"Transplantation of an alginate-matrigel matrix containing isolated ovarian stromal cells: first step in developing an artificial ovary"

Vanacker, Julie ; Dolmans, Marie-Madeleine ; des Rieux, Anne ; Jaeger, Jonathan ; Luyckx, Valérie ; Van Langendonckt, Anne ; Donnez, Jacques ; Andrade Amorim, Christiani

ABSTRACT

Introduction: For women diagnosed with leukemia, transplantation of cryopreserved ovarian tissue after disease remission is not advisable due to the risk of reintroduction of malignant cells. To restore fertility in these patients, a biodegradable artificial ovary that offers an environment allowing isolated follicles and stromal cells (SCs) to survive and grow needs to be developed. The aim of this study is therefore to test the survival and proliferation of isolated SCs encapsulated in an alginate-matrigel matrix. Materials and Methods: Four NMRI mice were ovariectomized and their ovaries were mechanically and enzymatically disrupted in order to isolate ovarian SCs. Groups of 50,000 SCs were embedded in an alginate-matrigel matrix for further fixation (fresh controls), one week of in vitro culture (IVC) or grafting. SC proliferation (Ki67), apoptosis (TUNEL), scaffold degradation, vessel formation (CD34) and inflammation (CD45) were analyzed. Results: SCs appeared round and none of...
3rd International Conference
"Strategies in Tissue Engineering"

Scientific Program
# Opening

**10:00 - 10:30**

**Franconia Hall**

**Chair:** Maximilian Rudert (Würzburg, Germany)

## Welcome and opening remarks

**W-001** Ulrich Nöth (Würzburg, Germany), President WITE e.V.  
10 min

Heike Walles (Würzburg, Germany), Chair Department of Tissue Engineering and Regenerative Medicine, University Hospital of Würzburg

Jürgen Groll (Würzburg, Germany)  
Chair Department for Functional Materials in Medicine and Dentistry, University of Würzburg

**W-002** Alfred Forchel (Würzburg, Germany)  
President of the University of Würzburg  
10 min

**W-003** Matthias Frosch (Würzburg, Germany)  
Dean of the Medical Faculty, University of Würzburg  
10 min
**Wednesday May 23rd, 2012**

**Session 1: Stem Cells**  
10:30 - 12:30  
Franconia Hall

**Chairs:**  
- Paolo Bianco (Rome, Italy)  
- Wiltrud Richter (Heidelberg, Germany)

**Keynote Lectures**

<table>
<thead>
<tr>
<th>Session</th>
<th>Speaker</th>
<th>Topic</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>O-001</td>
<td>Paolo Bianco (Rome, Italy)</td>
<td>Postnatal progenitors of skeletal and non-skeletal mesodermal tissues</td>
<td>25+5 min</td>
</tr>
<tr>
<td>O-002</td>
<td>Wiltrud Richter (Heidelberg, Germany)</td>
<td>Activation or silencing - what is the true role of mesenchymal stem cells</td>
<td>25+5 min</td>
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**Oral Presentations**

<table>
<thead>
<tr>
<th>Session</th>
<th>Speaker</th>
<th>Title</th>
<th>Duration</th>
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</thead>
<tbody>
<tr>
<td>O-003</td>
<td>Solvig Diederichs (Pittsburgh, USA)</td>
<td>Mesenchymal progenitors derived from human induced pluripotent stem cells</td>
<td>9+3 min</td>
</tr>
<tr>
<td>O-004</td>
<td>Ludmila Buravkova (Moscow, Russia)</td>
<td>Modulation of multipotent mesenchymal stromal cell immunosuppressive capacity under low oxygen tension</td>
<td>9+3 min</td>
</tr>
<tr>
<td>O-005</td>
<td>Stephan Hackenberg (Würzburg, Germany)</td>
<td>Toxicity of nanoparticles in human mesenchymal stem cells</td>
<td>9+3 min</td>
</tr>
<tr>
<td>O-006</td>
<td>David Guerit (Montpellier, France)</td>
<td>Role of Mir-29a during the chondrogenic differentiation of mesenchymal stem cells</td>
<td>9+3 min</td>
</tr>
<tr>
<td>O-007</td>
<td>Marc Mathieu (Montpellier, France)</td>
<td>Collagen-based microspheres for vectorisation and differentiation of mesenchymal stem cells: a potential strategy for cartilage engineering</td>
<td>9+3 min</td>
</tr>
</tbody>
</table>
Wednesday May 23rd, 2012

Session 2a: Symposium "Biomaterials for Regenerative Medicine 1"

10:30 - 12:30

Balthasar Neumann Hall

Chairs:  
Aldo Boccaccini (Erlangen, Germany)  
Jürgen Groll (Würzburg, Germany)

Keynote Lectures

O-008  
Michael Gelinski (Dresden, Germany)  
Designing anisotropic biomaterials for engineering anisotropic tissues  
20+4 min

O-009  
Hala Zreiqat (Sydney, Australia)  
The art of building new bone using uniquely designed ceramic  
20+4 min

Oral Presentations

O-010  
Ruben D. Godoy-Silva (Colombia, Colombia)  
Improved human fibrin with alginate as a scaffold for tissue engineering of skin - microfluidic approach  
9+3 min

O-011  
Antje Technau (Würzburg, Germany)  
Comparison of decellularized cartilage with collagen type I as a biomimetic material  
9+3 min

O-012  
Ingo Heschel (Herzogenraht, Germany)  
Collagen membranes and three-dimensional collagen sponges for clinical applications in regenerative medicine  
9+3 min

O-013  
Julio Suay (Valencia, Spain)  
Development of bioactive coating for metal implants  
9+3 min

O-014  
Alexander Hoppe (Erlangen, Germany)  
In vitro and in vivo studies of Cu-releasing bioactive glass (type 45S5) derived scaffolds for bone tissue engineering  
9+3 min

O-015  
Karla Lehle (Regensburg, Germany)  
Titanium coating increased biocompatibility of medical polyetherurethanes  
9+3 min
Wednesday May 23\textsuperscript{rd}, 2012

Lunch Break
12:30 - 14:15
Posters & Industrial Exhibition
Foyer
## Keynote Lectures

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Institution</th>
<th>Duration</th>
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<tbody>
<tr>
<td>O-016</td>
<td>Doris Steinmüller-Nethl</td>
<td>Innsbruck, Austria</td>
<td>15+3 min</td>
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<tr>
<td></td>
<td>Construction kit for tailor-made vascularized bone implants</td>
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<tr>
<td>O-017</td>
<td>Frank Kloss</td>
<td>Innsbruck, Austria</td>
<td>15+3 min</td>
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<tr>
<td></td>
<td>Construction kit for tailor-made vascularized bone implants- in vivo performance</td>
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<tr>
<td>O-018</td>
<td>Andreas Briel</td>
<td>Berlin, Germany</td>
<td>15+3 min</td>
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<tr>
<td></td>
<td>VISCOVERTM preclinical imaging: Innovative imaging agents enhance and advance the impact of in vivo small animal imaging.</td>
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## Oral Presentations

