



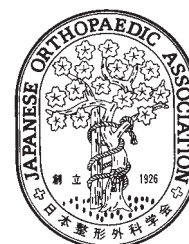
CORS 2013 V E N I C E

8th COMBINED MEETING
OF ORTHOPAEDIC
RESEARCH SOCIETIES
13-16 OCTOBER 2013
SAN SERVOLO
VENICE, ITALY



PATRONAGE & ENDORSEMENTS

CORS 2013 is proud to be patronaged and endorsed by numerous prestigious organisations. We thank our partner societies and public bodies for recognizing the relevance of CORS 2013 by sharing their official support.



The Bone and Joint Decade
Promoting musculoskeletal health
Keep people moving



Bone & Joint
Research



The
Bone & Joint
Journal
Formerly known as *JBJS (Br)*



Camera di Commercio
Venezia



PROVINCIA
DI VENEZIA



WELCOME

Dear friends and colleagues,

a warm welcome to the 8th Combined Meeting of Orthopaedic Research Societies, CORS 2013!

In the name of all bodies represented in CORS, it is a great honour and pleasure to host you in magical Venice, where the orthopaedic research world becomes a village for 4 days of presentations, discussions, and networking. Representing all continents and different scientific backgrounds, an impressive number of authors have brought their contribution to build a rich program including 33 symposia with more than 150 prominent speakers, 370 oral presentations in 45 sessions, 4 plenary and 5 keynote lectures, and over 350 posters.

Many young investigators have registered. Their active participation will strongly foster interaction and networking, making CORS 2013 the ideal platform for the development of research in orthopaedic sciences.

Venice has always been synonymous for inspiration, freedom, innovation, trading, and open-mindedness. With its extraordinary mixture of natural and architectural beauty, it offers the ideal context to stimulate creative and rational brainstorming. We chose San Servolo Island for CORS 2013 networking as the perfect incubator for new ideas to be spread around the world.

We are convinced that our efforts to create such a valuable space for close interaction and creative participation will have a natural follow-up with consistent and durable intercontinental cooperation.

In this line, we are very glad to announce the foundation, during CORS 2013, of ICORS, the International Combined Orthopaedic Research Societies union intended to intensify worldwide research collaboration for the benefit of the research community, the society, and patients.

Let yourself also be captured by the marvel of this extraordinary setting. Do not hurry up, slowness is the key to penetrate the unique atmosphere of Venice.

Make CORS 2013 an unforgettable meeting experience!

CONTENTS

Committees	page 3
General Information	page 4
Getting There	Page 5
Exhibition Map	Page 6
Scientific Information	page 7
Young Investigators.....	page 8
Social Program	page 9

Scientific Program

- Timetable	page 12
- Sunday, 13 October	page 14
- Monday, 14 October.....	page 27
- Tuesday, 15 October	page 39
- Wednesday, 16 October....	page 48
- Posters	page 62
- Name Index	page 78

Nicola Baldini



Bernd Grimm



ICORS

International Combined Orthopaedic Research Societies

A global union to promote interdisciplinary
orthopaedic and musculoskeletal research

Tuesday, October 15th

12.30 Auditorium - San Servolo

ICORS Plenum Session

Tuesday, October 15th

20.30 – Ca' Vendramin Calergi

ICORS Foundation Ceremony



COMMITTEES

ORGANIZING COMMITTEE

Nicola Baldini President CORS 2013, University of Bologna & Rizzoli Orthopaedic Institute, Bologna, I

Bernd Grimm Secretary CORS 2013, Atrium Medical Center, Heerlen, NL

Enrique Gómez-Barrena President EORS, Autonomous University of Madrid, Madrid, E

Klemens Trieb Vice-President EORS, Wels City Hospital, A

Edward Valstar Secretary EORS, University of Leiden, Leiden, NL

Ashley Blom Member-at-large EORS, University of Bristol, Bristol, UK

Denitsa Docheva Member-at-large EORS, LM University, Munich, D

Richie Gill Member-at-large EORS, Bath University, UK

Geoff Richards Member-at-large EORS, AO Foundation, Davos, CH

Gianluca Vadalà Member-at-large EORS, Campus Bio-Medico University of Rome, Rome, I

CORS

Australian & New Zealand Orthopaedic Research Society - **ANZORS**

British Orthopaedic Research Society - **BORS**

Chinese Orthopaedic Association - **COA**

Canadian Orthopaedic Research Society - **CORS**

European Orthopaedic Research Society - **EORS**

Japanese Orthopaedic Association - **JOA**

Korean Orthopaedic Research Society - **KORS**

Orthopaedic Research Society - **ORS**

Taiwanese Orthopaedic Research Society - **TORS**

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Paolo Cherubino University of Insubria, Varese, I

Vincenzo Denaro Campus Bio-Medico University of Rome, Rome, I

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C. James Kirkpatrick University of Mainz, Mainz, D

Jenneke Klein-Nulend ACTA, Amsterdam, NL

Yrjö Konttinen University of Helsinki, FIN

Pierre Layrolle INSERM U957, Nantes, F

Maurilio Marcacci University of Bologna & Rizzoli Orthopaedic Institute, Bologna, I

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Hans Van Oosterwyck L.U. Leuven, Leuven, B

Nico Verdonschot University of Twente, NL

Marco Viceconti University of Sheffield, Sheffield, UK

THANK YOU TO THE REVIEWERS

We would like to thank all the volunteers for their time, effort and dedication.

Toshihiro Akisue, J

Chris Arts, NL

Sofia Avnet, I

Nicola Baldini, I

Jarrett Cain, USA

John Costi, AUS

Matteo D'Este, CH

Denitsa Docheva, D

Colin Dunstan, AUS

David Eglin, CH

Pedro Esbrit, E

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David Haynes, AUS

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Jinho Lee, ROK

Pazit Levinger, AUS

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Ted Miclau, USA

Tony Miles, UK

Thimios Mitsiadis, CH

Yu Mochizuki, J

Damian Myers, AUS

Masashi Neo, J

Maria Pau Ginebra, E

Nathan Pavlos, AUS

Marianna Peroglio, CH

Francesca Perut, I

Giuseppe Pezzotti, J

Geoff Richards, CH

Daisuke Sakai, J

Gautam Shetty, IND

Choong-Soo Shin, ROK

Ashok Shyam, IND

Bogdan Solomon, AUS

Martin Stoddart, CH

Kazuya Tamai, J

Dominic Thewlis, AUS

Klemens Trieb, A

Gianluca Vadalà, I

Edward R. Valstar, NL

Nico Verdonschot, NL

Sophie Verrier, CH

Marco Viceconti, UK

Nuria Vilaboa, E

Markus Windolf, CH

Jiake Xu, AUS

Jianwen Xu, USA

Shinichi Yoshiya, J

Minghao Zheng, AUS

Hala Zreiqat, AUS

GENERAL INFORMATION

CONGRESS SECRETARIAT



O.I.C. srl

Viale G. Matteotti, 7 - 50121 Florence, Italy
Phone +39 (0)55 50351 - Fax +39 (0)55 5001912
info@cors2013.org

Registration desk opens:

Saturday, 12 October 2013	14.00-18.00
Sunday, 13 October 2013	8.00-17.30
Monday, 14 October 2013	8.00-17.30
Tuesday, 15 October 2013	8.00-17.00
Wednesday, 16 October 2013	8.00-17.00

CONGRESS VENUE

Isola di San Servolo Congress Center - Venice, Italy
Phone +39 (0)41 2765001

REGISTRATION FEES

Registration fees including VAT	€
Senior Investigator - Member of CORS Society	590,00
Senior Investigator - Non-member	690,00
Young Investigator*	350,00
Accompanying Guest / Spouse**	75,00

* Undergraduate and postgraduate students, PhD students, residents. Copy of valid student ID or letter from Head of Department required.

**Includes Opening Ceremony, Welcome Reception, one half day tour, Wine & Cheese.

Registration includes

Admission to scientific sessions and technical exhibits.
Program Book
App connection with downloadable content
Admission to Welcome Reception and Wine&Cheese
Lunch boxes and coffee-breaks

BADGES

Identification badge must be worn.

CATERING FACILITIES

Lunch boxes and coffee breaks are included in the registration fee. Bar and a self-service cafeteria are also available in San Servolo.

CERTIFICATE OF ATTENDANCE

Registered participants will receive a certificate of attendance.

CREDIT CARDS

Only VISA and MASTERCARD are accepted for payment of accommodation in San Servolo.

No credit cards are accepted at bar or cafeteria in San Servolo.
ATM machines are not available in San Servolo.

INSURANCE

The Congress Organisers do not assume any liability for personal injuries sustained or loss of, or damage to, property belonging to congress participants (or their accompanying persons), either during or as result of the congress. Participants are requested to make their own arrangements with respect to health and travel insurance.

LANGUAGE

The official language is English.

WI-FI INTERNET CONNECTION

Wi-Fi internet connection is available in the meeting rooms and the bar area.

USEFUL TELEPHONE NUMBERS

Medical emergency: 118

Police: 113

Fire emergency: 115

Taxi boat call: +39 (0)41 5222303 - +39 (0)41 5236994

Marco Polo Airport flight info: +39 (0)41 260 9260

For international calls from Italy: 00+Country code + number

For international calls to Italy: +39+City code (with 0) + number

GETTING THERE

BY AUTOMOTIVE AND RAILWAY

Venezia Santa Lucia is the headline railway stop to Venice. Automotive route to Venice heads to Piazzale Roma, close to the railway station.

BY AIRPLANE

The Marco Polo airport is connected to Piazzale Roma by bus services (ACTV AeroBus Line 5, 25 min, 6 €) and to Piazza San Marco (San Marco Square) by boat (Alilaguna, Linea Rossa, 73 min, 8 €).

IN VENICE: THE VAPORETTO

In Venice, the public transport (ACTV line) is operated by a network of water buses "vaporetto". A single trip (60 min) costs 7 €. The Venice Tourist Travel Card conveniently allows you an unlimited use of vaporetto in Venice. It can be purchased at box offices (often busy) or at automatic teller machines. It can also be purchased online and collected from the same automatic teller machines (www.veniceconnected.com/node/1503). This card is available for ½ day (18 €), 1 day (20 €), 2 days (30 €), 3 days (35 €), and 7 days. The 7 day card (50 €) covers the CORS 2013 meeting and, when applicable, also the post-meeting days. The 7 day card also comes with a single (54 €) or round airport transfer (58 €).

TO SAN SERVOLO ISLAND

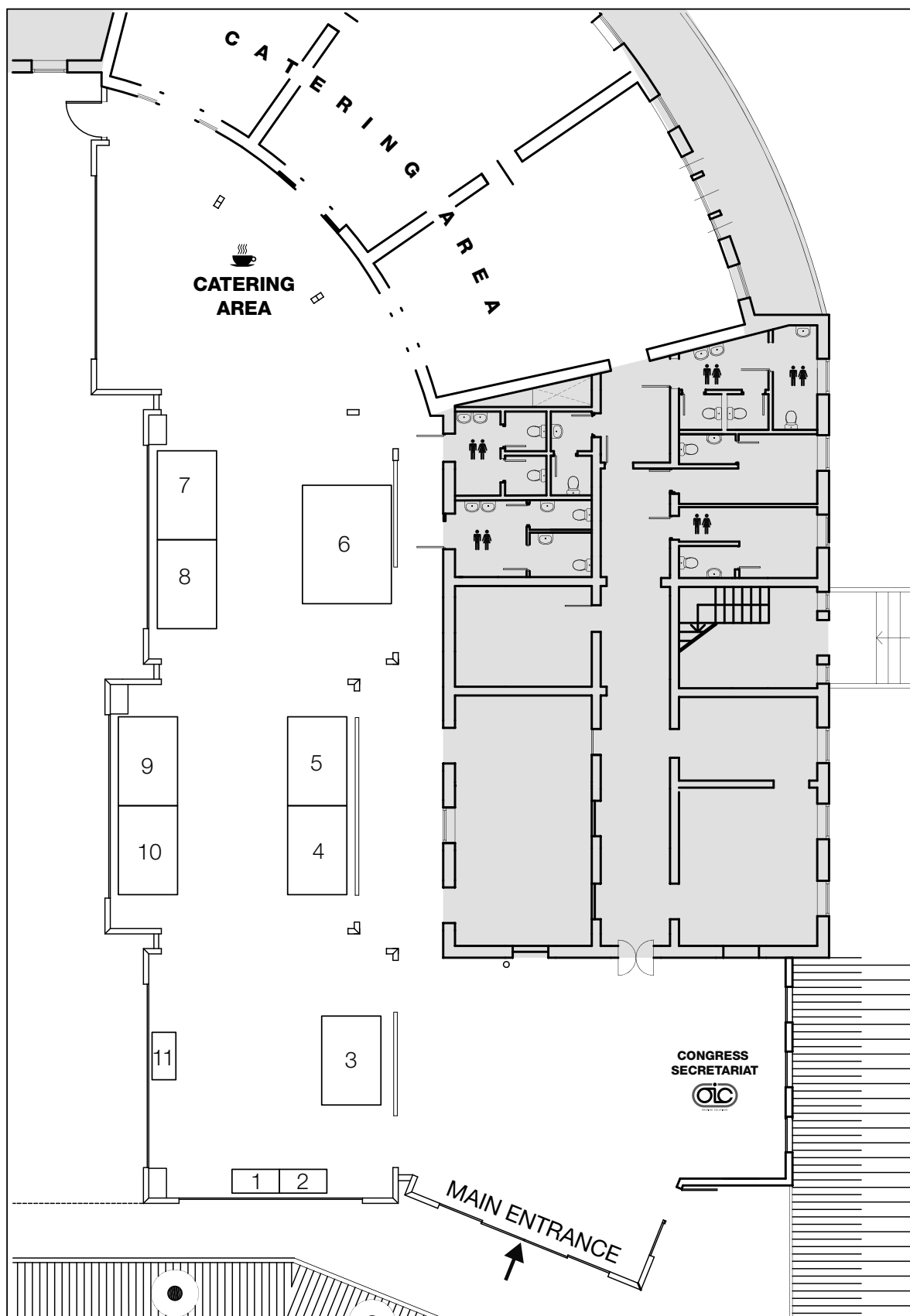
The public connection to San Servolo island is via the *vaporetto* line 20 from San Zaccaria stop, 200 m off Piazza San Marco (every 30-40 min, 10 minute trip).

LINEA 20 S.ZACCARIA - S.SERVOLO - S.LAZZARO - S.SERVOLO - S.ZACCARIA														
S.MARCO - S.ZACCARIA (M.V.E.) "B"	06.55	07.15	08.10	08.40	09.00	09.20	09.50	10.30	11.10	11.50	12.30	13.10	13.50	14.30
S.SERVOLO	07.05	07.25	08.20	08.50	09.10	09.30	10.00	10.40	11.20	12.00	12.40	13.20	14.00	14.40
S.LAZZARO	-	07.30	08.25	-	-	09.35	-	10.45	-	12.05	-	13.25	-	14.45
S.SERVOLO	-	07.35	08.30	-	-	09.40	-	10.50	-	12.10	-	13.30	-	14.50
S.MARCO - S.ZACCARIA (M.V.E.) "B"	07.15	07.45	08.40	09.00	09.20	09.50	10.10	11.00	11.30	12.20	12.50	13.40	14.10	15.00
												B	B	
S.MARCO - S.ZACCARIA (M.V.E.) "B"	15.10	15.50	16.30	17.10	17.50	18.30	19.10	19.50	20.30	21.30	22.30	23.30	00.25	01.30
S.SERVOLO	15.20	16.00	16.40	17.20	18.00	18.40	19.20	20.00	20.40	21.40	22.40	23.40	00.35	01.40
S.LAZZARO	15.25	-	16.45	17.25	-	18.45	-	20.05	-	21.45	-	-	-	-
S.SERVOLO	15.30	-	16.50	17.30	-	18.50	-	20.10	-	21.50	-	-	-	-
S.MARCO - S.ZACCARIA (M.V.E.) "B"	15.40	16.10	17.00	17.40	18.10	19.00	19.30	20.20	20.50	22.00	22.50	23.50	-	01.50
LIDO (S.M.E.) "D"													00.45	02.30

B = ONLY ON REQUEST. FROM S.SERVOLO IT IS POSSIBLE TO RESERVE CALLING THE NUMBER 800-845065 AT LEAST 20 MINUTES BEFORE.



EXHIBITION MAP



EXHIBITORS LIST:

AMTI	3	NORTHERN DIGITAL (NDI)	5
BIOCOMPOSITES	6	NOVEL	7
BOSE CORPORATION	10	RSACORE	2
EORS	11	SCANCO MEDICAL	4
MATERIALISE	9	THE BRITISH EDITORIAL SOCIETY OF BONE & JOINT SURGERY	1
NIKON INSTRUMENTS	8		

SCIENTIFIC INFORMATION

UEMS CREDITS

The CORS 2013 - 8th Combined Meeting of Orthopaedic Research Societies is accredited by the European Accreditation Council for Continuing Medical Education (EACCME) to provide the following CME activity for medical specialists. The EACCME is an institution of the European Union of Medical Specialists (UEMS), www.ums.net. The CORS 2013 - 8th Combined Meeting of Orthopaedic Research Societies is designed for **up to 24 hours of European external CME credits**. Each medical specialist should claim only those hours of credits that he/she actually spent in the educational activity. Through an agreement between the European Union of Medical Specialists and the American Medical Association, physicians may convert EACCME credits to an equivalent number of AMA PRA Category 1 Credits™. Information on the process to convert EACCME credit to AMA credit can be found at www.ama-assn.org/go/internationalcme. Live educational activities, occurring outside of Canada, recognized by the UEMS-EACCME for ECMEC credits are deemed to be Accredited Group Learning Activities (Section 1) as defined by the Maintenance of Certification Program of The Royal College of Physicians and Surgeons of Canada. The CME questionnaire and certificate will be available at www.cors2013.org after the Congress **from 17 October to 6 November 2013**. Please note that the registration code, printed on your badge will be required to access to CME questionnaire and to print the certificate.

AWARDS

CORS 2013 Awards will reflect the main themes of the meeting. Besides a Best Overall Oral presentation and a Best Overall Poster, an ICORS Award will be attributed to the best transcontinental collaborative study. Young Investigator Awards (best orals and best posters in Biology, Engineering and Clinic, respectively) will recognize emerging research talent.

Awards will be delivered during the Closure Ceremony on **Wednesday, 16 October**.

ORAL PRESENTATIONS

The oral presentation format is 6 + 2 minutes of discussion. Speakers are strictly required to respect their scheduled time.

SPEAKER READY ROOM

It is located in Room 5 (first floor) near Room Teatro and is available:

Saturday, 12 October 2013	14.00-18.00
Sunday, 13 October 2013	8.00-17.30
Monday, 14 October 2013	8.00-17.30
Tuesday, 15 October 2013	8.00-17.00
Wednesday, 16 October 2013	8.00-17.00

Digital presentations must be delivered to the Speaker Ready Room at least one hour before the beginning of the session, or the day before in case of early morning sessions.

POSTER PRESENTATIONS

Poster size and format: A0, portrait.

Poster boards will be numbered and set up material will be available. Authors are expected to attend poster sessions at lunch breaks.

Two double-day poster sessions will be held:

13 and 14 October:

Set up on 13 October (09.00 to 10.00)

Removal on 14 October (after 17.00)

15 and 16 October:

Set up on 15 October (09.00 to 10.00)

Removal on 16 October (15.30 to 17.00)

ELEVATOR PITCH SESSIONS

Poster authors will briefly summarize the content and aim of their work in a dedicated Elevator Pitch Session that will be held on Sunday, 13 October, from 17.00 to 17.30.

Clinical:

Room Basaglia - *Moderators:* Ashley Blom and Mike Whitehouse

Biology:

Room Teatro - *Moderators:* Lucy Di Silvio and Priya Kalia

Biomechanics & Biomaterials:

Auditorium - *Moderators:* Edward R. Valstar and Lennard Koster

YOUNG INVESTIGATORS

FOSTERING YOUNG INVESTIGATOR TALENT

CORS 2013 recognizes the importance of young investigator involvement for the future of orthopaedic research. One of the Meeting aims is to provide a global platform enabling the “next generation” of scientists and clinicians to interact and develop their professional and scientific background.

YOUNG INVESTIGATOR AWARDS

3 Best oral: Biology, Engineering, Clinical
3 Best poster: Biology, Engineering, Clinical

YOUNG INVESTIGATOR AS CO-MODERATORS

CORS 2013 gives Young Investigators the chance to serve as chairpersons at a major international meeting.

MEET-A-MENTOR LUNCHEON

The Meet-a-Mentor luncheon gives YIs the opportunity to enjoy lunch with a mentor, including keynote speakers, and members of the CORS 2013 Scientific and Executive Committee.

14 October 13.00 – 14.00 Atrio Colonne	15 October 13.00 – 14.00 Atrio Colonne	16 October 13.00 – 14.00 Atrio Colonne
Lucy Di Silvio	Mauro Alini	Enrique Gomez-Barrena
Steven Kurtz	Luigi Ambrosio	Johnny Huard
Maurilio Marcacci	Joan E. Bechtold	Katsuyuki Kusuzaki
Theodore Miclau	James C. Kirkpatrick	Gerald H. Pollack
Marjolein Van der Meulen	Melissa L. Knothe Tate	Dieter Rosenbaum
Marco Viceconti	Yrjö T. Konttinen	

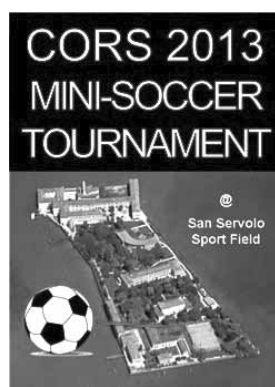
Check availability at Secretariat desk

YOUNG INVESTIGATOR ONLY SOCIAL EVENT

Monday, 14 October from 18.15 to 19.30
CAFFÈ CENTRALE VENEZIA, a short walk from Piazza San Marco.
A great opportunity to encourage professional networking and start friendships in a relaxed atmosphere.

Check availability at Secretariat desk

MINI-SOCCER TOURNAMENT

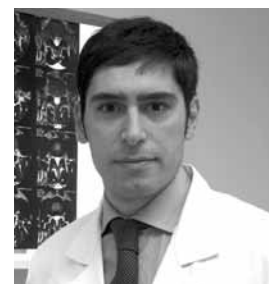


Sunday, 13 October, 18.30 – 20.00, San Servolo sport field

Tuesday, 15 October, 17.00 – 18.30, San Servolo sport field

16 teams formed of different Countries/background will dispute in the sport field of San Servolo Island.
The winner team will be announced during the CORS award ceremony on Wednesday, 16 October.

The Young Investigator initiatives are coordinated by **Gianluca Vadalà**.





SOCIAL PROGRAM

Sunday, 13 October - 17.45-18.45

WELCOME RECEPTION

San Servolo Congress Center

CORS 2013 Welcome Reception will be held on Sunday, 13 October, at the San Servolo Congress Centre (Exhibition & Catering Area), starting from 17.45.

Monday, 14 October - 18.15-19.30

YI-ONLY LOUNGE-PARTY

Caffè Centrale Venezia

It is a good chance for all the young investigators to let loose, socialise and spend time together enjoying music while sipping a real Italian style aperitivo! The Young Investigator Only Event will take place at Caffè Centrale Venezia, housed at Palazzo Cocco Molin, an ancient Venetian dwelling that dates back to the 1500s and is nestled within the heart of the historic centre of Venice, a few steps far from Piazza San Marco. A great opportunity to encourage professional networking and start new friendships in a relaxed atmosphere. No supervisors allowed. *A dedicated vaporetto will depart from San Servolo at 17.40.*

Tuesday, 15 October - 20.00-23.00

GALA PARTY

Ca' Vendramin Calergi (Vaporetto: S. Marcuola)

The Gala Party will be held in an historical mansion in the heart of Venice, on the Grand Canal. Please obtain your invitation card at the Social Program Desk before Monday, 14 October at 12.00 using your pre-booked Gala Party Voucher. Dress code: Semi-formal. ID Card necessary for admission.

Wednesday, 16 October - 17.00-18.00

WINE & CHEESE

San Servolo Congress Center - Exhibition & Catering Area

You will get a selection of local wine (Bisol winery, 500 years of experience) and cheese (Caseificio Benedetti) to say goodbye to CORS 2013.

TOURS

An attractive choice of guided tours has been prepared for delegates and accompanying persons. Pre booked vouchers are included in the congress kit. For on site availability please contact the Social Program Desk.



CORS 2013 PROGRAM

The full scientific program including abstracts is available on the App and downloadable from www.cors2013.org

Download the free App

Scan the QR Code

CORS 2013



from



For iPhone & iPad



For Android





SCIENTIFIC PROGRAM



TIMETABLE

SUNDAY 13 October					
	AUDITORIUM	ROOM BASAGLIA	ROOM TEATRO	ROOM 1E	ROOM 6
09.00 – 10.30	S1 - EORS I RSA & registries: the quest for phased introduction of new implants	09.30 S2 -IGEA Biophysical stimulation on articular cartilage	S3 - AO Foundation Bone infection, an AO TRAUMA clinical priority program for research	S4 - Maastricht University Advanced modeling of foot function and its clinical applications	
10.30 – 11.00	COFFEE BREAK				
11.00 – 12.00	O1 Knee & knee arthroplasty I	O2 Osteoporosis I	O3 Spine I 11.00-11.20 K1 Keynote V. Denaro Intervertebral disc regeneration: patho- genesis & cell therapy	O4 Tendon & ligaments I	O5 Clinical outcome
12.00 – 13.00	O6 Infection I	O7 Periprosthetic osteolysis 12.00-12.20 K2 Keynote YT Kontinen Macrophage polarization and activation in response to implants	O8 Hip & hip arthroplasty I	O9 Computer methods & finite element analysis	O10 Muscle
13.00 – 14.00	LUNCH / POSTER SESSION / TECHNICAL EXHIBITION				
14.00 – 15.30	O11 Tissue engineering I	O12 Biomechanics I	O13 Biomaterials I	O14 Osteoarthritis I	O15 Tumor I
15.30 – 17.00	S5 Korean ORS Stem cell based cartilage tissue engineering	S6 UHMWPE Advances in polyethylene biomaterials for total joint replacement	S7 MySpine A functional prognosis simulation of patient- specific spinal treatment for clinical use	S8 REBORNE Preclinical studies towards clinical trials on bone regeneration	
17.00 – 17.30	ELEVATOR PITCH Biomechanics	ELEVATOR PITCH Clinical	ELEVATOR PITCH Biology		
17.45h	OPENING CEREMONY > Auditorium / WELCOME RECEPTION > Exhibition Area				
18.30 – 20.00	SPORT TOURNAMENT > San Servolo sport field				

MONDAY 14 October					
	AUDITORIUM	ROOM BASAGLIA	ROOM TEATRO	ROOM 1E	ROOM 6
09.00 – 10.30	S9 ANZORS I Development of advanced orthopaedic implants	09.30 S10 Radboud University Nijmegen, NL A European perspective on the status & future of personalized musculo- skeletal modeling	S11 ORS In vivo models of increased loading for studying skeletal mechanobiology	S12 King's College London, UK "Mind the gap- strategies in tissue engineering"	S13 University Hospital Münster, D ADL-monitoring of orthopaedic patients. Technical & practical aspects of physical activity assessment
10.30 – 11.00	COFFEE BREAK				
11.00 – 12.00	O16 Tissue engineering II	O17 Knee & knee arthroplasty II	O18 Biomechanics II	O19 Cartilage & Meniscus I 11.00-11.20 K3 Keynote O. Kessler Orthopedic applications of silk derived tissues	O20 RSA & imaging
12.00 – 12.30	PL1 Plenary Lecture > Auditorium Junya Toguchida Application of iPS cell technology for musculoskeletal diseases				
12.30 – 14.30	LUNCH / POSTER SESSION / MEET THE MENTORS / TECHNICAL EXHIBITION				
14.30 – 15.00	PL2 Plenary Lecture > Auditorium Marco Viceconti The Virtual Physiological Human (VPH) project				
15.00 – 16.00	O21 Hip & Hip Arthroplasty II	O22 Knee & knee Arthroplasty III	O23 Tendon & Ligaments II	O24 Gait & Kinematics	O25 Shoulder I
16.00 – 17.30	S14 European Society for Biomechanics Multiscale biomechanical- mechanobiological models in orthopaedics: systems to organs to tissues to cells to genes	S15 TSOT & Turkish Orthopaedic Research Council Biomaterials in fracture healing 17.00	S16 University of Leeds, UK Advanced polymers for bearing surfaces 17.00	S17 Chinese ORS- WOA I Advances in bio-medical imaging for application in musculoskeletal disorders	S18 Rizzoli Institute I From fixation to kinematics: new applications for RSA
18.15h	YOUNG INVESTIGATOR ONLY EVENT > Caffè Centrale - Venezia				

TIMETABLE

TUESDAY 15 October					
	AUDITORIUM	ROOM BASAGLIA	ROOM TEATRO	ROOM 1E	ROOM 6
09.00 – 10.30	S19 Taiwanese ORS Novel treatment strategies for osteoarthritis and osteochondral lesions	S20 European Society for Biomaterials Implant-tissue interactions	09.30 S21 JOA Basic research on bone and soft tissue sarcomas	S22 Canadian ORS Advances in intervertebral disc repair	S23 Nat. University of Ireland & Paracelsus University Austria Tendon pathology, physiology & therapy
10.30 – 11.00	COFFEE BREAK				
11.00 – 12.30	O26 Biomechanics III	O27 Tissue engineering III	O28 Biomaterials II 11.00 – 11.20 K4 Keynote G. Pezzotti Quantum mechanics for molecular biomechanics of hard tissues	O29 Trauma & fracture I	O30 Spine II
12.30 – 13.00	ICORS Plenum > Auditorium				
13.00 – 14.30	LUNCH / POSTER SESSION / MEET THE MENTORS / TECHNICAL EXHIBITION				
14.30 – 15.30	PL3 Plenary Lecture > Auditorium Gerald H. Pollack Surprisingly central role of water in orthopaedic science				
15.30 – 17.00	S24 ANZORS II Novel potential therapeutic targets for osteolysis and bone repair	S25 Indian Orthopaedic Research Group Orthopaedic research in India 16.30	S26 TU Delft, NL Highly porous metallic implants and bone substitutes	S27 Rizzoli Institute II Kinematic alignment of total knee arthroplasty: science or fiction?	S28 Yamagata University Stanford University Innate immune sensors in joint diseases
17.00 – 18.30	SPORT TOURNAMENT > San Servolo sport field				
20.00	GALA PARTY > Ca' Vendramin Calergi				

WEDNESDAY 16 October					
	AUDITORIUM	ROOM BASAGLIA	ROOM TEATRO	ROOM 1E	ROOM 6
09.00 – 10.30	09.30 S29 eCM Journal Producing the stable chondrocyte phenotype - Considerations for in vitro stem cell differentiation	S30 EORS II Cross-disciplinary inspiration for orthopaedic practice & research	09.30 S31 BORS The "bionic" human: fact or fiction	S32 University of Pittsburgh and Campus Bio-medico University of Rome Regenerative medicine in orthopaedic surgery	S33 Chinese ORS-WOA II Development of bioactive implants and bone substitutes
10.30 – 11.00	COFFEE BREAK				
11.00 – 12.30	O31 Trauma & fracture II	O32 Tissue engineering IV	O33 Biomaterials III	O34 Tendon & ligaments III	O35 Elbow
12.30 – 13.00	PL4 Plenary Lecture > Auditorium Willem van Mechelen Evidence and health economic benefit of activity & exercise intervention programs on musculoskeletal health				
13.00 – 14.00	LUNCH / POSTER SESSION / MEET THE MENTORS / TECHNICAL EXHIBITION				
14.00 – 15.30	O36 Infection II	O37 Cells & molecular	O38 Spine III	O39 Tumor II 14.00-14.20 Keynote K. Kusuzaki New concept of lysosome targeting therapy using acridine orange for musculoskeletal sarcomas	O40 Imaging
15.30 – 16.30	O41 Cartilage & meniscus II	O42 Knee & knee arthroplasty IV	O43 Osteoarthritis II	O44 Osteonecrosis	O45 Shoulder II
16.30 – 17.00	AWARDS / CLOSURE / ICORS 2016 > Auditorium				
17.00	WINE & CHEESE Party > Exhibition Area				

SUNDAY 13 OCTOBER 2013

Auditorium 9.00-10.30**S1 SYMPOSIUM**

EORS 1

RSA AND REGISTRIES: THE QUEST FOR PHASED INTRODUCTION OF NEW IMPLANTSOrganizer: **E.R. Valstar** (Leiden - The Netherlands)Co-Organizer: **R.G.H.H. Nelissen** (Leiden - The Netherlands)

Disasters with the introduction of new orthopaedic implants are not something from the past. They still happen today as was recently shown with the metal on metal hip prostheses. In this workshop, we will focus on the phased introduction of new implants as a means to reduce the risk of catastrophes. Both RSA and national joint registries play an important role in phased market introduction, we explain their role in the phased introduction of hip- and knee prostheses, and discuss with you how a well-controlled introduction of implants could improve results.

9.00 **S1.1** Phased versus chaotic introduction of new implants

R.G.H.H. Nelissen (Leiden - The Netherlands)



9.20 **S1.2** RSA: an excellent early diagnostic technique for loosening
E.R. Valstar (Leiden - The Netherlands)



9.40 **S1.3** National joint registries: a powerful tool to screen implants
J. Karrholm (Gothenburg - Sweden)



10.00 **S1.4** A quest for the holy grail
H. Malchau (Gothenburg - Sweden)



10.20 Discussion

Room Basaglia 9.30-10.30**S2 SYMPOSIUM**

IGEA

BIOPHYSICAL STIMULATION ON ARTICULAR CARTILAGEOrganizer: **R. Cadossi** (Carpi - Italy)

An overview on the biological effects of Pulsed Electromagnetic Fields (PEMF) on joint microenvironment: cartilage, subchondral bone and synovial tissue either in localized chondral-osteochondral lesions or in degenerative disease (osteoarthritis). From a translational medicine perspective, this session starts from in vitro studies, which allowed to clearly identify PEMF mechanism of action, it goes through animal research, which outlined the complex biological response, till the clinical practice with Level I studies showing PEMF treatment benefit on patients.

9.30 **S2.1** Cellular effects of galvanotaxis on cartilage

C. Hung (New York - USA)



9.40 **S2.2** Control of joint inflammation by PEMF agonist activity for A2A adenosine receptor

K. Varani (Ferrara - Italy)



9.50 **S2.3** Pulsed electromagnetic stimulation in tissue engineering

M. Fini (Bologna - Italy)



10.00 **S2.4** Cartilage repair and preservation by physical forces

R.K. Aaron (Providence - USA)



10.10 **S2.5** Pulsed electromagnetic fields after knee surgery

M. Cadossi (Bologna - Italy)



10.20 Discussion

Room Teatro 9.00-10.30

S3 SYMPOSIUM

AO FOUNDATION

BONE INFECTION, AN AO TRAUMA CLINICAL PRIORITY PROGRAM FOR RESEARCH

Organizer: **G. Richards** (Davos - Switzerland)



Co-Organizer: **E. Schwartz** (Rochester - USA)



Infection remains a serious clinical problem in orthopedic surgery, with rates at approximately 2% and 5% for joint prosthesis and fracture-fixation devices, respectively. Despite the relatively low rates, the treatment of these infections can require a very costly and complicated two-stage reconstruction. In addition, the emergence of resistant organisms such as methicillin resistant *Staphylococcus aureus* (MRSA) has proved to be a serious public health problem in many countries and has resulted in great morbidity and mortality for many patients undergoing surgery. The Bone Infection symposium shall cover the clinical background to this important problem, providing an insight into the clinical and research challenges faced in the prevention and treatment of bone infection. In addition, the symposium shall provide an overview of the available animal models suitable for the robust testing of new anti-infective strategies. Finally, the symposium shall provide a comprehensive description of a recently developed passive immunization strategy for staphylococcal bone infection.

9.00 Clinical reality of bone infection

S3.1 S. Kates (Rochester - USA)



9.15 Animal models

S3.2 V. Alt (Giessen - Germany)



9.30 Influence of material on the development of device-associated infections

S3.3 F. Moriarty (Davos - Switzerland)



9.45 Biofilm formation by clinical isolates and the implications in chronic infections

S3.4 J. Wenke (Houston - USA)



10.00 Pre-clinical evaluation of anti-GMD passive immunization in infection prophylaxis of implant-associated osteomyelitis

S3.5 E. Schwartz (Rochester - USA)



10.15 Discussion

Room 1E 9.00-10.30

S4 SYMPOSIUM

MAASTRICHT UNIVERSITY

ADVANCED MODELING OF FOOT FUNCTION AND ITS CLINICAL APPLICATIONS

Organizer: **K. Meijer** (Maastricht - The Netherlands)



Co-Organizer: **A. Witlox** (Maastricht - The Netherlands)



Simulation models of the foot can provide a vital contribution to the clinical assessment of foot function in a variety of foot disorders. The workshop will give an overview of state of the art in foot modeling and will provide examples of the clinical use of these models.

9.00 A footprint; clinical use of foot models in RA treatment

S4.1 J. Woodburn (Glasgow - United Kingdom)



9.20 Predicting the functional consequences of an insole using a novel multi-body model of the foot

S4.2 M. Oosterwaal (Maastricht - The Netherlands)



9.40 The Glasgow - Maastricht AnyBody foot model to predict internal loads in the foot

S4.3 A.A. Al-Munajjed (Aalborg - Denmark)



10.00 Assessment of functional recovery after foot fracture with the Oxford foot model

S4.4 S. van Hove (Maastricht - The Netherlands)



10.20 Discussion

SUNDAY 13 OCTOBER 2013

Auditorium 11.00-12.00

01 KNEE & KNEE ARTHROPLASTY I

Moderators: **E. Gomez-Barrena** (Madrid - Spain)
S.J. Wright (Bath - United Kingdom)

- 11.00 Femorotibial constraint behavior of two CR TKA prostheses - Evaluation using computer simulations
01.1 **B. Gao, L. Angibaud** (Gainesville - USA)
- 11.08 Predict TKA prosthesis constraint behavior using computer simulation
01.2 **B. Gao, L. Angibaud** (Gainesville - USA)
- 11.16 Does total knee replacement modify flexion axis of the knee on frontal and axial plane regardless from limb alignment?
01.3 **D. Bruni, F. Iacono, S. Bignozzi, F. Colle, M. Marcacci** (Bologna - Italy)
- 11.24 Investigating knee kinematics before and after total knee arthroplasty to explore the influence of prosthesis shape and placement
01.4 **M. Akbari Shandiz, P. Boulos, S.K. Saevarsson, S. Yoo, C. Anglin** (Calgary - Canada)
- 11.32 A prospective randomized comparison of patient specific instruments with standard TKA instrumentation
01.5 **A. Porter, B. Snyder, P. Franklin, D. Ayers** (Worcester - USA)
- 11.40 Intermittent PTH and mechanical loading increase the quality, quantity and mechanical integrity of a porous titanium implant-bone interface
01.6 **M. Bostrom, H.-W. Courtland, M. Grosso, J. Sutherland, K. Stoner, X. Yang, M. van der Meulen** (New York - USA)
- 11.48 Influence of material and geometry on the wear of fixed bearing total knee replacements
01.7 **C. Brockett, S. Carbone, L. Jennings, J. Fisher** (Leeds - United Kingdom)

Room Basaglia 11.00-12.00

02 OSTEOPOROSIS I

Moderators: **P. Esbrit** (Madrid - Spain)
F. Taddei (Bologna - Italy)

- 11.00 Role of L-arginine in treatment of osteoporosis
02.1 **S. Goel, G. Kumar Jha, N.K. Agarwal** (Varanasi - India)
- 11.08 Bioactive natural compounds for treating bone resorption diseases
02.2 **G. Di Pompo, D. Granchi, F. Poli, B. Lorenzi, M. Mandrone, N. Baldini** (Bologna - Italy)
- 11.16 Inhibitory effects of obovatol on osteoclast differentiation and bone resorption
02.3 **S.-Y. Kim, J.M. Hong, H.-J. Yoon, B.-M. Kwon, I.-K. Lee, H.-J. Kim** (Daegu, Daejeon - Korea)
- 11.24 Therapeutic inhibition of miR-214 within osteogenic cells in aged osteoporotic rats induced by ovariectomy for bone anabolic strategy: optimization of dosage and duration
02.4 **B. Guo, X. Wang, A. Hong, A. Lu, B. Zhang, G. Zhang** (Hong Kong, Guangzhou - China)
- 11.32 Opportunistic computed tomography screening for osteoporosis in acute fractures of the cervical spine
02.5 **O. Emohare, A. Cagan, A. Dittmer, J. Switzer, D. Polly** (St Paul, Minneapolis - USA)
- 11.40 Opportunistic computed tomography screening for osteoporosis in acute fractures of the thoracic and lumbar spine
02.6 **O. Emohare, A. Cagan, A. Dittmer, R. Morgan, J. Switzer, D. Polly** (St Paul, Minneapolis - USA)
- 11.48 Opportunistic computed tomography screening shows a high incidence of osteoporosis in ankylosing spondylitis patients with acute vertebral fractures
02.7 **O. Emohare, A. Dittmer, A. Cagan, D. Polly, E. Gertner** (St Paul, Minneapolis - USA)

Room Teatro 11.00-12.00

11.00 **K1 KEYNOTE LECTURE 1**
Intervertebral disc regeneration: pathogenesis and cell therapy
Vincenzo Denaro (Rome - Italy)



O3 SPINE I
Moderators: **G. Vadalà** (Rome - Italy)
P-P. Vergroesen (Amsterdam - The Netherlands)

11.20 **O3.1** Cytokine regulation of neurotrophic factors & pain related peptides in disc & nerves - Implications in discogenic pain
A. Binch, K. Phillips, N. Chiverton, A. Cole, L. Breakwell, A. Michael, A. Cross, C. Le Maitre (Sheffield - United Kingdom)

11.28 **O3.2** Morphological analysis of spinal nerve tissue in rats following application of notochordal cells and chondrocyte-like cells
K. Larsson, C. Nordborg, C. Örndal, H. Brisby, B. Rydevik (Gothenburg - Sweden)

11.36 **O3.3** Systemic and local genotoxic stress accelerates disc degeneration
L.A. Nasto, D. Wang, A. Rasile Robinson, K. Ngo, E. Pola, G. Sowa, P. Robbins, J. Kang, L. Niedernhofer, N. Vo (Rome - Italy, Beijing - China, Pittsburgh - USA)

11.44 **O3.4** Exploring the link between mechanical load and cell death in the intervertebral disc: a theoretical study of mechano-regulated hypermetabolism and metabolic transport
A. Malandrino, D. Lacroix, J. Noailly (Barcelona - Spain, Sheffield - United Kingdom)

11.52 **O3.5** Mesenchymal stem cells in bone marrow concentrate added to allografts in posterolateral lumbar fusion
R. Hart, M. Komzák, M. Puskeiler, P. Jajtner (Znojmo - Czech Republic)

Room 1E 11.00-12.00

O4 TENDON & LIGAMENTS I

Moderators: **M.L. Knothe Tate** (Sydney - Australia)
C-F. Hsieh (Munich - Germany)

11.00 **O4.1** Three-dimensional reconstruction of rabbit bone-tendon junction chondrocyte using in-line x-ray phase contrast imaging
H. Lu, J. Hu, J. Zhou, Z. Zeng, Y. Cao, C. Chen (Changsha - China)

11.08 **O4.2** Treatment options in tendon healing following natural growth factor expression
S.A. Müller, A. Todorov, M. Majewski (Basel - Switzerland)

11.16 **O4.3** Viability of equine mesenchymal stem cells during transport and implantation
E. Garvican, S. Cree, L. Bull, R. Smith, J. Dudhia (London - United Kingdom)

11.24 **O4.4** Effect of corticosteroid on tendon-bone healing after acute rotator cuff tear in rat
T. Kanazawa, M. Gotoh, H. Shibata, H. Nakamura, N. Shiba, K. Nakamura, K. Nagata (Kurume - Japan)

11.32 **O4.5** Studying the relation between pulsed electromagnetic field (PEMF) dosage and in vitro functional response of tendon cells
M. Viganò, D. Stanco, S. Setti, E. Galliera, V. Sansone, L. De Girolamo (Milan, Carpi - Italy)

11.40 **O4.6** Biocompatibility of a novel polydioxanone biomimetic tendon patch
M. Morrey, E. Lostis, S. Franklin, O. Hakimi, P.-A. Mouthy, N.Z. Baboldashti, A. Carr (Rochester - USA, Oxford - United Kingdom)

11.48 **O4.7** Genetically engineered and systemically expressing Kusabira-Orange transgenic pigs as in vivo model to trace cell recruitment after anterior cruciate ligament reconstruction
H. Takeuchi, H. Enomoto, H. Matsunari, K. Umeyama, H. Nagashima, T. Yoshikawa, Y. Okada, Y. Toyama, Y. Suda (Tokyo - Japan)

SUNDAY 13 OCTOBER 2013

Room 6 11.00-12.00**O5 CLINICAL OUTCOME**

Moderators: **R.G.H.H. Nelissen** (*Leiden - The Netherlands*)
X. Li (*Boston - USA*)

- 11.00 **O5.1** Differences in pre-op characteristics between TKR and THR patients: results from FORCE-TJR a national US cohort
D. Ayers, L. Harrold, W. Li, J. Allison, P. Noble, P. Franklin (*Worcester, Houston - USA*)
- 11.08 **O5.2** Body-fixed inertia-sensor for movement analysis and activity monitoring as a regular clinical outcome tool for patients with ankle injury
L. Theelen, N. Wentink, Y. Dhooze, R. Senden, W. van Hemert, B. Grimm (*Heerlen - The Netherlands*)
- 11.16 **O5.3** A pilot cohort study to investigate the influence of cognitive dysfunction and psychological factors on the ability to drive in patients undergoing lower limb surgery
W. Rea, I. McCarthy, P. Smitham (*London - United Kingdom*)
- 11.24 **O5.4** Measuring satisfaction with industry metrics: a prospective cohort study of 6912 arthroplasty patients
D. Hamilton, J. Lane, P. Gaston, J. Patton, D. MacDonald, H. Simpson, C. Howie (*Edinburgh - United Kingdom*)
- 11.32 **O5.5** Do modern total knee replacements offer better value for money? A health economic analysis
D. Hamilton, N. Clement, J. Patton, R. Burnett, P. Gaston, C. Howie, H. Simpson (*Edinburgh - United Kingdom*)
- 11.40 **O5.6** Global trends in orthopaedic publications: the EBM perspective
T. Ahmad (*Karachi - Pakistan*)
- 11.48 **O5.7** Relationship of Internet or social media usage and patient referral patterns in orthopaedic surgery
E. Curry, X. Li, K. Buesser, J. Nguyen, E.G. Matzkin (*Boston, New York - USA*)

Notes

Auditorium 12.00-13.00

06 INFECTION I

Moderators: **G. Richards** (Davos - Switzerland)
F. Moriarty (Davos - Switzerland)

- 12.00
06.1 A competitive assay for bacterial and cellular adherence to biomaterials: an in vitro approach to the "race for the surface" theory
C. Perez-Jorge, R. Perez-Tanoira, D. Lozano, A. Conde, M.-A. Arenas, J.-M. Hernandez-Lopez, J.-J. De-Damborenea, E. Gomez-Barrena, P. Esbrit, J. Esteban (Madrid - Spain)
- 12.08
06.2 Lysophospholipid-functionalised titanium - A dual action surface supporting human osteoblast maturation whilst deterring bacterial attachment
J. Blackburn, M. Skinderso, K. Krogfelt, A.W. Blom, A. Lovering, J. Mansell (Bristol - United Kingdom)
- 12.16
06.3 Towards improving the detection of biofilm associated infection by sonication of polymethylmethacrylate (PMMA) cement
H. Gbejuade, A. Lovering, A. Hidalgo-Arroyo, J. Leeming, J. Webb (Bristol - United Kingdom)
- 12.24
06.4 Constant controlled release of antibiotics eradicating local infection/contamination in patients with Gustilo 3 open fractures. Results on 16 patients
D. Segal, R. Estrada, M. Pasion, R. Ramos, Y. Stark, R. Gustilo, N. Emanuel (Jerusalem, Petach-Tikva - Israel, Quezon - Philippines, Minneapolis - USA)
- 12.32
06.5 Effect of N-acetylcysteine and subinhibitory concentration of erythromycin in combination with antibiotics against staphylococcal biofilms. A preliminary study
D. Molina-Manso, G. Del-Prado, M. Lucas-Diaz, E. Gómez-Barrena, J. Cordero-Ampuero, J. Esteban (Madrid - Spain)
- 12.40
06.6 Prophylactic antibiotics for dental procedures in patients with prostheses: is there a need? - A survey of 163 surgeons
S.P. Morapudi, R. Zhou, K. Barnes (Macclesfield - United Kingdom)
- 12.48
06.7 Combined orthoplastic approach to open tibial fractures: a prospective multicentric study
F. Boriani, R. Urso, M. Fell, A. Ul Haq, U. Khan (Bologna - Italy, Bristol - United Kingdom, Lahore - Pakistan)

Room Basaglia 12.00-13.00

12.00 K2 KEYNOTE LECTURE 2

Macrophage polarization and activation in response to implants
Yrjö T. Konttinen (Helsinki - Finland)



07 PERIPROSTHETIC OSTEOLYSIS

Moderators: **S. Goodman** (Redwood City - USA)
P.S. Pezeshki (Toronto - Canada)

- 12.20
07.1 The influence of osteoporosis on wear particles induced osteolysis in animal model
Y. Ding, Z. Guan, J. Xu, R. Ma (Guangzhou - China)
- 12.28
07.2 Comparison of wear particle exposure and tissue reactions in patients with cemented and uncemented titanium hip prostheses that failed due to osteolysis
S. Grosse, P.J. Høl, P.K. Lilleng, H.K. Haugland, G. Hallan (Bergen - Norway)
- 12.36
07.3 Biological strategies for treatment of wear particle-induced periprosthetic osteolysis
S. Goodman, Z. Yao, P.-G. Ren, E. Gibon, A. Rao, J. Pajarinen, J. Antonios, T. Lin, R.L. Smith, K. Egashira, M. Keeney, F. Yang, Y. Konttinen (Stanford - USA, Shenzhen - China, Paris - France, Kyushu - Japan, Helsinki - Finland)
- 12.44
07.4 MicroRNA profiling in wear particle associated osteolysis
R.W. Li, H.R. Patel, D. Perriman, J. Wang, P.N. Smith (Canberra - Australia)
- 12.52
07.5 Lentivirus-mediated short hairpin RNA interference targeting TNF-alpha in macrophages inhibits particle-induced inflammation and osteolysis in vitro and in vivo
Y. Ding, C. Qin, D. Huang, H. Shen (Guangzhou - China)

SUNDAY 13 OCTOBER 2013

Room Teatro 12.00-13.00**08 HIP & HIP ARTHROPLASTY I**

Moderators: **K. Trieb** (*Wels - Austria*)
M. Mohaddes (*Möln dal - Sweden*)

- 12.00
08.1 A cadaveric study of the primary stability and biomechanical properties of a tapered versus conical revision hip prosthesis
I. Vanhegan, M. Coathup, I. McCarthy, F. Haddad, G. Blunn (*London - United Kingdom*)
- 12.08
08.2 Using the circle theorem to estimate acetabular version from a single antero-posterior hip radiograph
V. Moretti, J. Thormeyer, S. Chmell (*Chicago - USA*)
- 12.16
08.3 Prevalence of pincer-like radiographic patterns among general population. A CT and X-ray based descriptive study on 118 individuals
G. Trisolino, A. Strazzari, C. Stagni, G. Tedesco, U. Albinini, E. Martucci, D. Dallari (*Bologna - Italy*)
- 12.24
08.4 Flare index and the ability to restore femoral head centre. A comparison of two THR implant geometries
C. Lowry, G. Vincent, A. Traynor, S. Collins (*Cirencester, Manchester - United Kingdom*)
- 12.32
08.5 MARS MRI scanning for metal on metal hip arthroplasty
R. Gwyn, S. Mahmood, I. Malik, M. Maheson, A. John, C. Lyons, S. Jones (*Cardiff - United Kingdom*)
- 12.40
08.6 Treatment of pseudotumors after metal-on-metal hip resurfacing based on magnetic resonance imaging, metal ion levels and symptoms
W. van der Weegen, T. Sijbesma, H. Hoekstra, K. Brakel, P. Pilot, R.G.H.H. Nelissen (*Geldrop, Delft, Leiden - The Netherlands*)
- 12.48
08.7 Incorporation of raloxifene-impregnated allograft around orthopaedic titanium implants
L. Lykke Hermansen, M. Sørensen, J. Barckman, J. Bechtold, K. Søballe, J. Baas (*Aarhus - Denmark, Minneapolis - USA*)

Room 1E 12.00-13.00**09 COMPUTER METHODS & FINITE ELEMENT ANALYSIS**

Moderators: **A.A. Al-Munajjed** (*Aalborg - Denmark*)
Y. Lu (*Hamburg - Germany*)

- 12.00
09.1 Effect of the clinical CT image resolution on the finite element model of human cancellous bone
Y. Lu, K. Püschel, M. Morlock, G. Huber (*Hamburg - Germany*)
- 12.08
09.2 3D finite element modeling of clavicle for stress fractures
S. Abrassart, P. Hoffmeyer, C. Barea (*Geneva - Switzerland*)
- 12.16
09.3 Automatic reconstruction of large acetabular bone defects using statistical shape models
P. Vanden Berghe, J. Demol, F. Gelaude, J. Vander Sloten (*Leuven - Belgium*)
- 12.24
09.4 Computer-assisted method for the spatial 3D mapping of trabecular disconnections in the spine: a potential tool in the surgical prophylaxis of vertebral fractures?
P. Garner, R. Wilcox, J. Aaron (*Leeds - United Kingdom*)
- 12.32
09.5 Femoral morphology using software for three-dimensional analysis prior to arthroplasty
H. Wada, H. Mishima, K. Hyodo, M. Yamazaki (*Tsukuba - Japan*)
- 12.40
09.6 Efficient subject-specific computational model generation for design-phase evaluation of knee replacement
C. Fitzpatrick, L. Vigneron, S. Kannan, S. Shah, X. Liu, S. De Boodt, P. Rullkoetter (*Denver, Providence - USA*)
- 12.48
09.7 The influence of computer-assisted total knee arthroplasty on postoperative rotational component orientation: a qualitative and systematic review
M. Meijer, A. Boerboom, M. Stevens, S. Bulstra, I. Reininga (*Groningen - The Netherlands*)

Room 6 12.00-13.00

O10 MUSCLE

Moderators: **A. Gigante** (*Ancona - Italy*)
M. Musumeci (*Rome - Italy*)

12.00 The relationship between skeletal muscle mass indices
O10.1 determined by segmental bio-impedance and muscle strength
O. Alizadehkhayat, D. Hawkes, A. Howard, S. Frostick
(*Liverpool - United Kingdom*)

12.08 Fixation of rat tail vertebrae causes muscle fiber type
O10.2 transition in paraspinal muscle
K. Kishimoto, E. Itoi (*Sendai - Japan*)

12.16 Myoelectric imbalance in the coupled activity of
O10.3 the superficial long paraspinal muscles and the deep rotators at both sides of the curve in patients with idiopathic scoliosis. Direct intramuscular EMG recording in different spine tasks
C. Barrios, V. Zena, G. de Blas, J. García-Casado, L. Cabañes, B. Catalán, J. Burgos, D. Noriega, J. Saiz
(*Valencia, Madrid, Valladolid - Spain*)

12.24 Platelet rich fibrin matrix effects on skeletal muscle
O10.4 lesions: an experimental study
A. Gigante, M. Cianforlini, A. Busilacchi, S. Manzotti, M. Mattioli Belmonte (*Ancona - Italy*)

12.32 Successful Achilles tendon regeneration using a
O10.5 bioresorbable nanofiber scaffold, stem cells, and growth factor in a rat tendon gap defect model
R. James, M. Hogan, G. Balian, A.B. Chhabra, C.T. Laurencin (*Farmington, New York, Charlottesville - USA*)

12.40 Implantable micro-machined capacitive sensor to
O10.6 monitor compartment pressures in lower limb
S. Alqahtani, E. Harvey, J. Henderson, V. Chodavarapu, Y. Wang, C. Allan (*Montreal, Kingston - Canada*)

12.48 Intra-articular decorin does not reduce contractures, but
O10.7 does influence the fibrosis genetic expression profile in a rabbit model of joint contracture
M.P. Abdel, M.E. Morrey, J.D. Barlow, D.E. Grill, C.P. Kolbert, K.-N. An, S.P. Steinmann, B.F. Morrey, J. Sanchez-Sotelo (*Rochester - USA*)

Notes

SUNDAY 13 OCTOBER 2013

Auditorium 14.00-15.30**011 TISSUE ENGINEERING I**

Moderators: **L. Di Silvio** (London - United Kingdom)
N. Kohli (Birmingham - United Kingdom)

- 14.00
011.1 Minced umbilical cord fragments: an effective cell source for cartilage and bone tissue engineering?
A. Marmotti, S. Mattia, G.M. Peretti, D. Bonasia, M. Bruzzone, F. Dettoni, R. Rossi, L. Mazzucchelli, D. Gioia, F. Castoldi (Turin, Milan - Italy)
- 14.08
011.2 Mesenchymal stem cells from knee infrapatellar and subcutaneous adipose tissue are characterized by a differential commitment into chondrogenic and osteogenic lineage
S. Lopa, A. Colombini, D. Stanco, L. de Girolamo, V. Sansone, M. Moretti (Milan - Italy)
- 14.16
011.3 Influence of the culture model on transcription factors RUNX2 and osterix as well as on osteogenic differentiation of primary human osteoblasts
L. Kuntz, J. Tuebel, C. Marthen, F. Hilz, R. von Eisenhart-Rothe, R. Burkart (Munich - Germany)
- 14.24
011.4 ColVI and Dcn's control over cytoskeletal reorganization to load in differentiating hMSCs
J. Twomey, A. Hsieh (College Park - USA)
- 14.32
011.5 Stem cells catalyze cartilage formation by neonatal articular chondrocytes
J. Lai, G. Kajiyama, R.L. Smith, W. Maloney, F. Yang (Stanford - USA)
- 14.40
011.6 Novel application of mesenchymal stem cell-derived chondrocytes (MSC-DCs) for bone regeneration
N. Harada, Y. Watanabe, S. Abe, K. Sato, T. Iwai, I. Yamamoto, K. Yamada, K. Yamanaka, Y. Sakai, T. Kaneko, T. Matsushita (Tokyo - Japan)
- 14.48
011.7 18F-labeling - A novel method to quantify the osteogenic differentiation potential of human mesenchymal stem cells induced into the osteogenic lineage cultured on collagen I/III scaffolds
T. Grossner, U. Haberkorn, T. Gotterbarm (Heidelberg - Germany)
- 14.56
011.8 Fate of human mesenchymal stem cells in orthotopic and ectopic sites in mice for bone tissue-engineering
M. Manassero, V. Viateau, A. Decambron, M. Deschepper, M. Bensidhoum, D. Logeart, H. Petite (Maisons Alfort, Paris - France)
- 15.04
011.9 Bone tissue substitutes engineered from human pluripotent stem cells
G.M. de Peppo, I. Marcos-Campos, D. Kahler, D. Alsalman, L. Shang, G. Vunjak-Novakovic, D. Marolt (New York - USA)
- 15.12
011.10 BMP-7 for the treatment of non-union of the foot and benign bone tumors
K. Trieb, G. Pass, S. Hofstaetter (Wels - Austria)

Room Basaglia 14.00-15.30**012 BIOMECHANICS I**

Moderators: **J.E. Bechtold** (South Minneapolis - USA)
A. Carriero (London - United Kingdom)

- 14.00
012.1 Osteoporosis does not compromise the mechanical strength of the proximal femur in daily activities
F. Taddei, I. Palmadori, E. Schileo, M.O. Heller, W.R. Taylor, A. Toni (Bologna - Italy, Southampton - United Kingdom, Zurich - Switzerland)
- 14.08
012.2 A dynamic in vitro investigation on the behaviour of the pedicles and facets in spinal burst fractures
N. Brandolini, N. Kapur, R.M. Hall (Leeds - United Kingdom)
- 14.16
012.3 Individualised finite element model predicts femoral fractures more accurately than current clinical indicators
G. Farinella, M. Viceconti, E. Schileo, C. Falcinelli, L. Yang, R. Eastell (Sheffield - United Kingdom, Bologna - Italy)
- 14.24
012.4 Can the "turn-of-the-nut" method improve cortical screw insertion?
S. Thakkar, E. Langdale, S. Mears, S. Belkoff (Baltimore - USA)
- 14.32
012.5 Interfragmentary compression of different tibia plateau split fracture fixation techniques. An experimental study
K. Kojima, M. Lenz, T. Nicolino, G. Hofmann, R.G. Richards, B. Gueorguiev (Sao Paulo - Brazil, Davos - Switzerland, Jena - Germany)
- 14.40
012.6 Comparative effects of hydrostatic compression and shear stress on early mechano responsive gene expression in human MSCs
L. Sudre, M. Cruel, P. Becquart, T. Hoc, H. Petite, M. Bensidhoum (Paris, Lyon - France)
- 14.48
012.7 Influence of design and material coupling on micromotions at the stem-neck interface of bimodular hip prostheses
S.Y. Jauch, G. Huber, K. Sellenschloh, H. Haschke, T.M. Grupp, M.M. Morlock (Hamburg - Germany, Munich - Germany)
- 14.56
012.8 The assembly load influences the fretting behaviour at taper interfaces of modular hip prostheses: an in vitro study
S.Y. Jauch, L.V. Ng, S.R. Peirce, V. Dhokia, A.W. Miles, H.S. Gill (Bath - United Kingdom)
- 15.04
012.9 Mathematical calculations to quantify pull-off strength relationship to push-on strength
A. Kinbrum, A. Traynor, S. Collins (Corin - United Kingdom)
- 15.12
012.10 Biomechanical evaluation of the quadriceps tendon for ACL reconstruction - A human cadaveric study
N. Sasaki, K. Farraro, K. Kim, S. Woo (Pittsburgh - USA)

Room Teatro 14.00-15.30

O13 BIOMATERIALS I

Moderators: **F. Korkusuz** (Ankara - Turkey)
P. Kalia (London - United Kingdom)

- 14.00
O13.1 Reduced bacterial/fungal adhesion on vitamin E-added UHMWPE and crosslinked UHMWPE for total joint arthroplasties
A. Bistolfi, P. Bracco, G. Banche, V. Allizond, M. Boffano, A. Cimino, E.M. Brach del Prever, A.M. Cuffini (Turin - Italy)
- 14.08
O13.2 Staphylococcal biofilm formation on diamond-like-carbon coated UHMWPEs: a first approach
G. Del-Prado, F.-J. Pascual, A. Terriza, D. Molina-Manso, F. Yubero, J.-A. Puertolas, E. Gomez-Barrena, J. Esteban (Madrid, Zaragoza, Sevilla - Spain)
- 14.16
O13.3 The effect of sterilization methods on the osteoconductivity of allograft bone in a critical-sized bilateral tibial defect model in rabbits
N. Russell, R. Oliver, W. Walsh (Sydney - Australia)
- 14.24
O13.4 Surface modification of titanium implants for an enhanced osteointegration ability and antibacterial action
S. Spriano, S. Ferraris, M. Miola (Turin - Italy)
- 14.32
O13.5 Substrate geometry directs the mineralization of calcium phosphate ceramics in vitro
M. Bianchi, E. Urquia Edreira, J. Wolke, Z. Tahmasebi Birgani, P. Habibovic, A. Tampieri, J.A. Jansen, M. Maricacci, S.C.G. Leeuwenburgh, J.J.J.P. van den Beucken (Bologna, Faenza - Italy, Nijmegen, Enschede - The Netherlands)
- 14.40
O13.6 Strontium modified calcium phosphate cement (SrCPC) enhances bone formation in critical-size metaphyseal osteoporotic fracture defects in rats
S. Ray (Giessen - Germany)
- 14.48
O13.7 Development of a foamable bone substitute for application to osteoporotic bone voids
P. Arntz, M. Kuhli, N. Reimers, H. Steckel (Kiel - Germany)
- 14.56
O13.8 Osteoinductive coatings of titanium implants with shelf-life stability and sterilization resistance
D. Logeart-Avramoglou, R. Guillot, P. Becquart, F. Gilde, F. Sailhan, A. Lapeyre, C. Picart (Paris, Grenoble - France)
- 15.04
O13.9 Bone sialoprotein-collagen implants promote cranial bone repair by stimulating the differentiation of osteoprogenitor cells into mature osteoblasts
Q. Lu, J. Yost, A. Miller, J. Wang (Kansas City - USA)
- 15.12
O13.10 In vivo assessment of porous implants functionalised with RGD peptides in enhancing osseointegrated amputation prostheses
R. Dowling, C. Pendegrass, B. Thomas, G. Blunn (Stanmore - United Kingdom)
- 15.20
O13.11 A novel magnesium-based bone substitute to stimulate in vivo bone formation for orthopaedic implantation
H.M. Wong, P. Chu, K. Cheung, K. Luk, K. Yeung (Hong Kong - China)

Room 1E 14.00-15.30

O14 OSTEOARTHRITIS I

Moderators: **U.E. Pazzaglia** (Brescia - Italy)
D. Putzer (Innsbruck - Austria)

- 14.00
O14.1 Effect of muscle weakness and joint inflammation on the onset and progression of osteoarthritis in the rabbit knee
C. Egloff, R. Serrattan, D. Hart, A. Sawatsky, T. Leonard, V. Valderrabano, W. Herzog (Basel - Switzerland, Calgary - Canada)
- 14.08
O14.2 Effect of muscle forces and ACL resection on in vitro knee loading
D. Benoit (Ottawa - Canada)
- 14.16
O14.3 Alterations in the properties of rabbit articular cartilage and underlying bone at 4 weeks after anterior cruciate ligament transection
C. Florea, M.K.H. Malo, J. Rautiainen, J.T.A. Mäkelä, M.T. Nieminen, J.S. Jurvelin, A. Davidescu, R.K. Korhonen (Timisoara - Romania, Kuopio, Oulu - Finland)
- 14.24
O14.4 Increased macrophage infiltration and trap activity characterize subchondral bone sclerosis in knee osteoarthritis
J. Geurts, A. Patel, U. Helmrich, M. Hirschmann, M. Müller-Gerbl, V. Valderrabano, T. Hügle (Basel - Switzerland)
- 14.32
O14.5 Differential microstructure and mechanical competence of trabecular bone in knee osteoarthritis in presence or absence of subchondral cysts
C. Wen, K. Wong, C. Liu, C. Yan, W. Lu, K. Chiu (Hong Kong - China)
- 14.40
O14.6 Delayed gadolinium-enhanced MRI of cartilage (dGEMRIC) predicts the pattern of hip osteoarthritis progression at five year follow-up
A. Palmer, S. Fernquest, L. Hamish, T. Pollard, E. McNally, De. Wilson, Da. Wilson, B. Madler, A. Carr, S. Glyn-Jones (Oxford - United Kingdom, Vancouver - Canada)
- 14.48
O14.7 Evaluation of the efficacy of various treatment regimens for the prevention of progression of early osteoarthritis of the knee
E. Morsi, T. Eid, M. Hadhoud, A. Elseedy (Alexandria - Egypt, Shubin Elkom - Egypt, Menoufia - Egypt)
- 14.56
O14.8 A hexadecylamide hyaluronan derivative (HYMOVIS™), targets both synovial and cartilage pathology in OA
M. Smith, A. Schiavinato, C. Little (St. Leonards - Australia, Abano Terme - Italy)
- 15.04
O14.9 Differences in functional gain between rheumatoid arthritis and osteoarthritis patients undergoing arthroplasty: results from the FORCE-TJR national research consortium
L. Harrold, D. Ayers, G. Reed, P. Franklin (Worcester - USA)
- 15.12
O14.10 Arthritic periosteal tissue from joint replacement surgery as an autologous source of stem cells
H. Chang, D. Docheva, U. Knothe, M.L. Knothe Tate (Cleveland - USA, Munich - Germany, Sydney - Australia)

SUNDAY 13 OCTOBER 2013

Room 6 14.00-15.30		Notes
015	TUMOR I Moderators: J. Togucida (Kyoto - Japan) S. Avnet (Bologna - Italy)	
14.00 015.1	Sustained autocrine induction and impaired negative feedback of osteoclastogenesis in CD14+ cells of giant cell tumor of bone S. Avnet, M. Salerno, N. Zini, D. Gibellini, N. Baldini (Bologna - Italy)	
14.08 015.2	Prion proteins (PRNP and PRND) are over-expressed in osteosarcoma V. Sollazzo (Ferrara - Italy)	
14.16 015.3	Role of mesenchymal stromal cells in the pathogenesis of osteosarcoma G. Bonuccelli, S. Avnet, C. Fotia, M. Salerno, G. Grisendi, D. Granchi, M. Dominici, N. Baldini (Bologna, Modena - Italy)	
14.24 015.4	Human musculoskeletal sarcomas contain a minority of putative cancer stem cells that form sarcospheres in vitro M. Salerno, S. Avnet, G. Bonuccelli, A. Eramo, R. De Maria, M. Gambarotti, G. Gamberi, N. Baldini (Bologna, Rome - Italy)	
14.32 015.5	Survivin inhibition induces mitochondrial apoptosis in human MFH cells M. Minoda, T. Kawamoto, T. Akisue, H. Hara, Y. Onishi, M. Toda, R. Harada, M. Morishita, T. Ueha (Kobe - Japan)	
14.40 015.6	The effects of reoxygenation using a novel CO2 therapy on radiosensitivity in human malignant fibrous histiocytoma cells Y. Onishi, T. Kawamoto, T. Ueha, H. Hara, M. Toda, R. Harada, M. Minoda, M. Morishita, M. Kurosaka, T. Akisue (Kobe - Japan)	
14.48 015.7	Carbonic anhydrase IX is a candidate therapeutic target for osteosarcoma F. Perut, F. Carta, G. Di Pompo, K. Kusuzaki, C. Supuran, N. Baldini (Bologna, Sesto Fiorentino - Italy, Kyoto - Japan)	
14.56 015.8	Receptor activator of nuclear factor kappa beta (RANK) expression is a prognostic factor in human osteosarcoma K. Trieb (Wels - Austria)	
15.04 015.9	Sorafenib monotherapy and combination therapy with irradiation in osteosarcoma cell lines Y. Yu, N. Ibrahim, J.-L. Yang, W.R. Walsh (Sydney - Australia)	
15.12 015.10	Phototoxic effects with indocyanine green-labeled nanocarrier and near-infrared light for human breast cancer cells T. Tsukanishi, T. Funayama, M. Yamazaki, S. Onishi, E. Ozeki, I. Hara, M. Sakane (Tsukuba, Takahagi, Kyoto - Japan)	

Auditorium 15.30-17.00

S5 SYMPOSIUM

KOREAN ORS

STEM CELL-BASED CARTILAGE TISSUE ENGINEERING

Organizer: **S. Kim** (Daegu - Korea)



Co-Organizer: **S. Kwon** (Seoul - Korea)



Stem cells have been spotlighted as the foremost cell source for cartilage tissue engineering. The purpose of this symposium is to introduce the recent advances in stem cell-based cartilage tissue engineering and discuss the current obstacles and solutions to successful cartilage regeneration using stem cells.

15.30 **S5.1** Obstacles to successful cartilage tissue engineering from stem cells
G. Im (Goyang - Korea)



16.00 **S5.2** 3D porous scaffold for the effective chondrogenesis of stem cells
J. Lee (Daejeon - Korea)



16.30 **S5.3** Human articular cartilage repair using umbilical cord derived MSC
C. Ha (Seoul - Korea)



17.00 Discussion

Room Basaglia 15.30-17.00

S6 SYMPOSIUM

UHMWPE

ADVANCES IN POLYETHYLENE BIOMATERIALS FOR TOTAL JOINT REPLACEMENT

Organizer: **S. Kurtz** (Philadelphia - USA)



The purpose of this symposium is to bring together engineers, scientists, and clinicians to review the state of the art regarding the development and applications of medical grade polyethylene used in total joint arthroplasty. The focus of the symposium, reflected in the invited speakers, will be to summarize the mechanisms of radiation crosslinking, oxidation, thermal stabilization, and a recent alternative, antioxidant stabilization (e.g., Vitamin E) of polyethylene; critically review the clinical evidence for the long-term performance of highly crosslinked polyethylenes (HXLPEs) in hip and knee arthroplasty; summarize advances in the biologic aspects of HXLPE wear debris; and to provide an overview of retrieval studies documenting clinical failure mechanisms of the new HXLPEs and how they differ from conventional polyethylene.

15.30 **S6.1** State of the art in polyethylene biomaterials
S. Kurtz (Philadelphia - USA)



15.45 **S6.2** Overview of crosslinking, oxidation, thermal and antioxidant stabilization
P. Bracco (Turin - Italy)



16.05 **S6.3** Clinical performance of HXLPEs in hip and knee replacement
S. Goodman (Redwood City - USA)



16.25 **S6.4** The biologic response to first and second generation HXLPEs
J. Tipper (Leeds - United Kingdom)



16.45 **S6.5** Clinical failure modes for first and second generation HXLPEs
C. Rimnac (Cleveland - USA)



17.00 Discussion

SUNDAY 13 OCTOBER 2013

Room Teatro 15.30-17.00**S7 SYMPOSIUM**

MYSPINE

A FUNCTIONAL PROGNOSIS SIMULATION OF PATIENT-SPECIFIC SPINAL TREATMENT FOR CLINICAL USEOrganizer: **D. Lacroix** (Sheffield - United Kingdom)

Treatment and prognosis of spinal disc degeneration are still based on trial and error clinical decisions from the surgeon leading to numerous post treatment complications and eventual morbidity. A rational engineering approach based on advanced ICT and patient-specific predictive systems to treat various spinal pathologies needs to be developed to guide clinicians and improve long-term clinical outcomes. In this symposium an in silico virtual assessment of the evolution of treatments for patient-specific lumbar spine geometries, tissue properties, and loading histories will be presented. This interface will give clinicians the ability to virtually explore patient-specific treatment outcomes of disc degeneration, from short-term biomechanical ending to long-term mechanobiological tissue evolution.

15.30 Introduction

S7.1 D. Lacroix (Sheffield - United Kingdom)

15.35 Organ/tissue finite element modelling towards an integration of biomechanical and biophysical concepts in spine diseases

S7.2 J. Noailly (Barcelona - Spain)

15.55 Patient specific models with material properties and boundary conditions derived from MRI

S7.3 M. Ho Ba Tho (Compiègne - France)

16.15 Treatment decision can be simulated? Clinical implications of the MySpine project

S7.4 Z. Szoverfi (Budapest - Hungary)

16.45 Combined vertebra and disc lumbar model reconstruction from MR and CT images

S7.5 J. Pozo (Sheffield - United Kingdom)

16.55 Discussion

Room 1E 15.30-17.00**S8 SYMPOSIUM**

REBORNE

PRECLINICAL STUDIES TOWARDS CLINICAL TRIALS ON BONE REGENERATIONOrganizer: **E. Gomez-Barrena** (Madrid - Spain)Co-Organizer: **P. Layrolle** (Nantes - France)

Basic orthopaedic research and preclinical data are required to appropriately launch orthopaedic clinical trials on bone regeneration. This symposium gathers the experience of a multidisciplinary European consortium of cell biologists, biomaterial researchers, haematologists, pharmacutists, and orthopaedic surgeons. The preparation of bone regenerative medicine clinical trials requires the selection of mesenchymal stem cells, the efficacy and safety proofs in vitro and in experimental models, the development of adequate cellular expansion GMP grade techniques that are reproducible in the participating centres in a multinational clinical trial, and finally the justification of the hypothesis and the understanding of the regulation procedure to obtain clinical trial approval. These aspects will be reviewed and discussed in the context of an undergoing European project with 25 participating laboratories and hospitals across Europe. This will promote the discussion about the step-by-step development, the feasibility of these investigator-driven clinical trials (IDCT), and about the international similarities and differences of regulation to spread those trials with the aim of obtaining international recognition.

15.30 Introduction

S8.1 E. Gomez-Barrena (Madrid - Spain)

15.35 Introduction

S8.2 P. Layrolle (Nantes - France)

15.40 Comparative osteogenicity of human adipose tissue- and bone marrow-derived mesenchymal stem cells

S8.3 M. Brennan (Nantes - France)

15.55 Understanding bone regeneration capacity of mesenchymal stem cells before clinical uses: the REBORNE prediction

S8.4 A. Murgia (Modena - Italy)

16.10 How to expand MSCs under GMP conditions and reproduce the procedure in various production centres

S8.5 M. Rojewski (Ulm - Germany)

16.25 From the clinical needs to the clinical trials: the REBORNE European FP7 project

S8.6 E. Gomez-Barrena (Madrid - Spain)

16.40 Discussion

Auditorium 9.00-10.30

S9 SYMPOSIUM

ANZORS I

DEVELOPMENT OF ADVANCED ORTHOPAEDIC IMPLANTS

Organizer: **D. Findlay** (Adelaide - Australia)



Co-Organizer: **D. Haynes** (Adelaide - Australia)



Replacing large bone defects or critical size bone defects remains a significant challenge. In this symposium, both scientists and clinicians will lead discussion on integrative approaches for bone defect repair; including novel biomaterials, mechanical stimulation, and biomechanical testing and surgical procedures that might impact the outcomes of bone tissue regeneration.

9.00 **S9.1** Introduction

9.10 **S9.2** Unique micro/nano-structural ceramic design for repairing large bone defects under load
H. Zreiqat (Sydney - Australia)



9.30 **S9.3** Biomechanical evaluation of orthopaedic implants
D. Thewlis (Sydney - Australia)



9.50 **S9.4** Advanced biomechanical testing methods - towards physiological loading
J. Costi (Adelaide - Australia)



10.10 **S9.5** Surgical considerations when introducing new implants
B. Solomon (Adelaide - Australia)



10.30 Discussion

Room Basaglia 9.30-10.30

S10 SYMPOSIUM

**RADBOND UNIVERSITY NIJMEGEN, THE NETHERLANDS
A EUROPEAN PERSPECTIVE ON THE STATUS AND FUTURE
OF PERSONALIZED MUSCULOSKELETAL MODELING**

Organizer: **N. Verdonschot** (Nijmegen - The Netherlands)



The economic environment demands a more effective healthcare system for the aging population. Diseases to the musculoskeletal system such as osteoporosis, osteoarthritis, and cancer have a large socio-economical impact. Computer techniques can assist in analyzing these diseases and to define what the most effective treatment strategies are. In this workshop three projects will be presented and discussed: The Virtual Physiological Human (VPH) project, the XML project and the TLEMsafe project.

The VPH project is a large initiative assuming that pathologies occur at many different scales in the body. Hence a framework can be defined that connects the different scales and thereby, using multi-scale models, enables simulations of pathologies in an integrated manner.

A very different approach is taken in the XML project, whereby as much information is collected from clinical X-rays. By implementing refined image reconstruction, biomechanical modeling and analysis tools, XML will make the dynamic joint loading and stability accessible for the planning of joint surgery in a personalized manner.

In TLEMsafe personalized MRI-based musculoskeletal models are generated of patients who need to undergo severe surgery. The objective is to predict the functional capacity of the patient after surgery and with that to optimize the treatment options for this type of patient.

9.30 Status and future of the VPH-project
S10.1 M. Viceconti (Sheffield - United Kingdom)



9.50 Status and future of the XML project
S10.2 M. Heller (Southampton - United Kingdom)



10.10 Status and future of the TLEMsafe project
S10.3 N. Verdonschot (Nijmegen - The Netherlands)



10.30 Discussion

Room Teatro 9.00-10.30

S11 SYMPOSIUM

ORS

IN VIVO MODELS OF INCREASED LOADING FOR STUDYING SKELETAL MECHANOBIOLOGY

Organizer: **M. Silva** (St. Louis - USA)

Co-Organizer: **M. Van der Meulen** (New York - USA)



The mass and architecture of the skeleton develop in response to the mechanical stimuli experienced over the lifetime of an individual or organism. Because mechanical loading is ubiquitous in our gravitational environment, adaptation to mechanical loading is inherent to many biological processes of musculoskeletal biology. In addition, controlled mechanical loading holds promise as an anabolic agent to inhibit bone loss and maintain bone mass and strength with aging and disease. Exercise has been used as a tool to increase the loads experienced by the skeleton, but the loads imparted to the skeleton are difficult to quantify and control. Therefore, researchers have developed in vivo methods to apply well-controlled mechanical loads to the skeleton in small animal models. The purpose of this workshop is to present an overview of these in vivo loading methods, the principles of experimental design, and the methods to assess skeletal responses. In addition, recent data on the role of Lrp5/Wnt signaling in mechanotransduction, ascertained using these methods, will be presented.

9.00 Selecting in vivo models and designing experimental studies

S11.1

M. Van der Meulen (New York - USA)



9.25 Assessing in vivo skeletal adaptation to mechanical loading

S11.2

M. Silva (St. Louis - USA)



9.50 Wnt signaling and bone adaptation

S11.3

A. Robling (Indianapolis - USA)



10.15 Discussion

Room 1E 9.00-10.30

S12 SYMPOSIUM

KING'S COLLEGE LONDON

MIND THE GAP - STRATEGIES IN TISSUE ENGINEERING

Organizer: **L. Di Silvio** (London - United Kingdom)



Co-Organizer: **I. Reichert** (London - United Kingdom)



Bone defects present challenging clinical problems, delayed fracture healing, for example, is a major cause of musculoskeletal disabilities and psychological distress. Patients suffer the significant consequences of prolonged treatment, repeated operations and, most importantly a significant 'gap' in function – affecting both work and social life! The orthopaedic and trauma surgeon is often confronted with an acute 'gap' of missing bone either following a high energy long bone fracture or an osteoporotic fragility fracture in the elderly. Late reconstruction of a non-union fracture usually requires management of a 'fracture gap'. At King's College London (KCL) we have established a bone and joint clinical development group, which brings together scientists and healthcare professionals active in research and treatment to identify priorities for research and novel approaches to improving patient healthcare.

9.00 Opening remarks

S12.1 **L. Di Silvio, I. Reichert** (London - United Kingdom)

9.05 Mind the gap in fracture treatment - a biological and surgical challenge

S12.2

D. Marsh (London - United Kingdom)



9.15 Biomaterials in challenging clinical conditions

S12.2

P. Habibovic (Enschede - The Netherlands)



9.35 The role of calcium sulphate in managing infection in challenging cases

S12.4

M. Parihar (Mumbai - India)



9.50 Cell-based therapy using mesenchymal stem cells for challenging clinical conditions

S12.5

V. Gangji (Bruxelles - Belgium)



10.10 Round table discussion

S12.6 Chairman: **D. Marsh** (London - United Kingdom)

Room 6

9.00-10.30

Notes

S13 SYMPOSIUM

UNIVERSITY HOSPITAL MÜNSTER, GERMANY

ADL-MONITORING OF ORTHOPAEDIC PATIENTS - TECHNICAL AND PRACTICAL ASPECTS OF PHYSICAL ACTIVITY ASSESSMENT

Organizer: **D. Rosenbaum** (*Münster - Germany*)



The objective assessment of the mobility and physical activities in the daily life of patients suffering from musculoskeletal problems is valuable with respect to the functional status quo and the outcome after treatment or interventions.

9.00 **S13.1** Monitoring technology for the objective assessment of activity

D. Rosenbaum (*Münster - Germany*)



9.30 **S13.2** Activity assessment of tumor patients in children and adolescence

C. Winter (*Münster - Germany*)



10.00 **S13.3** Applications for ambulatory monitoring for ADL assessment in orthopaedic patients

R. Senden (*Maastricht/Heerlen - The Netherlands*)



10.30 Discussion

MONDAY 14 OCTOBER 2013

Auditorium 11.00-12.00**016 TISSUE ENGINEERING II**

Moderators: **B. Johnstone** (Portland - USA)
M. Peroglio (Davos - Switzerland)

- 11.00 Osteogenic potential and immunogenicity of human amniotic membrane: in vitro and in vivo studies
016.1 **R. Laurent, L. Nicod, P. Layrolle, B. de Billy, L. Obert, F. Gindraux** (Besançon, Nantes - France)
- 11.08 Osteodifferentiation of intact human amniotic membrane through a jet sprayed polycaprolactone nanofiber scaffold
016.2 **R. Laurent, M. Brennan, A. Renaud, C. D'Arros, L. Obert, P. Layrolle, F. Gindraux** (Besançon, Nantes - France)
- 11.16 Perfusion bioreactor for engineering bone constructs: bone regeneration in sheep using coral scaffold and autologous mesenchymal stem cells
016.3 **V. Viateau, M. Manassero, H. Petite, D. Logeart-Avramoglou, M. Sladkova, K. Oudina, M. Bensidhoum** (Paris - France)
- 11.24 Angiogenic factor production in hMSCs under hypoxic circumstances
016.4 **A. Buizer, S. Bulstra, A. Veldhuizen, R. Kuijer** (Groningen - The Netherlands)
- 11.32 Guiding fate with next generation stem cell mechanics studies
016.5 **H. Chang, M.J. Song, M.L. Knothe Tate** (Cleveland - USA, Sydney - Australia)
- 11.40 Nutrient and O₂ tension are crucial regulators of human mesenchymal stem cells (hMSCs) paracrine potentialities
016.6 **M. Deschepper, J. Paquet, H. Petite** (Paris - France)
- 11.48 pH in the engineered microenvironment : a critical factor for optimal osteogenesis mediated by human mesenchymal stem cell
016.7 **D. Logeart-Avramoglou, L. Monfoulet, P. Becquart, E. Pacard, K. Vandame, M. Bourguignon, D. Marchat, H. Petite** (Paris, Villeurbanne, Saint Étienne - France)

Room Basaglia 11.00-12.00**017 KNEE & KNEE ARTHROPLASTY II**

Moderators: **M. Marcacci** (Bologna - Italy)
S. Amiri (Vancouver - Canada)

- 11.00 Metal allergy screening prior to joint arthroplasty and its influence on implant choice. A Delphi consensus study amongst joint arthroplasty surgeons in the United Kingdom
017.1 **A. Razak, A. Ebinesan, C.P. Charalambous** (Blackpool - United Kingdom)
- 11.08 Pain experience following hospital discharge for total knee replacement - A comparison between two countries in the Asia-Pacific region
017.2 **E.-Y. Chan, F.M. Blyth, L. Nairn, M. Fransen** (Sydney - Australia)
- 11.16 Radiographic and operative outcome for patient-specific guides compared to conventional instrumentation in total knee arthroplasty. A multicentre, prospective, randomised controlled trial
017.3 **B. Boonen, M. Schotanus, B. Kerens, W. van der Wegen, N. Kort** (Sittard-Geleen, Geldrop - The Netherlands, Deurne - Belgium)
- 11.24 National trends and perioperative outcomes for navigated versus unnavigated total knee arthroplasty
017.4 **V. Moretti, A. Gordon** (Chicago - USA)
- 11.32 Patient specific guiding for revision of medial unicompartmental to total knee arthroplasty. Beneficial first results of a new operating technique performed on 10 patients
017.5 **B. Kerens, B. Boonen, M. Schotanus, N. Kort** (Antwerp - Belgium, Venlo, Sittard - The Netherlands)
- 11.40 A comparison of clinical results between microfracture technique with the use of PRF intraoperative injection, PRP postoperative injection and microfracture only for osteochondral lesion of the knee
017.6 **R. Papalia, G. Vadalà, F. Franceschi, L. Diaz Balzani, B. Zampogna, S. D'Adamio, N. Maffulli, V. Denaro** (Rome - Italy, London - United Kingdom)

Room Teatro 11.00-12.00

O18 BIOMECHANICS II

Moderators: **N. Verdonschot** (*Nijmegen - The Netherlands*)
L.G. Fitzgerald (*Bath - United Kingdom*)

- 11.00 Association of tibiofemoral osteoarthritis with hip geometry: Multicenter Osteoarthritis Study (MOST)
O18.1 **A. Boissonneault, J. Lynch, B. Wise, N. Segal, D. Gross, M. Nevitt, D. Murray, H. Pandit** (*Oxford - United Kingdom, San Francisco, Sacramento, Boston - USA*)
- 11.08 Mechanical properties of suspensory fixation devices for anterior cruciate ligament reconstruction: comparison of the fixed-length loop device versus the adjustable-length loop device
O18.2 **A. Eguchi, M. Ochi, N. Adachi, M. Deie, A. Nakamae, T. Nakasa** (*Hiroshima - Japan*)
- 11.16 Increased weight leads to contact changes indicative of knee osteoarthritis: a subject-specific finite element study
O18.3 **J. Boyd, H. Gill, A. Zavatsky** (*Oxford, Bath - United Kingdom*)
- 11.24 Biomechanical studies in orthopaedic surgery: science (f)or common sense?
O18.4 **J. Mellema, J. Doornberg, T. QUITTON, D. Ring** (*Amsterdam - The Netherlands, Boston - USA*)
- 11.32 Do internal forces relate to cartilage degeneration in early stage knee OA patients?
O18.5 **P. Oomen, K. Meijer, R. Garcia van der Westen, R. Gransier, P. Emans, L. van Rhijn** (*Maastricht, Eindhoven - The Netherlands*)
- 11.40 What is the underlying mechanism for the failure mode observed in the proximal femoral locking compression plate? A biomechanical study
O18.6 **K. Schneider, I. Zderic, B. Gueorguiev, R.G. Richards, S.E. Nork** (*Davos - Switzerland, Seattle - USA*)
- 11.48 Determining creep behaviour of the intervertebral disc: a comparison of two methods
O18.7 **A. van der Veen, A. Bisschop, M. Mullender, J. van Dieen** (*Amsterdam - The Netherlands*)

Room 1E 11.00-12.00

11.00 **K3 KEYNOTE LECTURE 3**

Orthopedic applications of silk derived tissues

Oliver Kessler (*Zurich - Switzerland*)



O19 CARTILAGE & MENISCUS I

Moderators: **G.-I. Im** (*Goyang - Korea*)
M. Caron (*Maastricht - The Netherlands*)

- 11.20 Stribeck analysis of articular cartilage lubrication: roles of different injectable hyaluronic acids and endogenous lubricin
O19.1 **E. Bonnevie, D. Galesso, C. Secchieri, L. Bonassar** (*Ithaca - USA, Padua - Italy*)
- 11.28 Geometry analysis of the medial meniscus: a statistical shape modeling approach
O19.2 **C. O'Kane, A. Vrancken, D. O'Rourke, D. Janssen, M. Ploegmakers, P. Buma, D. Fitzpatrick, N. Verdonschot** (*Dublin - Ireland, Nijmegen - The Netherlands*)
- 11.36 Alteration of chondroitin sulfate chain in human osteoarthritic cartilage of the knee
O19.3 **D. Ishimaru, K. Matsumoto, I. Takigami, N. Sugiura, H. Watanabe, K. Shimizu** (*Gifu, Nagakute - Japan*)
- 11.44 Meniscal scaffold fabricated via an improved e-jetting printing system
O19.4 **Y. Cai, J. Li, H.C. Tan, E.S. Thian, J.Y. Hsi Fuh, B.Y. Tay, W. Wang** (*Singapore - Singapore*)
- 11.52 Scaffold-free, spheroid-based strategy for the regeneration of articular cartilage defects - first histological and ultrastructural results
O19.5 **C. Brochhausen, D. Grevenstein, J. Grevenstein, A. Mamilos, V.H. Schmitt, C.J. Kirkpatrick** (*Mainz - Germany*)