<table>
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<tr>
<th>Code</th>
<th>Name</th>
<th>Institution</th>
<th>Duration</th>
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<tbody>
<tr>
<td>O-019</td>
<td>Michaela Bruschi</td>
<td>Innsbruck, Austria</td>
<td>9+3 min</td>
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<tr>
<td></td>
<td>Protein Immobilization to hydrophilic diamond nanoparticles in synthetic scaffolds by mean of physisorption</td>
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<tr>
<td>O-020</td>
<td>Xujun Wu</td>
<td>Innsbruck, Austria</td>
<td>9+3 min</td>
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<tr>
<td></td>
<td>Functionalization of Scaffolds with Nanodiamond Particles and Subsequent Immobilization of Angiopoietin-1 Results in Enhanced Neovascularization</td>
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<tr>
<td>O-021</td>
<td>Katharina Scheller</td>
<td>Heidelberg, Germany</td>
<td>9+3 min</td>
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<tr>
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<td>Upcyte® microvascular endothelial cells repopulate de-cellularized scaffolds</td>
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<tr>
<td>O-022</td>
<td>Zhe Xing</td>
<td>Bergen, Norway</td>
<td>9+3 min</td>
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<tr>
<td></td>
<td>In vitro and In vivo evaluations of copolymer scaffolds modified with nano-diamond particles</td>
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</table>
**Wednesday May 23rd, 2012**

**Session 3: 3D Models for Tissue Engineering and Cancer Research**  
**14:15 - 16:15**  
**Franconia Hall**

**Chairs:**  
Heike Walles (Würzburg, Germany)  
Dietmar Hutmacher (Brisbane, Australia)

**Keynote Lectures**

<table>
<thead>
<tr>
<th>O-023</th>
<th>James Kirkpatrick (Mainz, Germany)</th>
<th>25+5 min</th>
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<tbody>
<tr>
<td></td>
<td>Co-culture models for tissue engineering and cancer</td>
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<table>
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<tr>
<th>O-024</th>
<th>Dietmar Hutmacher (Brisbane, Australia)</th>
<th>25+5 min</th>
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<tbody>
<tr>
<td></td>
<td>Engineering of tumor microenvironments or tumor engineering</td>
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**Oral Presentations**

<table>
<thead>
<tr>
<th>O-025</th>
<th>David Fecher (Würzburg, Germany)</th>
<th>9+3 min</th>
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<tbody>
<tr>
<td></td>
<td>Establishment of an in vitro three-dimensional tumor model by use of a decellularized lung Scaffold</td>
<td></td>
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<thead>
<tr>
<th>O-026</th>
<th>Vehid Salih (London, UK)</th>
<th>9+3 min</th>
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<tbody>
<tr>
<td></td>
<td>Osteogenic events in hMSCs on Ti Implant surfaces are modified by tyrosine kinase AXL</td>
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<tr>
<th>O-027</th>
<th>Gerhard Unteregger (Homburg, Germany)</th>
<th>9+3 min</th>
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<tbody>
<tr>
<td></td>
<td>Invasive growing tumour cells from prostate carcinoma samples exhibit 3D-spheroid character</td>
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</table>

<table>
<thead>
<tr>
<th>O-028</th>
<th>Gerhard Unteregger (Homburg, Germany)</th>
<th>9+3 min</th>
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<tbody>
<tr>
<td></td>
<td>3D-Tumorspheroids in prostate cancer research as a tool to mimic the tumor-environment</td>
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<thead>
<tr>
<th>O-029</th>
<th>Verena Reichert (Erlangen, Germany)</th>
<th>9+3 min</th>
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<tbody>
<tr>
<td></td>
<td>Unraveling breast cancer cell interactions with the bone microenvironment</td>
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</tbody>
</table>
Session 2b: Symposium  14:15 - 16:15  "Biomaterials for Regenerative Medicine 2"

Balthasar Neumann Hall

Chairs:  Aldo Boccaccini (Erlangen, Germany)  
         Jürgen Groll (Würzburg, Germany)

Keynote Lectures

O-030  Paolo A. Netti (Naples, Italy)  20+4 min  
Guiding tissue growth in 3D matrices by spatial and temporal control of signal presentation

O-031  Paul Dalton (Brisbane, Australia)  20+4 min  
Melt electrospinning writing of tissue engineering scaffolds

Oral Presentations

O-032  Agnieszka Piegat (Szczecin, Poland)  9+3 min  
Influence of carbon nanoparticles and fatty acids on antibacterial activity and blood compatibility of new polyesters

O-033  Toshiaki Takezawa (Saga, Japan)  9+3 min  
Development of a collagen xerogel membrane composed of high density collagen fibrils and its application to transplantation in vivo and a culture chamber in vitro

O-034  Gerald Dräger (Hannover, Germany)  9+3 min  
Towards biocompatible medical devices: functionalization of hydrocarbon surfaces with RGD Peptides

O-035  Andreina Parisi-Amon (Stanford, USA)  9+3 min  
Protein engineered biomaterials for bioactive coating

O-036  Pascal Joly (Berlin, Germany)  9+3 min  
Cell-matrix interaction in void regeneration: an age and inter-species comparison of ECM network formation in macroporous scaffolds
O-037  **Rainer Detsch** (Erlangen, Germany)  9+3 min

Bioactive materials, cell & tissue printing: new therapeutic approaches for organ level tissue engineering and regenerative medicine
Coffee Break 16:15 - 16:45

Foyer
Wednesday May 23\textsuperscript{rd}, 2012

Session 4: Musculoskeletal Tissue Engineering I  16:45 - 18:45

Franconia Hall

Chairs: Lars Rackwitz (Würzburg, Germany)  
        Andre Steinert (Würzburg, Germany)

Keynote Lectures

O-038  Rocky Tuan (Pittsburgh, USA)  25+5 min
Adult stem cells in skeletal tissue engineering and regeneration:  
Application of nanostructured biomaterials and microenvironmental regulation

O-039  Chris Evans (Boston, USA)  25+5 min
Gene therapy approaches - Clinical trials and hurdles

Oral Presentations

O-040  Alexandra Karl (Regensburg, Germany)  9+3 min
The Role of TGFβ/BMP signaling in the terminal differentiation in the in vitro chondrogenesis of mesenchymal stem cells

O-041  Gundula Schulze-Tanzil (Berlin, Germany)  9+3 min
Chondrogenesis by heterotopic chondrocytes in polyglycolic acid scaffolds

O-042  Jakob Sieker (Würzburg, Germany)  9+3 min
Direct gene transfer for cartilage repair using coagulated bone marrow aspirate - bone morphogenetic protein-2 [BMP-2] as potent chondrogenic inductor with the risk of osteophyte formation in a rabbit model

O-043  Anika Krase (Heidelberg, Germany)  9+3 min
The correlation between biochemical and biomechanical properties in chondrocyte-seeded scaffolds for cartilage tissue engineering

O-044  Marcy Zenobi-Wong (Zürich, Switzerland)  9+3 min
Engineering MSC condensations for cartilage engineering
Session 5:  Cardiovascular System  16:45 - 18:45

Balthasar Neumann Hall

Chairs:  Katja Schenke-Layland (Stuttgart, Germany)
         W. Robb MacLellan (Seattle, USA)

Keynote Lectures

O-045  W. Robb MacLellan (Seattle, USA)  25+5 min
Characterization and therapeutic potential of human cardiovascular progenitor cells

O-046  Anthony Weiss (Sydney, Australia)  25+5 min
Elasticity, cell interactions and vascular repair

Oral Presentations

O-047  Afshin Arti (Leipzig, Germany)  9+3 min
Potential application of different types of adult stem cells on the treatment of patients following myocardial infarction (a clinical review)

O-048  Anja Metzner (Kiel, Germany)  9+3 min
Use of CD133+ cells for percutaneous tissue-engineered pulmonary valved stent implantation

O-049  Miriam Votteler (Tübingen, Germany)  9+3 min
Acquisition of RNA from FFPE fetal and adult human heart valve leaflets for transcriptional profiling

O-050  Ranjana Rai (Erlangen, Germany)  9+3 min
Poly(glycerol sebacate) based platform for cardiac tissue engineering

O-051  Rodrigo Rezende (Campinas, Brazil)  9+3 min
Organ printing enabling technologies: toward organ biofabrication line
The poster session with "Wine & Cheese" (free of charge) starts at 19:00 at the Foyer of the Congress Center.