MONDAY 14 OCTOBER 2013

MONDAY 14 OCTOBER

Room 6 11.00-12.00

O20 RSA & IMAGING

Moderators: **E.R. Valstar** (*Leiden - The Netherlands*)
E. Verboom (*Zoetermeer - The Netherlands*)

11.00 Radiostereometric analysis (RSA) of two MoM cups, 2 year results from a randomized clinical trial (RCT)

O20.1 **J. Penny, M. Ding, O. Ovesen, J.E. Varmarken, S. Overgaard** (*Odense, Næstved - Denmark*)

11.08 Clinical evaluation of model-based RSA to measure wear in 4 different cup designs

O20.2 **B. Shareghi, J. Kärrholm** (*Mölnådal - Sweden*)

11.16 Measuring polyethylene wear in total knee prostheses with model-based RSA, do we need weight-bearing images?

O20.3 **E. Verboom, E. van Ijsseldijk, E.R. Valstar, B. Kaptein, R. de Ridder** (*Zoetermeer, Leiden - The Netherlands*)

11.24 RSA evaluation of a cementless tapered femoral stem with crosslinked vs. conventional liners and tantalum vs. titanium acetabular shells in young, active THR patients

O20.4 **D. Ayers, B. Snyder, A. Porter, M. Walcott, M. Aubin, J. Drew, M. Greene, C. Bragdon** (*Worcester, Boston - USA*)

11.32 Good fixation of large-head metal-metal hip arthroplasty and no correlation to metal ion levels. A 5 year RSA study

O20.5 **M. Hjorth, K. Søballe, S. Jakobsen, N. Lorenzen, I. Mechlenburg, M. Stilling** (*Aarhus - Denmark*)

11.40 Inter- and intraobserver reliability of a new low-dose stereography system for follow-up after revision total knee arthroplasty

O20.6 **M. Meijer, A. Boerboom, M. Stevens, S. Bulstra, I. Reininga** (*Groningen - The Netherlands*)

11.48 High proximal migration and poor host bone contact precedes loosening of revision cups. 90 cemented and uncemented revision cups followed with RSA for 13 years

O20.7 **M. Mohaddes, H. Malchau, P. Herberts, P.-E. Johansson, J. Kärrholm** (*Gothenburg - Sweden*)

Notes

Auditorium

12.00-12.30

PL1 PLENARY LECTURE 1

Application of iPS cell technology for musculoskeletal diseases

Junya Toguchida (*Kyoto - Japan*)



Auditorium

14.30-15.00

PL2 PLENARY LECTURE 2

The Virtual Physiological Human (VPH) project

Marco Viceconti (*Sheffield - United Kingdom*)



Auditorium

15.00-16.00

O21 HIP & HIP ARTHROPLASTY II

Moderators: **C. Arts** (*Maastricht - The Netherlands*)
E.A. Testa (*Bruderholz - Switzerland*)

- 15.00 Small-diameter ceramic-on-ceramic hip wear testing
O21.1 with adverse microseparation conditions
D.W. Schroeder, S. Durham, M. Elliott (*Warsaw - USA, Bridgend - United Kingdom*)
- 15.08 Frictional torque of large diameter ceramic-on-ceramic
O21.2 bearings in total hip replacements
M. Al-Hajjar, J. Fisher, C. Hardaker, G. Kurring, G. Isaac, S. Williams (*Leeds - United Kingdom*)
- 15.16 Are 36+ MM diameter HXLPE bearings at risk of
O21.3 increased wear from modular taper corrosion with ceramic and CoCr heads?
S. Kurtz, D. MacDonald, G. Higgs, J. Gilbert, G. Klein, M. Mont, J. Parvizi, M. Kraay, C. Rimnac (*Ithaca, Syracuse, Paramus, Baltimore, Cleveland - USA*)
- 15.24 Head-neck taper corrosion of artificial hip joints
O21.4 **U. Wyss, R. Dyrkacz, O. Ojo, T. Turgeon, J. Brandt** (*Winnipeg - Canada*)
- 15.32 Gender differences for combined acetabular and
O21.5 femoral anteversion angles
N. Dong, J. Nevelos, S. Kreuzer (*Mahwah, Houston - USA*)
- 15.40 Short term outcome of the M2a-38tm Metal on Metal
O21.6 cementless total hip arthroplasty
C. Smeeke, B.F. Ongkiehong, B.C.H. van der Wal (*Amersfoort - The Netherlands*)
- 15.48 Results of a 2 year, prospective, controlled study of
O21.7 metal-ion release following metal on metal total hip replacement before and after revision with an algorithm to diagnosis and manage metal on metal hip patients
S. Slagis, N. Skrepnik, J. Wild Jr., M. Robertson, B. Nielsen, T. Skrepnik, R. Eberle (*Tucson - USA*)

Room Basaglia

15.00-16.00

O22 KNEE & KNEE ARTHROPLASTY III

Moderators: **A.W. Blom** (*Bristol - United Kingdom*)
T. Tai (*Tainan - Taiwan*)

- 15.00 Efficacy of service provision of viscosupplementation
O22.1 for knee osteoarthritis: a dedicated orthopaedic service within a District General Hospital
M. Yiasemidou, D. Teanby, U. Munir (*Leeds, Prescott - United Kingdom*)
- 15.08 Comparison of pre-operative planned and post-
O22.2 operative achieved implant position in TKA with PSPG
J. van Leeuwen, S. Röhr, B. Grøgaard, F. Snorrason (*Skien, Oslo, Drammen - Norway*)
- 15.16 The learning curve of robotically-assisted uni-condylar
O22.3 knee arthroplasty
M. Simons, P. Riches (*Edinburgh, Glasgow - United Kingdom*)
- 15.24 Effect of antioxidant on polyethylene particle induced
O22.4 inflammation and cellular activation
L. Song, L.Q. Loving, W. Xia, Z. Song, N. Zacharias, P. Wooley (*Mahwah, Wichita - USA*)
- 15.32 Retrieval analysis of 2nd generation HXLPE used in total
O22.5 hip arthroplasty and total knee arthroplasty
S. Kurtz, O. Zielinska, D. MacDonald, H. Cates, M. Mont, A. Malkani, J. Parvizi, M. Kraay, C. Rimnac, G. Klein (*Philadelphia, Knoxville, Baltimore, Louisville, Cleveland, Paramus - USA*)
- 15.40 Uncemented posterior stabilised total knee arthroplasty:
O22.6 prospective 5 year clinical and radiological review
R. Hutchinson, Q. Choudry, G. McLauclaghan (*Preston - United Kingdom*)
- 15.48 Development of a synthetic collateral ligament model
O22.7 for use in an in vitro kinematic knee simulator
L.G. Fitzgerald, A. Titchener, A.W. Miles (*Bath, Nottingham - United Kingdom*)

MONDAY 14 OCTOBER 2013

Room Teatro 15.00-16.00

023 TENDON & LIGAMENTS II

Moderators: **L. Qin** (Hong Kong - China)
V. Shim (Auckland - New Zealand)

- 15.00 Demineralized bone matrix augmented tendon bone healing
023.1 **P. Heuberger, V. Lovric, N. Russell, J. Goldberg, W. Walsh** (Vienna - Austria, Sydney - Australia)
- 15.08 A new application of demineralised bone as tendon substitute; animal study
023.2 **S. Elnikety, C. Pendegrass, C. Holden, G. Blunn** (London - United Kingdom)
- 15.16 The use of demineralised cortical bone for tendon and ligament repair
023.3 **S. Elnikety, C. Pendegrass, S. Alexander, G. Blunn** (London - United Kingdom)
- 15.24 3D-ultrastructural analysis at repaired supraspinatus tendon/bone insertion in rat
023.4 **T. Kanazawa, M. Gotoh, K. Ohta, A. Togou, R. Higashi, N. Shiba, K. Nakamura** (Kurume - Japan)
- 15.32 Mechanical regulation of integrins in human tenocytes in collagen and fibrin matrices
023.5 **E. Jones, K. Legerlotz, G. Riley** (Norwich - United Kingdom)
- 15.40 Tendon fascicles show an age-specific response to cyclic fatigue loading
023.6 **C. Thorpe, G. Riley, H. Birch, P. Clegg, H. Screen** (London, Norwich, Liverpool - United Kingdom)
- 15.48 Scaffold and scaffold-free strategies towards tendon repair
023.7 **D. Zeugolis** (Galway - Ireland)

Room 1E 15.00-16.00

024 GAIT & KINEMATICS

Moderators: **D. Rosenbaum** (Münster - Germany)
C. Meyer (Pellenberg - Belgium)

- 15.00 Speed-dependent increase of the entropy of gait kinematics in asymptomatic adults
024.1 **Y. Tochigi, N. Segal** (Koshigaya - Japan, Iowa City - USA)
- 15.08 Objective outcome using gait analysis of cementless total hip arthroplasty with a cementless dual mobility cup. A retrospective study at a mean follow-up of 5 years
024.2 **A.S. Acker, J.-F. Fischer, K. Aminian, E. Martin, B.M. Jolles** (Lausanne, Yverdon - Switzerland)
- 15.16 Weight bearing knee joint stabilisation strategies differ between younger, older, and osteoarthritic populations
024.3 **T. Flaxman, A. Smith, D. Benoit** (Ottawa - Canada)
- 15.24 Comparison of in vivo kinematics of total knee arthroplasty between cruciate retaining and condylar stabilized insert
024.4 **K. Iwamoto, T. Tomita, T. Yamazaki, A. Sasaki, Y. Kii, K. Futai, T. Miyamoto, M. Fujii, H. Yoshikawa, K. Sugamoto** (Suita, Sapporo, Takarazuka - Japan)
- 15.32 Non-invasive assessment of three dimensional skin motion artefacts of kinematic foot models
024.5 **M. Oosterwaal, S. Telfer, J. Woodburn, A. Witlox, J. Hermus, L. van Rhijn, K. Meijer** (Maastricht - The Netherlands, Glasgow - United Kingdom)
- 15.40 Asymmetry of lower limb joint loading in advanced knee osteoarthritis
024.6 **J. Arnold, S. Mackintosh, S. Jones, D. Thewlis** (Adelaide - Australia)
- 15.48 Postoperative gait variability in patients with comminuted tibial plateau fractures treated with lateral plating
024.7 **D. Crisan, D.I. Stoia, R. Prejbeanu, M. Toth-Trascau, D. Vermesan** (Timisoara - Romania)

Room 6 15.00-16.00

O25 SHOULDER I

Moderators: **A. Carr** (Oxford - United Kingdom)
B. Zampogna (Rome - Italy)

15.00 Are platelet rich plasma injections effectiveness after arthroscopic rotator cuff tear repair?

O25.1

R. Papalia, G. Vadalà, F. Franceschi, E. Franceschetti, B. Zampogna, N. Maffulli, V. Denaro (Rome - Italy, London - United Kingdom)

15.08 Ketotifen inhibits fibroblast contractile responses in the presence of mast cells

O25.2

K. Hildebrand, M. Zhang, P. Salo, D. Hart, D. Befus (Calgary, Edmonton - Canada)

15.16 Does endothelial dysfunction influence the rotator cuff tear size? An ultrasonographic study

O25.3

R. Papalia, G. Vadalà, L. Moro, F. Franceschi, S. Vasta, E. Albo, A. Tecame, N. Maffulli, V. Denaro (Rome - Italy, London - United Kingdom)

15.24 Predictive value of clinical and surgical factors in reparability of large and massive rotator cuff tears

O25.4

H. Razmjou, R. Holtby (Toronto - Canada)

15.32 Impact of bilateral shoulder involvement and hand dominance on disability

O25.5

H. Razmjou, G. Gunnis, R. Holtby (Toronto - Canada)

15.40 The undescended scapula syndrome: Sprengel and the cleithrum a case series and hypothesis

O25.6

R. Dhir, S. Lambert (London - United Kingdom)

15.48 Role of pre-operative factors on success of arthroscopic debridement for treatment of osteoarthritis of glenohumeral joint

O25.7

H. Razmjou, P. Henry, T. Dwyer, R. Holtby (Toronto - Canada)

Notes

MONDAY 14 OCTOBER 2013

Auditorium 16.00-17.30

S14 SYMPOSIUM

EUROPEAN SOCIETY FOR BIOMECHANICS
MULTISCALE BIOMECHANICAL-MECHANOBIOLOGICAL
MODELS IN ORTHOPEDICS: SYSTEM TO ORGANS TO
TISSUES TO CELLS TO GENES

Organizer: **M.L. Knothe Tate** (Sydney - Australia)



Co-Organizer: **L. Cristofolini** (Bologna - Italy)



Recent studies demonstrate the unique utility of multiscale modeling approaches to study organ and tissue physiology in health and in disease, over the course of a "model individual's" lifetime, which is hardly possible on a large scale for human patients. The proposed workshop aims to bring biomedical researchers up-to-date on the state of the art regarding not only the power of but also the "how to" of multiscale modeling, using several case studies as examples. System, organ, tissue, cell and gene scale approaches will be presented by active investigators, using methods including finite element, computational fluid dynamics, multiphysics, and gene regulatory network modeling to understand mechanophysiology in health and disease, and throughout life. An interactive panel discussion at the end of the workshop will highlight current hurdles to advancement and clinical translation of these insights as well as current controversies in the field.

16.00 Opening address

S14.1 H. Van Oosterwyck (Leuven - Belgium)



16.10 Multiscale, multiphysics modeling of stem-cell-mediated tissue re-/generation
S14.2 M.L. Knothe Tate (Sydney - Australia)



16.25 Case study for predicting phenotype from gene network models: growth plate morphology
S14.3 L. Geris (Liège - Belgium)



16.40 A multiscale patient-specific finite element analysis of disc degeneration in the lumbar spine
S14.4 D. Lacroix (Sheffield - United Kingdom)



16.55 Experimental identification and validation of multiscale models
S14.5 L. Cristofolini (Bologna - Italy)



17.10 Discussion

Room Basaglia 16.00-17.00

S15 SYMPOSIUM

TURKISH SOCIETY OF ORTHOPAEDICS AND
TRAUMATOLOGY & TURKISH ORTHOPAEDIC RESEARCH
COUNCIL

BIOMATERIALS IN FRACTURE HEALING

Co-Organizer: **F. Korkusuz** (Ankara - Turkey)



Chairman: **M.N. Doral** (Ankara - Turkey)



In this symposium, trace element containing nano-ceramics, nano-silver coating of implants to prevent implant related infections, biomaterial-tissue interface and animal models of fracture healing will be covered in an updated broad spectrum.

16.00 Nano-ceramics in fracture healing

S15.1 F. Korkusuz (Ankara - Turkey)



16.10 Nano-coating to prevent implant infection

S15.2 N. Kose (Eskisehir - Turkey)



16.20 Biomaterial-tissue integration

S15.3 P. Korkusuz (Ankara - Turkey)



16.30 Bone healing in different fracture models in animal studies
S15.4 V. Oztuna (Mersin - Turkey)



16.40 Discussion

Room Teatro 16.00-17.00

S16 SYMPOSIUM

UNIVERSITY OF LEEDS, UNITED KINGDOM
ADVANCED POLYMERS FOR BEARING SURFACES

Organizer: **C. Brockett** (Leeds - United Kingdom)



Co-Organizer: **S. Williams** (Leeds - United Kingdom)



The purpose of this symposium is to enhance the audience understanding of the new developments in polymers used for total joint replacement. Through three presentations from leading experts, we will review the progress in polyethylene processing, both cross-linking and oxidative stabilization, highlight the ongoing developments in new materials such as PEEK and carbon-fibre reinforced PEEK, and assess the biological implications of these materials.

This will be a significant programme reviewing the very latest developments in the field, and will comment on the potential clinical significance of these advanced polymer bearings for longer lasting total joint replacement.

16.00 Introduction

S16.1

16.05 First and second generation HXLPEs

S16.2 S. Kurtz (Philadelphia - USA)



16.20 PEEK with and without fibre in artificial joints

S16.3

A. Unsworth (Durham - United Kingdom)



16.35 Biological activity of novel polymer materials

S16.4

J. Tipper (Leeds - United Kingdom)



16.50 Discussion

Room 1E 16.00-17.30

S17 SYMPOSIUM

CHINESE ORS-WOA I
ADVANCES IN BIOMEDICAL IMAGING FOR APPLICATION IN MUSCULOSKELETAL DISORDERS

Organizer: **L. Qin** (Hong Kong - China)



Co-Organizer: **X. Zhang** (Shanghai - China)



Musculoskeletal imaging is a MUST today for advanced research and clinical diagnosis of musculoskeletal disorders, from macro to nano and from anatomy to function and metabolism. While optical imaging provides the best resolution, advanced non-destructive structure, function or metabolism based imaging modalities are appreciated and use-friendly for in vivo medical applications. This symposium is tutorial-orientated and will introduce advanced musculoskeletal biomedical imaging technologies, including imaging acquisition, descriptive and quantitative research and applications in diagnosis of musculoskeletal disorders. This symposium will shed light on how to expand the knowledge-based application potential for their applications in preclinical and clinical research.

16.00 Recent advancement of microCT for preclinical and clinical applications of musculoskeletal disorders

S17.1

L. Qin (Hong Kong - China)



16.17 Discussion

16.22 A novel intracellular tracking system for non-viral DNA delivery

S17.2

X. Zhang (Shanghai - China)



16.39 Discussion

16.44 Computational methods for biomechanical simulation based on 3D medical imaging

S17.3

D. Wang (Hong Kong - China)



17.01 Discussion

17.06 Quantitative orthopedics image analysis

S17.4

L. Shi (Hong Kong - China)



17.23 Discussion



MONDAY 14 OCTOBER 2013

MONDAY 14 OCTOBER

Room 6

16.00-17.30

Notes

S18 SYMPOSIUM

ISTITUTO ORTOPEDICO RIZZOLI I

FROM FIXATION TO KINEMATICS: NEW APPLICATIONS FOR RSA

Organizer: **M. Marcacci** (*Bologna - Italy*)



This Symposium will provide a comprehensive review of RSA applications, including the classical static RSA evaluation to investigate implant stability, the new concept of dynamic-RSA to investigate and compare in-vivo kinematics of knee implants under weight-bearing conditions and the markerless RSA, used to evaluate the native kinematics of normal and pathologic joints.

16.00 Development of a new bi-planar
S18.1 fluoroscope and a dedicated software
for dynamic, markerless RSA

M. Bontempi (*Bologna - Italy*)



16.15 Fluoroscopy-based motion analysis
S18.2 of the tibio- and patello femoral joint
kinematics in total knee replacement

A. Ensini (*Bologna - Italy*)



16.30 Experimental set-up and development
S18.3 of a new protocol to compare intra-
operative kinematic navigation and
post-operative dynamic RSA of different
total knee implants

D. Bruni (*Bologna - Italy*)



16.45 Historical aspects of RSA, highlights
S18.4 from the history and future trends

L. Ryd (*Huddinge - Sweden*)



17.00 Discussion

Auditorium 9.00-10.30

S19 SYMPOSIUM

TAIWANESE ORS

NOVEL TREATMENT STRATEGIES FOR OSTEOARTHRITIS AND OSTEOCHONDRAL LESIONS

Organizer: **J.K. Chang** (Kaohsiung - Taiwan)



Osteoarthritis (OA) is one of the most important diseases in the field of orthopedics and worldwide the joint disease with the highest prevalence which is the most common form of arthritis and affects more than 20 million Americans, costing billions of dollars in health care annually. In Western countries, 10–50% of the senior population is affected by OA, a quarter of who are severely disabled due to joint symptoms. Joint surface incongruity, osteochondral lesion and instability that follow some joint injuries play a critical role in post-traumatic OA (PTOA). With the best current care of significant joint injuries, the risk of PTOA ranges from about 20% to more than 50%. There is no cure for OA and current treatments are directed at the symptomatic relief of pain, and at improving and maintaining joint function. In this symposium, we will present the recent study in Taiwan about the novel treatment strategy for osteoarthritis and osteochondral lesion.

9.03 **S19.1** Clinical trial of a surgical graft derived from autologous bone marrow mesenchymal stem cells for chondral repair

H.C. Liu (Taiwan - Taiwan)



9.18 **S19.2** Novel treatment strategy for osteochondral lesion: Matrix-associated autologous cartilage implantation with a biphasic construct

C.C. Jiang (Taipei - Taiwan)



9.33 **S19.3** Parathyroid hormone (1-34) suppress osteoarthritis progression

M.L. Ho (Kaohsiung - Taiwan)



9.48 **S19.4** Dickkopf-1 blockade protects from cartilage and synovial deterioration in osteoarthritic knees: a pre-clinical trial perspective

F.S. Wang (Kaohsiung - Taiwan)



10.03 **S19.5** Extracellular matrix modulation on cartilage tissue engineering: from synthetic, natural to acellular

C.H. Chang (New Taipei City - Taiwan)



10.18 Discussion

Room Basaglia 9.00-10.30

S20 SYMPOSIUM

EUROPEAN SOCIETY FOR BIOMATERIALS

IMPLANT-TISSUE INTERACTIONS

Organizer: **R. Chiesa** (Milan - Italy)



Co-Organizer: **L. Ambrosio** (Rome - Italy)



This ESB symposium, organized by the European Society for Biomaterials, is intended to provide a comprehensive tutorial on selected aspects related to the interactions between biomaterials and the biological environment, particularly focusing on hard tissues. The symposium will account three lectures, providing a complementary approach to the interactions arising between bone cells and tissues and implantable biomaterials, considering in particular the recent developments in bone regeneration.

9.00 Symposium opening

S20.1 R. Chiesa (Milan - Italy)

9.05 Symposium opening

S20.2 L. Ambrosio (Rome - Italy)

9.10 **S20.3** The regenerative niche in bone: a target in orthopaedic applications?

C.J. Kirkpatrick (Mainz - Germany)



9.35 **S20.4** Synthetic bone grafts: key biomaterial properties for bone regeneration

M.P. Ginebra (Barcelona - Spain)



9.55 **S20.5** Innovative biomimetic scaffolds for bone regeneration

P. Layrolle (Nantes - France)



10.15 Discussion

TUESDAY 15 OCTOBER 2013

Room Teatro 9.30-10.30**S21 SYMPOSIUM**

JOA

BASIC RESEARCH ON BONE AND SOFT TISSUE SARCOMASOrganizer: **J. Toguchida** (Kyoto - Japan)

Malignant bone and soft tissue tumors (sarcomas) comprise a large number of rare, histogenetically heterogeneous, mesenchymal tumors and the current clinical outcome of sarcomas are still unsatisfactory, especially in cases of patients with metastatic or recurrence thus impose the development of new therapeutic strategies. In this symposium, an overview of the current knowledge of the molecular biology of sarcomas, including Ewing's sarcoma, Synovial sarcoma and cell origin for sarcomas and how increased understanding of the molecular biology of sarcomas is being translated to novel therapeutic advances in the near future are discussed.

9.30 Pericytes as a cell of origin for sarcomas

S21.1 S. Sato (Toronto - Canada)

9.50 Ewing sarcoma: current biological advances and future perspectives

S21.2 Y. Matsumoto (Fukuoka - Japan)

10.10 Targeted strategy to treat synovial sarcoma

S21.3 N. Naka (Osaka - Japan)

10.30 Discussion

Room 1E 9.00-10.30**S22 SYMPOSIUM**

CANADIAN ORS

ADVANCES IN INTERVERTEBRAL DISC REPAIROrganizer: **J. Antoniou** (Montreal - Canada)Co-Organizer: **F. Mwale** (Montreal - Canada)

Intervertebral disc degeneration is an insidious disorder that begins early in adult life and may progress slowly for decades until becoming symptomatic and requiring medical intervention. There are currently no proven treatments to prevent, stop or even retard disc degeneration, and surgery is often the ultimate outcome. Surgery commonly involves excision of the degenerate disc and fusion of the adjacent vertebrae, but this is not a benign procedure as it can result in adjacent segment disc degeneration due to altered spine biomechanics. A biological means to treat disc degeneration is therefore desirable. The purpose of the workshop is to look at recent advances and future prospects of disc repair.

9.00 Introduction

S22.1 J. Antoniou (Montreal - Canada)

9.10 Intervertebral disc calcification and Link-N signaling

S22.2 F. Mwale (Montreal - Canada)

9.30 Link-N as a therapeutic agent to treat early intervertebral disc degeneration

S22.3 P. Roughley (Montreal - Canada)

9.50 The ability of physiological load to restore disc function

S22.4 L.A. Haglund (Montreal - Canada)

10.10 Looking for intervertebral disc specific chemo-attractants for the homing of mesenchymal stem cells into degenerative IVDs

S22.5 M. Alini (Davos - Switzerland)

10.30 Discussion

Room 6

9.00-10.30

Notes

S23 SYMPOSIUM

NATIONAL UNIVERSITY OF IRELAND & PARACELSUS
MEDICAL UNIVERSITY, AUSTRIA

TENDON PATHOLOGY, PHYSIOLOGY AND THERAPY

Organizer: **D. Zeugolis** (Galway - Ireland)



Co-Organizer: **H.C. Bauer** (Salzburg - Austria)



Tendon and ligament injuries constitute an unmet clinical need with approximately 30 million clinical cases per year worldwide. In Europe, 25% of all adults will suffer a tendon related condition, resulting in healthcare expenditure of over US \$150 billion annually. As the human population ages and life expectancy increases, tendon injuries will continue to increase, putting a further physical and financial strain on healthcare systems. In fact, 100,000 new clinical cases are reported per annum in US alone. This symposium will discuss current therapies for tendon repair and regeneration.

9.00 Mechanism of rotator cuff
S23.1 tendinopathy: implications for novel therapies
A. Carr (Oxford - United Kingdom)



9.20 25 years studying tendinopathy and
S23.2 what do I know?
G. Riley (Norwich - United Kingdom)



9.40 Regenerative medicine for tendon
S23.3 injuries - experience from treating naturally-occurring overstrain injury in a large animal model
R.K.W. Smith (Hatfield - United Kingdom)



10.00 Scaffold and scaffold-free strategies
S23.4 towards tendon repair
D. Zeugolis (Galway - Ireland)



10.20 Discussion

TUESDAY 15 OCTOBER 2013

Auditorium 11.00-12.30**O26 BIOMECHANICS III**

Moderators: **D. Lacroix** (Sheffield - United Kingdom)
M. Cross (New York - USA)

- 11.00
O26.1 Finite element analysis of time-dependent stress and strain distribution at knee cartilage during the stance phase of gait
K. Zheng, C. Scholes, J. Lynch, D. Parker, Q. Li (Sydney - Australia)
- 11.08
O26.2 Altered intracortical canal architecture contributes to bone fragility
A. Carriero, M. Vogt, S. Shefelbine (London - United Kingdom)
- 11.16
O26.3 The effect of lateral wedge insoles on the asymptomatic knee of patients with medial compartment osteoarthritis
J. Sultan, G. Chapman, R. Jones (Cardiff, Manchester - United Kingdom)
- 11.24
O26.4 Mechanical properties of cartilage from cam-type femoroacetabular impingement deformities
A. Speirs, H. Frei, M. Lamontagne, P. Beaulé (Ottawa - Canada)
- 11.32
O26.5 Novel methodology for assessing cement injection behaviour in vertebroplasty
A.B. Francis, N. Kapur, R.M. Hall (Leeds - United Kingdom)
- 11.40
O26.6 Monitoring of cement distribution in vertebral bodies during vertebroplasty
I. Zderic, M. Windolf, B. Gueorguiev, V. Stadelmann (Davos Platz - Switzerland)
- 11.48
O26.7 Biomechanical testing of Salter-Harris fractures fixation techniques
C. Hydorn, K. Nathe, M. Kanwisher, J.D. Des Jardins, M. Rogers, A. Bertram (Columbia, Clemson - USA)
- 11.56
O26.8 Relationship between under-reaming, impact force, micromotion on cup stability in total hip replacement
F. Amirouche, G. Solitro, M. Gonzalez (Chicago - USA)
- 12.04
O26.9 FE-based bone strength can classify proximal femur fractures in a case-control retrospective study
C. Falcinelli, E. Schileo, L. Balistreri, F. Baruffaldi, A. Toni, U. Albisinni, F. Ceccarelli, L. Milandri, M. Viceconti, F. Taddei (Bologna, Parma, Faenza - Italy, Sheffield - United Kingdom)
- 12.12
O26.10 Coupled finite element - Analytical model to predict defect infilling by osteochondral progenitor cells
S.R. Moore, G. Sadel, M.L. Knothe Tate (Cleveland - USA, Sydney - Australia)
- 12.20
O26.11 Deciphering the smart mechanical properties of periosteum, bone's bounding envelope
S. Zulqadar, S.H. McBride, U. Knothe, M.L. Knothe Tate (Cleveland - USA, Sydney - Australia)

Room Basaglia 11.00-12.30**O27 TISSUE ENGINEERING III**

Moderators: **C.J. Kirkpatrick** (Mainz - Germany)
A. Malhotra (Sydney - Australia)

- 11.00
O27.1 Structural specifications for translational use and engineering of human periosteum
S.R. Moore, S. Milz, M.L. Knothe Tate (Cleveland - USA, Munich - Germany, Sydney - Australia)
- 11.08
O27.2 Modulating chondrogenesis of adipose-derived stromal cells in combinatorial extracellular matrix-containing hydrogels with independently tunable niche properties
T. Wang, F. Yang, J. Lai (Stanford - USA)
- 11.16
O27.3 Massive death of implanted human mesenchymal stem cells did not prevent their osteogenic potential
M. Sladkova, M. Manassero, V. Myrtil, H. Savari, M. Fall, D. Thomas, M. Bensidhoum, D. Logeart-Avramoglou, H. Petite (Paris - France)
- 11.24
O27.4 Engineering of functional endochondral bone and hematopoietic microenvironment with human adult mesenchymal stromal cells
C. Scotti, E. Piccinini, H. Takizawa, A. Todorov, P. Bourguine, A. Papadimitropoulos, A. Barbero, M.G. Manz, I. Martin (Milan - Italy, Basel, Zurich - Switzerland)
- 11.32
O27.5 Three-dimensionally printed β -tri-calcium phosphate/hydroxyapatite-bone morphogenetic protein scaffolds for long bone regeneration
N. Tovar, M. Sobieraj, L. Witek, J. Smay, P. Coelho (New York, Oklahoma City - USA)
- 11.40
O27.6 Prolonged presence of VEGF promotes vascularization in bioprinted scaffolds
M. Poldervaart, H. Gremmels, K. van Deventer, J. Fledderus, F. Cumhur Oner, M. Verhaar, W. Dhert, J. Alblas (Utrecht - The Netherlands)
- 11.48
O27.7 Platelet rich plasma induces new bone formation in older age sheep with a dose dependant response
A. Malhotra, M. Pelletier, Y. Yu, C. Christou, W.R. Walsh (Sydney - Australia)
- 11.56
O27.8 Parathyroid hormone-related protein (107-111) improves the bone regeneration potential of biopolymer-coated nanocrystalline hydroxyapatite
D. Lozano, A. López-Herradón, S. Portal-Núñez, J.A. Ardura, M. Vila, S. Sánchez-Salcedo, F. Mulero, E. Gómez-Barrena, M. Vallet-Regí, P. Esbrit (Madrid - Spain)
- 12.04
O27.9 Bone marrow cell mobilization by granulocyte-colony-stimulating-factor may enhance osseointegration? A prospective phase II clinical trial
A. Marmotti, F. Castoldi, R. Rossi, M. Bruzzzone, F. Dettoni, S. Marengo, D.E. Bonasia, D. Blonna, M. Assom, C. Tarella (Turin - Italy)
- 12.12
O27.10 Critical long bone defect treated by magnetic scaffolds and fixed by permanent magnets
A. Russo, S. Panseri, T. Shelyakova, M. Sandri, A. Ortolani, S. Meikle, J. Lacey, A. Tampieri, V. Dediu, M. Santin, M. Marcacci (Bologna, Faenza - Italy, Brighton - United Kingdom)

Room Teatro 11.00-12.30

11.00 **K4 KEYNOTE LECTURE 4**
Quantum mechanics for molecular biomechanics of hard tissues
Giuseppe Pezzotti (Kyoto - Japan)



O28 BIOMATERIALS II
Moderators: **P. Layrolle** (Nantes - France)
R. Dowling (Stanmore - United Kingdom)

11.20 **O28.1** Grafting of vitamin E in highly cross-linked UHMWPE
R. Lerf, R.P. Badertscher, C. Adhart, D. Delfosse (Bettlach, Wädenswil - Switzerland)

11.28 **O28.2** Hip simulator studies of highly cross-linked, vitamin E stabilised UHMWPE under severe conditions
R. Lerf, D. Delfosse (Bettlach - Switzerland)

11.36 **O28.3** A low wear, high impact strength, surface cross-linked UHMWPE by low energy irradiation
E. Oral, A. Neils, B. Doshi, O. Muratoglu (Boston - USA)

11.44 **O28.4** Comparative oxidative stability of highly cross-linked UHMWPE after in vivo service
S. Rowell, C. Reyes, H. Malchau, O. Muratoglu (Boston - USA)

11.52 **O28.5** In vivo oxidation in sequentially irradiated and annealed retrievals
S. Rowell, D. Estok, S. Kreuzer, H. Malchau, O. Muratoglu (Boston, Houston - USA)

12.00 **O28.6** Short-term follow-up retrieval study on irradiated and vitamin E-diffused UHMWPE bearings
S. Rowell, O. Muratoglu (Boston - USA)

12.08 **O28.7** Cobalt-chrome debris but not ultra high molecular weight polyethylene (UHMWPE) debris regulates CXCR4 expression in vivo and in vitro
A. Drynda, G. Singh, G. Buchhorn, S. Kliche, B. Feuerstein, M. Ruetschi, C. Lohmann (Magdeburg, Göttingen, Freiburg - Germany, Singapore - Singapore)

12.16 **O28.8** New porous and nano-structured polyetheretherketone (PEEK) surface for bone tissue engineering
K. Yeung, Y. Zhao, P. Li, Z. Xu, P. Chu (Hong Kong, Hubei - China)

Room 1E 11.00-12.30

O29 TRAUMA & FRACTURE I

Moderators: **U. Khan** (Bristol - United Kingdom)
J. Schilcher (Linköping - Sweden)

11.00 **O29.1** Stem cells in fracture gap non union
V. Senthikumar, S. Goel, K.K. Gupta (Varanasi - India)

11.08 **O29.2** Potential strategy regulating miRNAs to improve impaired fracture healing in aged females: a systematic view for timing and targets
B. He, J. Liu, T. Tang, B. Guo, X. Pan, A. Lu, G. Zhang (Hong Kong, Jiangsu, Shenzhen, Jinan, Beijing - China)

11.16 **O29.3** Enhancement of fracture healing by amino acids lysine and arginine- An experimental study in rabbits
S. Goel, S. Sinha (Varanasi - India)

11.24 **O29.4** MCP-1 in the periosteum and the endosteum at the early inflammatory phase is an essential component for successful fracture healing
M. Ishikawa, H. Ito, H. Yoshitomi, K. Murata, H. Shibuya, M. Furu, T. Kitaori, T. Nakamura, S. Matsuda (Kyoto - Japan)

11.32 **O29.5** A Dkk3 reporter identifies progenitors of the fibrocartilage and periosteum of the fracture callus
Y. Mori, D. Rowe, D. Adams, E. Itoi (Sendai - Japan, Farmington - USA)

11.40 **O29.6** Vascular response to bone injury: NOS-mediated vasodilation and increased blood flow rate following stress fracture in rats
R. Tomlinson, K. Shoghi, M. Silva (Saint Louis - USA)

11.48 **O29.7** Bone healing enhancement through inhibition of sclerostin by monoclonal antibody in rat osteotomy model
P.K. Suen, Y.-X. He, D.H.K. Chow, L. Huang, C.-Y. Li, H.Z. Ke, L. Qin (Hong Kong - China, Thousand Oaks - USA)

11.56 **O29.8** Collagen scaffolds modified with collagen-binding bFGF promotes the neural regeneration in the rat hemisection spinal cord injury model
W. Gao, L. Cheng, J. Dai, H. Yang, Q. Shi (Suzhou - China)

12.04 **O29.9** Development of a porcine model of transcutaneous osseointegration for weight-bearing prosthetic attachment
T. McIlff, K. Colbert, A. Boyer, A. Goodyear, D. Mar (Kansas City - USA)

12.12 **O29.10** The use of Fentanyl patches for sheep in orthopaedic research
C. Christou, J. Rawlinson, G. Mitchell, R. Oliver, W. Walsh (Sydney - Australia)

TUESDAY 15 OCTOBER 2013

Room 6 11.00-12.30**Notes****O30 SPINE II**

Moderators: **M. Alini** (*Davos - Switzerland*)
L.A. Nasto (*Rome - Italy*)

- 11.00
O30.1 The effect of disc degeneration on anterior shear flexibility in the lumbar spine
A. Melnyk, T. Wen, J. Chak, A. Kelly, P. Crompton, C. Fisher, M. Dvorak, T. Oxland (*Vancouver - Canada, Beijing - China*)
- 11.08
O30.2 Load increase on facet joints after nucleotomy in the human lumbar spine
M.F. Ivicsics, N.E. Bishop, K. Püschel, J.-P. Berteau, M.M. Morlock, G. Huber (*Hamburg - Germany*)
- 11.16
O30.3 Fatigue loading of the lumbar spine
G. Huber, K. Nagel, D.M. Skrzypiec, A. Klein, K. Püschel M.M. Morlock (*Hamburg - Germany, Leeds - United Kingdom*)
- 11.24
O30.4 Does combined compression, flexion and axial rotation place degenerated discs at risk of posterolateral herniation? Measurement of 3D lumbar intervertebral disc internal strains during repetitive loading
J. Costi, K. Heinze, I. Lawless, R. Stanley, B. Freeman (*Adelaide - Australia, Amsterdam - The Netherlands*)
- 11.32
O30.5 Developing a spine surgery training tool - measuring forces in the pedicle
A. Blair-Pattison, J. Henke, G. Penny, R. Hu, G. Swamy, C. Anglin (*Calgary - Canada*)
- 11.40
O30.6 Fixation advantages of C1 pedicle screws over lateral mass screws
R. Kueny, F. Fensky, K. Sellenschloh, K. Püschel, J. Rueger, W. Lehmann, N. Hansen-Algenstaedt, M. Morlock, G. Huber (*Hamburg - Germany*)
- 11.48
O30.7 Three-dimensional visualization of rat spinal cord microvasculature: comparison of synchrotron radiation and conventional X-ray microcomputed tomography
H. Lu, J. Hu, Y. Cao, T. Wu, D. Li, M. Cao (*Changsha - China*)
- 11.56
O30.8 Evaluation of carbon-fiber-reinforced PEEK as material for intervertebral disc replacement
T.M. Grupp, K. Kabir, B. Fritz, J. Schwiesau, W. Bloemer, V. Jansson (*Tuttlingen, Bonn, Munich - Germany*)
- 12.04
O30.9 Does pedicle dimension correlate with the accuracy of insertion in the thoracic and lumbar spine?
O. Emohare, D. Christensen, R. Morgan (*St Paul, Minneapolis - USA*)
- 12.12
O30.10 MRI T2* mapping to assess early degeneration of the intervertebral disc in a large animal model
S.E.L. Defiger, R.M. Holewijn, R.J.W. Hoogendoorn, M.N. Helder, F. Berger, J.P.A. Kuijter, T.H. Smit (*Amsterdam - The Netherlands*)
- 12.20
O30.11 MR16-1 allows recovery from spinal cord injury: an evaluation-based study using imaging mass spectrometry
H. Arima, M. Hanada, T. Hayasaka, N. Masaki, T. Hasegawa, D. Togawa, Y. Yamato, S. Kobayashi, M. Seto, Y. Matsuyama (*Hamamatsu - Japan*)

Auditorium

14.30-15.30

PL3 PLENARY LECTURE 3

Surprisingly central role of water in orthopedic science

Gerald H. Pollack (Seattle - USA)



Auditorium

15.30-17.00

S24 SYMPOSIUM

ANZORS II

NOVEL POTENTIAL THERAPEUTIC TARGETS FOR OSTEOLYSIS AND BONE REPAIR

Organizer: **H. Zreiqat** (Sydney - Australia)



Co-Organizer: **J. Costi** (Adelaide - Australia)



Many articulating orthopaedic implants fail too soon due to aseptic loosening. Prosthetic wear particles play a key role in the pathogenesis of aseptic loosening, a major cause of revision surgery. This symposium will present the cellular and molecular basis of peri-implant osteolysis and reduced bone formation associated with aseptic loosening. In addition, the symposium will identify novel therapeutic targets that may lead to future treatments.

15.30 Introduction

S24.1

15.40 A modern perspective on orthopaedic implants: Pathology insights

S24.2 D. Haynes (Adelaide - Australia)



16.00 Sclerostin as a regulator of bone formation- how does it work?

S24.3 D. Findlay (Adelaide - Australia)



16.20 Osteoblast mediation of glucocorticoid effects on bone and energy metabolism

S24.4 C. Dunstan (Sydney - Australia)



16.40 Angiogenic factors in bone microenvironment: potential therapeutic targets for bone repair

S24.5 J. Xu (Perth - Australia)



17.00 Discussion

Room Basaglia

15.30-16.30

S25 SYMPOSIUM

INDIAN ORTHOPAEDIC RESEARCH GROUP ORTHOPAEDIC RESEARCH IN INDIA

Organizer: **G. Shetty** (Mumbai - India)



Co-Organizer: **A. Shyam** (Mumbai - India)



With increasing awareness of the importance and impact of biomedical research on patient care around the world and role of leadership assumed by the developed nations, the scenario of orthopedic research in developing nations such as India is unclear. This symposium will therefore aim to showcase both clinical and basic orthopedic research being done in India. The emphasis will be on highlighting the challenges orthopedic researchers face in India, given the very basic and insufficient infrastructure and expertise currently available in the country and how researchers are trying to overcome these hurdles in an attempt to perform quality orthopedic research.

15.30 Clinical orthopedic research in India

S25.1 A. Shyam (Mumbai - India)



15.45 Basic orthopedic research in India

S25.2 G. Shetty (Mumbai - India)



16.00 Application of nanotechnology to develop smart biomaterials in orthopedics

S25.3 A. Suryavanshi (Mumbai - India)



16.15 Discussion

Room Teatro 15.30-17.00

S26 SYMPOSIUM

TU DELFT

HIGHLY POROUS METALLIC IMPLANTS AND BONE SUBSTITUTES

Organizer: **A.A. Zadpoor** (Delft - The Netherlands)



Highly porous metallic biomaterials have received significant attention during the last few years mostly due to availability of improved (additive) manufacturing techniques that allow for production of biocompatible metallic biomaterials with arbitrary micro-architectures and very highly porosities (up to +90%). The orthopedics community and most large implant manufacturing companies are showing growing interest in this type of materials. A few commercial products are already available and many more are expected to be available soon. It is therefore an excellent time to review the recent advances in highly porous metallic biomaterials that are used for joint replacement surgeries and as bone substitutes. This symposium aims to review the different aspects of highly porous metallic implants including the results of pre-clinical and clinical studies, properties of these porous biomaterials, and some aspects of manufacturing and surface treatment processes that are relevant for the orthopedics community. World-renown experts from academia and industry will present short tutorials on the above-mentioned aspects of porous biomaterials.

15.30 Use of metal foams for bone
S26.1 regeneration in pre-clinical studies
H. Weinans (Utrecht - The Netherlands)



15.45 Design, manufacturing, and evaluation
S26.2 of highly porous metallic implants
J. Schrooten (Leuven - Belgium)



16.00 Manufacturing of next generation
S26.3 implants: adding value through
additive manufacturing
R. Wauthle (Heverlee - Belgium)



16.15 Mechanical properties of highly porous
S26.4 metallic biomaterials with and without
surface modification
A.A. Zadpoor (Delft - The Netherlands)



16.30 Discussion

Room 1E 15.30-17.00

S27 SYMPOSIUM

ISTITUTO ORTOPEDICO RIZZOLI II

KINEMATIC ALIGNMENT OF TOTAL KNEE ARTHROPLASTY: SCIENCE OR FICTION?

Organizer: **M. Marcacci** (Bologna - Italy)



This symposium will provide a state-of-the-art description of how navigation and kinematic-alignment of total knee arthroplasty could provide a break-through modification for implant positioning in total knee arthroplasty.

15.30 The role of navigation and the mean
S27.1 helical axis method: from a basic
science to clinical applications about
the knee joint
S. Bignozzi (Bologna - Italy)



15.50 Kinematic alignment in TKA: definition,
S27.2 manual surgical technique, and
challenging cases
F. Catani (Modena - Italy)



16.10 Does total knee replacement modify
S27.3 flexion axis of the knee on frontal
and axial plane regardless from limb
alignment?
D. Bruni (Bologna - Italy)



16.30 Discussion

Room 6

15.30-17.00

Notes

S28 SYMPOSIUM

YAMAGATA UNIVERSITY & STANFORD UNIVERSITY
INNATE IMMUNE SENSORS IN JOINT DISEASES

Organizer: **M. Takagi** (Yamagata - Japan)



Co-Organizer: **S. Goodman** (Redwood City - USA)



Current advance in the research of innate immune sensors/effectors has brought about new insights not only in the local host response to microbial attack, but also sterile inflammation. Two major innate immunity sensors, Toll-like receptors (TLRs) and nucleotide-binding oligomerization domain (NOD)-like receptors (NLRs) have been reported to be involved in the pathogenesis of various type of joint diseases including osteoarthritis, rheumatoid arthritis, prosthetic joint infection and aseptic periprosthetic osteolysis. In this symposium, basic knowledge and current topics of TLRs and NLRs in area of joint diseases are presented for better understanding of Orthopaedic researchers.

15.30 Opening remarks and aim of the symposium

S28.1 M. Takagi (Yamagata - Japan)

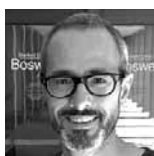
15.35 Basic knowledge of innate immune sensors and joint diseases

S28.2 J. Gallo (Olomouc - Czech Republic)



15.55 Macrophage, a key cell, in the innate immune reactions of joint diseases

S28.3 C. Nich (Paris - France)



16.15 Innate immune reaction in aseptic and septic osteolysis around hip implants

S28.4 J. Pajarinen (Helsinki - Finland)



16.35 Role of innate immune sensors in rheumatoid arthritis and osteoarthritis

S28.5 Y. Takakubo (Yamagata - Japan)



16.55 Comments and closing remarks

S28.6 S. Goodman (Redwood City - USA)

Auditorium 9.30-10.30

S29 SYMPOSIUM

ECM JOURNAL

**PRODUCING THE STABLE CHONDROCYTE PHENOTYPE
– CONSIDERATIONS FOR IN VITRO STEM CELL
DIFFERENTIATION**

Organizer: **B. Johnstone** (Portland - USA)



Co-Organizer: **G. Richards** (Davos - Switzerland)



In vitro studies of isolated adult stem cells give hope that these cells may one day be used to create high-quality replacement cartilage for articular cartilage defects that predispose individuals to post-traumatic osteoarthritis. However, successful differentiation of chondrogenic stem cells to a stable articular cartilage-like phenotype remains one of the major challenges in the field of cartilage cell therapy. Stem cells from many sources express markers of the endochondral chondrocyte lineage rather than those of stable articular chondrocytes when differentiated in vitro. Furthermore, the matrix they produce is not organized in the manner of articular cartilage. The mechanisms underlying the development and maintenance of the chondrocyte phenotype and its matrix are still not well understood. This purpose of this symposium is to provide an overview of the challenges in the field, the parameters that modulate in vitro chondrogenesis, and some possible mechanisms for producing stable chondrocytes. The development of novel treatments in order to alleviate pain, and repair the damaged tissue, require accurate in vitro models which can be used to pre-screen potential therapies prior to attempts in animal models.

9.30 Influence of oxygen on chondrocyte and stem cell differentiation

S29.1

B. Johnstone (Portland - USA)



9.45 Regulating the chondrocyte phenotype by complex multiaxial load

S29.2

M. Alini (Davos - Switzerland)



10.00 Enhanced maturation of stem cell derived cartilage cells by growth factor treatment

S29.3

C. Archer (Swansea - United Kingdom)



10.15 Discussion

Room Basaglia 9.30-10.30

S30 SYMPOSIUM

EORS II

**CROSS-DISCIPLINARY INSPIRATION FOR ORTHOPAEDIC
PRACTICE AND RESEARCH**

Organizer: **E. Gomez-Barrena** (Madrid - Spain)



The neverending amplification of information has made unfeasible the ideal of encyclopaedic knowledge, and triggered specialization. However, it is now clear that any of the most interesting and important problems in science can be answered only through collaborative efforts. The increasing complexity of science demands that concepts and methods from different disciplines be merged. A growing feeling of awareness of the amplitude of ignorance and the resulting impotence to control the whole of knowledge has prompted the convergence of different specialists to solve the same problem. Orthopaedic research is a classic example where scientists from different disciplines, including engineering and biomedical sciences already take mutual advantage from interaction and collaboration, as also demonstrated in CORS 2013. In this workshop, speakers will provide additional evidence of the need to further promote interdisciplinarity. Calls for science to contribute even more substantially to human well-being emphasize that interdisciplinary research must be front and center in any discussion of the future of science.

S30.1 Veterinary perspectives on translational orthopaedic research

A. Goodship (Stanmore - United Kingdom)



S30.2 Orthoplastic surgery. We are stronger when we work together

U. Khan (Bristol - United Kingdom)



S30.3 Research in dentistry inspires orthopaedics

J. Klein Nulend (Amsterdam - The Netherlands)



S30.4 Stem cell-based treatments of teeth and other tissues of the craniofacial complex

T. Mitsiadis (Zurich - Switzerland)



Discussion

Room Teatro 9.30-10.30

S31 SYMPOSIUM

BORS

THE "BIONIC" HUMAN: FACT OR FICTION

Organizer: **G. Blunn** (Stanmore - United Kingdom)



Osseointegrated implants for securing external prosthetic devices to the skeleton have been developed in Europe. This symposium will review the development of these implants and will investigate new developments in this field. This symposium will review the advantages and disadvantages of these implants in this emerging field. It will investigate the role of the bone implant interface and the soft tissue interface and highlight the importance of the skin seal achieving a skin seal to prevent infection.

- S31.1** Development of a skin seal for osseointegrated implants
C. Pendegrass (Stanmore - United Kingdom)



- S31.2** The use of clinical veterinary cases in the development of osseointegrated amputation prostheses
N. Fitzpatrick (Godalming - United Kingdom)



- S31.3** Use of osseointegrated prostheses in humans
N. Kang (London - United Kingdom)



- S31.4** The development of a nerve interface for control of amputation prostheses
N. Donaldson (London - United Kingdom)



Discussion

Room 1E 9.00-10.30

S32 SYMPOSIUM

UNIVERSITY OF PITTSBURGH & CAMPUS BIO-MEDICO
UNIVERSITY OF ROME

REGENERATIVE MEDICINE IN ORTHOPAEDIC SURGERY

Organizer: **J. Huard** (Pittsburgh - USA)



Co-Organizer: **V. Denaro** (Rome - Italy)



The symposium aims to provide a better understanding of current basic research findings, clinical data, and the challenges encountered on the application of growth factors, tissue engineering and stem cells therapy in the treatment of musculoskeletal lesions affecting bone, cartilage, intervertebral disc, muscle, ligaments and tendons.

The purpose of this symposium is to discuss about our future direction of musculoskeletal repair through novel regenerative medicine approaches.

- 9.00 Regenerative medicine in orthopaedic surgery
S32.1 J. Huard (Pittsburgh - USA)



- 9.30 Preclinical research in disc regeneration
S32.2 G. Vadalà (Rome - Italy)



- 10.00 Updates of basic research on cartilage regeneration
S32.3 R. Kuroda (Kobe - Japan)



10.30 Discussion

Room 6

9.00-10.30

Notes

S33 SYMPOSIUM

CHINESE ORS-WOA II

DEVELOPMENT OF BIOACTIVE IMPLANTS AND BONE SUBSTITUTES

Organizer: **T. Tang** (Shanghai - China)



Co-Organizer: **W. Lu** (Hong Kong - China)



Implants and bone substitutes are widely used to restore or repair the structure of damaged bone and joint in orthopaedic surgery. Poor osteointegration, aseptic loosening and infection represent major challenges to implant surgery. The major strategies to reduce these complications are to promote the osteogenic activities in regional microenvironment around implant as well as to prevent the pathogens contaminated during surgery on the implant surface. This symposium will introduce the latest developments to improve the bioactivities of implants and bone substitutes, as well as the influence of environment factors, such as the pH value and wear particles, on the biological performance of implant

- 9.00 **S33.1** Surface modification strategies to prevent implant associated infection
T. Tang (Shanghai - China)



- 9.18 **S33.2** An In vivo observation of microenvironment pH of biomaterials in bone defect repair model
W. Lu (Hong Kong - China)



- 9.36 **S33.3** Surface modification toward bioactive orthopaedic implants
B. Li (Jiangsu - China)



- 9.54 **S33.4** Identification of exogenous phytomolecules for developing bioactive bone substitutes
L. Qin (Hong Kong - China)



- 10.12 **S33.5** RNA interference targeting p100 β reduces tumor necrosis factor- α production in cellular response to wear particles in vitro and osteolysis in vivo
Y. Ding (Sun Yat-Sen - China)



10.30 Discussion

Auditorium 11.00-12.30

031 TRAUMA & FRACTURE II

Moderators: **T. Miclau** (San Francisco - USA)
B. Rocos (Bristol - United Kingdom)

- 11.00
031.1 Understanding the pathology of pelvis ring disruptions with radiostereometric analysis
L. Solomon, S. Callary, A. Mitra, A. Pohl (Adelaide - Australia)
- 11.08
031.2 Histology of atypical femoral fractures. Not just a crack!
J. Schilcher, O. Sandberg, H. Isaksson, P. Aspenberg (Linköping, Lund - Sweden)
- 11.16
031.3 The incidence of scapholunate, lunotriquetral, and triangular fibrocartilage complex tears: a cadaveric investigation
R. Nicolescu, E. Ouellette, C. Kam, P. Sawardeker, P. Clifford, L. Latta (Miami, Coral Gables, Indianapolis, Fargo - USA)
- 11.24
031.4 The incidence and characteristics of carpal fractures arising concurrently with distal radius fracture after a fall onto an outstretched hand
R. Nicolescu, E. Ouellette, P. Clifford, C. Kam, P. Sawardeker, L. Latta (Miami, Coral Gables, Indianapolis, Fargo - USA)
- 11.32
031.5 Effects of projection errors on ankle morphological measurements using CT-based simulated radiographs
H.-L. Lu, C.-C. Kuo, C.-C. Lin, T.-W. Lu (Taipei - Taiwan)
- 11.40
031.6 The role of soft tissues in rigidity of fracture fixation of upper and lower extremities; application for battlefield use
E. Ouellette, W. Elliott, L. Latta, E. Milne, D. Kaimrajh, J. Lowe, A.-L. Makowski, E. Herndon, C. Kam, P. Sawardeker (Coral Gables, Boulder, Miami Beach, Birmingham, Indianapolis, Fargo - USA)
- 11.48
031.7 Postoperative malreduction following ankle fracture surgery – a comprehensive analysis of reoperated patients
M.T. Ovaska, T.J. Mäkinen, R. Madanat, V. Kiljunen, J. Lindahl (Helsinki - Finland)
- 11.56
031.8 National utilization trends and perioperative outcomes for total hip arthroplasty versus hemiarthroplasty for femoral neck fractures
V. Moretti, B. Goldberg (Chicago - USA)
- 12.04
031.9 Stimulation of cancellous fracture healing with PTH is more efficacious in unloaded bone
O. Sandberg, B. Macias, P. Aspenberg (Linköping - Sweden, San Diego - USA)
- 12.12
031.10 NSAIDs impair healing of shaft fractures, but metaphyseal fractures are not affected
O. Sandberg, P. Aspenberg (Linköping - Sweden)

Room Basaglia 11.00-12.30

032 TISSUE ENGINEERING IV

Moderators: **T. Mitsiadis** (Zurich - Switzerland)
L. Crespo (Madrid - Spain)

- 11.00
032.1 Studies of mesenchymal stem cell secretion on musculoskeletal tissue repair
K. Wang, G. Li (Hong Kong - China)
- 11.08
032.2 Pro-angiogenic and pro-survival functions of glucose in human mesenchymal stem cells upon transplantation
M. Deschepper, J. Paquet, M. Manassero, D. Logeart-Avramoglou, M. Bensidhoum, H. Petite (Paris - France)
- 11.16
032.3 A comparison of culture expanded mesenchymal stem cells versus minimally manipulated bone marrow cells for their growth and chondrogenic differentiation in clinically relevant cell scaffolds with potential for cartilage repair
N. Kohli, M. Snow, E. Johnson (Birmingham - United Kingdom)
- 11.24
032.4 Capacity of in vitro expanded bone marrow stromal cells to make new bone in a setting of non-union: a randomised control study
A. Bhattacharjee, J.H. Kuiper, P.E. Harrison, S. Roberts, J.B. Richardson (Oswestry - United Kingdom)
- 11.32
032.5 The properties of equine chondroprogenitor cells from articular cartilage after extended in vitro expansion
H. McCarthy, C. Archer (Cardiff, Swansea - United Kingdom)
- 11.40
032.6 Osteoinductivity and osteogenicity of leading allograft bone products
A. Govil, N. Thompson (Carlsbad - USA)
- 11.48
032.7 Comparison of two scaffolds with different resorption containing autologous mesenchymal stem cells in bone critical-sized defect in sheep
A. Decambron, M. Manassero, M. Bensidhoum, H. Petite, V. Viateau (Paris - France)
- 11.56
032.8 Nanostructured materials: a new approach to design innovative scaffolds for the treatment of bone defects
P.D. Parchi, M. Cecchini, S. Antonini, N. Piolanti, L. Andreani, A. Poggetti, M. Lisanti, V. Orazio (Pisa - Italy, Sydney - Australia)
- 12.04
032.9 Bone defect at upper limb level treated by the induced membrane technique Prospective multicentric study on 20 cases: clinical evaluation and biological analyse of the membrane
L. Obert, F. Gindraux, P. Garbuio (Besançon - France)
- 12.12
032.10 Promotion of neurological recovery in rat spinal hemisection injury by collagen scaffold loaded with mesenchymal stem cells
X. Han, W. Gao, L. Chen, H. Yang, Q. Shi (Wuxi, Suzhou - China)

Room Teatro 11.00-12.30

033 BIOMATERIALS III

Moderators: **H. Zreiqat** (Sydney - Australia)
Y. Ghani (London - United Kingdom)

- 11.00
033.1 In vivo comparison of new biodegradable magnesium-based implants for orthopedic uses
O. Charyeva, U. Thormann, S. Schmidt, U. Sommer, K. Lips, L. Heimann, R. Schnettler (Giessen, Frankfurt, Dieburg - Germany)
- 11.08
033.2 Bioactive bone cement with antibacterial properties
M. Miola, E. Verné, S. Ferraris, A. Massè, A. Bistolfi, M. Crova, G. Maina (Turin, Orbassano - Italy)
- 11.16
033.3 Evaluation of polydioxanone scaffolds of varying architecture for tendon repair
O. Hakimi, P.-A. Mouthuy, C. Yapp, A. Wali, N.Z. Baboldashti, A. Carr (Oxford - United Kingdom)
- 11.24
033.4 Evaluation of mechanical, antimicrobial efficacy and biocompatibility of Si doped carbon coatings onto stainless steel and titanium orthopaedic implants
D. Bociaga, P. Niedzielski, J. Grabarczyk, D. Nowak, B. Walkowiak (Lodz - Poland)
- 11.32
033.5 Osteogenic cell differentiation on H- and O-terminated nanocrystalline diamond films
J. Liskova, O. Babchenko, M. Varga, A. Kromka, D. Hadraba, Z. Svindrych, Z. Burdikova, L. Bacakova (Prague - Czech Republic)
- 11.40
033.6 BonyPidTM: A lipid-and-polymer-based novel local drug delivery system physicochemical aspects and therapy
N. Emanuel, Y. Rosenfeld, O. Cohen, R. Estrada, Y. Applbaum, Y. Barenholz, R. Gustilo, S. David (Petach-Tikva, Jerusalem - Israel, Quezon - Philippines, Minneapolis - USA)
- 11.48
033.7 An electrospun patch reinforced with a woven component for rotator cuff repair
P.-A. Mouthuy, O. Hakimi, N.Z. Baboldashti, M. Morrey, E. Lostis, A. Carr (Oxford - United Kingdom)
- 11.56
033.8 CoCrMo implant alloy processed via metal injection molding. electrochemical and in vitro characterization
V. Melli, G. Rondelli, E. Sandrini, L. Altomare, G. Bolelli, B. Bonferroni, L. Lusvarghi, R. Chiesa, L. De Nardo (Milan, Bologna, Modena - Italy)
- 12.04
033.9 Generation and characterization of wear debris from silicon nitride coatings aimed to increase the longevity of joint replacements
M. Pettersson, C. Skjöldebrand, H. Engqvist, C. Persson (Uppsala - Sweden)
- 12.12
033.10 Particles from vitamin-E-diffused highly cross-linked UHMWPE induce less osteolysis compared to virgin UHMWPE in a murine calvarial bone model
D. Bichara, E. Malchau, N. Sillesen, S. Cakmak, O. Muratoglu (Boston - USA)
- 12.20
033.11 The effect of storage and continuous formation of metallic wear particles on their radical-generating ability
V. Bulgakov, N. Gavryushenko, A. Shal'nev (Moscow - Russia)

Room 1E 11.00-12.30

034 TENDON & LIGAMENTS III

Moderators: **G. Riley** (Norwich - United Kingdom)
M.V. Hogan (Pittsburgh - USA)

- 11.00
034.1 Micromechanics of fatigue loaded tendon
J. Shepherd, G. Riley, H. Screen (London, Norwich - United Kingdom)
- 11.08
034.2 The risks and benefits of glucocorticoid treatment for tendinopathy: a systematic review
B. Dean, E. Lostin, T. Oakley, M. Morrey, A. Carr (Oxford - United Kingdom)
- 11.16
034.3 Concurrent second harmonic generation (SHG) imaging of collagen orientation and two-photon fluorescence cell imaging microscopy in tendons
S. Durgam, S. Mayandi, M. Stewart (Urbana - USA)
- 11.24
034.4 Enhanced repair of naturally occurring tendinopathy by autologous mesenchymal stem cells implantation
J. Dudhia, N.J. Werling, S.G. Dakin, A.E. Goodship, R.K.W. Smith (North Mymms, Stanmore - United Kingdom)
- 11.32
034.5 Could tendon progenitor cells be useful in regenerative medicine applications? Characterization and in vitro comparison with adipose-derived stem cells
D. Stanco, M. Viganò, G. Thiebat, L. de Girolamo (Milan - Italy)
- 11.40
034.6 Immuno-modulatory effect of MSCs during ligament healing
E. Saether, C. Chamberlain, E. Leiferman, W.-J. Li, R. Vanderby (Madison - USA)
- 11.48
034.7 Biomechanical and histologic effects of augmented soft tissue mobilization therapy on Achilles tendinopathy in a rabbit model
K. Imai, K. Ikoma, R. Gay, T. Hirano, Y. Ozasa, Q. Chen, K.-N. An, C. Zhao (Rochester - USA)
- 11.56
034.8 Silver nanoparticles modulates collagen synthesis resulting in better therapeutic outcome in Achilles tendon healing
K.H.L. Kwan, K. Yeung, K. Cheung, M.K.T. To (Hong Kong - China)
- 12.04
034.9 Influence of geometry and material properties in Achilles tendon ruptures
V. Shim, J. Fernandez, P. Gamage, C. Regnery, P. Hunter, D. Lloyd, T. Besier (Auckland - New Zealand, Gold Coast - Australia)
- 12.12
034.10 Knee flexion and differential fibre recruitment in the anterior cruciate ligament: a microstructural study
L. Zhao, A. Thambyah, N. Broom (Auckland - New Zealand)

Room 6 11.00-12.30

O35 ELBOW

Moderators: **V. Sollazzo** (Ferrara - Italy)
A. Aframian (Canterbury - United Kingdom)

11.00 **O35.1** Three dimensional morphological characteristics of the proximal ulna

Y.B. Ong, C.L. Poh, T.S. Howe, Y.H. Ng, A. Yew, J.S.B. Koh, B.F. Morrey (Singapore - Singapore, Minnesota - USA)

11.08 **O35.2** Temporary presence of myofibroblasts in human elbow capsule after trauma

J. Doornberg, T. Bosse, M. Cohen, J. Jupiter, D. Ring, P. Kloen (Amsterdam, Leiden - The Netherlands, Chicago, Boston - USA)

11.16 **O35.3** Patient-centred assessment of pain, functional disability, and psychologic status in tennis elbow

O. Alizadehkhayat, G. Kemp, S. Frostick (Liverpool - United Kingdom)

11.24 **O35.4** Importance of implant radius of curvature in radial head arthroplasty

W. Elliott, D. Kaimrajh, P. Sawardeker, E. Milne, A. Ouellette, L. Latta (Boulder, Miami Beach, Fargo, Coral Gables - USA)

11.32 **O35.5** Relation of load distribution between radiocapitellar and ulnotrochlear joints with radial head arthroplasty

W. Elliott, P. Sawardeker, D. Kaimrajh, C. Kam, E. Milne, A. Ouellette, L. Latta (Boulder, Fargo, Indianapolis, Coral Gables, Miami Beach - USA)

11.40 **O35.6** Shifting of the forearm bones with improper sizing in radial head arthroplasty

W. Elliott, P. Sawardeker, C. Kam, A. Ouellette, L. Latta (Boulder, Fargo, Indianapolis, Coral Gables, Miami Beach - USA)

11.48 **O35.7** Medium-term results of unlinked elbow arthroplasty for stiff elbows with rheumatoid arthritis

S. Akita, H. Tsuboi, M. Hirao, J. Hashimoto (Kawachinagano - Japan)

11.56 **O35.8** Outcome of total elbow replacement: a 4-year mean follow-up

O. Alizadehkhayat, K. Vishwanathan, S. Frostick (Liverpool, Chester - United Kingdom)

12.04 **O35.9** Measuring daily life upper extremity activity in shoulder patients and healthy subjects using a single 3D accelerometer

G. Hendriks, R. Senden, I.C. Heyligers, K. Meijer, B. Grimm (Heerlen, Maastricht - The Netherlands)

12.12 **O35.10** Validating a single 3D accelerometer to monitor upper-extremity activity during daily life

G. Hendriks, A. Aquilina, R. Senden, A. Blom, K. Meijer, I.C. Heyligers, B. Grimm (Heerlen, Maastricht - The Netherlands, Southmead - United Kingdom)

Notes

Auditorium

12.30-13.00

PL4 PLENARY LECTURE 4

Evidence and health economic benefit of activity & exercise intervention programs on musculoskeletal health

Willem van Mechelen (*Amsterdam - The Netherlands*)



Auditorium 14.00-15.30

O36 INFECTION II

Moderators: **J. Esteban** (*Madrid - Spain*)
I. Potapova (*Davos - Switzerland*)

- 14.00
O36.1 Posterior percutaneous screw-rod instrumentation is a safe and effective alternative approach to TLSO rigid bracing for single level pyogenic spondylodiscitis
L.A. Nasto, D. Colangelo, C. Sernia, E. Di Meco, C. Fabbriani, M. Fantoni, E. Pola (*Rome - Italy*)
- 14.08
O36.2 Effectiveness of WHO regime in spinal tuberculosis - Prospective study
P. Bhushan, M. Varghese (*Delhi - India*)
- 14.16
O36.3 Gallium-based innovative surface treatments for orthopaedic applications
C. Della Valle, G. Candiani, D. Pezzoli, L. Visai, L. Rimondini, A. Cochis, E. De Giglio, S. Cometa, F. Buccioti, R. Chiesa (*Milan, Pavia, Novara, Bari - Italy*)
- 14.24
O36.4 68Ga-DOTA-Siglec-9 PET imaging detects biomaterial infection caused by *S. epidermidis*
H. Aro, H. Ahtinen, J. Kulkova, L. Lindholm, E. Eerola, A. Hakanen, N. Moritz, M. Söderström, T. Saanijoki, A. Roivainen (*Turku - Finland*)
- 14.32
O36.5 In-vivo monitoring of bone around an infected implant
V. Stadelmann, I. Potapova, K. Camenisch, U. Eberli, G. Richards, F. Moriarty (*Davos - Switzerland*)
- 14.40
O36.6 Click chemistry for imaging of infection: two-step labeling of *Staphylococcus aureus* with lysostaphin
I. Potapova, E. David, M.W. Laschke, M. Bischoff, G. Richards, F. Moriarty (*Davos - Switzerland, Homburg - Germany*)
- 14.48
O36.7 Assessing the role of implant associated immune response on the development of infection in vivo
E.T.J. Rochford, M. Sabaté Brescó, M. Ziegler, L. O'Mahoney, G. Richards, F. Moriarty (*Davos - Switzerland*)
- 14.56
O36.8 Biofilm formation and molecular characterization of *Staphylococcus aureus* isolated from orthopaedic implant related infections depends on type of device
V. Post, P. Wahl, I. Uckay, W. Zimmerli, S. Corvec, C. Loiez, P. Ochsner, F. Moriarty (*Davos, Geneva, Liestal, Lucerne- Switzerland, Nantes, Lille - France*)
- 15.04
O36.9 Antibacterial resorbable coating of orthopaedic implants: an in vitro and in vivo study
E. Meani, M. Fini, G. Giavaresi, L. Drago, C.L. Romanò (*Milan, Bologna - Italy*)
- 15.12
O36.10 Efficacy of a locally-injected amnion-derived tissue product in a murine model of implant-associated staphylococcus aureus osteomyelitis
N. Ehrhart, R. Rose, M. Woodard, L. Parkinson, L. Chubb (*Fort Collins, - USA*)

Room Basaglia 14.00-15.30

O37 CELLS & MOLECULAR

Moderators: **D.M. Findlay** (*Adelaide - Australia*)
M. Poldervaart (*Utrecht - The Netherlands*)

- 14.00
O37.1 Transplantation of a scaffold free cartilage tissue equivalent to physal cartilage injury of the proximal tibia in rabbit
J. Lee, C. Jeong (*Bucheon - Korea*)
- 14.08
O37.2 Differential gene and protein expression in postnatal cartilage canal and osteochondral junction chondrocytes
S. Semevolos, M. Kinsley, K. Duesterdieck-Zellmer, T. Riddick (*Corvallis - USA*)
- 14.16
O37.3 Sclerostin antagonises anabolic response to mechanical loading in bovine bone ex vivo
M. Kogawa, K. Khalid, A. Wijayak, R. Ormsby, D. Findlay, G. Atkins (*Adelaide - Australia*)
- 14.24
O37.4 The differentiation stage determines the effect of Indomethacin on chondrogenic differentiation
M. Caron, P. Emans, D. Surtel, A. Cremers, L. Van Rhijn, T. Welting (*Maastricht - The Netherlands*)
- 14.32
O37.5 Human bone-lineage cell responses to anisotropic Ti6Al4V surfaces are dependent on their maturation state
A. Calzado-Martín, L. Crespo, L. Saldaña, A. Boré, E. Gómez-Barrena, N. Vilaboa (*Madrid - Spain*)
- 14.40
O37.6 RNA interference targeting p110 β reduces tumor necrosis factor- α production in cellular response to wear particles in vitro and osteolysis in vivo
Y. Ding, J. Huang, D. Huang, H. Shen (*Guangzhou - China*)
- 14.48
O37.7 Can cobalt from metal-on-metal joints activate human TLR4 and cause an inflammatory response?
H. Lawrence, D. Deehan, J. Holland, J. Kirby, A. Tyson-Capper (*Newcastle upon Tyne - United Kingdom*)
- 14.56
O37.8 Inhibition of prostaglandin E2 synthesis by hyaluronan through NF- κ B down-regulation via ICAM-1 in U937 macrophages
T. Yasuda (*Kobe - Japan*)
- 15.04
O37.9 Intracellular tracking of fluorescently labelled calcium phosphate particles
R.L. Williams, N.M. Salimi, G.A. Leeke, R.H. Bridson, L.M. Grover (*Birmingham - United Kingdom*)
- 15.12
O37.10 Ischaemic preconditioning protects skeletal muscle myotubes against ischaemia-reperfusion injury through activation of Nrf2 signalling
P. Walsh, K. Mulhall (*Dublin - Ireland*)

Room Teatro 14.00-15.30

038 SPINE III

Moderators: **F. Mwale** (Montreal - Canada)
F. Russo (Rome - Italy)

- 14.00
038.1 Tandem spinal stenosis: A 926 multiracial Asian patients' prevalence and risk factors analysis
G. Liu, B. Tan, D. Riew, H.K. Wong (Singapore - Singapore, St Louis - USA)
- 14.08
038.2 Neurophysiologic monitoring during acute and progressive compression injury of the spinal cord experimentally induced in pigs
C. Barrios, E. Montes, J. Burgos, G. de Blas, M. Antón-Rodríguez, E. Hevia, C. Correa (Valencia, Madrid - Spain)
- 14.16
038.3 The influence of growth blocking of the neurocentral cartilages on the development of the spinal canal. An experimental study in pigs
R. Llombart-Blanco, R. Llombart-Ais, C. Barrios, J.L. Beguiristain (Pamplona, Valencia - Spain)
- 14.24
038.4 Targeting differential signalling pathways between catabolic and anabolic factors for novel treatments for low back pain
J. Daniels, K.L.E. Phillips, A.L.A. Binch, N. Chiverton, L. Breakwell, A.R. Micheal, A. Cole, S.L. Dunn, C.L. Le Maitre (Sheffield - United Kingdom)
- 14.32
038.5 Excitatory effect of transient receptor potential ankyrin 1 in spinal cord dorsal horn revealed by in vivo patch-clamp analysis.
T. Miyakawa, T. Takebayashi, Y. Terasima, I. Ohgon, T. Yamashita (Sapporo - Japan)
- 14.40
038.6 Ventral horn neurons in mouse organotypic spinal cord slice cultures are sustained to initial levels after 8 days in vitro when treated with a combination of NT3 and IL1RA
N. Schizas, B. Andersson, N. Hailer (Uppsala - Sweden)
- 14.48
038.7 Rate and depth dependent effects on demyelination and behavioural deficit following spinal cord contusion injury
C. Lam, P. Assinck, J. Liu, W. Tetzlaff, T. Oxland (Vancouver - Canada)
- 14.56
038.8 Loading and carrier determine the success of stem cell delivery into degenerative discs
M. Peroglio, D. Eglin, L. Benneker, M. Alini, S. Grad (Davos, Bern - Switzerland)
- 15.04
038.9 A blinded, multi-center clinical and radiological study to evaluate the efficacy of osteoAMP versus rhBMP-2 in TLIF/LLIF procedures
J. Roh, C. Yeung, J. Field (Seattle, Phoenix - USA)
- 15.12
038.10 Novel radiopaque UHMWPE sublaminar wires for application in a growth-guidance system for the treatment of early onset scoliosis: a large animal study
A. Roth, R. Bogie, P. Willems, T. Welting, C. Arts, L. van Rhijn (Maastricht - The Netherlands)
- 15.20
038.11 A novel nucleotomy model with intact anulus fibrosus to test intervertebral disc regeneration strategies
G. Vadalà, F. Russo, G. Pattappa, M. Peroglio, S. Grad, V. Stadelmann, M. Alini, V. Denaro (Rome - Italy, Davos - Switzerland)

Room 1E 14.00-15.30

14.00 K5 KEYNOTE LECTURE 5

New concept of lysosome targeting therapy using acridine orange for musculoskeletal sarcomas

Katsuyuki Kusuzaki (Kyoto - Japan)



039 TUMOR II

Moderators: **K. Kusuzaki** (Kyoto - Japan)
B. He (Hong Kong - China)

- 14.20
039.1 Hand tumors - series of 110 cases
D.M. Chetan (Mysore - India)
- 14.28
039.2 Novel radiofrequency ablation treatment of tumour and bone
P. Pezeshki, M. Akens, J. Woo, C. Whyne, A. Yee (Toronto, Mississauga - Canada)
- 14.36
039.3 Blood loss in spine tumour surgery - A meta-analysis
Y. Chen, B.C. Tai, D. Nayak, N. Kumar, R. Goy, H.K. Wong (Singapore - Singapore)
- 14.44
039.4 A novel method of removing malignant cells from blood salvaged during metastatic spine tumour surgery using a leucocyte depletion filter
N. Kumar, Y. Chen, Q. Ahmed, V. Lee, H.K. Wong (Singapore - Singapore)
- 14.52
039.5 Can intra-operative cell salvage (IOCS) be used in metastatic spine tumour surgery? A systematic review
N. Kumar, Y. Chen, A.S. Zaw, Q. Ahmed, R. Soong, D. Nayak, H.K. Wong (Singapore - Singapore)
- 15.00
039.6 Minimal invasive surgery (MIS) fixation for management of metastatic spinal disorders (MSD): our experience
R. Malhotra, N. Kumar, P.H. Wu, A.S. Zaw, G. Liu, J. Thambiah, H.K. Wong (Singapore - Singapore)
- 15.08
039.7 Neurological compromise in nasopharyngeal carcinoma with spinal metastasis
J. Tan, J. Lim, Y. Chen, N. Kumar (Singapore - Singapore)
- 15.16
039.8 Preventing bone loss and bone marrow adiposity caused by methotrexate cancer chemotherapy: supplementary treatment with dietary fish oil vs folic acid
R.R. Nadhanan, C.-M. Fan, Y.-W. Su, P. Howe, C. Xian (Adelaide - Australia)

Room 6 14.00-15.30

O40 IMAGING

Moderators: **R. Anderson** (New Orleans - USA)
A. Palmer (Oxford - United Kingdom)

14.00 Modelisation of supraspinatus muscle

O40.1 S. Abrassart, C. Barea, P. Hoffmeyer (Geneva - Switzerland)

14.08 The diagnostic power and interobserver agreement of three classification systems and radiographic measures to assess X-ankle concerning syndesmotic injury

O40.2 Y. Dhooge, N. Wentink, L. Theelen, W. van Hemert, R. Senden (Heerlen - The Netherlands)

14.16 3D in vivo evaluation for the effectiveness of bracing

O40.3 S. Hasegawa, J. Mizutani, S. Otsuka, N. Suzuki, M. Fukuoka, T. Otsuka, S. Banks (Nagoya - Japan, Gainesville - USA)

14.24 Quantification of posterior malleolar fractures

O40.4 L. Mangnus, D. Meijer, J. Mellema, W. Veltman, E. Steller, S. Stufkens, J. Doornberg (Amsterdam - The Netherlands)

14.32 Trabecular bone score in traumatology and orthopedics

O40.5 V. Povoroznyuk, H. Didier, N. Dzerovych (Kyiv - Ukraine, Lausanne - Switzerland)

14.40 Quantifying structural quality of bone regeneration within a porous bone graft substitute

O40.6 A. Parish, K. Hing, G. Davis (London - United Kingdom)

14.48 ACL and MPFL concurrent rupture rate: an MRI study

O40.7 A. Aframian, O. Jindasa, K.S. Khor, P. Vinayakam, S. Spencer, P.J.S. Jeer (Margate, Ashford - United Kingdom)

14.56 Estimating hip joint angles during weightbearing by combining low resolution open MRI images with high resolution conventional MRI images

O40.8 X. Kang, D. Wilson, A. Hodgson (Vancouver - Canada)

15.04 DIY 3D printing of custom orthopaedic implants - A proof of concept study

O40.9 M. Frame (Glasgow - United Kingdom)

Notes

Auditorium 15.30-16.30

O41 CARTILAGE & MENISCUS II

Moderators: **J. Huard** (Pittsburgh - USA)
E. Hargrave-Thomas (Auckland - New Zealand)

15.30
O41.1 The spatial organization and the pericellular matrix of human fetal chondrocytes are not inborn but instead acquired characteristics

T. Felka, S. Zouhair, S. Bast, K. Struck, L. Handl, M. Votteler, U. Stoeckle, V. Schmidt, K. Schenke-Layland, A. Grodzinsky, B. Rolauffs (Tübingen, Ulm - Germany, Cambridge - USA)

15.38
O41.2 Cartilage fragments for one-step cartilage repair: still a valid cell source in hypoxic condition as a model of joint microenvironment?

A. Marmotti, S. Mattia, D.E. Bonasia, M. Bruzzone, S. Terrando, C. Tarella, E. Ponzo, D. Blonna, F. Castoldi, G.M. Peretti, R. Rossi (Turin, Milan - Italy)

15.46
O41.3 Cannabinoids and IL-1 β signalling pathways in human osteoarthritic chondrocytes

S. Dunn, A. Crawford, M. Wilkinson, R.A.D. Bunning, C.L. Le Maitre (Sheffield - United Kingdom)

15.54
O41.4 Tissue engineered nasal cartilage for the regeneration of articular cartilage in goats

M. Mumme, K. Peltari, S. Gueven, K. Nuss, B. Von Rechenberg, M. Jakob, I. Martin, A. Barbero (Basel, Zurich - Switzerland)

16.02
O41.5 A BMP-mediated pathway of chondrocyte biosynthetic suppression by corticosteroids

K. Herzog, S. Durgam, M. Stewart (Urbana - USA)

16.10
O41.6 Microstructural, mechanical, and mineral changes in the pre-osteoarthritic and early osteoarthritic joints

E. Hargrave-Thomas, A. Thambyah, S. McGlashan, N. Broom (Auckland - New Zealand)

16.18
O41.7 Characterization of haemathrosis derived stem cells after abrasion arthroplasty

R. Beckmann, C. Hartz, M. Tohidnezhad, S. Neuss-Stein, M. Ventura Ferreira, B. Rath, M. Tingart, F. Pries, D. Varoga, T. Pufe (Aachen, Heidelberg, Kiel - Germany)

16.26
O41.8 Biologic approaches to post-traumatic osteoarthritis: comparison of three treatment schemas

R. Olewinski, M. Gupta, M. Wimmer, A. Hakimiyan, A. Margulis, L. Rappoport, C. Pacione, S. Chubinskaya (Chicago - USA)

Room Basaglia 15.30-16.30

O42 KNEE & KNEE ARTHROPLASTY IV

Moderators: **G. Shetty** (Mumbai - India)
D. Crisan (Timisoara - Romania)

15.30
O42.1 Autologous growth factors rich plasma (GFRP) following knee lavage - A reliable treatment option to avoid knee arthroplasty in early osteoarthritis knees

R. Sharma (Amritsar - India)

15.38
O42.2 The influence of patellofemoral degenerative changes on the outcome of the unicompartmental knee replacement

A. Abdulkarim, N. Motterlini, T.M. O'Donnell, M.J. Neil (Dublin - Ireland, Sydney - Australia)

15.46
O42.3 Outcome assessment of TKA patients using new functional scores and physical activity monitoring

R. Senden, I.C. Heyligers, B. Grimm (Heerlen - The Netherlands)

15.54
O42.4 Revision from unicompartmental to total knee arthroplasty; clinical outcome depends on reason for revision

B. Kerens, B. Boonen, M. Schotanus, H. Lacroix, P. Emans, N. Kort (Antwerp - Belgium, Venlo, Sittard, Helmond, Maastricht - The Netherlands)

16.06
O42.5 Simple geometrical principles for planed bony cuts in total knee arthroplasty to treat patients with severe extra-articular deformity

T.-W. Tai, K.-A. Lai (Tainan - Taiwan)

16.10
O42.6 National trends and patient outcomes for pulmonary embolism after primary total knee arthroplasty

V. Moretti, R. Shah (Chicago - USA)

16.18
O42.7 The 4D-SPECT/CT: evaluation of TKA alignment, position and tracer uptake distribution in patients with painful total knee arthroplasty

E.A. Testa, H. Rasch, F. Forrer, M.T. Hirschmann (Bruderholz - Switzerland)

Room Teatro 15.30-16.30

O43 OSTEOARTHRITIS II

Moderators: **R. Kuroda** (Kobe - Japan)
G. Kumar (Liverpool - United Kingdom)

- 15.30
O43.1 Interruption of ganglioside synthesis enhances osteoarthritis development in mice
T. Onodera, T. Yamashita, N. Iwasaki, F. Sasazawa (Sagamihara - Japan)
- 15.38
O43.2 Dickkopf-1 blockade protects from cartilage and synovial deterioration in osteoarthritic knee: a pre-clinical trial perspective
F.-S. Wang, L.-H. Wang, J.-Y. Ko (Kaohsiung - Taiwan)
- 15.46
O43.3 Dickkopf-3 (Dkk3) a regulator of chondrocyte biology in osteoarthritis
S. Snelling, A. Price, A. Carr, L. Le, I. Clark (Oxford, Norwich - United Kingdom)
- 15.54
O43.4 VEGF-signaling inhibition as a target of osteoarthritis treatment: an in vivo study on osteoarthritis rabbit model
G. Vadalà, M. Musumeci, A. Giacalone, F. Russo, V. Denaro (Rome - Italy)
- 16.02
O43.5 CCL chemokines are upregulated in articular cartilage defects and stimulate the migration of bone marrow cells
H. Ito, T. Fujii, T. Kasahara, M. Ishikawa, M. Furu, H. Shibuya, S. Matsuda (Kyoto - Japan)
- 16.10
O43.6 PCA-III inhibited the development of primary and secondary osteoarthritis
Y. Sun, A. Roberts, N. Haines, M. Ruffolo, D. Mauerhan, E. Hanley (Charlotte - USA)
- 16.18
O43.7 The CAM deformity in patients with femoroacetabular impingement demonstrates lost of proteoglycan content
A. Speirs, A. Huang, M. Lamontagne, P. Beaulé (Ottawa - Canada)
- 16.26
O43.8 Mechanical properties of porcine tibial plateau cartilage correlate with position of expected osteoarthritic lesions
M. Armengol, C.P. Brown, P.A. Hulley, A.J. Price, H.S. Gill (Oxford, Bath - United Kingdom)

Room 1E 15.30-16.30

O44 OSTEONECROSIS

Moderators: **N. Baldini** (Bologna - Italy)
G. Trisolino (Bologna - Italy)

- 15.30
O44.1 The role of vasospasm in the development of steroid-induced osteonecrosis in rabbits
S. Ikemura, T. Yamamoto, G. Motomura, R. Yamaguchi, T. Mawatari, Y. Iwamoto (Fukuoka - Japan)
- 15.38
O44.2 S100A9 induced vessel injury in osteonecrosis of femoral head
F.S. Wang, R.-W. Wu (Kaohsiung - Taiwan)
- 15.46
O44.3 Role of Wnt/beta-catenin signaling in early osteochondrosis
S. Semevolos, M. Kinsley, K. Duesterdieck-Zellmer (Corvallis - USA)
- 15.54
O44.4 Direct injection of mesenchymal stem cells in treatment of osteoarthritis - An experimental study in rabbits
S. Goel, A.K. Singh, K. Mohan, A. Goel, K.K. Gupta (Varanasi, Akola - India)
- 16.02
O44.5 Predicting risk factors of total hip arthroplasty (THA) conversion after concentrated autologous bone marrow aspirate transplantation (CABMAT) for the treatment of idiopathic osteonecrosis of the femoral head (ONFH)
K. Hyodo, T. Yoshioka, H. Akaogi, H. Sugaya, K. Aoto, H. Wada, S. Sakai, M. Yamazaki, H. Mishima (Tsukuba - Japan)
- 16.10
O44.6 Effect of low-intensity pulsed ultrasound on osteogenic differentiation of osteoprogenitor cells derived from mouse iPS cells
S.Y. Lee, E. Okumachi, Y. Dogaki, T. Niikura, T. Iwakura, T. Waki, K. Nishida, M. Kurosaka (Kobe - Japan)
- 16.18
O44.7 Outcome study of arthroscopic decompression of the lunate in Kienbock's disease
E. Ouellette, S. Yang, J. Morris, A.-L. Makowski, W. Fung (Coral Gables, Miami, New York - USA, Guelph - Canada)

Room 6 15.30-16.30

O45 SHOULDER II

Moderators: **R. Papalia** (Rome - Italy)
S. Vasta (Rome - Italy)

15.30
O45.1 Scapular kinematics in different humeral rotations - Analysis in health subjects and cadaver models

S. Oki, N. Matsumura, T. Morioka, H. Ikegami, Y. Kiriya, T. Nakamura, Y. Toyama, T. Nagura (Tokyo - Japan)

15.38
O45.2 How does reverse shoulder design affect rotator muscle moment arms?

M. Hamilton, P. Diep, C. Roche, P.-H. Flurin, T. Wright, J. Zuckerman, H. Routman (Gainesville, New York, Atlantis - USA, Bordeaux - France)

15.46
O45.3 Achieving optimal custom-made glenoid implant position and fixation using patient-specific guides in cases of severe glenoid defects

K. Eraly, D. Stoffelen, N. Van Geel, J. Demol, P. Debeer (Leuven - Belgium)

15.54
O45.4 Biomechanical comparison of initial stability of three humeral components in total shoulder arthroplasty

S. Dun, D. Warlop, S. Swope (Warsaw - USA)

16.02
O45.5 Novel neuronal changes in rotator cuff tendinopathy (RCT)

B. Dean, R. Murphy, K. Wheway, B. Watkins, S. Franklin, K. Javaid, A. Carr (Oxford - United Kingdom)

16.10
O45.6 The treatment of massive rotator cuff tears with two different patches

P. Ciampi, C. Scotti, G. Peretti, M. Vitali, G. Fraschini (Milan - Italy)

16.18
O45.7 Recovery following rotator cuff repair in younger patients

R. Holtby, H. Razmjou, G. Gunnis (Toronto - Canada)

Notes



Notes

Handwriting practice lines for the left page. Each line consists of a solid top line, a dashed midline, and a solid bottom line. There are 20 such lines available for practice.

Notes

Handwriting practice lines for the right page. Each line consists of a solid top line, a dashed midline, and a solid bottom line. There are 20 such lines available for practice.

POSTER SESSIONS

Poster will be displayed near the main entrance, detailed directions will be available onsite.