Please be available at your poster and ready to present it in the time from

- 19:00 - 20:00 if you have an odd poster number
- 20:00 - 21:00 if you have an even poster number

During the poster presentation, the poster-prize-jury will go through the posters and will nominate the best posters of the conference. The winners will be announced at the closing session on Friday, May 25th.
Thursday May 24\textsuperscript{th}, 2012

Session 6: Biomimetic Materials 8:00 - 10:00

Franconia Hall

Chairs: Jürgen Groll (Würzburg, Germany)  
Michael Gelinski (Dresden, Germany)

Keynote Lectures

O-052 Jos Malda (Utrecht, Netherland)  25+5 min
Induction of complex tissue organisation in articular cartilage

O-053 Carsten Werner (Dresden, Germany)  25+5 min
Modular Biohybrid Hydrogels

Oral Presentations

O-054 Daniel Seitz (Bayreuth, Germany)  9+3 min
Tissue ingrowth and osteoclast behavior on microporous BCP 3D-printed bone scaffolds in co-culture

O-055 Lars Rackwitz (Würzburg, Germany)  9+3 min
Heteropolymeric polycaprolactone-collagen type II nanofiber scaffolds - Co-Electrospinning

O-056 Jürgen Paletta (Marburg, Germany)  9+3 min
Influence of PLLA nanofiber functionalization on colonization, bone healing, angiogenesis and stem cell migration in vivo

O-057 Robert G. Stigler (Innsbruck, Austria)  9+3 min
Pluronic F-127 - A potential scaffold in stem cell based tissue engineering

O-058 Afshin Arti (Leipzig, Germany)  9+3 min
The role of the Biomaterials for the treatment of Myocardial Infarction - a review
Thursday May 24th, 2012

Session 7: Microsystem Technology 8:00 - 10:00

Balthasar Neumann Hall

Chairs: Norbert Schütze (Würzburg, Germany)
       Joachim Nickel (Würzburg, Germany)

Keynote Lectures

O-059 Martin Richter (Munich, Germany) 25+5 min
Bioreactors with microfluidic components for tissue engineering

O-060 Matthias Lutolf (Lausanne, Switzerland) 25+5 min
Microtechnologies to deconstruct and reconstruct stem cell environments

Oral Presentations

O-061 Michael Monaghan (Galway, Irland) 9+3 min
Delivery and efficacy of interfering RNA via a crosslinked collagen hydrogel in an excisional in vivo model and a human pre-clinical model to reduce fibrosis

O-062 Meike Simann (Würzburg, Germany) 9+3 min
Fibroblast growth factor signaling during the adipogenic conversion of osteoblasts

O-063 Michaela Leyh (Regensburg, Germany) 9+3 min
Cartilage-, and subchondral bone derived Factors regulate collagen production in MSC

O-064 Sylvia Hondke (Würzburg, Germany) 9+3 min
WISP1 and -3 affect cell survival in human mesenchymal stem cells (hMSCs) and TC28a2 chondrocytes

O-065 Theresa Schildberg (Dresden, Germany) 9+3 min
Array-based identification of potential osteoarthritis key genes using mesenchymal stromal cells from osteoarthritic versus healthy donors
Coffee Break

10:00 - 10:30

Foyer
Session 8: Nanomaterials in Regenerative Medicine 10:30 - 12:30

Franconia Hall

Chairs: Julia Will (Erlangen, Germany)  
Uwe Gbureck (Würzburg, Germany)

Keynote Lectures

O-066 Sarah Heilshorn (Stanford, USA) 25+5 min  
Designing stem cell delivery systems through protein engineering

O-067 Andreas Greiner (Marburg, Germany) 25+5 min  
Nanofibres by electrospinning for TE applications

Oral Presentations

O-068 Lars Rackwitz (Würzburg, Germany) 9+3 min  
Electrospun collagen type I nanofibers with highly isotropic scaffold architecture support the tenogenic differentiation of human mesenchymal stem cells

O-069 Bettina Ibold (Berlin, Germany) 9+3 min  
Immunological in vitro characterization of xenogeneic extracellular matrix proteins for novel electrospun matrices in cardiovascular tissue-engineering

O-070 Elena Andreeva (Moscow, Russia) 9+3 min  
Silica-based nanoparticle cytotoxicity is composition and cell type dependent

O-071 Elham Vatankhah (Isfahan, Iran) 9+3 min  
Structural characterization of PCL-gelatin composite scaffolds electrospun with different solvent systems

O-072 Ali Negahi Shirazi (Sydney, Australia) 9+3 min  
The effect of cellulose nanofibres on mechanical properties and bioactivity of chitosan
Session 9: Symposium "Start MSC" (BMBF) 10:30 - 12:30
Standardization of Innovative Stem Cell Products for Regenerative Medicine

Balthasar Neumann Hall

Chairs: Albrecht Müller (Würzburg, Germany)
Anthony D. Ho (Heidelberg, Germany)

Keynote Lectures

O-073 Claus Cichutek (Langen, Germany) 25+5 min
Development and regulation of tissue engineered products

O-074 Anthony D. Ho (Heidelberg, Germany) 25+5 min
Mesenchymal stem cells, pluripotent, multipotent or impotent?
Results of the collaborative research consortium START MSC

Oral Presentations

O-075 Karen Bieback (Heidelberg, Germany) 15+5 min
Xenogenic free culture media for MSC expansion

O-076 Michael Ott (Hannover, Germany) 15+5 min
Cell therapies for liver disease - which cells for what?

O-077 Matthias Becker (Würzburg, Germany) 15+5 min
Function of chromatin regulators in MSC ageing and differentiation
Thursday May 24th, 2012

Session 10: Healthy Aging - Regeneration in Old Age and Multimorbidity 10:30 - 12:30

Auvera - Bossi - Wagner Hall

Chairs: Franz Jakob (Würzburg, Germany)
       Günter Lepperdinger (Innsbruck, Austria)

Keynote Lectures

O-078 Günter Lepperdinger (Innsbruck, Austria) 25+5 min
Stem cell aging: agelessness of mesenchymal stem cells?

O-079 Johannes Grillari (Wien, Austria) 25+5 min
Title to be announced

O-080 Denitsa Docheva (Munich, Germany) 20+4 min
Stem Cells for Tendon Tissue Engineering

Oral Presentations

O-081 Robert G. Stigler (Innsbruck, Austria) 9+3 min
The aging bone - a comparison of murine mandibles and femora

O-082 Sebastian A. Müller (Basel, Switzerland) 9+3 min
Tendon healing: treatment options following natural growth factor expression

O-083 Patrick Prager (Würzburg, Germany) 9+3 min
Similar regenerative characteristics of human anterior cruciate ligament fibroblasts from old and young donors
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lunch Break</td>
<td>12:30 - 14:00</td>
</tr>
<tr>
<td>Posters &amp;</td>
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<td>Industrial</td>
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<td>Exhibition</td>
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**Foyer**
Thursday May 24th, 2012

ADIPOA 12:30 - 14:00
Lunch Symposium (EU FP-7)

Balthasar Neumann Hall

Chairs:  Danièle Noël (Montpellier, France)  Andrea Facchini (Bologna, Italy)

Keynote Lectures

O-084  Danièle Noël (Montpellier, France)  15+5 min
Anti-fibrotic effect of adipose stromal cells on chondrocytes from osteoarthritic patients

O-085  Andrea Facchini (Bologna, Italia)  15+5 min
Effect of intra-articular injection of adipose stem cells on different animal models of osteoarthritis

Oral Presentations

O-086  Giovanna Desando (Bologna, Italy)  8+2 min
Effect of adipose stem cells for the treatment of osteoarthritis in a rabbit model

O-087  Simona Neri (Bologna, Italy)  8+2 min
Replivative senescence and genetic stability of cultured human adipose stem cells (ASC) for the regeneration of injured cartilage

O-088  Karine Toupet (Montpellier, France)  8+2 min
Long-term detection of human adipose tissue-derived mesenchymal stem cells after intra-articular injection

Keynote Lecture

O-089  Louis Casteilla (Toulouse, France)  15+5 min
Adipose-derived stromal cells: their identity and uses in clinical trials
Thursday May 24th, 2012

Session 11: Musculoskeletal Tissue Engineering II 14:00 - 16:00

Franconia Hall

Chairs: Maximilian Rudert (Würzburg, Germany)  
Frank Barry (Galway, Ireland)

Keynote Lectures

O-090  Dietmar Hutmacher (Brisbane, Australia)  25+5 min  
Regenerative potential of osteoblasts versus bone marrow derived mesenchymal progenitor cells in the reconstruction of critical sized segmental tibial bone defects in a large animal model

O-091  Frank Barry (Galway, Ireland)  25+5 min  
Mesenchymal stem cells: host response and mechanism of action

Oral Presentations

O-092  Tzu-Miao Lin (Hsin-Chu, Taiwan)  9+3 min  
Cartilage hydrolysate-derived biomaterials for chondrogenesis

O-093  Solvig Diederichs (Heidelberg, Germany)  9+3 min  
Interplay of local TGF-β with fibrin hydrogel and collagen-type I/III scaffolds: role of cells and impact on human mesenchymal stem cell chondrogenesis

O-094  Marie Morille (Montpellier, France)  9+3 min  
New pharmacologically active microsphere (PAM) formulation enhances protein release and promotes cell survival: illustration in hMSC chondrogenesis

O-095  Claudia Eder (Vienna, Austria)  9+3 min  
Spinal defomities & tissue engineering: Intervertebral disc regeneration in the scoliotic spine

O-096  Alexandra Schmiermund (Giessen, Germany)  9+3 min  
The need of an appropriate matrix composition for the differentiation of human mesenchymal stem cells to disc cells
Thursday May 24th, 2012

Session 12: Skin & Regulatory Affairs

14:00 - 16:00

Balthasar Neumann Hall

Chairs:  
Heike Walles (Würzburg, Germany)  
Oliver Pullig (Würzburg, Germany)

Keynote Lecture

O-097  Heike Walles (Würzburg, Germany)  
Automated production of an engineered skin equivalent  
20+4 min

Oral Presentations

O-098  Sivan Unnikrishnan (Trivandrum, India)  
Differentiation of adipose derived mesenchymal stem cells to keratinocytes using matrix directed approach  
9+3 min

O-099  Florian Groeber (Würzburg, Germany)  
Development of a vascularised skin equivalent with a physiological perfused vascular network  
9+3 min

O-100  Ulrike Kriegebaum (Würzburg, Germany)  
Tissue engineering of oral mucosa - in vitro comparison of different scaffolds and cell culture methods  
9+3 min

O-101  Mohd Hilmi Abu Bakar (Kedah, Malaysia)  
In vitro characterization of chitosan skin regenerating template as a porous scaffold for three dimensional cultivation  
9+3 min

O-102  Renjith P. Nair (Trivandrum, India)  
In vitro construction of dermal and epidermal substitutes for healing chronic wounds on biodegradable hybrid scaffold  
9+3 min

O-103  Sarah Küchler (Berlin, Germany)  
Filaggrin knock-down skin models - a new approach in dermatological research  
9+3 min
O-104  **Moritz Goeldner** (Hamm-Lippstadt, Germany)  
In search of finding a suitable business model for regenerative medicine - A reason why cell-based therapies are still not commercially successful

O-105  **Sabine Kloth** (Munich, Germany)  
ISO 13022 - A new international standard for the management of risk and requirements for processing practices for medical products containing viable human cells
Thursday May 24th, 2012

Session 13: Nervous System 14:00 - 16:00

Auvera - Bossi - Wagner Hall

Chairs: Burkhard Schlosshauer (Reutlingen, Germany)  
       Guido Nikkah (Freiburg, Germany)

Keynote Lectures

O-106 Burkhard Schlosshauer (Reutlingen, Germany) 20+4 min  
Biohybrid concepts for neuro tissue engineering

O-107 Guido Nikkah (Freiburg, Germany) 20+4 min  
Stem cell-based restorative approaches in neurodegenerative disorders: challenges and limits

O-108 Garry Brook (Aachen, Germany) 20+4 min  
The development of an orientated nanofibre-based strategy for the repair of the injured peripheral nervous system

Oral Presentations

O-109 Winfried Neuhaus (Vienna, Austria) 9+3 min  
The role of astrocytes in a mouse blood-brain barrier in vitro model of oxygen/glucose deprivation

O-110 Frank Edenhofer (Bonn, Germany) 9+3 min  
Direct conversion of fibroblast cells into tripotent neural stem cells

O-111 Marco Metzger (Würzburg, Germany) 9+3 min  
Evaluation of the in vitro and in vivo potential of neural stem cells derived from human postnatal gut

O-112 Marcel Dihné (Tübingen, Germany) 9+3 min  
Functional neuronal networks generated from human induced pluripotent stem cells
Coffee Break 16:00 - 16:30
Foyer
Thursday May 24th, 2012

Session 14: Drug Delivery 16:30 - 18:30

Franconia Hall

Chairs:  
Lorenz Meinel (Würzburg, Germany)  
Markus Textor (Zürich Switzerland)

Keynote Lectures

O-113  Markus Textor (Zürich, Switzerland)  25+5 min  
Biomimetic Nanoparticle Functionalization and Smart Membrane Assembly of Core-Shell Nanoparticles for Triggered Release Applications

O-114  Wim Henning (Utrecht, Netherlands)  25+5 min  
Thermosensitive and Biodegradable Hydrogels for Protein Delivery

Oral Presentations

O-115  Jens Möller (Würzburg, Germany)  12+3 min  
Catch bonds mediate the uptake of surface bound bacteria by macrophages