POSTER SESSIONS 13-14 OCTOBER 2013

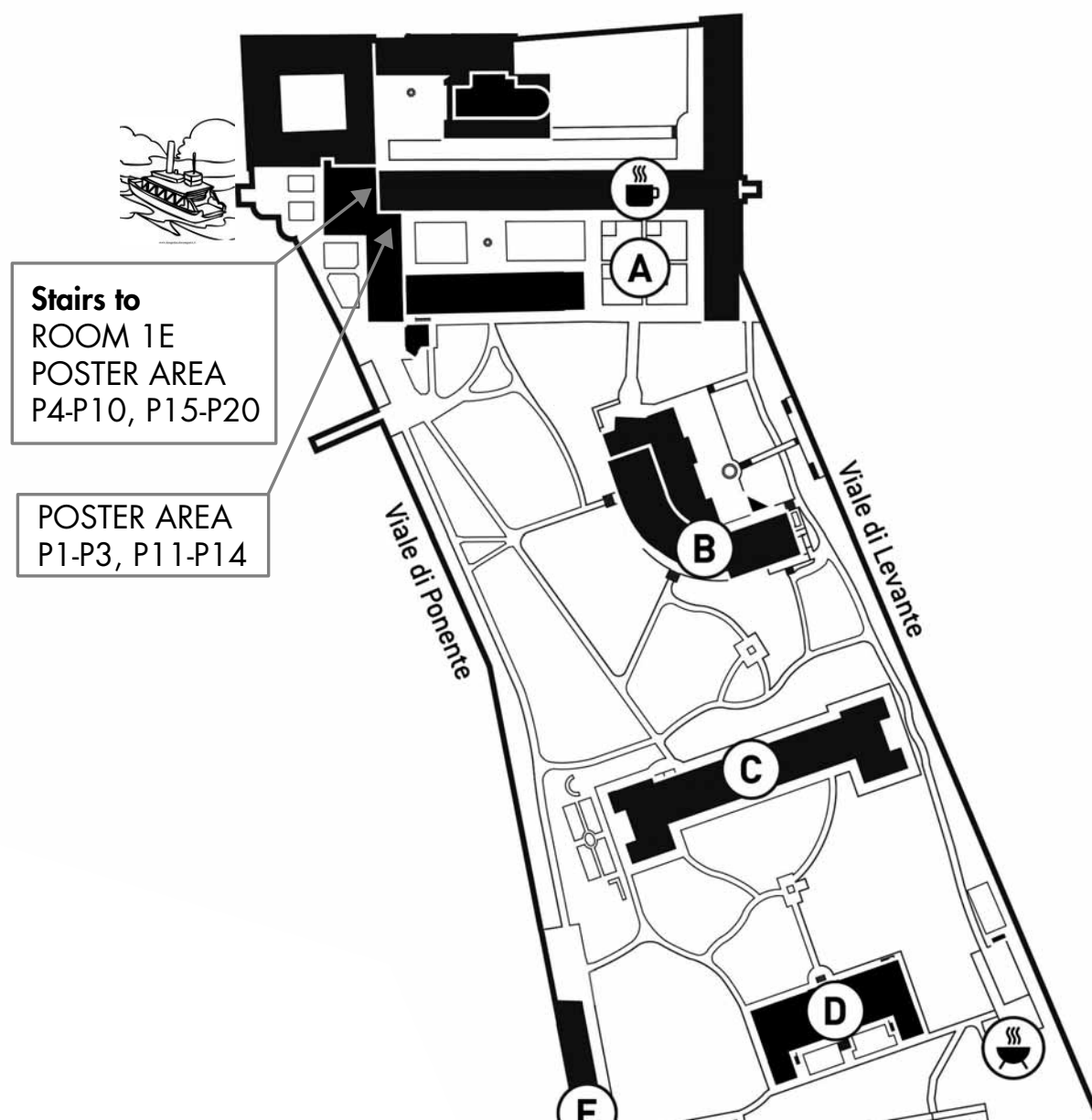
- P1** BIOMECHANICS
- P2** CLINICAL OUTCOME
- P3** GAIT & KINEMATICS
- P4** HIP & HIP ARTHROPLASTY
- P5** IMAGING
- P6** KNEE & KNEE ARTHROPLASTY
- P7** MUSCLE & TENDON
- P8** OSTEOPOROSIS
- P9** PERIPROSTHETIC OSTEOLYSIS
- P10** SHOULDER AND ELBOW

SET UP: Sunday, 13 October 9.00 - 10.00
REMOVAL: Monday, 14 October 17.00 - 19.00

POSTER SESSIONS 15-16 OCTOBER 2013

- P11** BIOMATERIALS
- P12** CARTILAGE & MENISCUS
- P13** CELL & MOLECULAR
- P14** INFECTION
- P15** OSTEOARTHRITIS
- P16** OSTEONECROSIS
- P17** SPINE
- P18** TISSUE ENGINEERING
- P19** TRAUMA
- P20** TUMOR

SET UP: Tuesday, 15 October 9.00 - 10.00
REMOVAL: Wednesday, 16 October after 15.30



POSTER SESSIONS 13/14 OCTOBER

P1 BIOMECHANICS

- P1.1** Three-dimensional assessment of the mechanical axis crossing point of the knee joint line in the weight-bearing standing position in healthy elderly subjects
A. Ariumi, T. Sato, S. Watanabe, O. Tanifuji, G. Omori (Nagaoka, Niigata - Japan)
- P1.2** Facet joint stiffness response to loading frequencies
R. Chung, E. Noonan, H. Sidoti, A. Valdevit, A. Ritter, T. Errico (Hoboken, New York - USA)
- P1.3** The development of a pseudosynovial fluid analogue for use in wear testing orthopaedic implants
L. Grover, A. Smith (Birmingham, Huddersfield - United Kingdom)
- P1.4** Post-cam mechanism functions during kneeling but does not function during stair-climbing in a posterior-stabilized total knee arthroplasty
S. Hamai, K. Okazaki, T. Shimoto, H. Higaki, H. Mizu-Uchi, Y. Tashiro, Y. Iwamoto (Fukuoka - Japan)
- P1.5** Improvement of postural balance after total knee arthroplasty in early postoperative period
H. Tanikawa, K. Harato, K. Okuma, T. Nagura, K. Takeda (Saitama, Kawasaki, Shinjyuku - Japan)
- P1.6** Conduction of whole body vibration - Effect of vibration frequency
Y. Tsukahara, T. Shinjo, K. Azuma, J. Iwamoto, H. Matsumoto, K. Iwashita (Tokyo, Kanagawa - Japan)
- P1.7** Plate-bone contact and cyclically loaded locking plates
R. Rotne, N. Bertollo, W. Walsh, N. Dhand, K. Voss, K. Johnson (Sydney - Australia)
- P1.8** Comparing stress distributions between a single large fragment and two small fragment locking plates for fixation of humeral shaft fractures
V. Kosmopoulos, A. Nana (Fort Worth - USA)
- P1.9** An improved six degree of freedom velocity-based force control method for dynamic flexibility testing in robotic biomechanics
I. Lawless, B. Ding, B. Cazzolato, J. Costi (Adelaide - Australia)
- P1.10** Changes of support moments in patients with bilateral medial knee osteoarthritis
Y.-H. Liu, T.-M. Wang, T.-W. Lu (Taipei - Taiwan)
- P1.11** Significant reduction of abnormal forces and impulses of the lesser toes in patients after chevron osteotomy for hallux valgus
C.-C. Kuo, H.-C. Hsu, T.-W. Lu (Taipei, Taichung - Taiwan)
- P1.12** The effects of dorsally angulation deformity of distal radius on distal radioulnar joint stability: a biomechanical study
T. Nakamura, T. Saito, N. Matsumura, T. Iwamoto, K. Sato, Y. Toyama (Tokyo - Japan)
- P1.13** Effects of kneeling after PCL retaining total knee arthroplasty on patellofemoral joint biomechanics
N. Takenaka, T. Matsushita (Tokyo - Japan)

- P1.14** Evaluation of an examination maneuver for ulnocarpal instability: a biomechanical study
E. Ouellette, C. Dy, A.-L. Makowski, E. Milne, D. Kaimrajh, L. Latta (Coral Gables, New York, Miami Beach, Miami - USA)
- P1.15** Peripheral TFCC tears cause ulnocarpal instability: a biomechanical study
E. Ouellette, C. Dy, A.-L. Makowski, E. Milne, L. Latta (Coral Gables, New York, Miami Beach, Miami - USA)
- P1.16** Triquetral rotational index: a measure of ulnocarpal instability
E. Ouellette, C. Dy, A. Trionfo, A.-L. Makowski, E. Milne, L. Latta (New York, Camden, Miami Beach - USA)
- P1.17** Biomechanical isokinetic evaluation of low back pain in workers
A. Perissinotto, A. Lorusso, P. Barbierato (Venice - Italy)
- P1.18** Experimental isokinetic tests in the biomechanical knee evaluation in workers and athletes
A. Perissinotto, N. Petrone (Venice, Padua - Italy)
- P1.19** Does a cleaning procedure in bone impaction grafting compromise the mechanical properties of the bone chips? A comparison of a newly developed cleaning procedure for untreated allografts used in hip arthroplasty
D. Putzer, A. Wurm, D. Coraca-Huber, W. Schmölz, M. Nogler (Innsbruck - Austria)
- P1.20** Numerical approach to analyse implant parameters for electro-stimulation therapy in the human femoral head
Y. Su, R. Souffrant, D. Kluess, M. Ellenrieder, U. van Rienen, W. Mittelmeier, R. Bader (Rostock - Germany)
- P1.21** Validation of 3D knee kinematic analysis assessed by surgical transepicondylar axis
O. Tanifuji, T. Sato, H. Yamagiwa, S. Watanabe, R. Katsumi, G. Omori (Niigata - Japan)
- P1.22** The theoretical and experimental stress analyses on the lumbar vertebrae with and without hemi-spodyllysis
T. Matsumoto, A. Kojima (Wakayama, Osaka - Japan)
- P1.23** Pressure investigation in transverse patellar fracture fixation with two different tension band wiring techniques. A biomechanical study
I. Zderic, T. Nicolino, M. Windolf, B. Gueorguiev (Davos - Switzerland)

P2 CLINICAL OUTCOME

- P2.1** Streamling total hip & knee replacement instrument sets: functional & cost-effective?
A. Aframian, J. Preston, G. Green, K.S. Khor, P. Vinayakam, P.J.S. Jeer (Margate - United Kingdom)
- P2.2** Prediction of functional outcome of lower limb salvage surgery using musculoskeletal modeling
V. Carbone, S. Schurink, R. Fluit, M. van der Krogt, I. van der Geest, B. Koopman, N. Verdonschot (Enschede, Amsterdam, Nijmegen - The Netherlands)

POSTER SESSIONS 13/14 OCTOBER

- P2.3** Female athlete triad awareness among residents and attendings across specialties
C. Logan, E. Curry, K. Ackerman, K. McInnis, E. Matzkin (Boston - USA)
- P2.4** FORCE-TJR: TJR function and outcomes research for comparative effectiveness in US national cohort
P. Franklin, J. Allison, W. Li, L. Harrold, B. Barton, B. Snyder, M. Rosal, N. Weissman, D. Ayers (Worcester - USA)
- P2.5** The Forgotten Joint Score: Item bank development for computer-adaptive assessment of joint awareness in patients after hip, knee and shoulder surgery
K. Giesinger, N. Kesterke, B. Jost, B. Holzner, J.M. Giesinger (St. Gallen - Switzerland, Innsbruck - Austria)
- P2.6** Minimal important change or difference for the Oxford Hip and Knee Scores following joint replacement surgery
D. Beard, J. Dawson, K. Harris, H. Doll, D. Murray, A. Carr, A. Price (Oxford - United Kingdom)
- P2.7** Using the Oxford Knee Score to monitor the progression of knee osteoarthritis: a validation study
K. Harris, J. Dawson, L. Jones, D. Beard, A. Price (Oxford - United Kingdom)
- P2.8** Use of pre-designed patient-specific guide for total ankle arthroplasty in cases of rheumatoid arthritis
M. Hirao, H. Tsuboi, S. Akita, S. Ohshima, Y. Saeki, K. Ebina, H. Yoshikawa, T. Murase, T. Ishii, J. Hashimoto (Kawachinagano, Suita - Japan)
- P2.9** Impact of biological and structural factors to the mid-term outcome and quality of life in fracture neck of femur patients. A Sri Lankan Study with compare to a cohort in England
L.K.D.C.R. Karunathilaka, N. Pinto, S.S. Deo, F. Chan, K. Rathnayake (Colombo - Sri Lanka, Lancashire - United Kingdom)
- P2.10** In-patient trends and complications after total ankle arthroplasty in the United States
H. Zhou, J. Shaw, X. Li, A. Patel (Worcester, Boston - USA)
- P2.11** The FIFA 11+ program is effective in preventing injuries in elite male basketballers: A cluster randomised controlled trial
M. Loppini, U.G. Longo, A. Berton, N. Maffulli, V. Denaro (Rome - Italy, London - United Kingdom)
- P2.12** How the Oxford Hip Scores (OHS) differ if scored at 3 week interval? - Can we decide on intervention based on the OHS
S.P. Morapudi, R. Zhou, K. Pearson, K. Barnes (Macclesfield - United Kingdom)
- P2.13** Distribution and growth of orthopaedic residency positions in the United States
V. Moretti, A. Mejia (Chicago - USA)
- P2.14** National trends and patient outcomes for hip resurfacing
V. Moretti, A. Gordon (Chicago - USA)

- P2.15** National trends and patient outcomes for total ankle arthroplasty
V. Moretti, A. League (Chicago - USA)

- P2.16** Physical activity of total joint arthroplasty patients at long-term follow-up compared to healthy controls
R. Senden, L. Lindelauf, B. Linssen, I.C. Heyligers, B. Grimm (Heerlen - The Netherlands)

P3 GAIT & KINEMATICS

- P3.1** Gait progressions in operated Shatzker VI tibial plateau fractures
D. Crisan, D.-I. Stoia, R. Prejbeanu, D. Vermesan, M. Toth-Tascu (Timisoara - Romania)
- P3.2** In vivo kinematics of the PFC sigma rotating platform cruciate retaining total knee arthroplasty
K. Iwamoto, T. Tomita, T. Yamazaki, A. Sasaki, Y. Kii, K. Futai, T. Miyamoto, M. Fujii, H. Yoshikawa, K. Sugamoto (Suita, Sapporo, Osaka, Takarazuka - Japan)
- P3.3** A preliminary report about the evidence based exercise therapy aided by robot
K. Kitaoka, A. Kabe, Y. Hayashi (Kochi, Tokorozawa - Japan)
- P3.4** Evaluation of gait motion trajectories of newly developed moving system with gait rehabilitation function
B. Lee, L. Song, H. Choi, K. Chun (Seoul, Cheonan - Korea)
- P3.5** Biomechanical changes of the lower limb joints in patients with anterior cruciate ligament deficiency during obstacle-crossing
H.-C. Hsu, T.-W. Lu, S.-W. Hong (Taichung, Taipei - Taiwan)
- P3.6** Functional gait assessment after total knee replacement using inertial measurement units
I. McCarthy, J. Rahman, Q. Tang, J. Miles (London - United Kingdom)
- P3.7** Innovative approach for gait pattern description in hip osteoarthritic patients
C. Meyer, K. Corten, D. Monari, J.-P. Simon, K. Desloovere (Pellenberg, Leuven - Belgium)
- P3.8** Center of pressure tracking evaluation in young and worker subjects using plantar orthoses and protective shoes
A. Perissinotto, A. Forestiero, M. Barzan, M. Pesce, C. Benzoni (Venice, Padua - Italy)
- P3.9** Floor pressure distribution asymmetry index variations in normal subjects, patients after orthotic therapy and low back pain workers
A. Perissinotto, E. Annunziata, C. Benzoni, C. Elia (Venice - Italy)
- P3.10** Gait biomechanics during downhill walking following total knee arthroplasty
S. Reynolds, M. Lamontagne, G. Dervin, G. Mantovani (Ottawa - Canada)

POSTER SESSIONS 13/14 OCTOBER

P3.11 Differences in plantar loading between orthosis with and without lateral wedge
K. Trieb (*Wels - Austria*)

P3.12 Comparable study of hip kinematics between roentgen stereophotogrammetric analysis and a three dimensional gait analyse system using Lundberg skinmarker- and a cluster model
R. Zügner, J. Kärrholm, R. Tranberg (*Göteborg - Sweden*)

P4 HIP & HIP ARTHROPLASTY

P4.1 Cemented versus uncemented fixation in total hip replacement: a systematic review & meta-analysis
A. Abdulkarim, P. Ellanti, N. Motterlini, T. Fahey, J.M. O'Byrne (*Dublin - Ireland*)

P4.2 The use of hammering sound to objectively predict micro-fracture in bones in rasping: a study on animal bone
A. Abdulkarim, A. Elsibaei, B. Jackson, D. Riordan, J. Rice (*Kerry - Ireland*)

P4.3 The use of sound analysis to guide femoral reaming in uncemented total hip arthroplasty: a new concept
A. Abdulkarim, A. Elsibaei, B. Jackson, D. Riordan, J. Rice (*Kerry - Ireland*)

P4.4 Prophylaxis for venous thromboembolism in neck of femur fracture: a re-audit
A. Aframian, K.S. Khor, G. Green, P. Vinayakam, P.J.S. Jeer (*Margate - United Kingdom*)

P4.5 Trabecular metal reconstruction of severe acetabular defects
A. Aframian, V. Goulidakis, S. Sinha, R. Slack (*Margate - United Kingdom*)

P4.6 A randomized controlled trial of a cemented vs. cementless femoral component for metal-on-metal hip resurfacing: a bone mineral density study
A. Tice, J.-J. Ryu, P. Kim, L. Dinh, P. Beaulé (*Ottawa - Canada*)

P4.7 Ion release after modular neck primary total hip replacement: a prospective longitudinal study
P. Beaulé, P. Kim, R. Feibel, P. Thurston, L. Dinh (*Ottawa - Canada*)

P4.8 A randomized, controlled study of ReCap, Magnum and C2a
A. Borgwardt, Li. Borgwardt, Lo. Borgwardt, B. Zerahn, I. Hamsa, S. Ribøl-Madsen (*Frederiksberg, Copenhagen, Hillerød, Herlev - Denmark*)

P4.9 Occurrence of post operative complications of cemented versus uncemented total hip replacements
H. Bryan (*Manchester - United Kingdom*)

P4.10 Long term results of the rotational acetabular osteotomy - Over 10 year follow up
D. Chiba, N. Yamada, Y. Kuwahara, A. Noro, M. Tanaka, E. Itoi (*Sendai, Kesenuma - Japan*)

P4.11 Early complications and failure of the modular rejuvenate femoral implant
R. Cohen, N. Skrepnik (*Tucson - USA*)

P4.12 Five-year, prospective, randomized controlled, clinical, radiographic and DXA results of a composite femoral component for THA
R. Cohen, N. Skrepnik, S. Slagis, L. Housman, J. Katz, J. Maltry, R. Eberle (*Tucson - USA*)

P4.13 Cemented polished double taper stems in patients younger than 40 with pathologies other than primary osteoarthritis
K. Costi, L.B. Solomon, A. MacDonald, M. McGee, D. Howie (*Adelaide - Australia*)

P4.14 Fretting and corrosion damage in modular total hip arthroplasty
M. Cross, R. Jenabzadeh, S. Munir, A. Sokolova, C. Esposito, D. Molloy, B. Zicat, W.K. Walter, W.L. Walter (*New York - USA, Sydney - Australia*)

P4.15 Use of chromium nitride coating for the reduction of cobalt release and metallic wear in metal-on-polyethylene bearings
D. de Villiers, S. Banfield, J. Housden, A. Kinbrum, A. Traynor, S. Collins, J. Shelton (*London, Cambridge, Cirencester - United Kingdom*)

P4.16 A new radiographic technique for precisely measuring wear of uncemented XLPE acetabular cups
B. Derbyshire, M. Porter (*Wigan - United Kingdom*)

P4.17 Management of acetabular labral tears and impingement lesions of the hip: a seven year experience in a District General Hospital
J. Dhaliwal, R. Dhir, T. Greer (*London - United Kingdom*)

P4.18 Acetabular placement angles determined by pelvic local landmarks
N. Dong, J. Nevelos, M. Nogler, T. Lovell (*Mahwah, Spokane - USA, Innsbruck - Austria*)

P4.19 Serum 8-hydroxydeoxyguanosine and circulating DNA assay in patients with metal-on-metal resurfacing implants
C. Fotia, L. Savarino, M. Greco, N. Baldini (*Bologna - Italy*)

P4.20 Preoperative simulation images of the femoral neck-cut plane can be used to improve the control of femoral stem anteversion during primary cementless total hip arthroplasty
H. Fujii (*Yamaguchi City - Japan*)

P4.21 Effect of implant modularity on metal ion levels in patients with the Birmingham hip bearing
R. Gwyn, S. Mahmood, D. Woodnutt, M. Maheson, A. John, S. Jones (*Swansea - United Kingdom*)

P4.22 Research synthesis of recommended acetabular cup orientations for total hip arthroplasty
C. Harrison, A. Thomson, S. Cutts, P. Rowe, P. Riches (*Glasgow - United Kingdom*)

POSTER SESSIONS 13/14 OCTOBER

- P4.23** Use of cemented calcar replacement total hip arthroplasty in the treatment of old trochanteric fractures with bone loss
M.S.M. Hassan (Ismailia - Egypt)
- P4.24** An in-vitro investigation of shear strength of cement on cement mantles
T. Holsgrove, A. Pentlow, A. Miles (Bath, Bristol - United Kingdom)
- P4.25** Outcomes of uncemented total hip replacements for displaced femoral neck fractures in the elderly.
A. Mahmoud, J. Rutherford-Davies, G. Kumar (Liverpool - United Kingdom)
- P4.26** New techniques using ultra-high molecular weight polyethylene tapes for the situation of bone repair in total hip arthroplasty.
Y. Kuroda, H. Akiyama, K. So, S. Matsuda (Kyoto - Japan)
- P4.27** Evaluation of hip internal and external rotation range of motion as an injury risk factor for hip, abdominal and groin injuries in professional baseball
X. Li, M. Thompson, C. Dawson, R. Ma, J. Nguyen, S. Coleman (Boston, New York - USA)
- P4.28** Examination of failure mechanisms of burst ceramic liners with an apical engagement feature
T. Marriott, M. Elliott, I. Khan (Swindon, Bridgend - United Kingdom)
- P4.29** Does reduced movement restrictions and use of assistive devices affect rehabilitation outcome after total hip replacement? A non-randomized, controlled study in 365 patients with six week follow-up
L.R. Mikkelsen, M.K. Petersen, S. Mikkelsen, K. Soballe, I. Mechlenburg (Silkeborg, Aarhus - Denmark)
- P4.30** The role of magnetic resonance tomography in the assessment of the risk factors and consequences in cases of the labral tear in the coxofemoral joint
O. Medvedeva, V. Fokin, G. Trufanov (St. Petersburg - Russia)
- P4.31** Similar risk of early re-revision between trabecular metal and porous titanium cups. Analysis of 1504 first-time revisions in the Swedish Hip Arthroplasty Register
M. Mohaddes, J. Kärrholm (Gothenburg - Sweden)
- P4.32** Serum metal ion levels in bilateral and unilateral metal on metal (MoM) stemmed hip arthroplasty - Is there a significant difference?
S.P. Morapudi (Macclesfield - United Kingdom)
- P4.33** Patient characteristics affect anatomic location of the femoral artery about the hip
V. Moretti, M. Merz, S. Chmell (Chicago - USA)
- P4.34** Correlation between physical examination and questionnaires with radiographic parameters of cam FAI
M. Lamontagne, K.C.G. Ng, M. Labrosse, K. Dwyer, P. Beaulé (Ottawa - Canada)
- P4.35** Intra-operative quantitative evaluation of the soft tissue tension with a new gap tensor in total hip arthroplasty
Y. Okanou, T. Kawakami, M. Ikeuchi, M. Izumi, K. Aso, N. Sugimura, S. Takaya, T. Tani (Nankoku - Japan)
- P4.36** Evaluation of the effects of the Metha short stem on periprosthetic bone remodelling in total hip arthroplasties: results at 3 years and literature review
P.D. Parchi, G. Ciapini, I. Castellini, N. Piolanti, S. Maffei, M. Lisanti (Pisa - Italy)
- P4.37** Changes in bone mineral density of the acetabulum and femoral shaft after large head metal on metal total hip replacement, compared to resurfacing and standard THA. Two year results from a randomized study
J. Penny, O. Ovesen, K. Brixen, J.E. Varmarken, S. Overgaard (Odense, Naestved - Denmark)
- P4.38** Corrosion at the modular interfaces of metal femoral components in total hip replacements
J. Kim, R. Moore, M. Kraay, C. Rinnac (Cleveland - USA)
- P4.39** Physical activity and metal ion concentrations in patients with metal on metal hip prosthesis
J. Jelsma, R. Senden, I.C. Heyligers, B. Grimm (Heerlen - The Netherlands)
- P4.40** Quantity and quality of patient activity in total hip arthroplasty patients with low and high polyethylene wear rates
M. Lipperts, R. Senden, I.C. Heyligers, B. Grimm (Heerlen - The Netherlands)
- P4.41** How does interference fit affect the initial stability of the stem in a total hip replacement
F. Amirouche, G. Solitro (Chicago - USA)
- P4.42** The effect of irradiation on allograft in a sheep model of femoral impaction grafting
L. Solomon, S. Callary, J. Field, J. Costi, M. McGee, D. Campbell, D. Howie, R. Stanley, R. Stamenkov (Adelaide - Australia)
- P4.43** Image free navigation system reduce leg length discrepancy in total hip arthroplasty
R. Sugama, H. Ohashi, H. Yo, Y. Okajima, K. Ra (Osaka - Japan)
- P4.44** Sequential change in functional anteversion and abduction angle of acetabular component after total hip arthroplasty followed over 7 years
S. Takaya, Y. Okanou, T. Kawakami, M. Ikeuchi, M. Izumi, K. Aso, N. Sugimura, T. Tani (Nankoku - Japan)
- P4.45** Primary total hip arthroplasty with a spongy metal surface acetabular component for hip dysplasia
I. Takigami, Y. Ito, K. Matsumoto, N. Terabayashi, T. Ohno (Gifu - Japan)
- P4.46** Protrusion acetabuli and total hip arthroplasty (THA) in patients with Marfan Syndrome
S. Thakkar, J. Foran, S. Mears, P. Sponseller (Baltimore, Golden - USA)
- P4.47** Comparison of three different pseudotumour grading systems with a single cohort of metal-on-metal hip arthroplasty patients
W. van derWeegen, K. Brakel, R. Horn, D. Das, J. Willems, P. Pilot, R.G.H.H. Nelissen (Geldrop, Delft, Leiden - The Netherlands)

POSTER SESSIONS 13/14 OCTOBER

P4.48 Natural course of small pseudotumors after metal-on-metal hip arthroplasty. A longitudinal clinical study with MRI
W. van der Weegen, K. Brakel, R. Horn, H. Hoekstra, T. Sijbesma, P. Pilot, R.G.H.H. Nelissen (*Geldrop, Delft, Leiden - The Netherlands*)

P4.49 Validation of Nottingham Adjustment Scale Japanese version (NAS-J-Hip) in preoperative patients who undergo total hip arthroplasty
N. Watanabe, H. Iguchi, S. Murakami, Y. Nishimori, S. Taniguchi, T. Yamagami, G. Sagara, H. Sakurai, H. Okamoto, T. Otsuka (*Seto, Nagoya - Japan*)

P4.50 Why does a collared and anatomically shaped total hip stem yield successful clinical results?
S. Wright, N. Pincher, A. Miles (*Bath, Basingstoke - United Kingdom*)

P4.51 Stability of cemented triple tapered polished stem inserted with line-to-line technique
H. Yo, H. Ohashi, S. Iida, I. Minato, Y. Tanabe (*Osaka, Niigata - Japan*)

P4.52 Scanning electron microscope analysis of tapered neck from a case postoperatively affected by metal corrosion on the head-neck junction of total hip prosthesis
T. Yoshikawa, T. Yamakawa, J. Morikawa, M. Matsumoto, S. Hosoi, A. Sudo (*Ise, Suzuka, Tsu - Japan*)

P5 IMAGING

P5.1 Accuracy evaluation of a tracked C-arm system for intraoperative 2D & 3D quantitative assessments
S. Amiri, D.R. Wilson, B.A. Masri, C. Anglin (*Vancouver, Calgary - Canada*)

P5.2 MRI findings of the labrum in the hip with osteoarthritis: correlation with macroscopic and histological findings
S. Kanezaki, A. Yamamoto, S. Nakamura, T. Matsushita (*Tokyo - Japan*)

P5.3 Morphological findings of ACL remnants on 3DCT
K. Takazawa, N. Adachi, M. Ishifuro, M. Deie, A. Nakamae, T. Nakasa, G. Kamei, A. Eguchi, M. Ochi (*Hiroshima - Japan*)

P5.4 The relationship between the findings of the ultrasonography and the value of the stress radiography in chronic lateral ankle instability
M. Takeda, Y. Ishii, H. Noguchi, J. Sato (*Gyoda - Japan*)

P5.5 X-ray visualization of polymer-based implants with osseointegrating coatings
F. Tessarolo, G. Miori, N. Pace, G. Zappini, G. Nollo, M. Recla, A. Valentini (*Trento, Pergine Valsugana - Italy*)

P6 KNEE & KNEE ARTHROPLASTY

P6.1 An alternative method for predicting component sizes in total knee arthroplasty
A. Abdulkarim, S. Brady, K. Ryan, A. Amin, M. Donnelly, S. Dudeney (*Dublin - Ireland*)

P6.2 Prevalence of neuropathic pain after total knee arthroplasty
D. Boljanovic, S. Wright, R. Holtby, J. Murnaghan, H. Razmjou (*Toronto - Canada*)

P6.3 Effect of backside wear and bearing material on wear performance of rotating platform mobile bearings
A. Abdelgaied, C. Brockett, F. Liu, L. Jennings, Z. Jin, J. Fisher (*Leeds - United Kingdom*)

P6.4 Unicompartmental knee replacement implant survivorship with all-poly tibial component
D. Bruni, F. Iacono, M. Nitri, G. Raspugli, M. Marcacci (*Bologna - Italy*)

P6.5 A new surgical approach for TKA in Patients with inaccessible medullary canal
G. Castellarin (*Mantua - Italy*)

P6.6 Ambulation following total knee replacement
E.-Y. Chan, Y.-H. Teo, P. Assam, C.T.L. Ng, M. Fransen (*Sydney - Australia, Singapore - Singapore*)

P6.7 The influence of non-threaded length on the fixation properties of pedicle screw instrumentation
C.-J. Chiang, C.-H. Yang, C.-H. Chen, Y.-H. Tsuang, W.-P. Chen (*Taipei City - Taiwan*)

P6.8 An elevated joint line after TKA leads to increased mid-flexion laxity
M. Cross, G. Klingenstein, C. Plaskos, X.A. Li, D. Nam, S. Lyman, A. Pearle, D. Mayman (*New York, Taunton - USA*)

P6.9 Do younger TKR patients have similar disability at the time of surgery as older adults? Lessons from FORCE-TJR
L. Harrold, W. Li, J. Allison, P. Noble, D. Ayers, P. Franklin (*Worcester, Houston - USA*)

P6.10 Effect of TKA femoral implant design on tibial insert contact stress at high flexion
B. Gao, L. Angibaud (*Gainesville - USA*)

P6.11 Unicompartmental knee implant wear test without cruciate ligament resistance
A. Gardner, L. Angibaud, N. Stroud (*Gainesville - USA*)

P6.12 Dynamic compression-shear loading of unicompartmental knee arthroplasty in human tibiae - Influence of the applied cementing technique on the interface stability
T.M. Grupp, M.F. Pietschmann, M. Holderied, C. Scheele, C. Schroeder, C. Schilling, V. Jansson, P.E. Mueller (*Tuttlingen, Munich - Germany*)

P6.13 Evaluation of a new computer assisted guidance system
N. Hohl, G. Giordano, M. Brax, S. Polakovic, R. Boiardo (*Toulouse, Haguenau, La Tronche - France, Newark - USA*)

POSTER SESSIONS 13/14 OCTOBER

- P6.14** Revision knee arthroplasty for femoral component malrotation: clinical and radiological outcomes
E. Smith, Q. Choudry, S. Ali, G. McLauchlan (Preston - United Kingdom)
- P6.15** Locus of femoral tunnels for anterior cruciate ligament reconstruction in passive range of motion of the knee
H. Jung, S. Koo, Y.J. Cha, H.-J. Lee, M.-K. Kim, S.-H. Chang (Seoul - Korea)
- P6.16** Patient specific guiding in Oxford unicompartmental knee arthroplasty. Our first experience in 20 knees compared with 20 conventional knees
B. Kerens, M. Schotanus, B. Boonen, N. Kort (Antwerp - Belgium, Sittard, Venlo - The Netherlands)
- P6.17** Acute anterior cruciate ligament tear is healed naturally under control of the abnormal joint movement?
K. Takayanagi, N. Kanemura, T. Kokubun, K. Murata, T. Fujino, H. Maejima, H. Ihara (Kosigaya, Adachi, Kitakyusyu - Japan)
- P6.18** Ceramic femoral component fracture in total knee arthroplasty: an analysis using fractography, fourier-transform infrared microscopy, contact radiography and histology
A. Krueger, G. Singh, T. Beil, B. Feuerstein, W. Ruether, C. Lohmann (Magdeburg, Hamburg - Germany, Singapore - Singapore)
- P6.19** Alteration patterns of contact pressure and microstrain from extension to deep flexion in newly designed total knee arthroplasty (TKA)
Y.W. Jang, P. Han, O.Si. Yoo, J.S. Kim, H.-S. Kim (Seoul, Cheonan, Wonju - Korea)
- P6.20** The profile of the cut tibia. Is resection depth, proportionately larger for smaller tibias, responsible for change in profile?
C. Lowry, A. Traynor, S. Collins (Cirencester - Ireland)
- P6.21** Effects of mobile-bearing knees on antero-posterior dynamic stability during sit-to-stand
T.-W. Lu, H.-C. Hsu, C.-C. Lin, T.-Y. Tsai, M.-Y. Kuo (Taipei, Taichung - Taiwan)
- P6.22** Postoperative knee kinematics of TKA affect knee range of motion and clinical results
T. Majima, Y. Nishio, T. Onodera, Y. Kasahara, S. Takai (Nasu-Shiobara, Sapporo, Tokyo - Japan)
- P6.23** Possible involvement of platelet-derived microparticles in pre-donated autologous blood on occurrences of venous thromboembolism and pulmonary thromboembolism after total joint arthroplasty in lower extremity
H. Manabe, M. Morimoto, N. Sato, T. Sasa, T. Inoue, T. Hirano, T. Tonai (Kagawa - Japan)
- P6.24** The influence of flexion-extension gap and thickness of polyethylene insert on knee extension range of motion after total knee arthroplasty
M. Aratake, N. Mitsugi, N. Taki, K. Shinohara, H. Ota (Yokohama - Japan)
- P6.25** Transdermal fentanyl patch improves postoperative pain relief and promotes early functional recovery in patients undergoing primary total knee arthroplasty
K. Matsumoto, S. Matsumoto, Y. Ito, I. Takigami, N. Terabayashi, H. Iida (Gifu - Japan)
- P6.26** Regeneration of the anterior cruciate ligament using a novel silk-fiber based scaffold device
A. Teuschl, S. Nürnberger, P. Heimerl, H. Redl, T. Nau (Vienna - Austria)
- P6.27** An in vivo biomechanical characteristics of soft-tissue stiffness in osteoarthritic knees undergoing posterior-stabilized total knee arthroplasty
H. Nochi, S. Abe, T. Ruike, H. Kobayashi, H. Ito (Asahikawa - Japan)
- P6.28** Modified axial radiography technique for evaluation of the coronal alignment of the knee while patients are sitting with flexed knees
H. Nochi, S. Abe, T. Ruike, H. Kobayashi, H. Ito (Asahikawa - Japan)
- P6.29** The relationships between rotational alignment of the femoral component to the flexion gap balance and to the tibial mechanical axis when a balanced gap technique is used in posterior-stabilized total knee arthroplasties
H. Nochi, S. Abe, T. Ruike, H. Kobayashi, H. Ito (Asahikawa - Japan)
- P6.30** The effect of deep knee flexion at the early postoperative stage and height of patellar on incidence of patellar clunk syndrome
A. Osawa, H. Kanazawa, K. Yoshida, Y. Yamamoto, Y. Maruyama (Chiba - Japan)
- P6.31** Total knee arthroplasty: do custom cutting blocks improve the clinical outcome or implant positioning precision?
F. Vauclair, N. Fleury, K. Aminian, B. Jolles (Lausanne - Switzerland)
- P6.32** Benefit of the 3D matching evaluation method using the CT in TKA before and after operation
A. Sakka (Ube - Japan)
- P6.33** Soft tissue envelop and collateral ligament strain after TKR for different rotation of the femoral component
O. Kessler, P. Shantanu, D. D'Lima (Zurich - Switzerland, La Jolla - USA)
- P6.34** A comparison of radiofrequency and microwave hyperthermia on knee osteoarthritis
K. Takahashi, S. Hashimoto, H. Kurosaki, Y. Mochizuki, H. Watanabe, Y. Satake, H. Nakamura, S. Takai (Tokyo - Japan)
- P6.35** The posterior condyle thickness of femoral component in high-flexion posterior stabilized total knee arthroplasty affected the extension and flexion gap
M. Tamaki, T. Miyamoto, T. Ueda (Osaka - Japan)
- P6.36** The use of synvisc-one in the treatment of symptoms of knee osteoarthritis, a District General Hospital experience
R. Thakrar, J. Robinson, S. Xu, K. Bell (Birmingham - United Kingdom)

POSTER SESSIONS 13/14 OCTOBER

P6.37 Quantitative index in making the decision to apply preventive anticoagulant therapy in osteoarthritis patients undergoing total knee arthroplasty
S. Tsuji, A. Kobayashi, T. Tomita, T. Iwai, M. Hamada, K. Sugamoto, H. Yoshikawa (Osaka - Japan)

P6.38 2D-3D image registration using arthroscopic images for computer assisted arthroscopic surgery
S. Watanabe, G. Omori (Niigata - Japan)

P6.39 When does knee range of motion reach a plateau after total knee arthroplasty
Z. Zhou, A. Yew, S.-L. Chia, S.J. Yeo (Singapore - Singapore)

P6.40 Postoperative component alignment parameters following total knee arthroplasty with patient-specific instrumentation
N. Bertollo, R. Sorial, A. Low, W. Walsh (Sydney - Australia)

P7 MUSCLE & TENDON

P7.1 Acupuncture treatment improves spiral wire immobilization-induced skeletal muscle atrophy and reduces Ca²⁺ ATPase (SERCA1) expression
S. Minamisawa, T. Fukubayashi, A. Onda (Tokyo, Saitama - Japan)

P7.2 Low-level laser therapy with wrist splint in the treatment of carpal tunnel syndrome in Asian patients: a double-blinded randomized controlled trial
Y. Fusakul, S. Thiengwittayaporn, T. Aranyavalai, P. Saensri (Bangkok - Thailand)

P7.3 Downregulation of matrix metalloproteinases by adenovirus-relaxin in the dupuytren myofibroblasts
S.-I. Lee, H.-J. Kim, B.-H. Lee, H.-M. Lee, S.-H. Moon, Y.-M. Kang (Seoul - Korea)

P7.4 Wnt10b expression and fatty degeneration in supraspinatus muscle of the rabbit after surgical repair
Y. Kuwahara, K. Kishimoto, E. Itoi (Sendai City - Japan)

P7.5 Length change of the bone-patellar tendon-bone grafts in ACL Reconstruction: comparison between isometric and anatomic reconstruction techniques
Y. Take, K. Shino, S. Nakagawa, R. Ozaki, T. Mae (Osaka - Japan)

P8 OSTEOPOROSIS

P8.1 Protection by 17 β -estradiol against glucosamine-induced pancreatic β -cell dysfunction via calcium influx and endoplasmic reticulum stress
C.-H. Chen, L. Kang, F.-M. Chang, C. Juei-Tang (Kaohsiung, Tainan - Taiwan)

P8.2 Clinical results after switching to minodronic acid hydrate in patients with osteoporosis responding poorly to treatment
T. Ishii, C. Nishimura, M. Ono, M. Hirao, H. Tsuboi, S. Akita, J. Hashimoto, M. Saito (Osaka - Japan)

P8.3 A retrospective analysis of the predictive value of FRAX in a sample of elderly subjects in Singapore
S.L. Low, B. Tan, W. Wang, S.D. De (Singapore - Singapore)

P9 PERIPROSTHETIC OSTEOLYSIS

P9.1 Can we determine the risk for periprosthetic osteolysis from cytokine expression-pattern of stimulated peripheral blood mononuclear cells (PBMC)?
P. Schneiderova, T. Tomankova, F. Mrazek, E. Kriegova, J. Gallo (Olomouc - Czech Republic)

P9.2 Low expression of TLR-1, -2, -4 and IL-2, -2R, -10, -10R in pseudosynovial tissues obtained from aseptically failed total hip and knee arthroplasty
T. Tomankova, R. Fillerova, E. Kriegova, P. Luzna, J. Gallo (Olomouc - Czech Republic)

P9.3 Semaphorin-3a and neuropilin-1 expression at sites of peri-implant bone loss
S. Saad, K. Dharmapatni, T. Crotti, M. Cantley, D. Findlay, A. Gerald, D. Haynes (Adelaide - Australia)

P9.4 Characterization of macrophage polarizing cytokines in the aseptic loosening of total hip replacements
E. Jämsen, Y. Kontinen, J. Pajarinen, V.-P. Kouri, A. Cör (Koper - Slovenia)

P9.5 Lactic acid-based polymers for local drug delivery can negatively affect the bone-implant interface and impair implant fixation
M. Sorensen, J. Baas, J. Barckman, J.E. Bechtold, K. Søballe (Aarhus - Denmark, Minneapolis - USA)

P10 SHOULDER & ELBOW

P10.1 Extracorporeal shockwave therapy improves short-term functional outcomes of shoulder adhesive capsulitis
C.-Y. Chen, C. Cheng, Y.-H. Tsuang, C.-X. Chen, C.-J. Chiang (Taipei City - Taiwan)

P10.2 How to enhance results of hemiarthroplasty for proximal humerus fracture? Anatomical and clinical multicenter study to define anatomy landmarks and new jig
T. Lascar, L. Obert (Monaco - Monaco, Besançon - France)

P10.3 The effect of muscle wrapping on modeling of reverse shoulders
M. Hamilton, P. Diep, C. Roche, P.-H. Flurin, T. Wright, J. Zuckerman, H. Routman (Gainesville, New York, Atlantis - USA, Bordeaux - France)

P10.4 Cytotoxic effects of corticosteroids, lidocaine and hyaluronic acid on fibroblasts derived from torn human rotator cuff tendon
H. Nakamura, M. Gotoh, H. Shibata, T. Kanazawa, Y. Mitsui, K. Ohta, N. Shiba (Kurume - Japan)

P10.5 Does the use of an inferiorly offset glenosphere in reverse shoulder arthroplasty reduce scapular notching? A radiographic and functional outcome analysis
J. Dines, X. Li, R. Warren, E. Craig, D. Dines (New York, Boston - USA)

POSTER SESSIONS 13/14 OCTOBER

- P10.6** In-patient trends and complications after total elbow arthroplasty in the United States
H. Zhou, J. Shaw, X. Li, M. Price (*Worcester, Boston - USA*)
- P10.7** MicroCT evaluation of trabecular bone architecture and characteristics in the different regions of the glenoid
X. Li, P. Williams, E. Curry, D. Choi, E. Craig, R. Warren, L. Gulotta, T. Wright (*Boston, New York - USA*)
- P10.8** The safe zone for avoiding suprascapular nerve injury in bone block procedures: a cadaveric study
M. Loppini, U.G. Longo, F.F. Campos, A. Lanotte, G. Salvatore, N. Maffulli, V. Denaro (*Rome - Italy, Madrid - Spain, London - United Kingdom*)
- P10.9** Comparison of two humeral head resurfacing implants. 2 year results of a randomized controlled clinical trial
I. Mechlenburg, T. Klebe, K. Dossing, K. Soballe, M. Stilling (*Aarhus, Silkeborg, Viborg - Denmark*)
- P10.10** The influence of low-intensity pulsed ultrasound for human rotator cuff derived cells
I. Nagura, T. Kokubu, T. Niikura, Y. Mifune, A. Inui, T. Muto, Y. Harada, F. Takase, M. Kurosaka (*Kobe - Japan*)
- P10.11** Relationship between the backward arm raising and the range of motion of glenohumeral joints in patients with rotator cuff tear
S. Ono, M. Shibahara, D. Mori, T. Nakamura, M. Kobayashi, N. Funakoshi, F. Yamashita (*Kyoto, Akashi - Japan*)
- P10.12** Arthroscopic elbow synovectomy in rheumatoid arthritis: comparison with intra-articular steroid injection
V. Shankar, P. Sharma, R. Mittal (*New Delhi - India*)
- P10.13** Comparison study of bone mineral density in the proximal humeral head with rotator cuff tear
M. Shibahara, H. Tanaka, H. Tachihara, S. Ono (*Akashi City, Kyoto - Japan*)
- P10.14** Is coracoid process large enough for the Latarjet procedure in Asian? Measurement by 3-dimensional computed tomography
H. Takahashi, N. Yamamoto, H. Nagamoto, D. Kurokawa, H. Sano, K. Himori, M. Tanaka, K. Sato, E. Itoi (*Sendai - Japan*)
- P10.15** Increased blood flow of the anterior humeral circumflex artery correlated with night pain in rotator cuff tear and idiopathic frozen shoulder patients
N. Terabayashi, T. Watanabe, K. Matsumoto, I. Takigami, Y. Ito, T. Ohno (*Gifu - Japan*)
- P10.16** Three-Dimensional analysis of acromial morphology by using the proximity mapping technique: comparison of subjects with and without rotator cuff tear
Y. Fujisawa, T. Mihata, T. Murase, K. Sugamoto, M. Neo (*Osaka, Takatsuki, Suita - Japan*)