O-116  Martin Ehrbar (Zürich, Switzerland)  12+3 min  
Cell-instructive matrices for the recruitment and differentiation of mesenchymal stromal cells during bone healing

O-117  Martin Behe (Villingen, Switzerland)  12+3 min  
Delivery of radioisotopes for diagnostic and therapeutic application

O-118  Subhas C. Kundu (Kharagpur, India)  12+3 min  
Non-mulberry silk biomaterial for regenerative medicine
Thursday May 24th, 2012

Session 15: Regulatory Affairs and Clinical Studies  
16:30 - 18:30

Balthasar Neumann Hall

Chairs:  
Hans-Georg Eckert (Mannheim, Germany)  
Oliver Pullig (Würzburg, Germany)

Keynote Lectures

O-119  
Ralf Sanzenbacher (Langen, Germany)  
Advanced Therapy Medicinal Products: A Regulatory Requirements Roadmap for Europe and Germany  
25+5 min

O-120  
Heiko von der Leyen (Hannover, Germany)  
Design and realization of clinical trials–from bench to bedside  
25+5 min

Oral Presentations

O-121  
Oliver Pullig (Würzburg, Germany)  
Application for cell based medical therapies: A long distance run in the academic environment  
10+5 min

O-122  
Christine Günther (Munich, Germany)  
Cells as a drug: development of pharma-grade cell-based therapies for clinical application  
10+5 min

O-123  
Klaus Kühlcke (Idar-Oberstein, Germany)  
Manufacturing of vectors and gene modified cells for early phase clinical trials on ex-vivo gene therapy in Europe  
10+5 min

O-124  
Albrecht Meichle (Weinheim, Germany)  
Human Heterologous Liver Cells for Treatment of Urea Cycle Disorders - a Regulatory Challenge  
10+5 min
Gala Dinner at the Würzburg Residence

The Gala Dinner at 19:00 starts with a reception at the main entrance of the Würzburg Residence.

Please check the Würzburg map at the end of this program book to find your way to the Würzburg Residence.

Additional tickets for the Gala Dinner are available at the conference office in the Foyer of the Congress Center.
Friday May 25th, 2012

Session 16: Strategies for Tissue Vascularization  8:00 - 10:00
Franconia Hall

Chairs: Anthony Weiss (Sydney, Australia)  
        Vladimir Mironov (Chaleston, USA)

Keynote Lectures

O-125  Vladimir Mironov (Chaleston, USA)  25+5 min
Title to be announced

O-126  Felipe Prosper (Pamplona, Spain)  25+5 min
Cardiovascular regeneration and strategies for neovascularization

Oral Presentations

O-127  Achim Feucht (Munich, Germany)  9+3 min
Prefabrication of tissue engineered constructs – a viable strategy for neovascularisation – a model tested on rabbits

O-128  Stefan Zorn (Wisconsin-Madison, USA)  9+3 min
Specific and reversible growth factor sequestering and release from PEG based hydrogels

O-129  Andreas Arkudas (Erlangen, Germany)  9+3 min
Generation of axially vascularized bone substitute in the AV loop rat model using mesenchymal stem cells and BMP2

O-130  Caroline Seebach (Frankfurt, Germany)  9+3 min
Endothelial progenitor cells improve directly and indirectly early vascularization of mesenchymal stem cells-driven bone regeneration in a critical bone defect in rats

O-131  Christian Muhr (Würzburg, Germany)  9+3 min
3D coculture spheroids of adipose-derived stem cells and microvascular endothelial cells - local inhibition of adipogenesis
Session 17: Musculoskeletal Tissue Engineering III

Friday May 25th, 2012

Balthasar Neumann Hall

Chairs: Mehdi Shakibaei (Munich, Germany)
       Johannes Reichert (Würzburg, Germany)

Keynote Lecture

O-132 Franz Jakob (Würzburg, Germany) 20+4 min
Stem cell targeted strategies for bone regeneration

Oral Presentations

O-133 Elisabeth Seebach (Heidelberg, Germany) 9+3 min
Enhanced in vivo attraction of host cells into mesenchymal stem cell
- seeded fibrin hydrogels transplanted in a rat femur bone defect

O-134 Johannes Reichert (Würzburg, Germany) 9+3 min
A Tissue Engineering Solution for Segmental Defect Regeneration in Long Bones

O-135 Peter Brett (London, UK) 9+3 min
Osteogenic events in hMSCs on Ti implant surfaces are modified by
tyrosine kinase AXL

O-136 Alexander Kahlig (Stuttgart, Germany) 9+3 min
Evaluation of the optimal culture conditions to develop in vitro bone

tissue through various methods of in silico modeling

O-137 Pia Voltz (Heidelberg, Germany) 9+3 min
Ectopic Bone Formation by Human MSC on Synthetic versus
Biological Bone Substitutes

O-138 Mehdi Shakibaei (Munich, Germany) 9+3 min
Three-Dimensional High-Density Co-Culture with Primary
osteoalbs promotes osteogenic differentiation in MSCs in vitro
O-139  **Falk Milan** (Dresden, Germany)  
Dynamic seeding of large cancellous bone scaffolds with mesenchymal stromal cells: spatial cell distribution using perfusion, rotation and static seeding techniques  

O-140  **Sabine Stöckl** (Regensburg, Germany)  
In vitro knockdown of Sox9 affects cell survival via p21 and Cyclin D1 and favors osteogenic differentiation of mesenchymal stem cells
Session 18: Liver, Pancreas and Abdomen  8:00 - 10:00

Auvera - Bossi - Wagner Hall

Chairs:  Marco Metzger (Würzburg, Germany)
         Insa Schröder (Halle, Germany)

Keynote Lectures

O-141  Insa Schröder (Halle, Germany)  25+5 min
       In vitro pancreas - hopes and hypes

O-142  Günter Paeth (Freiburg, Germany)  25+5 min
       Cellular crosstalk between bone-marrow-derived mesenchymal
       stromal cells (MSC) and β-cells

Oral Presentations

O-143  Christiani Amorin (Louvain, Belgium)  9+3 min
       Transplantation of alginate-matrigel hydrogel containing isolated
       ovarian stromal cells: first step to develop an artificial ovary

O-144  Tigran Poghosyan (Paris, France)  9+3 min
       Esophageal tissue engineering using a hybrid approach. In vitro
       analysis of cell seeding conditions

O-145  Iris Dally (Stuttgart, Germany)  9+3 min
       From R&D to GMP - Development of tracheal patch

O-146  Karl-Heinz Heffels (Würzburg, Germany)  9+3 min
       Hernia meshes enhanced with nanofibres for treatment of
       diaphragm defects

O-147  Miroslawa El Fray (Szczecin, Poland)  9+3 min
       Enzymatic degradation of injectable polymeric materials for hernia
       repair
Coffee Break 10:00 - 10:30
Foyer
### Session 19: New Tools for Cell and Tissue Imaging  
**10:30 - 12:30**

**Franconia Hall**

#### Chairs:
- Peter Jakob (Würzburg, Germany)
- Thorsten Walles (Würzburg, Germany)

#### Keynote Lectures

<table>
<thead>
<tr>
<th>ID</th>
<th>Speaker</th>
<th>Title</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>O-148</td>
<td>Peter Jakob</td>
<td>New tools for cell and tissue imaging: MRI and MPI</td>
<td>25+5 min</td>
</tr>
<tr>
<td>O-149</td>
<td>Karin Schütze</td>
<td>Photonic fingerprinting - Raman spectroscopy for marker-free and nondestructive cell and tissue analyses</td>
<td>25+5 min</td>
</tr>
</tbody>
</table>

#### Oral Presentations

<table>
<thead>
<tr>
<th>ID</th>
<th>Speaker</th>
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<tbody>
<tr>
<td>O-150</td>
<td>Jan Hansmann</td>
<td>Impedance spectroscopy - a tool for the characterization of skin equivalents</td>
<td>9+3 min</td>
</tr>
<tr>
<td>O-151</td>
<td>Ben Fabry</td>
<td>Physical principles of cell migration in 3 dimensions</td>
<td>9+3 min</td>
</tr>
<tr>
<td>O-152</td>
<td>Carmen Pettersson</td>
<td>Quantifying of adhesion and mechanics of single cells on biomaterials</td>
<td>9+3 min</td>
</tr>
<tr>
<td>O-153</td>
<td>Marianne E. Mertens</td>
<td>Magnetic Resonance Imaging of Tissue-Engineered Implants</td>
<td>9+3 min</td>
</tr>
<tr>
<td>O-154</td>
<td>Joachim Schrauth</td>
<td>Comparison of different MRI sequences for the characterization of cartilage in an Osteoarthritis model in goats</td>
<td>9+3 min</td>
</tr>
</tbody>
</table>
Friday May 25th, 2012

Session 20: Adipose Tissue Engineering 10:30 - 12:30

Balthasar Neumann Hall

Chairs: Lauren Flynn (Kingston, Canada)  
Torsten Blunk (Würzburg, Germany)

Keynote Lectures

O-155  Lauren Flynn (Kingston, Canada)  25+5 min
Decellularized Adipose Tissue as an Adipo-inductive Substrate for Soft Tissue Engineering

O-156  Nestor Torio-Padron (Freiburg, Germany)  25+5 min
Adipose tissue engineering by transplantation of preadipocytes in fibrin

Oral Presentations

O-157  Lukas Prantl (Regensburg, Germany)  9+3 min
Different Methods to Collect Human Adipose Tissue-derived Adult Stem Cells

O-158  Katharina Storck (Munich, Germany)  9+3 min
In vivo vascularization of engineered adipose tissue using composite constructs made from biodegradable porous scaffolds and hydrogels

O-159  Jürgen H. Dolderer (Tuebingen, Germany)  9+3 min
Assessment of angiogenic factors in de-novo generated vascularized adipose tissue

O-160  Jan-Thorsten Schantz (Munich, Germany)  9+3 min
Development of 3D Breast Shape Scaffolds for Adipose Tissue Engineering

O-161  Timm P. Wolter (Aachen, Germany)  9+3 min
The effect of hyperbaric oxygenation on the expression of the growth factors VEGF, bFGF, IGF, PDGF-BB and MMP-9 in autologous fat transplantation
Friday May 25th, 2012

Session 21: Symposium 10:30 - 12:30
"Tissue Engineering Ear, Nose, Throat and Eye"

Auvera - Bossi - Wagner Hall

Chairs: Norbert Kleinsasser (Würzburg, Germany)
Gerd Geerling (Düsseldorf, Germany)

Keynote Lectures

O-162 Norbert Kleinsasser (Würzburg, Germany) 15+5 min
Applications of Tissue Engineering in Otorhinolaryngology-Reconstructive Head and Neck Surgery

O-163 Rainer Staudenmaier (Munich, Germany) 15+5 min
Customized Tissue Engineering For Ear Reconstruction

O-164 Nicole Rotter (Ulm, Germany) 15+5 min
Cell based restoration of salivary gland function

Oral Presentations

O-165 Kristina Spaniol (Düsseldorf, Germany) 9+3 min
Strategies for Lacrimal Gland Replacement

O-166 Katrin Frölich (Würzburg, Germany) 9+3 min
Tissue Engineering in Laryngology

O-167 Thomas Fuchsluger (Düsseldorf, Germany) 9+3 min
Current Status of Ocular Surface Reconstruction with Tissue Constructs

O-168 Stefan Schrader (Düsseldorf, Germany) 9+3 min
Perspectives of Conjunctival Tissue Engineering

O-169 Gesa Maria Grobe (Braunschweig, Germany) 9+3 min
Stimulation of extracellular matrix synthesis in human corneal keratocytes for tissue engineering applications
Friday May 25th, 2012

Closing Remarks 12:30 - 13:00

Franconia Hall

Chair: Maximilian Rudert (Würzburg, Germany)

Farewell

C-001 Ulrich Nöth (Würzburg, Germany) 30 min
Heike Walles (Würzburg, Germany)
Jürgen Groll (Würzburg, Germany)

Announcement of the poster prize winners and closing remarks
Poster Presentations P 1 - P 101

The posters are presented at the foyer in front of Franconia Hall and can be visited during the whole conference.

Poster set up is on Wednesday, May 23rd, from 7:30 - 10:00. Suitable mounting material is available at the registration desk.

A special poster session with "Wine & Cheese" will be held on Wednesday evening (May 23rd), starting at 19:00 at the Foyer of the Congress Center.

Please be available at your poster and ready to present it in the time from

<table>
<thead>
<tr>
<th>Time</th>
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<tr>
<td>19:00 - 20:00</td>
<td>if you have an odd poster number</td>
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<tr>
<td>20:00 - 21:00</td>
<td>if you have an even poster number</td>
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During this poster presentation, the poster-prize-jury will go through the posters and will nominate the best posters of the conference. The winners will be announced in the closing session on Friday, May 25th.

Posters have to be removed on Friday, May 25th, in the time from 13:00 - 14:00. Posters that have not been removed by 14:00 will be discarded.
## Poster Presentation