Notes

POSTER SESSIONS 15/16 OCTOBER

P11 BIOMATERIALS

- P11.1** Apatite-forming ability of the new Ti-Nb-Sn alloy with low Young's modulus via anodic oxidation and hot water treatment
A. Noro, E. Itoi, N. Yamada, N. Masahashi, S. Hanada (Sendai - Japan)
- P11.2** Is Vitamin E a plasticizing agent for UHMWPE?
N. Hope, A. Bellare (Boston - USA)
- P11.3** The relative efficacy of phenolic antioxidants on crosslinking and oxidative stability of irradiated UHMWPE
N. Hope, A. Bellare (Boston - USA)
- P11.4** Osteoblast-like cell attachment on stoichiometric and silicate substituted hydroxyapatite porous granules is regulated by a complex interaction between chemistry, strut porosity and Fn concentration
V. Castagna, A. Sullivan, K. Hing (London - United Kingdom)
- P11.5** Controlling the phenotype of mesenchymal stromal cells in vitro by adhesion to chemically-engineered ECM-like surfaces
G. Ciapetti, C. Fotia, G.M. Messina, B. Bochicchio, M. Vassalli, G. Marletta, N. Baldini (Bologna, Catania, Potenza, Genoa - Italy)
- P11.6** Population based design validation of subcutaneous bone anchored hearing aid implant
J. Deckx, G. Björn, J. Frimanson, S. De Boodt, L. Vigneron (Leuven - Belgium, Mölnlycke - Sweden)
- P11.7** In vitro evaluation of resorption activity of human osteoclasts on CaP-based cements
G. Di Pompo, G. Ciapetti, S. Avnet, E.B. Montúfar, M.P. Ginebra, N. Baldini (Bologna - Italy, Barcelona - Spain)
- P11.8** Improved microarchitecture of concentric gap mass and enhanced implant fixation in sheep with a synthetic cell-binding peptide bone substitute
M. Ding, C. Andreassen, M. Dencker, A. Jensen, S. Overgaard (Odense - Denmark)
- P11.9** Polyphenol-stabilised highly crosslinked UHMWPE as candidate materials for joint implants
J. Fu, J. Shen, G. Gao (Ningbo - China)
- P11.10** Preparation of porous bioceramics using reverse thermo-responsive hydrogels in combination with rhBMP-2 carriers
C.-H. Chen, J.-K. Chang, G.-J. Wang, M.-Li. Ho, C.-K. Wang, Y.-C. Fu (Kaohsiung - Taiwan)
- P11.11** Variation of aggregate modulus with channel diameter in channelized porous polyurethane scaffolds mimicking cartilage tissue
Y. Ganji, H. Sarkhosh, M. Kasra (Tehran - Iran)
- P11.12** The effect of current density and time on electrochemical deposition of hydroxyapatite on titanium implant
Y. Ghani, M. Coathup, K. Hing, G. Blunn (London - United Kingdom)
- P11.13** Biologic response to orthopaedic suture wear-debris: a histological study in a murine airpouch model
P. Heuberger, V. Lovric, R. Oliver, M. Goldberg, D. Stone, Y. Yu, W. Walsh (Vienna - Austria, Sydney - Australia)
- P11.14** Development of synthetic synovia for tribological testing
E. Bortel, J. Krieg, J. Sague, J. Nohava, R. Heuberger (Hamburg - Germany, Bettlach, Peseux - Switzerland)
- P11.15** Surface patterning of nanosilicon substituted hydroxyapatite for medical implants
J. Huang (London - United Kingdom)
- P11.16** Characterization of 3D printed collagen-calcium phosphate composites for bone defect repair
J. Inzana, D. Olvera, S. Fuller, O. Graeve, E. Schwarz, S. Kates, H. Awad (Rochester, Alfred, San Diego - USA)
- P11.17** Could different shapes of nanosized hydroxyapatite have a role in modulating bone formation?
P. Kalia, G. Vizcay-Barrena, J.P. Fan, A. Warley, L. Di Silvio, J. Huang (London - United Kingdom)
- P11.18** Bone composition of normal and irradiated human mandible determined by fourier-transform infrared spectroscopic imaging. Preliminary study
T. Ruotsalainen, J. Mikkonen, L. Rieppo, A. Koistinen, H.A. Dekker, E.A.J.M. Schulten, C.M. Ten Bruggenkate, E. Bloemena, N. Bravenboer, A. Kullaa (Oulu, Kuopio - Finland, Amsterdam - The Netherlands)
- P11.19** An innovative magnesium associated PLGA/TCP porous scaffold for bone regeneration
Y. Lai, M. Zhang, S. Chen, X. Wang, P. Zhang, L. Qin (Shenzhen, Hong Kong - China)
- P11.20** Four-years follow-up of patients treated with radius osteotomy and a biphasic absorbable bone substitute
M. Landgren, P. Kopylov, A. Abramo, M. Tägil (Lund, Malmö - Sweden)
- P11.21** Effects of preservation techniques on the in vivo response of supercritical fluid treated allograft bone in the treatment of osseous defects
V. Lovric, R. Anwar, Y. Yu, W. Walsh (Sydney - Australia)
- P11.22** Novel bioactive glasses development and biological characterisation for orthopaedic and maxillofacial applications
E. Mancuso, M.A. Birch, A.W. McCaskie, M. Marshall, K.W. Dalgarno, O.A. Bretcanu (Newcastle Upon Tyne, Sheffield - United Kingdom)
- P11.23** Innovative diffusive/PVD coating treatments for improved in vivo life-time of modular orthopaedic implants
E. Marin, M. Regis, S. Fusi, A. Lanzutti, R. Offoia, L. Fedrizzi (Udine, Villanova di San Daniele - Italy)
- P11.24** In vitro corrosion test of TiNbN coatings for joint replacement components
G. Rondelli, V. Melli, L. De Nardo, R. Chiesa (Bologna, Milan - Italy)

POSTER SESSIONS 15/16 OCTOBER

- P11.25** Development of an osteochondral plug from a novel, mechanically inhomogeneous hydrogel
M. Motwani, S. Ferreira, M. Enayati, L. Hirvonen, E.Z. Chong, F. Festy, L. Bozec, E. Gentleman (London - United Kingdom)
- P11.26** A hindered phenol antioxidant stabilized UHMWPE for tibial knee inserts
V. Narayan (Warsaw - USA)
- P11.27** Toughness changes with radiation dose in an antioxidant stabilized UHMWPE
V. Narayan, C. Rimnac, J. Bensusan (Warsaw, Cleveland - USA)
- P11.28** Intraarticular reaction and secretion of inflammatory chemokines to Multi wall carbon nanotubes
H. Nomura (Matsumoto - Japan)
- P11.29** PLGA/TCP scaffolds incorporating phytoestrogenic molecule icaritin developed for bone defect repair
S. Chen, L. Zheng, X. Xie, X. Wang, L. Qin (Hong Kong - China)
- P11.30** Resorption characteristics of a PLDLLA implant inserted with ultrasonic energy - Results from four years follow-up
K. Olms, J.A. Arrington, N. Reimers, B. Robioneck, R. Buescher, R.W. Sanders (Bad Schwartau, Kiel - Germany, Tampa - USA)
- P11.31** Pulsed plasma deposition of zirconia thin films on uhmwpe: proof of concept of a novel approach for joint prosthetic implants
M. Bianchi, N. Lopomo, A. Russo, A. Ortolani, M. Boi, M.C. Maltarello, S. Sprio, M. Baracchi, M. Marcacci (Bologna, Faenza - Italy)
- P11.32** Low friction visco-elastic polymers as future materials for articulation with native cartilage tissue
J. Sague, B. Andreatta, R. Egli, R. Luginbuehl (Bettlach - Switzerland)
- P11.33** Biocompatibility and antibacterial activity of bone scaffolds enriched with Gallium and Zinc
S. Sanchez-Salcedo, S. Shruti, A.J. Salinas, M. Vallet-Regi (Madrid - Spain, Modena - Italy)
- P11.34** A new metal utility: ultralow nickel Co-Cr-Mo alloy
K. Sonofuchi, Y. Hagiwara, K. Kanazawa, Y. Yabe, A. Ando, E. Itoi, Y. Koizumi, A. Chiba, M. Kawano, K. Ogasawara (Sendai - Japan)
- P11.35** Novel magnesium-polycaprolactone nanocomposite biomaterial for bone fixation applications
R. Srivastava, A. Suryavanshi (Mumbai - India)
- P11.36** Biomechanical comparison of different screw-types used for the correction of severe metatarsus primus
S. Daniel, S. Hoffmann, S. Hofstätter, K. Trieb, F. Landauer, U. Dorn, P. Augat (Murnau - Germany, Wels, Salzburg - Austria)
- P11.37** Bone Cements loaded with ferrimagnetic bioactive glass-ceramics
M. Bruno, M. Miola, O. Bretcanu, E. Verné (Turin - Italy, Newcastle - United Kingdom)

- P11.38** Bioactive trabecular-like coatings to improve the osteointegration of ceramic prosthetic devices
C. Vitale-Brovarone, F. Baines, E. Verné, P. Perdika, F. Korkusuz, J. Minguela (Turin - Italy, Barcelona - Spain)
- P11.39** Spine-ghost: an innovative bioresorbable osteoinductive vertebral cement
C. Vitale-Brovarone, F. Tallia, E. Verné, L. Pontiroli (Turin - Italy, London - United Kingdom)
- P11.40** Immobilized BMP-7 peptide on cobalt chromium alloy for enhanced bone growth
L. Tan, Y. Cai (Singapore - Singapore)

P12 CARTILAGE & MENISCUS

- P12.1** Differential effects of cyclooxygenase-1 and -2 specific NSAIDs on chondrogenic differentiation
M. Caron, P. Emans, D. Surtel, A. Cremers, K. Sanen, D. Ophelders, L. Van Rhijn, T. Welting (Maastricht - The Netherlands)
- P12.2** Novel strategies to enhance the quality of microfracture surgery: use of SDF-1 and sphingosine scaffolds in isolated cartilaginous defects
N. Chinitz, J. Schwartz, P. Razzano, N. Chahine, N. Sgaglione, D. Grande (Manhasset - USA)
- P12.3** Treatment of cartilage defects with a novel RUNX-1 inducing molecule to induce chondrogenesis
A. Gitlin, J. Schwartz, P. Razzano, N. Sgaglione, D. Grande (New Hyde Park, Manhasset - USA)
- P12.4** Rho small GTPases regulate COL2A1 expression associated with mechanical stretch in inner meniscus cells
T. Kanazawa, T. Fusumatsu, T. Ozaki (Okayama - Japan)
- P12.5** A prospective study of intraoperative accuracy of ankle joint injection
F. Melaki, A. Ramesh, J. McKenna (Dublin - Ireland)
- P12.6** Insult magnitude dependency of injury severity in a survival rabbit knee model of full-thickness blunt impaction cartilage injury
Y. Tochigi, J. Goetz, A. Heiner, M. Arunakul, B. Diestelmeier, M.J. Rudert, D. Fredericks, J. Martin, T. Brown, T. McKinley (Koshigaya - Japan, Iowa City, Indianapolis - USA, Pathumthani - Thailand)

P13 CELL & MOLECULAR

- P13.1** Variations in lacuna and osteocyte morphology alter the cell mechanical environment
C. Lim, A.F. Pereira, J. Jeffers, A. Carriero (London - United Kingdom)
- P13.2** RB1CC1 suppresses type II collagen synthesis in chondrocytes, and causes dwarfism
T. Chano, I. Nishimura, H. Kita, Y. Matsusue, H. Okabe (Otsu - Japan)

POSTER SESSIONS 15/16 OCTOBER

- P13.3** Cyclic tensile strain increases CCN2 expression by inducing Smad3 phosphorylation in human inner meniscus cells
T. Furumatsu, T. Kanazawa, T. Ozaki (Okayama - Japan)
- P13.4** Defining the role of ADAMTS4 splice variant
R. Gwyn, S. Wainwright, J. Bonderson, B. Caterson, C. Hughes (Cardiff - United Kingdom)
- P13.5** Electromagnetic stimulation modulates intracellular calcium levels in SAOS-2 cells as a first step in the signaling cascade
F. Hilz, L. Kuntz, J. Tübel, F. Wilken, T. Eichhorn, F. Pohlig, U. Lenze, R. von Eisenhart-Rothe, R. Burgkart (Munich - Germany)
- P13.6** Endochondral bone formation with induced hypertrophic cartilage
C. Bahney, L. Jacobs, M. Wang, M. Park, S. Limburg, H. Kim, R. Marcucio, A. Kuo (San Francisco - USA)
- P13.7** 24,25-dihydroxyvitamin D3 is a bone fide vitamin D receptor agonist supporting human osteoblast maturation
S. Lancaster, J. Blackburn, A.W. Blom, M. Makishima, M. Ishizawa, J. Mansell (Bristol - United Kingdom, Tokyo - Japan)

P14 INFECTION

- P14.1** Impact of culture media and incubation conditions in the Staphylococcus epidermidis biofilm formation on UHMWPE
G. Del-Prado, D. Molina-Manso, E. Gómez-Barrena, J. Cordero-Ampuero, J. Esteban (Madrid - Spain)
- P14.2** Antimicrobial activities of daptomycin, vancomycin and gentamicin loaded polymethylmethacrylate (PMMA) cement on staphylococcus epidermidis biofilm: an experimental model of a joint wound infection
H. Gbejuade, A. Lovering, A. Hidalgo-Arroyo, J. Leeming, J. Webb (Bristol - United Kingdom)
- P14.3** Propionibacterium acnes causes delayed surgical site infection only in the presence of implant
Y. Shiono, K. Ishii, S. Nagai, H. Kakinuma, A. Sasaki, M. Aizawa, Y. Okada, S. Koyasu, Y. Toyama, M. Matsumoto (Tokyo - Japan)

P15 OSTEOARTHRITIS

- P15.1** Radiological and clinical results after platelet-rich plasma treatment in mild tibiofemoral osteoarthritis
R. Hart, A. Safi, M. Komzák, P. Jajtner, M. Puskeiler, P. Hartová (Znojmo - Czech Republic)
- P15.2** Detecting symptoms that affect the coxofemoral osteoarthritis development rate using the results of MRI-scan
O. Medvedeva, V. Fokin, G. Trufanov (St. Petersburg - Russia)

- P15.3** Cannabinoid receptor I involved in cartilage integrity of osteoarthritic knee joints
L. Tzu-Ping, W. Feng-Sheng, K. Jih-Yang (Kaohsiung - Taiwan)
- P15.4** Efficacy of radiofrequency hyperthermia on the cartilage in guinea pigs with primary osteoarthritis
K. Takahashi, H. Watanabe, Y. Mochizuki, S. Hashimoto, Y. Satake, H. Nakamura, S. Takai (Tokyo - Japan)

P16 OSTEONECROSIS

- P16.1** Development of an experimental bio-mechanical simulation model of avascular necrosis in the femoral head
J. Anderson, J. Thompson, G. Isaac, J. Fisher, S. Williams (Leeds - United Kingdom)
- P16.2** Enoxaparin co-treatment by high-dosis glucocorticoid therapy can prevent steroid-related avascular necrosis of the femoral head
R. Beckmann, H. Saheen, N. Kweider, M. Ghassemi, M. Tohidnezhad, B. Rath, M. Tingart, M. Kadyrov, T. Pufe, W. Drescher (Aachen - Germany)
- P16.3** Candidate-based proteomics in the search for biomarkers of steroid-induced osteonecrosis in rabbits
S. Ikemura, T. Yamamoto, G. Motomura, R. Yamaguchi, T. Mawatari, Y. Iwamoto (Fukuoka - Japan)
- P16.4** The role of MRI in diagnostics, outcome prognosis and defining the therapeutic tactics for cases of aseptic necrosis of the femoral head
O. Medvedeva, V. Fokin, G. Trufanov (St. Petersburg - Russia)

P17 SPINE

- P17.1** Intraoperative spinal cord blood flow measurements using high resolution laser Doppler. The value of cord neurophysiological monitoring
J. Burgos, E. Hevia, L. Muñoz, C. Barrios, G. de Blas, L. Cabañes, I. Sampera, C. Correa (Madrid, Valencia, Palma de Mallorca - Spain)
- P17.2** MRI assessment of fat infiltration and atrophy of the lumbar muscles after one single level fusion with topping-off dynamic stabilization
A. Maruenda, C. Barrios, J.I. Maruenda, F. Garibo, N. Saus, S. Guijarro (Valencia - Spain)
- P17.3** Implications of semaphorins on neural ingrowth in disc degeneration
A. Binch, K. Phillips, N. Chiverton, A. Cole, L. Breakwell, A. Michael, A. Cross, C. Le Maitre (Sheffield - United Kingdom)
- P17.4** Two degree-of-freedom mechanical loading bioreactor for the study of the intervertebral disc mechanobiology under complex loading
S.C.W. Chan, J. Walser, P. Käppli, M.J. Shamsollahi, S. Ferguson, B. Gantenbein-Ritter (Bern, Zurich - Switzerland)

POSTER SESSIONS 15/16 OCTOBER

- P17.5** In vitro culture of notochordal cells - How to preserve their phenotype?
B. Gantenbein-Ritter, E. Calandriello, K. Wuerztz, M. Keel, S. Chan (Bern, Zurich - Switzerland)
- P17.6** MMP13 as a marker during intervertebral disk degeneration
C.-H. Chen, C.-J. Chiang, J.-Y. Tseng, Y.-H. Tsuang Tsuang (Taipei - Taiwan)
- P17.7** Definition of a risk scoring system to predict onset of a first vertebral osteoporotic fracture in post-menopausal women: a cross-sectional analysis
D. Colangelo, L.A. Nasto, C. Sernia, M. Mormando, S. Piacentini, L. De Marinis, C. Fabbriani, E. Pola (Rome - Italy)
- P17.8** Aquaporins expressed in the Human Intervertebral Disc - A link to disc degeneration?
R. Day, K. Phillips, A. Cole, L. Breakwell, A. Michael, N. Chiverton, M. Conner, C. Le Maitre (Sheffield - United Kingdom)
- P17.9** Advanced age as a factor in acute thoracic spine fractures
O. Emohare, A. Dittmer, R. Morgan, J. Switzer (St. Paul - USA)
- P17.10** An evaluation of the role of age on resource utilization and outcome in acute fractures of the cervical spine
O. Emohare, A. Dittmer, R. Morgan, D. Polly, J. Switzer (St. Paul, Minneapolis - USA)
- P17.11** Geriatric status as a factor in acute lumbar spine fractures
O. Emohare, A. Dittmer, R. Morgan, J. Switzer (St. Paul - USA)
- P17.12** The application of a comorbidity index in the management of acute fractures in late ankylosing spondylitis
O. Emohare, D. Christensen, A. Cagan, R. Morgan, E. Gertner (St. Paul, Minneapolis - USA)
- P17.13** The role of advanced age on outcome and resource utilization in acute fractures of the thoracic and lumbar spine
O. Emohare, A. Dittmer, R. Morgan, D. Polly, J. Switzer (St. Paul, Minneapolis - USA)
- P17.14** The role of interfacet distance on facet arthrosis and degenerative disc disease, an evolutionary perspective
B. Farrell, C. Kuo, J. Tang, S. Phan, J. Buckley, D. Kondrashov (San Francisco - USA)
- P17.15** Evaluation of effect of Tranilast on the spinal cord injury in rat
M. Hanada, Y. Arima, R. Shinjo, Y. Sugiura, K. Tsutsumi, S. Imagama, N. Ishiguro, Y. Matsuyama (Hamamatsu, Nagoya, Tokyo, Sagami-hara - Japan)
- P17.16** Slow BMP-2 release from a fibrin-hyaluronate hydrogel for intervertebral disc regeneration in a large animal model
S.E.L. Detiger, L.S. Karfeld-Sulzer, K. Mevorat Kaplan, R.J.W. Hoogendoorn, B.J. van Royen, T.H. Smit, A. Yayon, F.E. Weber, M.N. Helder (Amsterdam - The Netherlands, Zurich - Switzerland, Nes Ziona - Israel)
- P17.17** In vivo measurement of 3D pedicle geometry in whole-spine
S. Shigemitsu, K. Akeda, K. Murata, A. Sudo, N. Inoue (Kyoto, Tsu, - Japan, Chicago - USA)
- P17.18** Osteo-integration for pediatric spinal surgery in miniature pig model
K. Shiba, H. Taneichi, S. Inami, T. Namikawa, D. Takeuchi, Y. Nohara (Mibu-Machi - Japan)
- P17.19** Expression of proteoglycan in the intervertebral disc cells under the oxygen condition
Y.-M. Kang, S.-I. Lee, H.-J. Kim, B.-H. Lee, J.-O. Park, H.-M. Lee, S.-H. Moon (Seoul - Korea)
- P17.20** Expression of sclerostin and role of Non-canonical (PKC) signaling in the intervertebral disc cells
Y.-M. Kang, S.-I. Lee, H.-J. Kim, B.-H. Lee, J.-O. Park, H.-M. Lee, S.-H. Moon (Seoul - Korea)
- P17.21** Effect of abdominal muscles elongation during pregnancy on L4-L5 spinal load using a finite element model
F.M. Khaksar, M. Kasra, N. Pronost (Utrecht - The Netherlands, Tehran - Iran)
- P17.22** Comparison of the paraspinal muscle injury among three different PLIF techniques for pedicle screws
K. Miura (Nagaoka - Japan)
- P17.23** Posterior lumbar interbody fusion with a cortical bone trajectory decreases the muscle injury - A comparison with the traditional procedure
K. Miura (Nagaoka - Japan)
- P17.24** Anatomical evaluation of the screw placement with sacral plate related to nerve injury in lumbosacral fixation - using cadavers -
S. Otsuka, M. Fukuoka, J. Mizutani, N. Suzuki, T. Otsuka (Nagoya - Japan)
- P17.25** Biomechanical characterization of a novel low-stiffness posterior spinal implant under anterior shear loading in a degenerative spinal model
A. Melnyk, J. Chak, V. Singh, A. Kelly, P. Crompton, C. Fisher, M. Dvorak, T. Oxland (Vancouver - Canada, Memphis - USA)
- P17.26** Patient-specific templates for pedicle spine screws placement: literature review and proposal of a new design
P.D. Parchi, V. Ferrari, S. Condino, M. Carbone, L. Andreani, M. Novi, M. Lisanti (Pisa - Italy)
- P17.27** Microtensile properties of individual fibre bundles in healthy and degenerate human annulus fibrosus
D. Pham, J. Costi, J. Shapter (Adelaide - Australia)
- P17.28** Interleukin-1 stimulates release of cytokines and chemokines from human nucleus pulposus cells: implications for tissue homeostasis in the intervertebral disc
K. Phillips, K. Cullen, N. Chiverton, A. Cole, L. Breakwell, A. Michael, G. Haddock, R. Bunning, A. Cross, C. Le Maitre (Sheffield, Leeds - United Kingdom)

POSTER SESSIONS 15/16 OCTOBER

P17.29 Radiographic evaluation of vertebral body stenting (VBS) in osteoporotic vertebral compression fractures. A retrospective study of 44 cases
Ro. Rotter, Ri. Rotter, P. Gierer, I. Stratos, K.-H. Hauenstein, T. Mittlmeier, M. Beck (Rostock - Germany)

P17.30 The role of type I diabetes in intervertebral disc degeneration
F. Russo, V. Denaro, G. Vadalà, K. Ngo, T. Yurube, Q. Dong, Y. Fan, M. Trucco, G. Sowa, J. Kang, N. Vo (Rome - Italy, Pittsburgh - USA)

P17.31 Anti-inflammatory effect of COX-2 in spinal cord injury in rats : COX-2-derived PGI2 reduces inducible ICAM-1 expression
T. Sasa, M. Morimoto, N. Yamamoto, T. Inoue, T. Tonai (Zentsuji - Japan)

P17.32 Disc height and intradiscal pressure are linearly related under dynamic loading conditions. The behaviour of intradiscal pressure in time, under different levels of dynamic axial compressive loading
P.-P. Vergroesen, J. Meijering, D. Witte, A. van der Veen, T. Smit (Amsterdam - The Netherlands)

P17.33 Clinical outcomes and prognostic factors for mortality, overall morbidity and surgical related morbidity in surgically treated spinal epidural abscesses: a single centre 10-year experience
K.L. Wong, Y. Mo, L. Shen, H.T. Hee, J. Thambiah, N. Kumar, K.P.G. Liu, H.K. Wong (Singapore - Singapore)

P18 TISSUE ENGINEERING

P18.1 Osteochondral regeneration of a critical size defect in a minipig model using adipose-derived stem cells in association with an hydrogel of oligo(polyethylene glycol) fumarate
L. de Girolamo, E. Arrigoni, S. Niada, A. Di Giancamillo, C. Domeneghini, M. Dadsetan, M.J. Yaszemski, P. Vena, G. Peretti, A.T. Brini (Milan - Italy, Rochester - USA)

P18.2 Cultivation of mesenchymal stromal stem cells on demineralized bone matrix powder: influence of particle size and seeding density on cell colonization and metabolic activity
B. Dozza, E. Lucarelli, S. Duchi, I.G. Lesci, E. Martella, G. Teti, D. Donati (Bologna - Italy)

P18.3 Adipose-derived stromal cells seeded on demineralized bone matrix persist in critical sized bone defects and permit bridging union
N. Ehrhart, C. Laura, W. Tracy (Fort Collins - USA)

P18.4 In vivo loading of osteoconductive porous material with with bone progenitors
P. Frayssinet, D. Mathon, N. Rouquet (Saint Lys, Toulouse - France)

P18.5 Superior potency of CD34-positive cells for healing of nonunion following bone fracture
T. Fukui, Y. Mifune, T. Matsumoto, T. Shoji, Y. Kawakami, A. Kawamoto, M. Ii, T. Kuroda, T. Niikura, M. Miwa, R. Kuroda, M. Kurosaka, T. Asahara (Kobe - Japan)

P18.6 Fingertip reconstruction with occlusive dressing: clinical results and biological analysis of the dressing content's
L. Obert, F. Gindraux, J. Pauchot (Besançon - France)

P18.7 Surgical technique and evaluation at long follow-up of a chondrocostal autograft in hand surgery
L. Obert, F. Gindraux, D. Lepage (Besançon - France)

P18.8 Mesenchymal stem cells and their role in bridging of bone gaps- an experimental study in rabbits
S. Goel, K. Rajiv, K.K. Gupta (Varanasi - India)

P18.9 Synergistic effect of adipose stem cells and bone marrow stem cell to promote osteogenic differentiation and angiogenesis
K.I. Kim, Y.J. Choi, N.H. Jo, G.I. Im (Goyang - Korea)

P18.10 Fate of bone marrow mesenchymal stem cells 24 weeks after autologous transplantation into a rabbit osteonecrosis model
H. Sugaya, H. Mishima, K. Aoto, M. Li, T. Yoshioka, T. Ogawa, N. Ochiai, M. Yamazaki (Tsukuba - Japan)

P18.11 One-year results of percutaneous concentrated autologous bone marrow aspirate transplantation (CABMAT) in fifteen cases of non-union of lower limbs
T. Yoshizawa, H. Mishima, H. Sugaya, T. Yoshioka, S. Sakai, H. Akaogi, N. Ochiai, M. Yamazaki, T. Nakatani (Tsukuba - Japan)

18.12 Potential application of programmed mesenchymal stem cells for tendon healing: an in vivo study using Rattus norvegicus as an experimental model
C.-F. Hsieh, P. Alberton, E. Volkmer, M. Schieker, D. Docheva (Munich - Germany)

P18.13 hTERT-gene transfected mesenchymal stem cells combined with in-situ gelation hydrogel for cartilage regeneration in a porcine model
Y.-M. Hsu, C.-H. Chang (Taipei - Taiwan)

P18.14 The dual role of hypoxia on adipose derived stem cells (ASCs)
A. Massa, C. Fotia, F. Boriani, D. Granchi, N. Baldini (Bologna - Italy)

P18.15 Application of iPS cells for rare and intractable diseases involving mesenchymal tissues
Y. Matsumoto, M. Ikeya, E. Hsiao, I. Asaka, T. Otsuka, J. Toguchida (Kyoto, Nagoya - Japan, San Francisco - USA)

P18.16 Platelet-rich plasma is more effective than cortisone for severe chronic greater trochanteric bursitis
R. Monto (Nantucket - USA)

P18.17 Effect of Nanog on proliferation and differentiation of the epidermal stem cell via beta-catenin phosphorylation
P. Cheng, H. Huang, A. Chen (Wuhan - China)

POSTER SESSIONS 15/16 OCTOBER

P18.18 The role of receptor-mediated cell-matrix interactions in the remodelling of three-dimensional collagenous environment by tendon stem/progenitor cells
C. Popov, M. Schieker, D. Docheva (Munich - Germany)

P18.19 Basal Osterix expression and comparative osteogenesis of progenitors from equine bone marrow, synovium and adipose tissue
M. Bianchessi, A. Andrietti, Y. Chen, S. Durgam, A. Stewart, M. Stewart (Urbana - USA)

P18.20 Exosomes derived from human platelet lysate induce MSC proliferation in vitro
E. Torreggiani, F. Perut, L. Roncuzzi, N. Baldini (Bologna - Italy)

P18.21 The design of a fluidised bed bioreactor for bone tissue engineering using CFD
I. Benzeval, I. Turner, M. Ellis (Bath - United Kingdom)

P18.22 In vitro expression and refolding of recombinant peptide constructs with growth differentiation factor 7 (GDF-7/BMP-12) for enhanced interactions with biomaterials
W. Wang, M. Foo (Singapore - Singapore)

P18.23 Growth factors and cytokines in orthopaedics. Comparison of two blood processing techniques: ORTHOKINE® and ACP®.
M.P. Weisshaar, S. Gaji (Rheinbach - Germany)

P18.24 The osteogenic effect of kaempferol in human MSC cells and ovariectomized mice: in vitro and in vivo study
A. Yoshida, Y. Shiozaki, T. Mazaki, K. Yamane, A. Matsukawa, T. Kitajima, Y. Ito, A. Mino, M. Sato, T. Ozaki (Okayama, Saitama - Japan)

P18.25 Overexpression of PTHrP-related miRNA in human bone marrow derived stem cells enhances chondrogenesis and inhibits hypertrophy
J.-M. Lee, J.-H. Joe, J.-M. Ahn, E.-A. Kim, G.-I. Im, B.-S. Kim (Goyang, Seoul - Korea)

P18.26 PD98059-impregnated functional PLGA scaffold for direct tissue engineering promotes chondrogenesis and prevents hypertrophy from mesenchymal stem cells
J.-H. Lee, J.-H. Joe, E.-J. Oh, S.-H. Oh, J.-H. Lee, G.-I. Im, B.-S. Kim (Goyang, Daejeon, Seoul - Korea)

P19 TRAUMA

P19.1 Vascular injuries associated with traumatic bone injuries
A. Abdulkarim, F.J. Fleming, P.A. Grace, T Burke (Dublin, Limerick - Ireland)

P19.2 Locking plate for distal femoral fractures
M. Grigoras, C. Crisan, A. Aframian, G. Green, K.S. Khor, P. Vinayakam, P.J.S. Jeer (Margate - United Kingdom)

P19.3 Proximal femoral nail anti-rotation (PFNA) - Quality of reduction & fixation: a district general hospital experience
G. Green, J. Stanton, A. Aframian, K.S. Khor, P. Vinayakam, P.J.S. Jeer (Margate - United Kingdom)

P19.4 Raised white cell count in patients admitted with fractured neck of femur : Should there be a delay in surgery?
P. Vinayakam, M. Prasad, A. Aframian, P.J.S. Jeer (Margate - United Kingdom)

P19.5 The impact of achieving major trauma centre status on operative time and theatre utilisation: experience from a UK trauma centre
T. Bouteffnouchet, B. Budair, M. Ashraf, K. Porter (Birmingham - United Kingdom)

P19.6 Medium-term results of open tibia fractures requiring flap coverage
W. Chua, D. Murphy (Singapore - Singapore)

P19.7 Assessment of the initial viscoelastic properties of a critical segmental long bone defect reconstructed with impaction bone grafting and intramedullary nailing
J. Costi, R. Stanley, B. Ding, L. Solomon (Adelaide - Australia)

P19.8 Effects of percutaneous sacroplasty of pain, analgesic utilization and patient satisfaction
M. DePalma, J. Ketchum (Richmond - USA)

P19.9 What clinical parameters influence healing of sacral insufficiency fractures?
M. DePalma, J. Ketchum (Richmond - USA)

P19.10 FE-based strength estimation for proximal femur fracture prediction: a case-control study
E. Schileo, C. Falcinelli, S. Sigurdsson, V. Gudnason, F. Taddei (Bologna - Italy, Kopavogur - Iceland)

P19.11 Surgically decompressed foot compartment syndrome following blunt trauma: a study of the quality of life and predictors of outcomes
F. Han, V.P. Kumar (Singapore - Singapore)

P19.12 Study of cemented hemiarthroplasty as a primary method of treatment in intertrochanteric fractures in the elderly
S. Gupta (Mysore - India)

P19.13 Deteriorated fracture healing in DAP12-deficient mice
M. Kamimura, Y. Mori, T. Takai, E. Itoi (Sendai - Japan)

P19.14 Quantitation of the duration of different approaches to hip hemi-arthroplasty: a prospective observational cohort study
K. Kamo (Yamaguchi - Japan)

P19.15 Lack of knowledge in anatomy and inconsistent clinical evaluation of the wrist in scaphoid injury
W. Mallee, J.C. Goslings, E. Henny (Amsterdam - The Netherlands)

P19.16 CT-generated versus conventional plain radiographs for acetabular fracture evaluation in an obese patient population
P. Sinatra, B. Moed (Saint Louis - USA)

P19.17 CT-generated versus conventional plain radiographs for the diagnosis of pelvic ring injury
A. Abdelfattah, J. Boudreau, B. Moed (Saint Louis - USA)

POSTER SESSIONS 15/16 OCTOBER

- P19.18** Ligamentous contribution to pelvic stability in a rotationally unstable open book injury
A. Abdelfattah, B. Moed (*Saint Louis - USA*)
- P19.19** Bone transport with a locking plate for the segmental defect of tibia
C.-W. Oh, J.-W. Kim, S.-G. Baek (*Daegu - Korea*)
- P19.20** Interosseous complex disruption reliably increases radiographic forearm interosseous width - Implications for healing
E. Ouellette, W. Elliott, C. Kam, P. Sawardeker, R. Nicolescu, L. Latta (*Coral Gables, Boulder, Indianapolis, Fargo, Miami - USA*)
- P19.21** The Incidence of scapholunate and lunotriquetral ligament tears in distal radius fractures: the effect of wrist position and forearm rotation during a fall onto an outstretched hand
R. Nicolescu, P. Clifford, L. Latta, E. Ouellette (*Miami, Coral Gables - USA*)
- P19.22** The pattern of injury and workload associated injuries after suicide attempt by jumping from a height
B. Rocos, T. Chesser (*Bristol - United Kingdom*)
- P19.23** Cigarette smoke inhalation impairs angiogenesis in early bone healing process and delays fracture union
T.-W. Tai, I.-M. Jou, F.-C. Su (*Tainan - Taiwan*)
- P19.24** Accuracy, legibility, and content of consent forms for hip fracture repair in a teaching hospital
S. Thakkar, F. Frassica, S. Mears (*Baltimore - USA*)
- P19.25** Calcar bone graft to restore limb length in comminuted intertrochanteric fractures - An innovative method
S. Thakkar, C. Thakkar (*Baltimore - USA, Mumbai - India*)
- P19.26** Comparison of metaphyseal fracture defect healing between osteoporotic and non-osteoporotic bone of the rat
U. Thormann, T. El Khassawna, S. Ray, M. Hundgeburth, L. Dürselen, M. Kampschulte, R. Schnettler, V. Alt (*Giessen - Germany*)
- P19.27** Profiling microRNA expression in fracture nonunion
T. Waki, S.Y. Lee, T. Niikura, T. Iwakura, Y. Dogaki, E. Okumachi, R. Kuroda, M. Kurosaka (*Kobe - Japan*)
- P19.28** Socially deprived patients sustain their distal radial fracture at a younger age
N. Wickramasinghe, N. Clement, A. Duckworth, C. Court-Brown, M. McQueen (*Edinburgh - United Kingdom*)
- P19.29** A novel technique of cerclage wiring using a power tool
Z. Zhou, K. Koo, A. Yew, J. Koh, T.S. Howe (*Singapore - Singapore*)
- P20 TUMOR**
- P20.1** Acridine orange is an effective drug for the treatment of multidrug-resistant and sensitive human osteosarcoma
C. Fotia, K. Kusuzaki, L. Roncuzzi, S. Avnet, N. Baldini (*Bologna - Italy, Kyoto - Japan*)
- P20.2** 3D computer navigation for minimally invasive bone tumor biopsy and resection
W. Hettwer, T. Grum-Schwensen, M.M. Petersen (*Copenhagen - Denmark*)
- P20.3** mTOR inhibitor rapamycin induced-autophagy in MG63 cells
R. Horie, O. Nakamura, T. Hitora, Y. Yamagami, M. Mori, H. Nishimura, T. Yamamoto (*Kita-gun - Japan*)
- P20.4** Comparison of neurological improvements in acute traumatic central cord syndrome following surgical and non-surgical interventions
N. Kumar, J. Tay, S.H. Lee, E. Chew, G. Liu, J. Thambiah, H.K. Wong (*Singapore - Singapore*)
- P20.5** The role of preoperative vascular embolization in surgery for spinal metastases
N. Kumar, B. Tan (*Singapore - Singapore*)
- P20.6** Identification and validation of housekeeping genes for gene expression analysis of cancer stem cell from human sarcomas
S. Lemma, M. Salerno, S. Avnet, N. Baldini (*Bologna - Italy*)
- P20.7** Mesenchymal stem cells promote vasculogenic mimicry in prostate cancer through SDF-1/CXCR4 axis and PI3K/Akt pathway
A. Chen, F. Guo, Q. Yang, P. Chen, H. Liao, L. Qin (*Wuhan - China*)
- P20.8** Application of iPS cells for sarcoma research: investigation for the cell-of-origin of synovial sarcoma
M. Fukuta, K. Hayakawa, S. Tamaki, T. Kato Jr., M. Ikeya, T. Okamoto, T. Otsuka, K. Waljen, J. Toguchida (*Kyoto, Nagoya - Japan*)
- P20.9** Hypoxia marker CA IX and VEGF expressed by extracellular low pH independently of hypoxia on human osteosarcoma cells
T. Matsubara, G. Di Resta, A. Sudo, J. Healey (*Tsu - Japan, New York - USA*)
- P20.10** Development of tumor specific caffeine-potentiated chemotherapy by a novel DDS with Span80 nano-vesicles
H. Nakata, T. Miyazaki, T. Iwasaki, K. Hayashi, Y. Omokawa, A. Nakamura, T. Kidani, K. Sakayama, J. Masumoto, H. Miura (*To-on, Matsuyama - Japan*)
- P20.11** Hsp90 inhibitor induced autophagy and apoptosis in osteosarcoma cells
M. Mori (*Kagawa - Japan*)
- P20.12** Effects of GSK3 inhibitor in human osteosarcoma cell lines
H. Nishimura, T. Hitora, O. Nakamura, M. Mori, Y. Yamagami, R. Horie, T. Yamamoto (*Kita-gun - Japan*)
- P20.13** Chemosensitizing effects of telomerase-specific oncolytic adenovirus in human osteosarcoma cells
S. Osaki, T. Sasaki, H. Tazawa, J. Hasei, Y. Yamakawa, T. Kunisada, Y. Urata, T. Fujiwara, T. Ozaki (*Okayama - Japan*)

NAME INDEX

A

Aaron J., O9.4
 Aaron R., S2.4
 Abdel M.P., O10.7
 Abdelfattah A., P19.17, P19.18
 Abdelgaied A., P6.3
 Abdulkarim A., O42.2, P4.1, P4.2, P4.3, P6.1, P19.1
 Abe S., O11.6, P6.27, P6.28, P6.29
 Abramo A., P11.20
 Abrassart S., O9.2, O40.1
 Acker A.S., O24.2
 Ackerman K., P2.3
 Adachi N., O18.2, P5.3
 Adams D., O29.5
 Adlhart C., O28.1
 Aframian A., O35, O40.7, P2.1, P4.4, P4.5, P19.2, P19.3, P19.4
 Agarwal N.K., O2.1
 Ahmad T., O5.6
 Ahmed Q., O39.4, O39.5
 Ahn J.-M., P18.25
 Ahtinen H., O36.4
 Aizawa M., P14.3
 Akaogi H., O44.5, P18.11
 Akbari Shandiz M., O1.4
 Akeda K., P17.17
 Akens M., O39.2
 Akisue T., O15.5, O15.6
 Akita S., O35.7, P2.8, P8.2
 Akiyama H., P4.26
 Alberton P., P18.12
 Albisinni U., O8.3, O26.9
 Alblas J., O27.6
 Albo E., O25.3
 Alexander S., O23.3
 Al-Hajjar M., O21.2
 Ali S., P6.14
 Alini M., O30, O38.8, O38.11, S22.5, S29.2
 Alizadehkhayat O., O10.1, O35.3, O35.8
 Allan C., O10.6
 Allison J., O5.1, P2.4, P6.9
 Allizond V., O13.1
 Al-Munajjed A.A., O9, S4.3
 Alqahtani S., O10.6
 Alsalman D., O11.9
 Alt V., P19.26, S3.2
 Altomare L., O33.8
 Ambrosio L., S20, S20.2
 Amin A., P6.1
 Aminian K., O24.2, P6.31
 Amiri S., O17, P5.1

Amirouche F., O26.8, P4.41
 An K.-N., O10.7, O34.7
 Anderson J., P16.1
 Anderso R., O40
 Andersson B., O38.6
 Ando A., P11.34
 Andreani L., O32.8, P17.26
 Andreasen C., P11.8
 Andreatta B., P11.32
 Andrietti A., P18.19
 Angibaud L., O1.1, O1.2, P6.10, P6.11
 Anglin C., O1.4, O30.5, P5.1
 Annunziata E., P3.9
 Antonini S., O32.8
 Antonios J., O7.3
 Antoniou J., S22., S22.1
 Antón-Rodríguez M., O38.2
 Anwar R., P11.21
 Aoto K., O44.5, P18.10
 Applbaum Y., O33.6
 Aquilina A., O35.10
 Aranyavalai T., P7.2
 Aratake M., P6.24
 Archer C., O32.5, S29.3
 Ardura J.A., O27.8
 Arenas M.-A., O6.1
 Arima H., O30.11
 Arima Y., P17.15
 Ariumi A., P1.1
 Armengol M., O43.8
 Arnold J., O24.6
 Arntz P., O13.7
 Aro H., O36.4
 Arrigoni E., P18.1
 Arrington J.A., P11.30
 Arts C., O21, O38.10
 Arunakul M., P12.6
 Asahara T., P18.5
 Asaka I., P18.15
 Ashraf M., P19.5
 Aso K., P4.35, P4.44
 Aspenberg P., O31.2, O31.9, O31.10
 Assam P., P6.6
 Assinck P., O38.7
 Assom M., O27.9
 Atkins G., O37.3
 Aubin M., O20.4
 Augat P., P11.36
 Avnet S., O15, O15.1, O15.3, O15.4, P11.7, P20.1, P20.6
 Awad H., P11.16
 Ayers D., O1.5, O5.1, O14.9, O20.4, P2.4, P6.9
 Azuma K., P1.6

B

Baas J., O8.7, P9.5
 Babchenko O., O33.5
 Baboldashti N.Z., O33.3, O33.7, O4.6
 Bacakova L., O33.5
 Bader R., P1.20
 Badertscher R.P., O28.1
 Baek S.-G., P19.19
 Bahney C., P13.6
 Baino F., P11.38
 Baldini N., O2.2, O15.1, O15.3, O15.4, O15.7, O44, P4.19, P11.5, P11.7, P18.14, P18.20, P20.1, P20.6
 Balian G., O10.5
 Balistreri L., O26.9
 Banche G., O13.1
 Banfield S., P4.15
 Banks S., O40.3
 Baracchi M., P11.31
 Barbero A., O27.4, O41.4
 Barbierato P., P1.17
 Barckman J., O8.7, P9.5
 Barea C., O9.2, O40.1
 Barenholz Y., O33.6
 Barlow J.D., O10.7
 Barnes K., O6.6, P2.12
 Barrios C., O10.3, O38.2, O38.3, P17.1, P17.2
 Barton B., P2.4
 Baruffaldi F., O26.9
 Barzan M., P3.8
 Bast S., O41.1
 Bauer H., S23
 Beard D., P2.6, P2.7
 Beaule P., O26.4, O43.7, P4.6, P4.7
 Beaulé P., P4.34
 Bechtold J., O8.7, O12
 Bechtold J.E., P9.5
 Beck M., P17.29
 Beckmann R., O41.7, P16.2
 Becquart P., O12.6, O13.8, O16.7
 Befus D., O25.2
 Beguiristain J.L., O38.3
 Beil T., P6.18
 Belkoff S., O12.4
 Bell K., P6.36
 Bellare A., P11.2, P11.3
 Benneker L., O38.8
 Benoit D., O14.2, O24.3
 Bensidhoum M., O11.8, O12.6, O16.3, O27.3, O32.2, O32.7
 Bensusan J., P11.27
 Benzeval I., P18.21
 Benzoni C., P3.8, P3.9