### Poster

<table>
<thead>
<tr>
<th>P-001</th>
<th>Miroslava Sedlackova <em>(Brno, Czech Republic)</em></th>
<th>P 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Understanding cell-to-cell communication in hESCs – creating basis for the move to 3D culture</td>
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<thead>
<tr>
<th>P-002</th>
<th>Jan Vojtassak <em>(Trnava, Slovakia)</em></th>
<th>P 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Autologous MSC, Colagenous membrane, PRP and hydroxyapatite: a perspective for Cleft Palate treatment</td>
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<tr>
<th>P-003</th>
<th>Gudrun Hager <em>(Wien, Austria)</em></th>
<th>P 3</th>
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<tbody>
<tr>
<td></td>
<td>Isolation of EPC from human liposuction material by Magnetic Cell Sorting</td>
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<tr>
<th>P-004</th>
<th>Mariana P. Vamanu <em>(Loughborouough, Leicestershire, UK)</em></th>
<th>P 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Microcarrier Engineering: Pluripotent Stem Cell recovery from thermoresponsive particles produced via Membrane Emulsification</td>
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<tr>
<th>P-005</th>
<th>Natalia Gurtowska <em>(Torun, Poland)</em></th>
<th>P 5</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Characterization of novel stem cell sources for urological Tissue Engineering</td>
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<tr>
<th>P-006</th>
<th>Sigrid Seuß <em>(Erlangen, Germany)</em></th>
<th>P 6</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Electrophoretic deposition of soft polymer-based composite coatings containing bioactive glass particles</td>
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<tr>
<th>P-007</th>
<th>Viviana Mourino <em>(Buenos Aires, Argentina)</em></th>
<th>P 7</th>
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<tbody>
<tr>
<td></td>
<td>Characterization of Novel Nano-Composites Containing Bioactive Glass for Bone Tissue Engineering Applications</td>
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<tr>
<th>P-008</th>
<th>Madeleine Witting <em>(Munich, Germany)</em></th>
<th>P 8</th>
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<tbody>
<tr>
<td></td>
<td>Enzymatic Functionalization of Collagens for Medical Applications</td>
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<tr>
<th>P-009</th>
<th>Matthias Kuhlmann <em>(Aachen, Germany)</em></th>
<th>P 9</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dual setting calcium phosphate cements</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>P-010</th>
<th>Anna Statmann <em>(Würzburg, Germany)</em></th>
<th>P 10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Validation of a human 3D Lung Adenocarcinoma Tumor Model via Drug Testing</td>
<td></td>
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<table>
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<tr>
<th>P-011</th>
<th>Sarah Nietzer <em>(Würzburg, Germany)</em></th>
<th>P 11</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Development of a 3D intestinal tumor model on the basis of a natural collagen matrix - induction of beta-catenin and invasion by fibroblasts</td>
<td></td>
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</tbody>
</table>
Corinna Moll (Würzburg, Germany)
Development of a human 3D in vitro tumor test system for nerve sheath tumors

Annika Jaenicke (Berlin, Germany)
Development of 3D human vascularized intestinal equivalents for substance testing in microliter-scale on a multi-organ-chip

Manuel Röder (Würzburg, Germany)
effects and biocompatibility of surface functionalized nanodiamonds on mesenchymal stem cells and breast cancer cells

Daniel Seitz (Bonn, Germany)
Glucose metabolism under low and high oxygen concentration in cartilage tissues of a small animal model

Verena Dexheimer (Heidelberg, Germany)
Proliferation: an important part of in vitro chondrogenesis of human mesenchymal stem cells

Kai Stuckensen (Würzburg, Germany)
A route to osteochondral interface tissue engineering by layered hydrogel deposition

Eiva Bernotiene (Vilinus, Lithuania)
Beneficial effects of human adipose tissue derived stem cells on osteoarthritic cartilage explants in vitro

Achim Feucht (Ulm, Germany)
Mechanical effect on homogeneity of cultured cartilage constructs by reciprocal agitation

Reza Abedian Dehagani (Hannover, Germany)
Arthroscopic measurements of streaming potential integrals as a clinical approach for the quantification of cartilage degeneration

Alexandra Karl (Regensburg, Germany)
BAMBI - a modulator in mesenchymal stem cell chondrogenesis

Karolien Gellynck (Gent, Belgium)
PMMA and PDMS surface modification to enhance sensor-associated vascularization: a histological analysis.
P-023  Jenny Wehmüller (Würzburg, Germany)  
Interaction of human mesenchymal stem cells and human meniscus cell with extracellular matrix and neighboring cells

P-024  Jürgen Steinmeyer (Giessen, Germany)  
Are collagen hydrolysates novel tools to stimulate collagen type II synthesis by human chondrocytes?

P-025  Ausra Unguryte (Vilnius, Lithuania)  
Poorly adherent population of isolated chondrocytes from human articular cartilage express ABC transporter ABCG2 and better redifferentiate to chondrogenic phenotype after propagation in monolayer

P-026  Alexander Nedopil (Würzburg, Germany)  
Comparison of Intra-individual chondrogenic differentiation capacity of ASCs and MSCs in type I collagen-hydrogel

P-027  Fabian Gilbert (Würzburg, Germany)  
Chondrogenic differentiation of bone marrow-derived MSCs with a novel high affine GDF-5 variant (R57A) in vitro

P-028  Manuel Weißenberger (Würzburg, Germany)  
Indian hedgehog gene transfer is a chondrogenic inductor of human mesenchymal stem cells

P-029  Manuela Kunz (Würzburg, Germany)  
Reduced chondrogenic hypertrophy In Vitro following Sox 9 gene transfer in human mesenchymal stem cells

P-030  Afshin Arti (Leipzig, Germany)  
The application of the nanobiomaterials in cardiac tissue engineering (A review)

P-031  Afshin Arti (Leipzig, Germany)  
Stem Cells Differentiation into Human Cardiomyocytes (A Clinical Review)

P-032  Volha Ninichuk (Würzburg, Germany)  
Trans-differentiation of vascular wall-resident progenitor and stem cells into cardiomyocytes
P-033 Sebastian Schürlein (Würzburg, Germany)  
Tissue engineering of human 3D cardiac muscle patches

P-034 Claus Moseke (Würzburg, Germany)  
Dicalcium phosphate emulsion synthesis for calcium phosphate cements with optimized setting reaction stoichiometry

P-035 Andrea Ewald (Würzburg, Germany)  
Cytocompatibility of macroporous phosphate ceramic scaffolds

P-036 Kathrin Hahn (Würzburg, Germany)  
Differentiation of human monocytes into osteoclasts and their activity on calcium and magnesium phosphate cements

P-037 Tomasz Jüngst (Würzburg, Germany)  
Physical vapor deposition of nanocrystalline calcium phosphate coatings

P-038 Franziska Warmuth (Würzburg, Germany)  
Physical vapor deposition of Ti-Ag coatings by means of modular targets

P-039 Daniela Duarte Campos (Aachen, Germany)  
Submerged biofabrication into a hydrophobic high-density fluid

P-040 Tobias Schmitz (Würzburg, Germany)  
Antimicrobial properties of Ti(Ag)N coatings produced by physical vapour deposition

P-041 Tobias Schmitz (Würzburg, Germany)  
Oxygen diffusion hardening of tantalum coatings on cp-titanium for biomedical applications

P-042 Andreas Krause (Hannover, Germany)  
Intelligent bio-based hydrogels as extracellular matrices for tissue engineering

P-043 Holger Kirch (Würzburg, Germany)  
Suitability of a silica gel based non-woven fibre mat for tissue engineering

P-044 Julia van de Kamp (Aachen, Germany)  
Towards in vivo recruitment of mesenchymal stem cells using HGF-loaded biomaterials
P-045  **Jasmin Hum** (Erlangen, Germany)  
Gelatin coatings on bioactive glass (Bioglass®) scaffolds

P-046  **Michael Schmitz** (Würzburg, Germany)  
Synthesis of hydrophilic, multifunctional polymers based of poly(ethylene glycol) methyl ether acrylate

P-047  **Giselle Yeo** (Sydney, Australia)  
The tropoelastin bridge region contributes to elastin fiber assembly and cell interactions

P-048  **Lim Jeong** (Chungnam, Korea)  
Preparation and cellular response of silk fibroin nanofibers containing silver nanoparticles for skin regeneration

P-049  **Kathrin Hahn** (Würzburg, Germany)  
Designing an artificial extracellular matrix by combining biofunctional nanofibers with hyaluronic acid-based hydrogels

P-050  **Matthias Becker** (Heidelberg, Germany)  
Replicative aging and differentiation potential of human adipose tissue-derived mesenchymal stromal cells expanded in pooled human or fetal bovine serum

P-051  **Prager Patrick** (Würzburg, Germany)  
Fabrication of autologous conditioned plasma hydrogels for anterior cruciate ligament regeneration

P-052  **Jörn Probst** (Würzburg, Germany)  
SKINHEAL - Development and Evaluation of new therapies for chronic wound diseases

P-053  **Manuel Butting** (Frankfurt, Germany)  
Autologous full-thickness skin equivalents an alternative for the treatment of non-healing or slowly healing wounds?