NAME INDEX

- Berger F., O30.10
 Berteau J.-P., O30.2
 Bertollo N., P1.7, P6.40
 Berton A., P2.11
 Bertram A., O26.7
 Besier T., O34.9
 Bhattacharjee A., O32.4
 Bhushan P., O36.2
 Bianchessi M., P18.19
 Bianchi M., O13.5, P11.31
 Bichara D., O33.10
 Bignozzi S., O1.3, S27.1
 Binch A., O3.1, P17.3
 Binch A.L.A., O38.4
 Birch H., O23.6
 Birch M.A., P11.22
 Bischoff M., O36.6
 Bishop N.E., O30.2
 Bisschop A., O18.7
 Bistolfi A., O13.1, O33.2
 Björn G., P11.6
 Blackburn J., O6.2, P13.7
 Blair-Pattison A., O30.5
 Bloemena E., P11.18
 Bloemer W., O30.8
 Blom A., O22, O35.10, P13.7
 Blom A.W., O6.2
 Blonna D., O27.9, O41.2
 Blunn G., O8.1, O13.10, O23.2, O23.3, P11.12, S31
 Blyth F.M., O17.2
 Bochicchio B., P11.5
 Bociaga D., O33.4
 Boerboom A., O9.7, O20.6
 Boffano M., O13.1
 Bogie R., O38.10
 Boi M., P11.31
 Boiardo R., P6.13
 Boissonneault A., O18.1
 Bolelli G., O33.8
 Boljanovic D., P6.2
 Bonasia D., O11.1
 Bonasia D.E., O27.9, O41.2
 Bonassar L., O19.1
 Bonderson J., P13.4
 Bonferroni B., O33.8
 Bonnevie E., O19.1
 Bontempi M., S18.1
 Bonuccelli G., O15.3, O15.4
 Boonen B., O17.3, O17.5, O42.4, P6.16
 Boré A., O37.5
 Borgwardt A., P4.8
 Borgwardt Li., P4.8
 Borgwardt Lo., P4.8
 Boriani F., O6.7, P18.14
 Bortel E., P11.14
 Bosse T., O35.2
 Bostrom M., O1.6
 Boudreau J., P19.17
 Boulos P., O1.4
 Bourguine P., O27.4
 Bourguignon M., O16.7
 Boutefnouchet T., P19.5
 Boyd J., O18.3
 Boyer A., O29.9
 Bozec L., P11.25
 Bracco P., O13.1, S6.2
 Brach del Prever E.M., O13.1
 Brady S., P6.1
 Bragdon C., O20.4
 Brakel K., O8.6, P4.47, P4.48
 Brandolini N., O12.2
 Brandt J., O21.4
 Bravenboer N., P11.18
 Brax M., P6.13
 Breakwell L., O3.1, O38.4, P17.3, P17.8, P17.28
 Brennan M., O16.2, S8.3
 Bretcanu O., P11.37
 Bretcanu O.A., P11.22
 Bridson R.H., O37.9
 Brini A.T., P18.1
 Brisby H., O3.2
 Brixen K., P4.37
 Brochhausen C., O19.5
 Brockett C., O1.7, P6.3, S16
 Broom N., O34.10, O41.6
 Brown C.P., O43.8
 Brown T., P12.6
 Bruni D., O1.3, P6.4, S18.3, S27.3
 Bruno M., P11.37
 Bruzzzone M., O11.1, O27.9, O41.2
 Bryan H., P4.9
 Bucciotti F., O36.3
 Buchhorn G., O28.7
 Buckley J., P17.14
 Budair B., P19.5
 Buescher R., P11.30
 Buesser K., O5.7
 Buizer A., O16.4
 Bulgakov V., O33.11
 Bull L., O4.3
 Bulstra S., O16.4
 Bulstra S., O9.7, O20.6
 Buma P., O19.2
 Bunning R., P17.28
 Bunning R.A.D., O41.3
 Burdikova Z., O33.5
 Burgkart R., O11.3, P13.5
 Burgos J., O10.3, O38.2, P17.1
 Burke T., P19.1
 Burnett R., O5.5
 Busilacchi A., O10.4
- C**
- Cabañes L., O10.3, P17.1
 Cadossi M., S2.5
 Cadossi R., S2
 Cagan A., O2.5, O2.6, O2.7, P17.12
 Cai Y., O19.4, P11.40
 Cakmak S., O33.10
 Calandriello E., P17.5
 Callary S., O31.1, P4.42
 Calzado-Martín A., O37.5
 Camenisch K., O36.5
 Campbell D., P4.42
 Campos F.F., P10.8
 Candiani G., O36.3
 Cantley M., P9.3
 Cao M., O30.7
 Cao Y., O4.1, O30.7
 Carbone M., P17.26
 Carbone S., O1.7
 Carbone V., P2.2
 Caron M., O19, O37.4, P12.1
 Carr A., O4.6, O14.6, O25, O33.3, O33.7, O34.2, O43.3, O45.5, P2.6, S23.1
 Carriero A., O12, O26.2, P13.1
 Carta F., O15.7
 Castagna V., P11.4
 Castellarin G., P6.5
 Castellini I., P4.36
 Castoldi F., O11.1, O27.9, O41.2
 Catalán B., O10.3
 Catani F., S27.2
 Caterson B., P13.4
 Cates H., O22.5
 Cazzolato B., P1.9
 Ceccarelli F., O26.9
 Cecchini M., O32.8
 Cha Y.J., P6.15
 Chahine N., P12.2
 Chak J., O30.1, P17.25
 Chamberlain C., O34.6
 Chan E.-Y., O17.2, P6.6
 Chan F., P2.9
 Chan S., P17.5
 Chan S.C.W., P17.4
 Chang C.H., P18.13, S19.5
 Chang F.-M., P8.1

NAME INDEX

- Chang H., O14.10, O16.5
 Chang J.K., P11.10, S19
 Chang S.-H., P6.15
 Chano T., P13.2
 Chapman G., O26.3
 Charalambous C.P., O17.1
 Charyeva O., O33.1
 Chen A., P18.17, P20.7
 Chen C., O4.1
 Chen C.-H., P11.10, P17.6, P6.7, P8.1
 Chen C.-X., P10.1
 Chen C.-Y., P10.1
 Chen L., O32.10
 Chen P., P20.7
 Chen Q., O34.7
 Chen S., P11.19, P11.29
 Chen W.-P., P6.7
 Chen Y., O39.3, O39.4, O39.5, O39.7, P18.19
 Cheng C., P10.1
 Cheng L., O29.8
 Cheng P., P18.17
 Chesser T., P19.22
 Chetan D.M., O39.1
 Cheung K., O13.11, O34.8
 Chew E., P20.4
 Chhabra A.B., O10.5
 Chia S.-L., P6.39
 Chiang C.-J., P6.7, P10.1, P17.6
 Chiba A., P11.34
 Chiba D., P4.10
 Chiesa R., O33.8, O36.3, P11.24, S20, S20.1
 Chinitz N., P12.2
 Chiu K., O14.5
 Chiverton N., O3.1, O38.4, P17.3, P17.8, P17.28
 Chmell S., O8.2, P4.33
 Chodavarapu V., O10.6
 Choi D., P10.7
 Choi H., P3.4
 Choi Y.J., P18.9
 Chong E.Z., P11.25
 Choudry Q., O22.6, P6.14
 Chow D.H.K., O29.7
 Christensen D., O30.9, P17.12
 Christou C., O27.7, O29.10
 Chu P., O13.11, O28.8
 Chua W., P19.6
 Chubb L., O36.10, P18.3
 Chubinskaya S., O41.8
 Chun K., P3.4
 Chung R., P1.2
 Ciampi P., O45.6
 Cianforlini M., O10.4
 Ciapetti G., P11.5, P11.7
 Ciapini G., P4.36
 Cimino A., O13.1
 Clark I., O43.3
 Clegg P., O23.6
 Clement N., O5.5, P19.28
 Clifford P., O31.3, O31.4
 Cliford P., P19.21
 Coathup M., O8.1, P11.12
 Cochis A., O36.3
 Coelho P., O27.5
 Cohen M., O35.2
 Cohen O., O33.6
 Cohen R., P4.11, P4.12
 Colangelo D., O36.1, P17.7
 Colbert K., O29.9
 Cole A., O3.1, O38.4, P17.3, P17.8, P17.28
 Coleman S., P4.27
 Colle F., O1.3
 Collins S., O8.4, O12.9, P4.15, P6.20
 Colombini A., O11.2
 Cometa S., O36.3
 Conde A., O6.1
 Condino S., P17.26
 Conner M., P17.8
 Cör A., P9.4
 Coraca-Huber D., P1.19
 Cordero-Ampuero J., O6.5, P14.1
 Correa C., O38.2, P17.1
 Corten K., P3.7
 Corvec S., O36.8
 Costi J., O30.4, P1.9, P4.42, P17.27, P19.7, S9.4, S24
 Costi K., P4.13
 Court-Brown C., P19.28
 Courtland H.-W., O1.6
 Craig E., P10.5, P10.7
 Crawford A., O41.3
 Cree S., O4.3
 Cremers A., O37.4, P12.1
 Crespo L., O32, O37.5
 Crompton P., O30.1, P17.25
 Crisan C., O42, P19.2
 Crisan D., O24.7, P3.1
 Cristofolini L., S14, S14.5
 Cross A., O3.1, P17.3, P17.28
 Cross M., O26, P4.14, P6.8
 Crotti T., P9.3
 Crova M., O33.2
 Cruel M., O12.6
 Cuffini A.M., O13.1
 Cullen K., P17.28
 Cumhuri Oner F., O27.6
 Curry E., O5.7, P2.3, P10.7
 Cutts S., P4.22
- D**
 D'Adamio S., O17.6
 D'Arros C., O16.2
 Dadsetan M., P18.1
 Dai J., O29.8
 Dakin S.G., O34.4
 Dalgarno K.W., P11.22
 Dallari D., O8.3
 Daniel S., P11.36
 Daniels J., O38.4
 Das D., P4.47
 David E., O36.6
 David S., O33.6
 Davidescu A., O14.3
 Davis G., O40.6
 Dawson C., P4.27
 Dawson J., P2.6, P2.7
 Day R., P17.8
 de Billy B., O16.1
 de Blas G., O10.3, O38.2, P17.1
 De Boodt S., O9.6, P11.6
 De Giglio E., O36.3
 de Girolamo L., O4.5, O11.2, O34.5, P18.1
 De Maria R., O15.4
 De Marinis L., P17.7
 De Nardo L., O33.8, P11.24
 de Peppo G.M., O11.9
 de Ridder R., O20.3
 De S.D., P8.3
 de Villiers D., P4.15
 Dean B., O34.2, O45.5
 Debeer P., O45.3
 Decambron A., O11.8, O32.7
 Deckx J., P11.6
 De-Damborenea J.-J., O6.1
 Dediu V., O27.10
 Deehan D., O37.7
 Deie M., O18.2, P5.3
 Dekker H.A., P11.18
 Delfosse D., O28.1, O28.2
 Della Valle C., O36.3
 Del-Prado G., O6.5, O13.2, P14.1
 Demol J., O9.3, O45.3
 Denaro V., K1, O17.6, O25.1, O25.3, O38.11, O43.4, P2.11, P10.8, P17.30, S32, S32.2
 Dencker M., P11.8
 Deo S.S., P2.9
 DePalma M., P19.8, P19.9

NAME INDEX

Derbyshire B., P4.16
 Dervin G., P3.10
 Des Jardins J.D., O26.7
 Deschepper M., O11.8, O16.6, O32.2
 Desloovere K., P3.7
 Detiger S.E.L., O30.10, P17.16
 Dettoni F., O11.1, O27.9
 Dhaliwal J., P4.17
 Dhand N., P1.7
 Dharmapatni K., P9.3
 Dhert W., O27.6
 Dhir R., O25.6, P4.17
 Dhokia V., O12.8
 Dhooge Y., O5.2, O40.2
 Di Giancamillo A., P18.1
 Di Meco E., O36.1
 Di Pompo G., O2.2, O15.7, P11.7
 Di Resta G., P20.9
 Di Silvio L., O11, P11.17, S12, S12.1
 Diaz Balzani L., O17.6
 Didier H., O40.5
 Diep P., O45.2, P10.3
 Diestelmeier B., P12.6
 Dines D., P10.5
 Dines J., P10.5
 Ding B., P1.9, P19.7
 Ding M., O20.1, P11.8
 Ding Y., O7.1, O7.5, O37.6, S33.5
 Dinh L., P4.6, P4.7
 Dittmer A., O2.5, O2.6, O2.7, P17.9, P17.10, P17.11, P17.13
 D'Lima D., P6.33
 Docheva D., O14.10, P18.12, P18.18
 Dogaki Y., O44.6, P19.27
 Doll H., P2.6
 Domeneghini C., P18.1
 Dominici M., O15.3
 Donaldson N., S31.4
 Donati D., P18.2
 Dong N., O21.5, P4.18
 Dong Q., P17.30
 Donnelly M., P6.1
 Doornberg J., O18.4
 Doornberg J., O35.2, O40.4
 Doral M.N., S15
 Dorn U., P11.36
 Doshi B., O28.3
 Dossing K., P10.9
 Dowling R., O13.10, O28
 Dozza B., P18.2
 Drago L., O36.9
 Drescher W., P16.2
 Drew J., O20.4
 Drynda A., O28.7

Duchi S., P18.2
 Duckworth A., P19.28
 Dudeney S., P6.1
 Dudhia J., O4.3, O34.4
 Duesterdieck-Zellmer K., O37.2, O44.3
 Dun S., O45.4
 Dunn S., O41.3
 Dunn S.L., O38.4
 Dunstan C., S24.4
 Durgam S., O34.3 O41.5 P18.19
 Durham S., O21.1
 Dürselen L., P19.26
 Dvorak M., O30.1, P17.25
 Dwyer K., P4.34
 Dwyer T., O25.7
 Dy C., P1.14, P1.15, P1.16
 Dyrkacz R., O21.4
 Dzerovych N., O40.5

E

Eastell R., O12.3
 Eberle R., O21.7, P4.12
 Eberli U., O36.5
 Ebina K., P2.8
 Ebinesan A., O17.1
 Eerola E., O36.4
 Egashira K., O7.3
 Egli R., P11.32
 Eglin D., O38.8
 Egloff C., O14.1
 Eguchi A., O18.2, P5.3
 Ehrhart N., O36.10, P18.3
 Eichhorn T., P13.5
 Eid T., O14.7
 El Khassawna T., P19.26
 Elia C., P3.9
 Ellanti P., P4.1
 Ellenrieder M., P1.20
 Elliott M., O21.1, P4.28
 Elliott W., O31.6, O35.4, O35.5, O35.6, P19.20
 Ellis M., P18.21
 Elnikety S., O23.2, O23.3
 Elseedy A., O14.7
 Elsibaei A., P4.2, P4.3
 Emans P., O18.5, O37.4, O42.4, P12.1
 Emanuel N., O6.4, O33.6
 Emohare O., O2.5, O2.6, O2.7, O30.9, P17.9, P17.10, P17.11, P17.12, P17.13
 Enayati M., P11.25
 Engqvist H., O33.9
 Enomoto H., O4.7
 Ensini A., S18.2

Eraly K., O45.3
 Eramo A., O15.4
 Errico T., P1.2
 Esbrit P., O2, O6.1, O27.8
 Esposito C., P4.14
 Esteban J., O6.1, O6.5, O13.2, O36, P14.1
 Estok D., O28.5
 Estrada R., O6.4, O33.6

F

Fabbriani C., O36.1, P17.7
 Fahey T., P4.1
 Falcinelli C., O12.3, O26.9, P19.10
 Fall M., O27.3
 Fan C.-M., O39.8
 Fan J.P., P11.17
 Fan Y., P17.30
 Fantoni M., O36.1
 Farinella G., O12.3
 Farraro K., O12.10
 Farrell B., P17.14
 Fedrizzi L., P11.23
 Feibel R., P4.7
 Felka T., O41.1
 Fell M., O6.7
 Feng-Sheng W., P15.3
 Fensky F., O30.6
 Ferguson S., P17.4
 Fernandez J., O34.9
 Fernquest S., O14.6
 Ferrari V., P17.26
 Ferraris S., O13.4, O33.2
 Ferreira S., P11.25
 Festy F., P11.25
 Feuerstein B., O28.7, P6.18
 Field J., O38.9, P4.42
 Fillerova R., P9.2
 Findlay D., O37, O37.3, P9.3, S9, S24.3
 Fini M., O36.9, S2.3
 Fischer J.-F., O24.2
 Fisher C., O30.1, P17.25
 Fisher J., O1.7, O21.2, P6.3, P16.1
 Fitzgerald L.G., O18, O22.7
 Fitzpatrick C., O9.6
 Fitzpatrick D., O19.2
 Fitzpatrick N., S31.2
 Flaxman T., O24.3
 Fledderus J., O27.6
 Fleming F.J., P19.1
 Fleury N., P6.31
 Florea C., O14.3
 Fluit R., P2.2

NAME INDEX

Flurin P.-H., O45.2, P10.3
 Fokin V., P4.30, P15.2, P16.4
 Foo M., P18.22
 Foran J., P4.46
 Forestiero A., P3.8
 Forrer F., O42.7
 Fotia C., O15.3, P4.19, P11.5, P18.14, P20.1
 Frame M., O40.9
 Franceschetti E., O25.1
 Franceschi F., O17.6, O25.1, O25.3
 Francis A.B., O26.5
 Franklin P., O1.5, O5.1, O14.9, P2.4, P6.9
 Franklin S., O4.6, O45.5
 Fransén M., P6.6
 Frascini G., O45.6
 Frassica F., P19.24
 Frayssinet P., P18.4
 Fredericks D., P12.6
 Freeman B., O30.4
 Frei H., O26.4
 Frimanson J., P11.6
 Fritz B., O30.8
 Frostick S., O10.1, O35.3, O35.8
 Fu J., P11.9
 Fu Y.-C., P11.10
 Fujii H., P4.20
 Fujii M., O24.4, P3.2
 Fujii T., O43.5
 Fujino T., P6.17
 Fujisawa Y., P10.16
 Fujiwara T., P20.13, P20.17
 Fukubayashi T., P7.1
 Fukui T., P18.5
 Fukuoka M., O40.3, P17.24
 Fukuta M., P20.8
 Fuller S., P11.16
 Funakoshi N., P10.11
 Funayama T., O15.10
 Fung W., O44.7
 Furu M., O29.4, O43.5
 Furumatsu T., P13.3
 Fusakul Y., P7.2
 Fusi S., P11.23
 Fusumatsu T., P12.4
 Futai K., O24.4, P3.2

G

Gaji S., P18.23
 Galesso D., O19.1
 Galliera E., O4.5
 Gallo J., P9.1, P9.2
 Gallo J., S28.2
 Gamage P., O34.9
 Gambarotti M., O15.4
 Gamberi G., O15.4
 Gangji V., S12.5
 Ganji Y., P11.11
 Gantenbein-Ritter B., P17.4, P17.5
 Gao B., O1.1, O1.2, P6.10
 Gao G., P11.9
 Gao W., O29.8, O32.10
 Garbuio P., O32.9
 Garcia van der Westen R., O18.5
 García-Casado J., O10.3
 Gardner A., P6.11
 Garibo F., P17.2
 Garner P., O9.4
 Garvican E., O4.3
 Gaston P., O5.4, O5.5
 Gavryushenko N., O33.11
 Gay R., O34.7
 Gbejuade H., O6.3, P14.2
 Gelaude F., O9.3
 Gentleman E., P11.25
 Gerald A., P9.3
 Geris L., S14.3
 Gertner E., O2.7, P17.12
 Geurts J., O14.4
 Ghani Y., O33, P11.12
 Ghassemi M., P16.2
 Giacalone A., O43.4
 Giavaresi G., O36.9
 Gibellini D., O15.1
 Gibon E., O7.3
 Gierer P., P17.29
 Giesinger J.M., P2.5
 Giesinger K., P2.5
 Gigante A., O10, O10.4
 Gilbert J., O21.3
 Gilde F., O13.8
 Gill H., O18.3
 Gill H.S., O12.8, O43.8
 Gindraux F., O16.1, O16.2, O32.9, P18.6, P18.7
 Ginebra M.P., P11.7
 Gioia D., O11.1
 Giordano G., P6.13
 Gitlin A., P12.3
 Glyn-Jones S., O14.6
 Goel A., O44.4
 Goel S., O2.1
 Goel S., O29.1, O29.3, O44.4, P18.8
 Goetz J., P12.6
 Goldberg B., O31.8
 Goldberg J., O23.1
 Goldberg M., P11.13

Gomez-Barrena E., O1, O6.1, O6.5, O13.2, O27.8, O37.5, P14.1, S8, S8.1, S8.6, S30
 Gonzalez M., O26.8
 Goodman S., O7, O7.3, S6.3, S28, S28.6
 Goodship A., S30.1
 Goodship A.E., O34.4
 Goodyear A., O29.9
 Gordon A., O17.4, P2.14
 Goslings J.C., P19.15
 Gotoh M., O4.4, O23.4, P10.4
 Gotterbarm T., O11.7
 Goulidakis V., P4.5
 Govil A., O32.6
 Goy R., O39.3
 Grabarczyk J., O33.4
 Grace P.A., P19.1
 Grad S., O38.8, O38.11
 Graeve O., P11.16
 Granchi D., O15.3, O2.2, P18.14
 Grande D., P12.2, P12.3
 Gransier R., O18.5
 Greco M., P4.19
 Green G., P2.1, P4.4, P19.2, P19.3
 Greene M., O20.4
 Greer T., P4.17
 Gremmels H., O27.6
 Grevenstein D., O19.5
 Grevenstein J., O19.5
 Grigoras M., P19.2
 Grill D.E., O10.7
 Grimm B., O5.2, O35.9, O35.10, O42.3, P2.16, P4.39, P4.40
 Grisendi G., O15.3
 Grodzinsky A., O41.1
 Grøgaard B., O22.2
 Gross D., O18.1
 Grosse S., O7.2
 Grossner T., O11.7
 Grosso M., O1.6
 Grover L., P1.3
 Grover L.M., O37.9
 Grum-Schwensen T., P20.2
 Grupp T.M., O12.7, O30.8, P6.12
 Guan Z., O7.1
 Gudnason V., P19.10
 Gueorguiev B., O12.5, O18.6, O26.6, P1.23
 Gueven S., O41.4
 Guijarro S., P17.2
 Guillot R., O13.8
 Gulotta L., P10.7
 Gunnis G., O25.5, O45.7
 Guo B., O2.4, O29.2

NAME INDEX

Guo F., P20.7
Gupta K.K., O29.1, O44.4, P18.8
Gupta M., O41.8
Gupta S., P19.12
Gustilo R., O6.4, O33.6
Gwyn R., O8.5, P4.21, P13.4

H

Ha C., S5.3
Haberkorn U., O11.7
Habibovic P., O13.5, S12.3
Haddad F., O8.1
Haddock G., P17.28
Hadhoud M., O14.7
Hadraba D., O33.5
Hagiwara Y., P11.34
Haglund L.A., S22.4
Hailer N., O38.6
Haines N., O43.6
Hakanen A., O36.4
Hakimi O., O4.6, O33.3, O33.7
Hakimiyan A., O41.8
Hall R.M., O12.2, O26.5
Hallan G., O7.2
Hamada M., P6.37
Hamai S., P1.4
Hamilton D., O5.4, O5.5
Hamilton M., O45.2, P10.3
Hamish L., O14.6
Hamsa I., P4.8
Han F., P19.11
Han P., P6.19
Han X., O32.10
Hanada M., O30.11, P17.15
Hanada S., P11.1
Handl L., O41.1
Hanley E., O43.6
Hansen-Algenstaedt N., O30.6
Hara H., O15.5, O15.6
Hara I., O15.10
Harada N., O11.6
Harada R., O15.5, O15.6
Harada Y., P10.10
Harato K., P1.5
Hardaker C., O21.2
Hargrave-Thomas E., O41, O41.6
Harris K., P2.6, P2.7
Harrison C., P4.22
Harrison P.E., O32.4
Harrold L., O5.1, O14.9, P2.4, P6.9
Hart D., O14.1, O25.2
Hart R., O3.5, P15.1
Hartová P., P15.1
Hartz C., O41.7

Harvey E., O10.6
Haschke H., O12.7
Hasegawa S., O40.3
Hasegawa T., O30.11
Hasei J., P20.13, P20.17
Hashimoto J., O35.7, P2.8, P8.2
Hashimoto S., P6.34, P15.4
Hassan M.S.M., P4.23
Hauenstein K.-H., P17.29
Haugland H.K., O7.2
Hawkes D., O10.1
Hayakawa K., P20.8
Hayasaka T., O30.11
Hayashi K., P20.10
Hayashi Y., P3.3
Haynes D., P9.3, S9, S24.2
He B., O29.2, O39
He Y.-X., O29.7
Healey J., P20.9
Hee H.T., P17.33
Heimann L., O33.1
Heimel P., P6.26
Heiner A., P12.6
Heinze K., O30.4
Helder M.N., O30.10, P17.16
Heller M.O., O12.1, S10.2
Helmrich U., O14.4
Henderson J., O10.6
Hendriks G., O35.9, O35.10
Henke J., O30.5
Henny E., P19.15
Henry P., O25.7
Herberts P., O20.7
Hermus J., O24.5
Hernandez-Lopez J.-M., O6.1
Herndon E., O31.6
Herzog K., O41.5
Herzog W., O14.1
Hettwer W., P20.2
Heuberger P., O23.1, P11.13
Heuberger R., P11.14
Hevia E., O38.2, P17.1
Heyligers I.C., O35.9, O35.10, O42.3, P2.16, P4.39, P4.40
Hidalgo-Arroyo A., O6.3, P14.2
Higaki H., P1.4
Higashi R., O23.4
Higgs G., O21.3
Hildebrand K., O25.2
Hilz F., O11.3, P13.5
Himori K., P10.14
Hing K., O40.6, P11.4, P11.12
Hirano T., O34.7, P6.23
Hirao M., O35.7, P2.8, P8.2

Hirschmann M., O14.4
Hirschmann M.T., O42.7
Hirvonen L., P11.25
Hitora T., P20.3, P20.12
Hjorth M., O20.5
Ho M.Li., P11.10, S19.3
Ho Ba Tho M., S7.3
Hoc T., O12.6
Hodgson A., O40.8
Hoekstra H., O8.6, 4.48
Hoffmann S., P11.36
Hoffmeyer P., O9.2, O40.1
Hofmann G., O12.5
Hofstätter S., O11.10, P11.36
Hogan M., O34, O10.5
Hohl N., P6.13
Høl P.J., O7.2
Holden C., O23.2
Holderied M., P6.12
Holewijn R.M., O30.10
Holland J., O37.7
Holsgrove T., P4.24
Holtby R., O25.4, O25.5, O25.7, O45.7, P6.2
Holzner B., P2.5
Hong A., O2.4
Hong J.M., O2.3
Hong S.-W., P3.5
Hoogendoorn R.J.W., O30.10, P17.16
Hope N., P11.2, P11.3
Horie R., P20.3, P20.12
Horn R., P4.47, P4.48
Hosoi S., P4.52
Housden J., P4.15
Housman L., P4.12
Howard A., O10.1
Howe P., O39.8
Howe T.S., O35.1, P19.29
Howie C., O5.4, O5.5
Howie D., P4.13, P4.42
Hsi Fuh J.Y., O19.4
Hsiao E., P18.15
Hsieh A., O11.4
Hsieh C.-F., O4, P18.12
Hsu H.-C., P1.11, P6.21
Hsu Y.-M., P18.13
Hsu Hsu H.-C., P3.5
Hu J., O4.1, O30.7
Hu R., O30.5
Huang A., O43.7
Huang D., O7.5, O37.6
Huang H., P18.17
Huang J., O37.6, P11.15, P11.17
Huang L., O29.7

NAME INDEX

Huard J., O41, S32, S32.1

Huber G., O9.1, O12.7, O30.2, O30.3, O30.6

Hughes C., P13.4

Hügler T., O14.4

Hulley P.A., O43.8

Hundgeburth M., P19.26

Hung C., S2.1

Hunter P., O34.9

Hutchinson R., O22.6

Hydorn C., O26.7

Hyodo K., O9.5, O44.5

I

Iacono F., O1.3, P6.4

Ibrahim N., O15.9

Iguchi H., P4.49

Ihara H., P6.17

Ii M., P18.5

Iida H., P6.25

Iida S., P4.51

Ikegami H., O45.1

Ikemura S., O44.1, P16.3

Ikeuchi M., P4.35, P4.44

Ikeya M., P18.15, P20.8

Ikoma K., O34.7

Im G.-I., O19, P18.9, P18.25, P18.26, S5.1

Imagama S., P17.15

Imai K., O34.7

Inami S., P17.18

Inoue N., P17.17

Inoue T., P6.23, P17.31

Inui A., P10.10

Inzana J., P11.16

Isaac G., O21.2, P16.1

Isaksson H., O31.2

Ishifuro M., P5.3

Ishiguro N., P17.15

Ishii K., P14.3

Ishii T., P2.8, P8.2

Ishii Y., P5.4

Ishikawa M., O29.4, O43.5

Ishimaru D., O19.3

Ishizawa M., P13.7

Ito H., O29.4, O43.5, P6.27, P6.28, P6.29

Ito Y., P4.45, P6.25, P10.15, P18.24

Itoi E., O10.2, O29.5, P4.10, P7.4, P11.1, P10.14, P11.34, P19.13

Ivicsics M.F., O30.2

Iwai T., O11.6, P6.37

Iwakura T., O44.6, P19.27

Iwamoto J., P1.6

Iwamoto K., O24.4, P3.2

Iwamoto T., P1.12

Iwamoto Y., O44.1, P1.4, P16.3

Iwasaki N., O43.1

Iwasaki T., P20.10

Iwashita K., P1.6

Izumi M., P4.35, P4.44

J

Jackson B., P4.2, P4.3

Jacobs L., P13.6

Jajtner P., O3.5, P15.1

Jakob M., O41.4

Jakobsen S., O20.5

James R., O10.5

Jämsen E., P9.4

Jang Y.W., P6.19

Jansen J.A., O13.5

Janssen D., O19.2

Jansson V., O30.8, P6.12

Jauch SY, O12.7, O12.8

Javaid K., O45.5

Jeer P.J.S., O40.7, P2.1, P4.4, P19.2, P19.3, P19.4

Jeffers J., P13.1

Jelsma J., P4.39

Jenabzadeh R., P4.14

Jennings L., O1.7, P6.3

Jensen A., P11.8

Jeong C., O37.1

Jiang C.C., S19.2

Jih-Yang K., P15.3

Jin Z., P6.3

Jindasa O., O40.7

Jo N.H., P18.9

Joe J.-H., P18.25, P18.26

Johansson P.-E., O20.7

John A., O8.5, P4.21

Johnson E., O32.3

Johnson K., P1.7

Johnstone B., O16, S29, S29.1

Jolles B., P6.31

Jolles B.M., O24.2

Jones E., O23.5

Jones L., P2.7

Jones R., O26.3

Jones S., O8.5, O24.6, P4.21

Jörg F., P20.14

Jost B., P2.5

Jou I.-M., P19.23

Juei-Tang C., P8.1

Jung H., P6.15

Jupiter J., O35.2

Jurvelin J.S., O14.3

K

Kabe A., P3.3

Kabir K., O30.8

Kadyrov M., P16.2

Kahler D., O11.9

Kaimrajh D., O31.6, O35.4, O35.5, P1.14

Kajiyama G., O11.5

Kakinuma H., P14.3

Kalia P., O13, P11.17

Kam C., O31.3, O31.4, O31.6, O35.5, O35.6, P19.20

Kamei G., P5.3

Kamimura M., P19.13

Kamo K., P19.14

Kampschulte M., P19.26

Kanazawa H., P6.30

Kanazawa K., P11.34

Kanazawa T., O4.4, O23.4, P10.4, P12.4, P13.3

Kaneko T., O11.6

Kanemura N., P6.17

Kanezaki S., P5.2

Kang J., O3.3, P17.30

Kang L., P8.1

Kang N., S31.3

Kang X., O40.8

Kang Y.-M., P7.3, P17.19, P17.20

Kannan S., O9.6

Kanwisher M., O26.7

Käppli P., P17.4

Kaptein B., O20.3

Kapur N., O12.2, O26.5

Karfeld-Sulzer L.S., P17.16

Kärholm J., O20.2, O20.7, P3.12, P4.31, S1.3

Karunathilaka L.K.D.C.R., P2.9

Kasahara T., O43.5

Kasahara Y., P6.22

Kasra M., P11.11, P17.21

Kates S., P11.16, S3.1

Kato T. Jr., P20.8

Katsumi R., P1.21

Katz J., P4.12

Kawakami T., P4.35, P4.44

Kawakami Y., P18.5

Kawamoto A., P18.5

Kawamoto T., O15.5, O15.6

Kawano M., P11.34

Ke H.Z., O29.7

Keel M., P17.5

Keeney M., O7.3

Kelly A., O30.1, P17.25

Kemp G., O35.3

NAME INDEX

- Kerens B., O17.3, O17.5, O42.4, P6.16
 Kessler O., K3, P6.33
 Kesterke N., P2.5
 Ketchum J., P19.8, P19.9
 Khaksar F.M., P17.21
 Khalid K., O37.3
 Khan I., O29, P4.28
 Khan U., O6.7, S30.2
 Khor K.S., O P4.4, 40.7, P19.2, P19.3, P2.1
 Kidani T., P20.10
 Kii Y., O24.4, P3.2
 Kiljunen V., O31.7
 Kim B.-S., P18.25, P18.26
 Kim E.-A., P18.25
 Kim H., P13.6
 Kim H.-J., O2.3, P7.3, P17.19, P17.20
 Kim H.-S., P6.19
 Kim J., P4.38
 Kim J.S., P6.19
 Kim J.-W., P19.19
 Kim K., O12.10
 Kim K.I., P18.9
 Kim M.-K., P6.15
 Kim P., P4.6, P4.7
 Kim S., S5
 Kim S.-Y., O2.3
 Kinbrum A., O12.9, P4.15
 Kinsley M., O37.2, O44.3
 Kirby J., O37.7
 Kiriyaama Y., O45.1
 Kirkpatrick C.J., O19.5, O27, S20.3
 Kishimoto K., O10.2, P7.4
 Kita H., P13.2
 Kitajima T., P18.24
 Kitaoka K., P3.3
 Kitaori T., O29.4
 Klebe T., P10.9
 Klein A., O30.3
 Klein G., O21.3, O22.5
 Klein Nulend J. S30.3
 Kliche S., O28.7
 Klingenstein G., P6.8
 Kloen P., O35.2
 Kluess D., P1.20
 Knothe Tate M.L., O4, O14.10, O16.5, O26.10, O26.11, O27.1, S14, S14.2
 Ko J.-Y., O43.2
 Kobayashi A., P6.37
 Kobayashi H., P6.27, P6.28, P6.29
 Kobayashi M., P10.11
 Kobayashi S., O30.11
 Kogawa M., O37.3
 Koh J., P19.29
 Koh J.S.B., O35.1
 Kohli N., O11, O32.3
 Koistinen A., P11.18
 Koizumi Y., P11.34
 Kojima A., P1.22
 Kojima K., O12.5
 Kōks S., P20.15
 Kokubu T., P10.10
 Kokubun T., P6.17
 Kolbert C.P., O10.7
 Komzák M., O3.5, P15.1
 Kondrashov D., P17.14
 Konttinen Y., K2, O7.3, P9.4
 Koo K., P19.29
 Koo S., P6.15
 Koopman B., P2.2
 Kopylov P., P11.20
 Korhonen R.K., O14.3
 Korkusuz F., O13, P11.38, S15, S15.1
 Korkusuz P., S15.3
 Kort N., O17.3, O17.5, O42.4, P6.16
 Kose N., S15.2
 Kosmopoulos V., P1.8
 Kouri V.-P., P9.4
 Koyasu S., P14.3
 Kraay M., O21.3, O22.5, P4.38
 Kreuzer S., O21.5, O28.5
 Krieg J., P11.14
 Kriegova E., P9.1, P9.2
 Krogfelt K., O6.2
 Kromka A., O33.5
 Krueger A., P6.18
 Kueny R., O30.6
 Kuhli M., O13.7
 Kuijer J.P.A., O30.10
 Kuijer R., O16.4
 Kuiper J.H., O32.4
 Kulkova J., O36.4
 Kullaa A., P11.18
 Kumar G., O43, P4.25
 Kumar Jha G., O2.1
 Kumar N., O39.3, O39.5, O39.6, O39.7, P17.33, P20.4, P20.5
 Kumar V.P., P19.11
 Kunisada T., P20.13, P20.17
 Kuntz L., O11.3, P13.5
 Kuo A., P13.6
 Kuo C., P17.14
 Kuo C.-C., O31.5, P1.11
 Kuo M.-Y., P6.21
 Kuroda R., O43, P18.5, P19.27, S32.3
 Kuroda T., P18.5
 Kuroda Y., P4.26
 Kurokawa D., P10.14
 Kurosaka M., O15.6, O44.6, P10.10, P18.5, P19.27
 Kurosaki H., P6.34
 Kurring G., O21.2
 Kurtz S., O21.3, O22.5, S6, S6.1, S16.2
 Kusuzaki K., K5, O15.7, O39, P20.1
 Kuwahara Y., P4.10, P7.4
 Kwan K.H.L., O34.8
 Kweider N., P16.2
 Kwon B.-M., O2.3
 Kwon S., S5
- ### L
- Labrosse M., P4.34
 Lacey J., O27.10
 Lacroix D., O3.4, O26, S7, S7.1, S14.4
 Lacroix H., O42.4
 Lai J., O11.5, O27.2
 Lai K.-A., O42.5
 Lai Y., P11.19
 Lam C., O38.7
 Lambert S., O25.6
 Lamontagne M., O26.4, O43.7, P3.10, P4.34
 Lancaster S., P13.7
 Landauer F., P11.36
 Landgren M., P11.20
 Lane J., O5.4
 Langdale E., O12.4
 Lanotte A., P10.8
 Lanzutti A., P11.23
 Lapeyre A., O13.8
 Larsson K., O3.2
 Lascar T., P10.2
 Laschke M.W., O36.6
 Latta L., O31.3, O31.4, O31.6, O35.4, O35.5, O35.6, P1.14, P1.15, P1.16, P19.20, P19.21
 Laurencin C.T., O10.5
 Laurent R., O16.1, O16.2
 Lawless I., O30.4, P1.9
 Lawrence H., O37.7
 Layrolle P., O16.1, O16.2, O28, S8, S8.2, S20.5
 Le L., O43.3
 Le Maitre C., O3.1, P17.3, P17.8, P17.28
 Le Maitre C.L., O38.4, O41.3
 League A., P2.15
 Lee B., P3.4
 Lee B.-H., P7.3, P17.19, P17.20
 Lee H.-J., P6.15
 Lee H.-M., P7.3, P17.19, P17.20
 Lee I.-K., O2.3
 Lee J., O37.1, S5.2

NAME INDEX

Lee J.-H., P18.26
 Lee J.-M., P18.25, P18.26
 Lee S.H., P20.4
 Lee S.-I., P7.3, P17.19, P17.20
 Lee S.Y., O44.6, P19.27
 Lee V., O39.4
 Leeke G.A., O37.9
 Leeming J., O6.3, P14.2
 Leeuwenburgh S.C.G., O13.5
 Legerlotz K., O23.5
 Lehmann W., O30.6
 Leiferman E., O34.6
 Leithner A., P20.14
 Lemma S., P20.6
 Lenz M., O12.5
 Lenze U., P13.5
 Leonard T., O14.1
 Lepage D., P18.7
 Lerf R., O28.1, O28.2
 Lesci I.G., P18.2
 Li B., S33.3
 Li C.-Y., O29.7
 Li D., O30.7
 Li G., O32.1
 Li J., O19.4
 Li M., P18.10
 Li P., O28.8
 Li Q., O26.1
 Li R.W., O7.4
 Li W., O5.1, P2.4, P6.9
 Li W.-J., O34.6
 Li X., O5, O5.7, P2.10, P4.27, P10.5,
 P10.6, P10.7
 Li X.A., P6.8
 Liao H., P20.7
 Lilleng P.K., O7.2
 Lim C., P13.1
 Lim J., O39.7
 Limburg S., P13.6
 Lin C.-C., O31.5, P6.21
 Lin T., O7.3
 Lindahl J., O31.7
 Lindelauf L., P2.16
 Lindholm L., O36.4
 Linssen B., P2.16
 Lipperts M., P4.40
 Lips K., O33.1
 Lisanti M., O32.8, P4.36, P17.26
 Liskova J., O33.5
 Little C., O14.8
 Liu C., O14.5
 Liu F., P6.3
 Liu G., O38.1, O39.6, P20.4
 Liu H.C., S19.1

Liu J., O29.2, O38.7
 Liu K.P.G., P17.33
 Liu X., O9.6
 Liu Y.-H., P1.10
 Llombart-Ais R., O38.3
 Llombart-Blanco R., O38.3
 Lloyd D., O34.9
 Logan C., P2.3
 Logeart D., O11.8
 Logeart-Avrarmoglou D., O13.8, O16.3,
 O16.7, O27.3, O32.2
 Lohmann C., O28.7, P6.18
 Loiez C., O36.8
 Longo U.G., P2.11, P10.8
 Lopa S., O11.2
 López-Herrradón A., O27.8
 Lopomo N., P11.31
 Loppini M., P2.11, P10.8
 Lorenzen N., O20.5
 Lorenzi B., O2.2
 Lorusso A., P1.17
 Lostin E., O34.2
 Lostis E., O4.6, O33.7
 Lovell T., P4.18
 Lovering A., O6.2, O6.3, P14.2
 Loving L.Q., O22.4
 Lovric V., O23.1, P11.13, P11.21
 Low A., P6.40
 Low S.L., P8.3
 Lowe J., O31.6
 Lowry C., O8.4, P6.20
 Lozano D., O6.1, O27.8
 Lu A., O2.4, O29.2
 Lu H., O4.1, O30.7
 Lu H.-L., O31.5
 Lu Q., O13.9
 Lu T.-W., O31.5, P1.10, P1.11, P3.5,
 P6.21
 Lu W., O14.5, S33, S33.2
 Lu Y., O9, O9.1
 Lucarelli E., P18.2
 Lucas-Diaz M., O6.5
 Luginbuehl R., P11.32
 Luk K., O13.11
 Lusvarghi L., O33.8
 Luzna P., P9.2
 Lykke Hermansen L., O8.7
 Lyman S., P6.8
 Lynch J., O18.1, O26.1
 Lyons C., O8.5

M

Ma R., O7.1, P4.27
 Maasalu K., P20.15

MacDonald A., P4.13
 MacDonald D., O5.4, O21.3, O22.5
 Macias B., O31.9
 Mackintosh S., O24.6
 Madanat R., O31.7
 Madler B., O14.6
 Mae T., P7.5
 Maejima H., P6.17
 Maffei S., P4.36
 Maffulli N., O17.6, O25.1, O25.3, P
 P2.11, 10.8
 Maheson M., O8.5, P4.21
 Mahmood S., O8.5, P4.21
 Mahmoud A., P4.25
 Maina G., O33.2
 Majewski M., O4.2
 Majima T., P6.22
 Mäkelä J.T.A., O14.3
 Mäkinen T.J., O31.7
 Makishima M., P13.7
 Makowski A.-L., O31.6, O44.7, P1.14,
 P1.15, P1.16
 Malandrino A., O3.4
 Malchau E., O33.10
 Malchau H., O20.7, O28.4, O28.5,
 S1.4
 Malhotra A., O27, O27.7
 Malhotra R., O39.6
 Malik I., O8.5
 Malkani A., O22.5
 Mallee W., P19.15
 Malo M.K.H., O14.3
 Maloney W., O11.5
 Maltarello M.C., P11.31
 Maltry J., P4.12
 Mamilos A., O19.5
 Manabe H., P6.23
 Manassero M., O11.8, O16.3, O27.3,
 O32.2, O32.7
 Mancuso E., P11.22
 Mandrone M., O2.2
 Mangnus L., O40.4
 Mansell J., O6.2, P13.7
 Mantovani G., P3.10
 Manz M.G., O27.4
 Manzotti S., O10.4
 Mar D., O29.9
 Marcacci M., O1.3, O13.5, O17,
 O27.10, P6.4, P11.31, S18, S27
 Marchat D., O16.7
 Marcos-Campos I., O11.9
 Marcucio R., P13.6
 Marengo S., O27.9
 Margulis A., O41.8
 Marin E., P11.23

NAME INDEX

- Marletta G., P11.5
Marmotti A., O11.1, O27.9, O41.2
Marolt D., O11.9
Marriott T., P4.28
Marsh D., S12.2, S12.6
Marshall M., P11.22
Martella E., P18.2
Marthen C., O11.3
Martin E., O24.2
Martin I., O27.4, O41.4
Martin J., P12.6
Märtson A., P20.15
Martucci E., O8.3
Maruenda A., P17.2
Maruenda J.I., P17.2
Maruyama Y., P6.30
Masahashi N., P11.1
Masaki N., O30.11
Masri B.A., P5.1
Massa A., P18.14
Massè A., O33.2
Masumoto J., P20.10
Mathon D., P18.4
Matsubara T., P20.9
Matsuda S., O29.4, O43.5, P4.26
Matsukawa A., P18.24
Matsumoto H., P1.6
Matsumoto K., O19.3, P4.45, P6.25, P10.15
Matsumoto M., P4.52, P14.3
Matsumoto S., P6.25
Matsumoto T., P1.22, P18.5
Matsumoto Y., P18.15, S21.2
Matsumura N., O45.1, P1.12
Matsunari H., O4.7
Matsushita T., O11.6, P1.13, P5.2
Matsusue Y., P13.2
Matsuyama Y., O30.11, P17.15
Mattia S., O11.1, O41.2
Mattioli Belmonte M., O10.4
Matzkin E., P2.3
Matzkin E.G., O5.7
Mauerhan D., O43.6
Maurer-Ertl W., P20.14
Mawatari T., O44.1, P16.3
Mayandi S., O34.3
Mayman D., P6.8
Mazaki T., P18.24
Mazzucchelli L., O11.1
McBride S.H., O26.11
McCarthy H., O32.5
McCarthy I., O5.3, O8.1, P3.6
McCaskie A.W., P11.22
McGee M., P4.13, P4.42
McGlashan S., O41.6
McIlff T., O29.9
McInnis K., P2.3
McKenna J., P12.5
McKinley T., P12.6
McLauaghlan G., O22.6, P6.14
McNally E., O14.6
McQueen M., P19.28
Meani E., O36.9
Mears S., O12.4, P4.46, P19.24
Mechlenburg I., O20.5, P4.29, P10.9
Medvedeva O., P4.30, P15.2, P16.4
Meijer D., O40.4
Meijer K., O18.5, O24.5, O35.9, O35.10, S4
Meijer M., O9.7, O20.6
Meijering J., P17.32
Meikle S., O27.10
Mejia A., P2.13
Melaki F., P12.5
Mellema J., O18.4, O40.4
Melli V., O33.8, P11.24
Melnyk A., O30.1, P17.25
Merz M., P4.33
Messina G.M., P11.5
Mevorat Kaplan K., P17.16
Meyer C., O24, P3.7
Michael A., O3.1, P17.3, P17.8 P17.28
Micheal A.R., O38.4
Miclau T., O31
Mifune Y., P10.10, P18.5
Mihata T., P10.16
Mikkelsen L.R., P4.29
Mikkelsen S., P4.29
Mikkonen J., P11.18
Milandri L., O26.9
Miles A., P4.24, P4.50
Miles A.W., O12.8, O22.7
Miles J., P3.6
Miller A., O13.9
Milne E., O31.6, O35.4, O35.5, P1.14, P1.15, P1.16
Milz S., O27.1
Minamisawa S., P7.1
Minato I., P4.51
Minguella J., P11.38
Mino A., P18.24
Minoda M., O15.5, O15.6
Miola M., O13.4, O33.2, P11.37
Miori G., P5.5
Mishima H., O9.5, O44.5, P18.10, P18.11
Mitchell G., O29.10
Mitra A., O31.1
Mitsiadis T., O32, S30.4
Mitsugi N., P6.24
Mitsui Y., P10.4
Mittal R., P10.12
Mittelmeier W., P1.20
Mittlmeier T., P17.29
Miura H., P20.10
Miura K., P17.22, P17.23
Miwa M., P18.5
Miyakawa T., O38.5
Miyamoto T., O24.4, P3.2, P6.35
Miyazaki T., P20.10
Mizutani J., O40.3, P17.24
Mizu-Uchi H., P1.4
Mo Y., P17.33
Mochizuki Y., P6.34, P15.4
Moed B., P19.16, P19.17, P19.18
Mohaddes M., O8, O20.7, P4.31
Mohan K., O44.4
Molina-Manso D., O6.5, O13.2, P14.1
Molloy D., P4.14
Monari D., P3.7
Monfoulet L., O16.7
Mont M., O21.3, O22.5
Montes E., O38.2
Monto R., P18.16
Montúfar E.B., P11.7
Moon S.-H., P7.3, P17.19, P17.20
Moore R., P4.38
Moore S.R., O26.10, O27.
Morapudi S.P., O6.6, P2.12, P4.32
Moretti M., O11.2
Moretti V., O8.2, O17.4, O31.8, O42.6, P2.13, P2.14, P2.15, P4.33
Morgan R., O2.6, O30.9, P17.9, P17.10, P17.11, P17.12, P17.13
Mori D., P10.11
Mori M., P20.3, P20.11, P20.12
Mori Y., O29.5, P19.13
Moriarty F., O6, O36.5, O36.6, O36.7, O36.8, S3.3
Morikawa J., P4.52
Morimoto M., P6.23, P17.3
Morioka T., O45.1
Morishita M., O15.5, O15.6
Moritz N., O36.4
Morlock M., O9.1, O30.6
Morlock M.M., O12.7, O30.2, O30.3
Mormando M., P17.7
Moro L., O25.3
Morrey B.F., O10.7, O35.1
Morrey M., O4.6, O33.7, O34.2
Morrey M.E., O10.7
Morris J., O44.7

NAME INDEX

Morsi E., O14.7
 Motomura G., O44.1, P16.3
 Motterlini N., O42.2, P4.1
 Motwani M., P11.25
 Mouthuy P.-A., O33.3, O33.7
 Mouthy, P.-A., O4.6
 Mrazek F., P9.1
 Mueller P.E., P6.12
 Mulero F., O27.8
 Mulhall K., O37.10
 Mullender M., O18.7
 Müller S.A., O4.2
 Müller-Gerbl M., O14.4
 Mumme M., O41.4
 Munir S., P4.14
 Munir U., O22.1
 Muñoz L., P17.1
 Murakami S., P4.49
 Murase T., P2.8, P10.16
 Murata K., O29.4, P6.17, P17.17
 Muratoglu O., O28.3, O28.4, O28.5,
 O28.6, O33.10
 Murgia A., S8.4
 Murnaghan J., P6.2
 Murphy D., P19.6
 Murphy R., O45.5
 Murray D., O18.1, P2.6
 Musumeci M., O10, O43.4
 Muto T., P10.10
 Mwale F., O38, S22, S22.2
 Myrttil V., O27.3

N

Nadhanan R.R., O39.8
 Nagai S., P14.3
 Nagamoto H., P10.14
 Nagashima H., O4.7
 Nagata K., O4.4
 Nagel K., O30.3
 Nagura I., P10.10
 Nagura T., O45.1, P1.5
 Nairn, M. Fransen L., O17.2
 Naka N., S21.3
 Nakagawa S., P7.5
 Nakamae A., O18.2, P5.3
 Nakamura A., P20.10
 Nakamura H., O4.4, P P6.34, 10.4,
 P15.4
 Nakamura K., O4.4, O23.4
 Nakamura O., P20.3, P20.12
 Nakamura S., P5.2
 Nakamura T., O29.4, O45.1, P1.12,
 P10.11
 Nakasa T., O18.2, P5.3

Nakata H., P20.10
 Nakatani T., P18.11
 Nam D., P6.8
 Namikawa T., P17.18
 Nana A., P1.8
 Narayan V., P11.26, P11.27
 Nasto L.A., O3.3, O30, O36.1, P17.7
 Nathe K., O26.7
 Nau T., P6.26
 Nayak D., O39.3, O39.4, O39.5
 Neil M.J., O42.2
 Neils A., O28.3
 Nelissen R.G.H.H., O5, O8.6, P4.47,
 P4.48, S1, S1.1
 Neo M., P10.16
 Neuss-Stein S., O41.7
 Nevelos J., O21.5, P4.18
 Nevitt M., O18.1
 Ng C.T.L., P6.6
 Ng K.C.G., P4.34
 Ng L.V., O12.8
 Ng Y.H., O35.1
 Ngo K., O3.3, P17.30
 Nguyen J., O5.7, P4.27
 Niada S., P18.1
 Nich C., S28.3
 Nicod L., O16.1
 Nicolescu R., O31.3, O31.4, P19.20,
 P19.21
 Nicolino T., O12.5, P1.23
 Niedernhofer L., O3.3
 Niedzielski P., O33.4
 Nielsen B., O21.7
 Nieminen M.T., O14.3
 Niiikura T., O44.6, P10.10, P18.5,
 P19.27
 Nishida K., O44.6
 Nishimori Y., P4.49
 Nishimura C., P8.2
 Nishimura H., P20.3, P20.12
 Nishimura I., P13.2
 Nishio Y., P6.22
 Nitri M., P6.4
 Noailly J., O3.4, S7.2
 Noble P., O5.1, P6.9
 Nochi H., P6.27, P6.28, P6.29
 Nogler M., P1.19, P4.18
 Noguchi H., P5.4
 Nohara Y., P17.18
 Nohava J., P11.14
 Nollo G., P5.5
 Nomura H., P11.28
 Noonan E., P1.2
 Nordborg C., O3.2

Noriega D., O10.3
 Nork S.E., O18.6
 Noro A., P4.10, P11.1
 Novi M., P17.26
 Nowak D., O33.4
 Nürnberger S., P6.26
 Nuss K., O41.4

O

O'Donnell T.M., O42.2
 O'Kane C., O19.2
 O'Mahoney L., O36.7
 O'Rourke D., O19.2
 Oakley T., O34.2
 Obermayer-Pietsch B., P20.14
 Obert L., O16.1, O16.2, O32.9, P10.2,
 P18.6, P18.7
 O'Byrne J.M., P4.1
 Ochi M., O18.2, P5.3
 Ochiai N., P18.10, P18.11
 Ochsnor P., O36.8
 Offoiach R., P11.23
 Ogasawara K., P11.34
 Ogawa T., P18.10
 Oh C.-W., P19.19
 Oh E.-J., P18.26
 Oh S.-H., P18.26
 Ohashi H., P4.43, P4.51
 Ohgon I., O38.5
 Ohno T., P4.45, P10.15
 Ohshima S., P2.8
 Ohta K., O23.4, P10.4
 Ojo O., O21.4
 Okabe H., P13.2
 Okada Y., O4.7, P14.3
 Okajima Y., P4.43
 Okamoto H., P4.49
 Okamoto T., P20.8
 Okanoue Y., P4.35, P4.44
 Okazaki K., P1.4
 Oki S., O45.1
 Okuma K., P1.5
 Okumachi E., O44.6, P19.27
 Olewinski R., O41.8
 Oliver R., O13.3, O29.10, P11.13
 Olms K., P11.30
 Olvera D., P11.16
 Omokawa Y., P20.10
 Omori G., P1.1, P1.21, P6.38
 Onda A., P7.1
 Ong Y.B., O35.1
 Ongkiehong B.F., O21.6
 Onishi S., O15.10
 Onishi Y., O15.5, O15.6

NAME INDEX

Ono M., P8.2
 Ono S., P10.11, P10.13
 Onodera T., O43.1, P6.22
 Oomen P., O18.5
 Oosterwaal M., O24.5, S4.2
 Ophelders D., P12.1
 Oral E., O28.3
 Orazio V., O32.8
 Ormsby R., O37.3
 Örndal C., O3.2
 Ortolani A., O27.10, P11.31
 Osaki S., P20.13
 Osawa A., P6.30
 Ota H., P6.24
 Otsuka S., O40.3, P17.24
 Otsuka T., O40.3, P4.49, P17.24,
 P18.15, P20.8
 Oudina K., O16.3
 Ouellette A., O35.4, O35.5, O35.6
 Ouellette E., O31.3, O31.4, O31.6,
 O44.7, P1.14, P1.15, P1.16, P19.20,
 P19.21
 Ovaska M.T., O31.7
 Overgaard S., O20.1, P4.37, P11.8
 Ovesen O., O20.1, P4.37
 Oxland T., O30.1, O38.7, P17.25
 Ozaki R., P7.5
 Ozaki T., P12.4, P13.3, P18.24, P20.13,
 P20.17
 Ozasa Y., O34.7
 Ozeki E., O15.10
 Oztuna V., S15.4

P

Pacard E., O16.7
 Pace N., P5.5
 Pacione C., O41.8
 Pajarinen J., O7.3, P9.4, S28.4
 Palmadori I., O12.1
 Palmer A., O14.6, O40
 Pan X., O29.2
 Pandit H., O18.1
 Panseri S., O27.10
 Papadimitropoulos A., O27.4
 Papalia R., O17.6, O25.1, O25.3, O45
 Paquet J., O16.6, O32.2
 Parchi P.D., O32.8, P4.36, P17.26
 Parihar M., S12.4
 Parish A., O40.6
 Park J.-O., P17.19, P17.20
 Park M., P13.6
 Parker D., O26.1
 Parkinson L., O36.10
 Parvizi J., O21.3, O22.5

Pascual F.-J., O13.2
 Pasion M., O6.4
 Pass G., O11.10
 Patel A., O14.4, P2.10
 Patel H.R., O7.4
 Pattappa G., O38.11
 Patton J., O5.4, O5.5
 Pau Ginebra M. S20.4
 Pauchot J., P18.6
 Pazzaglia U., O14
 Pearle A., P6.8
 Pearson K., P2.12
 Peirce S.R., O12.8
 Pelletier M., O27.7
 Pelttari K., O41.4
 Pendegrass C., O13.10, O23.2, O23.3,
 S31.1
 Penny G., O30.5
 Penny J., O20.1, P4.37
 Pentlow A., P4.24
 Perdika P., P11.38
 Pereira A.F., P13.1
 Peretti G., O45.6, P18.1
 Peretti G.M., O11.1, O41.2
 Perez-Jorge C., O6.1
 Perez-Tanoira R., O6.1
 Perissinotto A., P1.17, P1.18, P3.8, P3.9
 Peroglio M., O16, O38.8, O38.11
 Perriman D., O7.4
 Persson C., O33.9
 Perut F., O15.7, P18.20
 Pesce M., P3.8
 Petersen M.K., P4.29
 Petersen M.M., P20.2
 Petite H., O11.8, O12.6, O16.3, O16.6,
 O16.7, O27.3, O32.2, O32.7
 Petrone N., P1.18
 Pettersson M., O33.9
 Pezeshki P., O7, O39.2
 Pezzoli D., O36.3
 Pezzotti G., K4
 Pham D., P17.27
 Phan S., P17.14
 Phillips K., O3.1, P17.3, P17.8, P17.28
 Phillips K.L.E., O38.4
 Piacentini S., P17.7
 Picart C., O13.8
 Piccinini E., O27.4
 Pietschmann M.F., P6.12
 Pilot P., O8.6, P4.47, P4.48
 Pincher N., P4.50
 Pinto N., P2.9
 Piolanti N., O32.8, P4.36
 Pirker-Frühau U., P20.14

Plaskos C., P6.8
 Ploegmakers M., O19.2
 Poggetti A., O32.8
 Poh C.L., O35.1
 Pohl A., O31.1
 Pohlig F., P13.5
 Pola E., O3.3, O36.1, P17.7
 Polakovic S., P6.13
 Poldervaart M., O27.6, O37
 Poli F., O2.2
 Pollack G.H., P13
 Pollard T., O14.6
 Polly D., O2.5, O2.6, O2.7, P17.10,
 P17.13
 Pontiroli L., P11.39
 Ponzo E., O41.2
 Popov C., P18.18
 Portal-Núñez S., O27.8
 Porter A., O1.5, O20.4
 Porter K., P19.5
 Porter M., P4.16
 Post V., O36.8
 Potapova I., O36, O36.5, O36.6
 Povoroznyuk V., O40.5
 Pozo J., S7.5
 Prans E., P20.15
 Prasad M., P19.4
 Prejbeanu R., O24.7, P3.1
 Preston J., P2.1
 Price A., O43.3, P2.6, P2.7
 Price A.J., O43.8
 Price M., P10.6
 Pries F., O41.7
 Pronost N., P17.21
 Puertolas J.-A., O13.2
 Pufe T., O41.7, P16.2
 Püschel K., O9.1, O30.2, O30.3, O30.6
 Puskeiler M., O3.5, P15.1
 Putzer D., O14, P1.19

Q

Qin C., O23, O7.5
 Qin L., O29.7, P11.19, P11.29, P20.7,
 S17, S17.1, S33.4
 Quittion T., O18.4

R

Ra K., P4.43
 Rahman J., P3.6
 Rajiv K., P18.8
 Ramesh A., P12.5
 Ramos R., O6.4
 Rao A., O7.3
 Rappoport L., O41.8

NAME INDEX

- Rasch H., O42.7
 Rasile Robinson A., O3.3
 Raspugli G., P6.4
 Rath B., O41.7, P16.2
 Rathnayake K., P2.9
 Rautiainen J., O14.3, O29.10
 Ray S., O13.6, P19.26
 Razak A., O17.1
 Razmjou H., P6.2, O25.4, O25.5, O25.7, O45.7
 Razzano P., P12.2, P12.3
 Rea W., O5.3
 Recla M., P5.5
 Redl H., P6.26
 Reed G., O14.9
 Regis M., P11.23
 Regnery C., O34.9
 Reichert I, S12, S12.1
 Reimann E., P20.15
 Reimers N., O13.7, P11.30
 Reininga I., O9.7, O20.6
 Ren P.-G., O7.3
 Renaud A., O16.2
 Reyes C., O28.4
 Reynolds S., P3.10
 Ribel-Madsen S., P4.8
 Rice J., P4.2, P4.3
 Richards G., O6, O36.5, O36.6, O36.7, S3, S29
 Richards R.G., O12.5, O18.6
 Richardson J.B., O32.4
 Riches P., O22.3, P4.22
 Riddick T., O37.2
 Rieppo L., P11.18
 Riew D., O38.1
 Riley G., O23.5, O23.6, O34, O34.1, S23.2
 Rimnac C., O21.3, O22.5, P4.38, P11.27, S6.5
 Rimondini L., O36.3
 Ring D., O18.4, O35.2
 Riordan D., P4.2, P4.3
 Ritter A., P1.2
 Robbins P., O3.3
 Roberts A., O43.6
 Roberts S., O32.4
 Robertson M., O21.7
 Robinson J., P6.36
 Robioneck B., P11.30
 Robling A., S11.3
 Roche C., O45.2, P10.3
 Rochford E.T.J., O36.7
 Rocos B., O31, P19.22
 Rogers M., O26.7
 Roh J., O38.9
 Röhl S., O22.2
 Roivainen A., O36.4
 Rojewski M., S8.5
 Rolaufts B., O41.1
 Romanò C.L., O36.9
 Roncuzzi L., P18.20, P20.1
 Rondelli G., O33.8, P11.24
 Rosal M., P2.4
 Rose R., O36.10
 Rosenbaum D., O24, S13, S13.1
 Rosenfeld Y., O33.6
 Rossi R., O11.1, O27.9, O41.2
 Roth A., O38.10
 Rotne R., P1.7
 Rotter Ri., P17.29
 Rotter Ro., P17.29
 Roughley P., S22.3
 Rouquet N., P18.4
 Routman H., O45.2, P10.3
 Rowe D., O29.5
 Rowe P., P4.22
 Rowell S., O28.4, O28.5, O28.6
 Rudert M.J., P12.6
 Rueger J., O30.6
 Ruether W., P6.18
 Ruetschi M., O28.7
 Ruffolo M., O43.6
 Ruike T., P6.27, P6.28, P6.29
 Rullkoetter P., O9.6
 Ruotsalainen T., P11.18
 Russell N., O13.3, O23.1
 Russo A., O27.10, P11.31
 Russo F., O38, O38.11, O43.4, P17.30
 Rutherford-Davies J., P4.25
 Ryan K., P6.1
 Ryd L., S18.4
 Rydevik B., O3.2
 Ryu J.-J., P4.6
S
 Saad S., P9.3
 Saanijoki T., O36.4
 Sabaté Brescó M., O36.7
 Saeki Y., P2.8
 Saensri P., P7.2
 Saether E., O34.6
 Saevarsson S.K., O1.4
 Safi A., P15.1
 Sagara G., P4.49
 Sague J., P11.14, P11.32
 Saheen H., P16.2
 Saidel G., O26.10
 Sailhan F., O13.8
 Saito M., P8.2
 Saito T., P1.12
 Saiz J., O10.3
 Sakai S., O44.5, P18.11
 Sakai Y., O11.6
 Sakane M., O15.10
 Sakayama K., P20.10
 Sakka A., P6.32
 Sakurai H., P4.49
 Saldaña L., O37.5
 Salerno M., O15.1, O15.3, O15.4, P20.6
 Salimi N.M., O37.9
 Salinas A.J., P11.33
 Salo P., O25.2
 Salvatore G., P10.8
 Sampera I., P17.1
 Sánchez-Salcedo S., O27.8, P11.33
 Sanchez-Sotelo J., O10.7
 Sandberg O., O31.2, O31.9, O31.10
 Sanders R.W., P11.30
 Sandri M., O27.10
 Sandrini E., O33.8
 Sanen K., P12.1
 Sano H., P10.14
 Sansone V., O4.5, O11.2,
 Santin M., O27.10
 Sarkhosh H., P11.11
 Sasa T., P6.23, P17.31
 Sasaki A., O24.4, P3.2, P14.3
 Sasaki N., O12.10
 Sasaki T., P20.13, P20.17
 Sasazawa F., O43.1
 Satake Y., P6.34, P15.4
 Sato J., P5.4
 Sato K., O11.6, P1.12, P10.14
 Sato M., P18.24
 Sato N., P6.23
 Sato S., S21.1
 Sato T., P1.1, P1.21
 Saus N., P17.2
 Savari H., O27.3
 Savarino L., P4.19,
 Sawardeker P., O31.3, O31.4, O31.6, O35.4, O35.5, O35.6, P19.20
 Sawatsky A., O14.1
 Scheele C., P6.12
 Schenke-Layland K., O41.1
 Schiavinato A., O14.8
 Schieker M., P18.12, P18.18
 Schilcher J., O29, O31.2
 Schileo E., O12.1, O12.3, O26.9, P19.10
 Schilling C., P6.12

NAME INDEX

- Schizas N., O38.6
 Schmidt S., O33.1
 Schmidt V., O41.1
 Schmitt V.H., O19.5
 Schmölz W., P1.19
 Schneider K., O18.6
 Schneiderova P., P9.1
 Schnettler R., O33.1, P19.26
 Scholes C., O26.1
 Schotanus M., O17.3, O17.5, O42.4, P6.16
 Schroeder C., P6.12
 Schroeder D.W., O21.1
 Schrooten J., S26.2
 Schulten E.A.J.M., P11.18
 Schurink S., P2.2
 Schwartz E., S3
 Schwartz J., P12.2, P12.3
 Schwarz E., P11.16
 Schwiesau J., O30.8
 Scotti C., O27.4, O45.6
 Screen H., O23.6, O34.1
 Secchieri C., O19.1
 Segal D., O6.4
 Segal N., O18.1, O24.1
 Sellenschloh K., O12.7, O30.6
 Semevolos S., O37.2, O44.3
 Senden R., O5.2, O35.9, O35.10, O40.2, O42.3, P2.16, P4.39, P4.40, S13.3
 Senthilkumar V., O29.1
 Sernia C., O36.1, P17.7
 Serrattan R., O14.1
 Seto M., O30.11
 Setti S., O4.5
 Sgaglione N., P12.2, P12.3
 Shah R., O42.6
 Shah S., O9.6
 Shal'nev A., O33.11
 Shamsollahi M.J., P17.4
 Shang L., O11.9
 Shankar V., P10.12
 Shantanu P., P6.33
 Shapter J., P17.27
 Shareghi B., O20.2
 Sharma P., P10.12
 Sharma R., O42.1
 Shaw J., P2.10, P10.6
 Shefelbine S., O26.2
 Shelton J., P4.15
 Shelyakova T., O27.10
 Shen H., O7.5, O37.6
 Shen J., P11.9
 Shen L., P17.33
 Shepherd J., O34.1
 Shetty G., O42, S25, S25.2
 Shi L., S17.4
 Shi Q., O29.8, O32.10
 Shiba K., P17.18
 Shiba N., O4.4, O23.4, P10.4
 Shibahara M., P10.11, P10.13
 Shibata H., O4.4, P10.4
 Shibuya H., O29.4, O43.5
 Shigemitsu S., P17.17
 Shim V., O23, O34.9
 Shimizu K., O19.3
 Shimoto T., P1.4
 Shinjo R., P17.15
 Shinjo T., P1.6
 Shino K., P7.5
 Shinohara K., P6.24
 Shiono Y., P14.3
 Shiozaki Y., P18.24
 Shoghi K., O29.6
 Shoji T., P18.5
 Shruti S., P11.33
 Shyam A., S25, S25.1
 Sidoti H., P1.2
 Sigurdsson S., P19.10
 Sijbesma T., O8.6, P4.48
 Sillesen N., O33.10
 Silva M., O29.6, S11, S11.2
 Simon J.-P., P3.7
 Simons M., O22.3
 Simpson H., O5.4, O5.5
 Sinatra P., P19.16
 Singh A.K., O44.4
 Singh G., O28.7, P6.18
 Singh V., P17.25
 Sinha S., O29.3, P4.5
 Skinderso M., O6.2
 Skjöldebrand C., O33.9
 Skrepnik N., O21.7, P4.11, P4.12
 Skrepnik T., O21.7
 Skrzypiec D.M., O30.3
 Slack R., P4.5
 Sladkova M., O16.3, O27.3
 Slagis S., O21.7, P4.12
 Smay J., O27.5
 Smeekes C., O21.6
 Smit T., P17.32
 Smit T.H., O30.10, P17.16
 Smith A., O24.3, P1.3
 Smith E., P6.14
 Smith M., O14.8
 Smith P.N., O7.4
 Smith R., O4.3, S23.3
 Smith R.K.W., O34.4
 Smith R.L., O7.3, O11.5
 Smitham P., O5.3
 Snelling S., O43.3
 Snorrason F., O22.2
 Snow M., O32.3
 Snyder B., O1.5, O20.4, P2.4
 So K., P4.26
 Søballe K., O8.7, O20.5, P4.29, P9.5, P10.9
 Sobieraj M., O27.5
 Söderström M., O36.4
 Sokolova A., P4.14
 Solitro G., O26.8, P4.41
 Sollazzo V., O15.2, O35
 Solomon B., S9.5
 Solomon L., O31.1, P4.42, P19.7
 Solomon L.B., P4.13
 Sommer U., O33.1
 Song L., O22.4,
 Song M.J., O16.5
 Song Z., O22.4
 Sonofuchi K., P11.34
 Sørensen M., O8.7, P9.5
 Sorial R., P6.40
 Souffrant R., P1.20
 Sowa G., O3.3, P17.30
 Speirs A., O26.4, O43.7
 Spencer S., O40.7
 Sponseller P., P4.46
 Spriano S., O13.4
 Sprio S., P11.31
 Srivastava R., P11.35
 Stadelmann V., O26.6, O36.5, O38.11
 Stagni C., O8.3
 Stamenkov R., P4.42
 Stanco D., O4.5, O11.2, O34.5
 Stanley R., O30.4, P4.42, P19.7
 Stanton J., P19.3
 Stark Y., O6.4
 Steckel H., O13.7
 Steinmann S.P., O10.7
 Steller E., O40.4
 Stevens M., O9.7, O20.6
 Stewart A., P18.19
 Stewart M., O34.3, O41.5, P18.19
 Stilling M., O20.5, P10.9
 Stoeckle U., O41.1
 Stoffelen D., O45.3
 Stoia D.I., O24.7
 Stoia D.-I., P3.1
 Stone D., P11.13
 Stoner K., O1.6
 Stratos I., P17.29
 Strazzari A., O8.3

NAME INDEX

Stroud N., P6.11
 Struck K., O41.1
 Stufkens S., O40.4
 Su F.-C., P19.23
 Su Y., P1.20
 Su Y.-W., O39.8
 Suda Y., O4.7
 Sudo A., P4.52, P17.17, P20.9
 Sudre L., O12.6
 Suen P.K., O29.7
 Sugama R., P4.43
 Sugamoto K., O24.4, P3.2, P6.37, P10.16
 Sugaya H., O44.5, P18.10, P18.11
 Sugimura N., P4.35, P4.44
 Sugiura N., O19.3
 Sugiura Y., P17.15
 Sullivan A., P11.4
 Sultan J., O26.3
 Sun Y., O43.6
 Supuran C., O15.7
 Surtel D., O37.4, P12.1
 Suryavanshi A., P11.35, S25.3
 Sutherland J., O1.6
 Suzuki N., O40.3, P17.24
 Svindrych Z., O33.5
 Swamy G., O30.5
 Switzer J., O2.5, O2.6, P17.9, P17.10, P17.11, P17.13
 Swope S., O45.4
 Szoverfi Z., S7.4

T

Tachihara H., P10.13
 Taddei F., O2, O12.1, O26.9, P19.10
 Tägil M., P11.20
 Tahmasebi Birgani Z., O13.5
 Tai B.C., O39.3
 Tai T., O22
 Tai T.-W., O42.5, P19.23
 Takagi M., S28, S28.1
 Takahashi H., P10.14
 Takahashi K., P6.34, P15.4
 Takai S., P6.22, P6.34, P15.4
 Takai T., P19.13
 Takakubo Y., S28.5
 Takase F., P10.10
 Takaya S., P4.35, P4.44
 Takayanagi K., P6.17
 Takazawa K., P5.3
 Take Y., P7.5
 Takebayashi T., O38.5
 Takeda K., P1.5
 Takeda M., P5.4

Takenaka N., P1.13
 Takeuchi D., P17.18
 Takeuchi H., O4.7
 Taki N., P6.24
 Takigami I., O19.3, P4.45, P6.25, P10.15
 Takizawa H., O27.4
 Tallia F., P11.39
 Tamaki M., P6.35
 Tamaki S., P20.8
 Tampieri A., O13.5, O27.10
 Tan B., P8.3, O38.1, P20.5
 Tan H.C., O19.4
 Tan J., O39.7
 Tan L., P11.40
 Tanabe Y., P4.51
 Tanaka H., P10.13
 Tanaka M., P4.10, P10.14
 Taneichi H., P17.18
 Tang J., P17.14
 Tang Q., P3.6
 Tang T., O29.2, S33, S33.1
 Tani T., P4.35, P4.44
 Tanifuji O., P1.1, P1.21
 Taniguchi S., P4.49
 Tanikawa H., P1.5
 Tarella C., O27.9, O41.2
 Tashiro Y., P1.4
 Tay B.Y., O19.4
 Tay J., P20.4
 Taylor W.R., O12.1
 Tazawa H., P20.13, P20.17
 Teanby D., O22.1
 Tecame A., O25.3
 Tedesco G., O8.3
 Telfer S., O24.5
 Ten Bruggenkatte C.M., P11.18
 Teo Y.-H., P6.6
 Terabayashi N., P4.45, P6.25, P10.15
 Terasima Y., O38.5
 Terrando S., O41.2
 Terriza A., O13.2
 Tessarolo F., P5.5
 Testa E.A., O21, O42.7
 Teti G., P18.2
 Tetzlaff W., O38.7
 Teuschl A., P6.26
 Thakkar C., P19.25
 Thakkar S., O12.4, P4.46, P19.24, P19.25
 Thakrar R., P6.36
 Thambiah J., O39.6, P17.33, P20.4
 Thambyah A., O34.10, O41.6
 Theelen L., O5.2, O40.2

Thewlis D., O24.6, S9.3
 Thian E.S., O19.4
 Thiebat G., O34.5
 Thiengwittayaporn S., P7.2
 Thomas B., O13.10
 Thomas D., O27.3
 Thompson J., P16.1
 Thompson M., P4.27
 Thompson N., O32.6
 Thomson A., P4.22
 Thormann U., O33.1, P19.26
 Thormeyer J., O8.2
 Thorpe C., O23.6
 Thurston P., P4.7
 Tice A., P4.6
 Tingart M., O41.7, P16.2
 Tipper J., S6.4, S16.4
 Titchener A., O22.7
 To M.K.T., O34.8
 Tochigi Y., O24.1, P12.6
 Toda M., O15.5, O15.6
 Todorov A., O4.2, O27.4
 Togawa D., O30.11
 Togou A., O23.4
 Toguchida J., O15, P18.15, P20.8, P11, S21
 Tohidnezhad M., O41.7, P16.2
 Tomankova T., P9.1, P9.2
 Tomita T., O24.4, P3.2, P6.37
 Tomlinson R., O29.6
 Tonai T., P6.23, P17.31
 Toni A., O12.1, O26.9
 Torreggiani E., P18.20
 Toth-Tascau M., P3.1
 Toth-Trascau M., O24.7
 Tovar N., O27.5
 Toyama Y., O4.7, O45.1, P1.12, P14.3
 Tranberg R., P3.12
 Traynor A., O8.4, O12.9, P4.15, P6.20
 Trieb K., O8, O11.10, O15.8, P3.11, P11.36, P20.16
 Trionfo A., P1.16
 Trisolino G., O8.3, O44
 Trucco M., P17.30
 Trufanov G., P4.30, P15.2, P16.4
 Tsai T.-Y., P6.21
 Tseng J.-Y., P17.6
 Tsuang Tsuang Y.-H., P17.6
 Tsuang Y.-H., P6.7, P10.1
 Tsuboi H., O35.7, P2.8, P8.2
 Tsuji S., P6.37
 Tsukahara Y., P1.6
 Tsukanishi T., O15.10
 Tsutsumi K., P17.15

NAME INDEX

Tübel J., O11.3, P13.5
 Turgeon T., O21.4
 Turner I., P18.21
 Twomey J., O11.4
 Tyson-Capper A., O37.7
 Tzu-Ping L., P15.3

U

Uckay I., O36.8
 Ueha T., O15.5, O15.6, P6.35
 Ul Haq A., O6.7
 Umeyama K., O4.7
 Unsworth A., S16.3
 Urata Y., P20.13, P20.17
 Urquia Edreira E., O13.5
 Urso R., O6.7

V

Vadalà G., O3, O17.6, O25.1, O25.3,
 O38.11, O43.4, P17.30, S32.2
 Valderrabano V., O14.1, O14.4
 Valdevit A., P1.2
 Valentini A., P5.5
 Vallet-Regí M., O27.8, P11.33
 Valstar E., O20, O20.3, S1, S1.2
 van den Beucken J.J.J.P., O13.5
 van der Geest I., P2.2
 van der Krogt M., P2.2
 van der Meulen M., O1.6, S11, S11.1
 van der Veen A., O18.7, P17.32
 van der Wal B.C.H., O21.6
 van der Weegen W., O8.6, O17.3,
 P4.47, P4.48
 van Deventer K., O27.6
 van Dieen J., O18.7
 Van Geel N., O45.3
 van Hemert W., O5.2, O40.2
 van Hoeve S., S4.4
 van Ijsseldijk E., O20.3
 van Leeuwen J., O22.2
 van Mechelen W., P14
 Van Oosterwyck H., S14.1
 van Rhijn L., O18.5, O24.5, O37.4,
 O38.10, P12.1
 van Rienen U., P1.20
 van Royen B.J., P17.16
 Vandame K., O16.7
 Vanden Berghe P., O9.3
 Vander Sloten J., O9.3
 Vanderby R., O34.6
 Vanhegan I., O8.1
 Varani K., S2.2
 Varga M., O33.5
 Varghese M., O36.2

Varmarken J.E., O20.1, P4.37
 Varoga D., O41.7
 Vassalli M., P11.5
 Vasta S., O25.3, O45
 Vauclair F., P6.31
 Veldhuizen A., O16.4
 Veltman W., O40.4
 Vena P., P18.1
 Ventura Ferreira M., O41.7
 Verboom E., O20, O20.3
 Verdonschot N., O18, O19.2, P2.2, S10,
 S10.3
 Vergroesen P.-P., O3, P17.32
 Verhaar M., O27.6
 Vermesan D., O24.7, P3.1
 Verné E., O33.2
 Verné E., P11.37, P11.38, P11.39
 Viateau V., O11.8, O16.3, O32.7
 Viceconti M., O12.3, O26.9, P12, S10.1
 Viganò M., O4.5, O34.5
 Vigneron L., O9.6, P11.6
 Vila M., O27.8
 Vilaboa N., O37.5
 Vinayakam P., O40.7, P4.4, P19.2,
 P19.3, P19.4, P2.1
 Vincent G., O8.4
 Visai L., O36.3
 Vishwanathan K., O35.8
 Vitale-Brovarone C., P11.38, P11.39
 Vitali M., O45.6
 Vizcay-Barrena G., P11.17
 Vo N., O3.3, P17.30
 Vogt M., O26.2
 Volkmer E., P18.12
 von Eisenhart-Rothe R., O11.3, P13.5
 Von Rechenberg B., O41.4
 Voss K., P1.7
 Votteler M., O41.1
 Vrancken A., O19.2
 Vunjak-Novakovic G., O11.9

W

Wada H., O9.5, O44.5
 Wahl P., O36.8
 Wainwright S., P13.4
 Waki T., O44.6, P19.27
 Walcott M., O20.4
 Wali A., O33.3
 Walkowiak B., O33.4
 Walser J., P17.4
 Walsh P., O37.10
 Walsh W., O13.3, O23.1, O29.10,
 P1.7, P6.40, P11.13, P11.21
 Walsh W.R., O15.9, O27.7

Walter W.K., P4.14
 Walter W.L., P4.14
 Waltjen K., P20.8
 Wang C.-K., P11.10
 Wang D., O3.3, S17.3
 Wang F.S., O43.2, O44.2, S19.4
 Wang G.-J., P11.10
 Wang J., O7.4, O13.9
 Wang K., O32.1
 Wang L.-H., O43.2
 Wang M., P13.6
 Wang T., O27.2
 Wang T.-M., P1.10
 Wang W., O19.4, P8.3, P18.22
 Wang X., O2.4, P11.19, P11.29
 Wang Y., O10.6
 Warley A., P11.17
 Warlop D., O45.4
 Warren R., P10.5, P10.7
 Watanabe H., O19.3, P6.34, P15.4
 Watanabe N., P4.49
 Watanabe S., P1.1, P1.21, P6.38
 Watanabe T., P10.15
 Watanabe Y., O11.6
 Watkins B., O45.5
 Wauthle R., S26.3
 Webb J., O6.3, P14.2
 Webb T., P18.3
 Weber F.E., P17.16
 Weinans H., S26.1
 Weisshaar M.-P., P18.23
 Weissman N., P2.4
 Welting T., O37.4, O38.10, P12.1
 Wen C., O14.5
 Wen T., O30.1
 Wenke J., S3.4
 Wentink N., O5.2, O40.2
 Werling N.J., O34.4
 Wheway K., O45.5
 Whyne C., O39.2
 Wickramasinghe N., P19.28
 Wijenayaka A., O37.3
 Wilcox R., O9.4
 Wild Jr. J., O21.7
 Wilken F., P13.5
 Wilkinson M., O41.3
 Willems P., O38.10
 Williams P., P10.7
 Williams R.L., O37.9
 Williams S., O21.2, P16.1, S16
 Wilson D., O40.8
 Wilson D.R., P5.1
 Wilson Da., O14.6
 Wilson De., O14.6

NAME INDEX

Wimmer M., O41.8
Windolf M., O26.6, P1.23
Winter C., S13.2
Wise B., O18.1
Witek L., O27.5
Witlox A., O24.5, S4
Witte D., P17.32
Wolke J., O13.5
Wong H.K., O38.1, O39.3, O39.4,
O39.5, O39.6, P17.33, P20.4
Wong H.M., O13.11
Wong K., O14.5
Wong K.L., P17.33
Woo J., O39.2
Woo S., O12.10
Woodard M., O36.10
Woodburn J., O24.5, S4.1
Woodnutt D., P4.21
Wooley P., O22.4
Wright S., P4.50, P6.2
Wright S.J., O1
Wright T., O45.2, P10.3, P10.7
Wu P.H., O39.6
Wu R.-W., O44.2
Wu T., O30.7
Wuertz K., P17.5
Wullems J., P4.47
Wurm A., P1.19
Wyss U., O21.4

X

Xia W., O22.4
Xian C., O39.8
Xie X., P11.29
Xu J., O7.1, S24.5
Xu S., P6.36
Xu Z., O28.8

Y

Yabe Y., P11.34
Yamada K., O11.6
Yamada N., P4.10, P11.1
Yamagami T., P4.49
Yamagami Y., P20.3, P20.12
Yamagiwa H., P1.21
Yamaguchi R., O44.1, P16.3
Yamakawa T., P4.52
Yamakawa Y., P20.13, P20.17
Yamamoto A., P5.2
Yamamoto I., O11.6
Yamamoto N., P10.14, P17.31
Yamamoto T., O44.1, P16.3, P20.12,
P20.3
Yamamoto Y., P6.30

Yamanaka K., O11.6
Yamane K., P18.24
Yamashita F., P10.11
Yamashita T., O38.5, O43.1
Yamato Y., O30.11
Yamazaki M.,
Yamazaki M., O9.5, O15.10, O44.5,
P18.10, P18.11
Yamazaki T., O24.4, P3.2
Yan C., O14.5
Yang C.-H., P6.7
Yang F., O7.3, O11.5, O27.2
Yang H., O29.8, O32.10
Yang J.-L., O15.9
Yang L., O12.3
Yang Q., P20.7
Yang S., O44.7
Yang X., O1.6
Yao Z., O7.3
Yapp C., O33.3
Yasuda T., O37.8
Yaszemski M.J., P18.1
Yayon A., P17.16
Yee A., O39.2
Yeo S.J., P6.39
Yeun K., O13.11
Yeung C., O38.9
Yeung K., O28.8, O34.8
Yew A., O35.1, P6.39, P19.29
Yiasemidou M., O22.1
Yo H., P4.43, P4.51
Yoo O.Si., P6.19
Yoo S., O1.4
Yoon H.-J., O2.3
Yoshida A., P18.24, P20.17
Yoshida K., P6.30
Yoshikawa H., O24.4, P2.8, P3.2, P6.37
Yoshikawa T., O4.7, P4.52
Yoshioka T., O44.5, P18.10, P18.11
Yoshitomi H., O29.4
Yoshizawa T., P18.11
Yost J., O13.9
Yu Y., O15.9, O27.7, P11.13, P11.21
Yubero F., O13.2
Yurube T., P17.30

Z

Zacharias N., O22.4
Zadpoor A., S26
Zadpoor A.A., S26.4
Zampogna B., O17.6, O25, O25.1
Zappini G., P5.5
Zavatsky A., O18.3
Zaw A.S., O39.5, O39.6

Zderic I., O18.6, O26.6, P1.23
Zena V., O10.3
Zeng Z., O4.1
Zerahn B., P4.8
Zeugolis D., O23.7, S23, S23.4
Zhang B., O2.4
Zhang G., O2.4, O29.2
Zhang M., O25.2, P11.19
Zhang P., P11.19
Zhang X., S17, S17.2
Zhao C., O34.7
Zhao L., O34.10
Zhao Y., O28.8
Zheng K., O26.1
Zheng L., P11.29
Zhou H., P2.10, P10.6
Zhou J., O4.1
Zhou R., O6.6, P2.12
Zhou Z., P6.39, P19.29
Zicat B., P4.14
Ziegler M., O36.7
Zielinska O., O22.5
Zimmerli W., O36.8
Zini N., O15.1
Zouhair S., O41.1
Zreiqat H., O33, S9.2, S24
Zuckerman J., O45.2, P10.3
Zügner R., P3.12
Zulqadar S., O26.11

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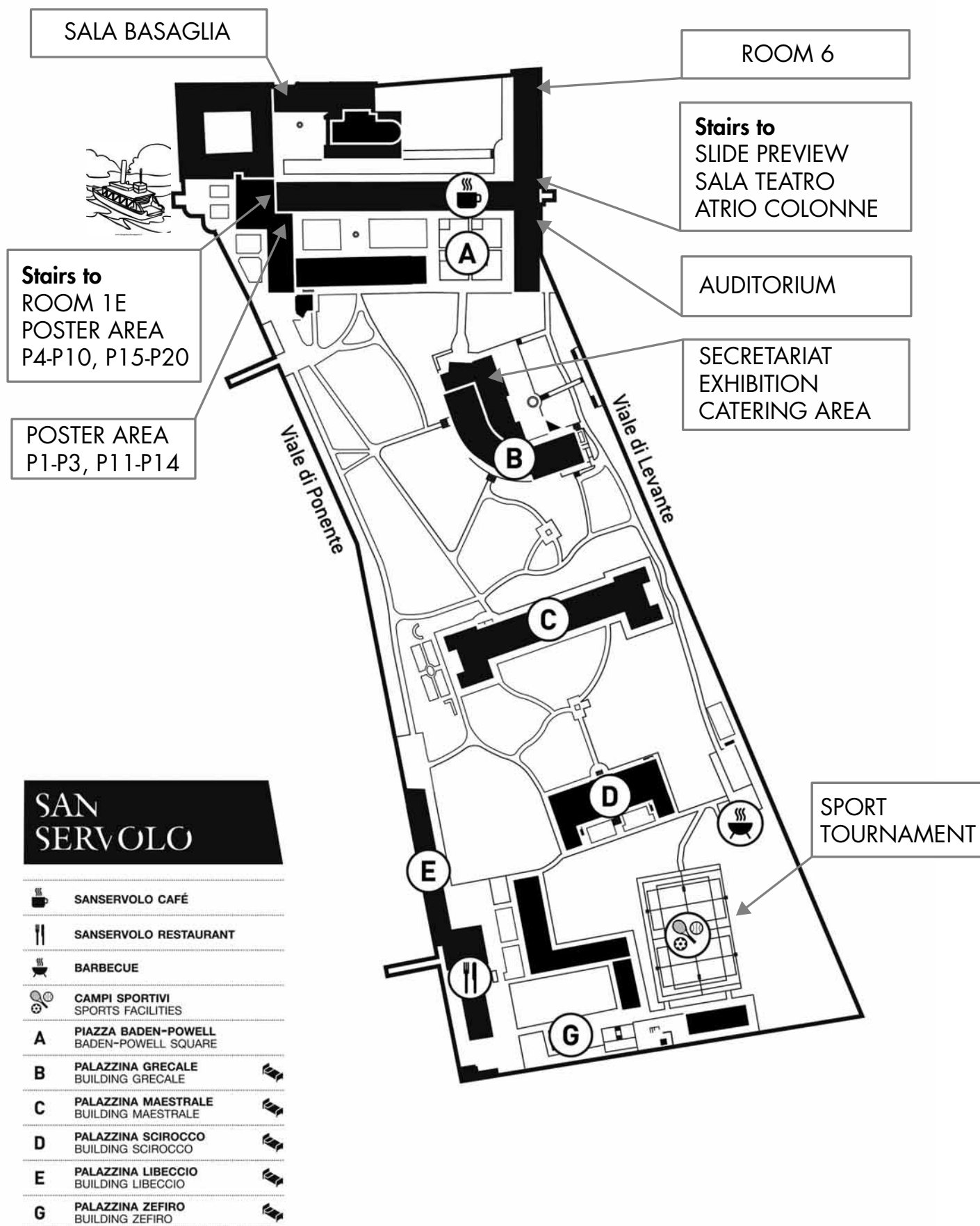


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