P-054  **Frederike Weil** (Würzburg, Germany)  
A human artificial skin model for ex-vivo simulation of graft-versus-host disease

P-055  **Malgorzata Burek** (Wüzburg, Germany)  
Generation of an immortalized murine brain microvascular endothelial cell line as an in vitro blood brain barrier model
P-056  **Antje Appelt** (Würzburg, Germany)  P 56
Development of an in vitro 3D blood brain barrier model

P-057  **Sergio A. Yoshioka** (Sao Paulo, Brazil)  P 57
Characterization of reconstituted anionic collagen for application at nerve tube regeneration

P-058  **Sven Knaack** (Dresden, Germany)  P 58
Functionalized biomaterials for the controlled release of VEGF – an approach for bone defect healing by chemoattraction

P-059  **Sergey Shityakov** (Würzburg, Germany)  P 59
α-Cyclodextrin dimer complexes of dopamine and levodopa derivatives to assess drug delivery to the central nervous system: ADME and molecular docking studies

P-060  **Elke Vorndran** (Würzburg, Germany)  P 60
3D-Powder Printing of Magnesium Phosphate Scaffolds with Drug Eluting Properties

P-061  **Matthias Kuhlmann** (Aachen, Germany)  P 61
Polyglycidol-based Nanogels for Targeted Protein Delivery

P-062  **Szymon Kurdyn** (Würzburg, Germany)  P 62
Multi-factor release systems for regenerative applications in tissue engineering

P-063  **Karl Wenzelewski** (Pforzheim, Germany)  P 63
Standardization: A strategic approach in support towards meeting regulatory requirements

P-064  **Meltem Avci-Adali** (Tübingen, Germany)  P 64
An in vitro rotation model composed of single-use sterile disposables for investigation of endothelialization of different vascular prostheses

P-065  **Torbjorn O. Pedersen** (Bergen, Norway)  P 65
Osteogenic stimulatory conditions enhance growth and maturation of endothelial cell microvascular networks
P-066 Andrea Lenertz (Würzburg, Germany)  
Differentiation of adipose tissue-derived mesenchymal stem cells towards the endothelial lineage by combination of hypoxic treatment and angiogenic growth factors

P-067 Claudia Kleinhans (Stuttgart, Germany)  
The influence of low pressure plasma modification on cell-adhesion and proliferation on degradable bone substitute material

P-068 Andreas Gerken (Mannheim, Germany)  
Assembly of tissue engineering constructs for the reconstruction of bone: Investigation of iron oxide labelled vs. unlabelled mesenchymal stem cells seeded on polylactic acid scaffolds with regard to morphology, viability and differentiation

P-069 Christoph Rücker (Würzburg, Germany)  
BioVaSc as scaffold for tissue engineering of bone substitutes

P-070 Alexey Ivanov (Moscow, Russia)  
Surgical treatment of congenital pseudarthroses using cellular technologies in children

P-071 Alexey Ivanov (Moscow, Russia)  
Reparative potential of allografts in pelvic surgery in children

P-072 Ko Eun Park (Wonkwang, Korea)  
Bone regeneration ability of SF/PCL nano/microfibrous composite scaffolds

P-073 Carina Adamzyk (Aachen, Germany)  
Biomaterial-based bone tissue engineering using mesenchymal stem cells

P-074 Monica Garcia (Porto, Portugal)  
Osteoblastic cytocompatibility of anodised AZ31 and RZ5 magnesium alloys

P-075 Dirk Henrich (Frankfurt, Germany)  
Initial adhesion of bone marrow mononuclear cells (BMC) on a beta-Tricalciumphosphat (TCP)-scaffold is independent from the surface coating
P-076  **Jan Gohlke** (Brisbane, Australia)  
An experimental comparison of ovine mandibular and tibial osteoblasts

P-077  **Enrique Martinez** (Madrid, Spain)  
A new methodology for the improvement of the cell number measurement using commercial cell viability-proliferation assays.

P-078  **Verena Kleiner** (Mainz, Germany)  
Label-free protein detection with individual plasmonic nanoparticles

P-079  **Sofia Dembski** (Würzburg, Germany)  
ORMOBEAD® - New Generation of Multifunctional Particle Systems for Diagnostics and Therapy

P-080  **Sofia Dembski** (Würzburg, Germany)  
Photostimulated nanoparticles for biomedical diagnostics

P-081  **Sönke Frey** (Würzburg, Germany)  
Influence of locally applied CYR61 on Muscle Strength Recovery after acute Compartment Syndrome treated by Limb shortening and distraction procedure in rabbits

P-082  **Katharina Wittmann** (Würzburg, Germany)  
Development of volume-stable adipose tissue constructs

P-083  **Katharina Werner** (Würzburg, Germany)  
Towards Engineering Vascularized Adipose Tissue Using Decellularized Jejunal Segments as Cell Carrier

P-084  **Susanne Dietl** (Würzburg, Germany)  
Engineering adipose tissue constructs using different fibrin gel modifications

P-085  **Steffen Koch** (Tutzing, Germany)  
Micro-Raman Spectroscopy – an invaluable Method for Tissue Engineering and Regenerative Medicine

P-086  **Katharina Werner** (Würzburg, Germany)  
Stem Cell-Seeded Collagen Matrices for the Reconstruction of the Subcutaneous Fat Layer
<table>
<thead>
<tr>
<th>Poster Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P-087</strong>  <strong>Marina Handel</strong> <em>(Hohenstein, Germany)</em></td>
</tr>
<tr>
<td>Engineering soft tissue substitutes with ADSC-biofunctionalized scaffolds</td>
</tr>
<tr>
<td><strong>P-088</strong>  <strong>Marc Burghartz</strong> <em>(Würzburg, Germany)</em></td>
</tr>
<tr>
<td>Cultivation of human salivary gland tissue</td>
</tr>
<tr>
<td><strong>P-089</strong>  <strong>Pedro Gomes</strong> <em>(Porto, Portugal)</em></td>
</tr>
<tr>
<td>Evaluation of the maxillofacial bone regeneration process in an animal model of post-menopausal osteoporosis</td>
</tr>
<tr>
<td><strong>P-090</strong>  <strong>Katrin Lochner</strong> <em>(Rostock, Germany)</em></td>
</tr>
<tr>
<td>Migration capacity and viability of human primary osteoblasts in synthetic three-dimensional bone scaffolds made of electron beam-melted Ti-6Al-4V</td>
</tr>
<tr>
<td><strong>P-091</strong>  <strong>Anke Hoppensack</strong> <em>(Stuttgart, Germany)</em></td>
</tr>
<tr>
<td>An in vitro model of the renal proximal tubule composed of human kidney-derived cells and small intestinal submucosa</td>
</tr>
<tr>
<td><strong>P-092</strong>  <strong>Martin Vaegler</strong> <em>(Tuebingen, Germany)</em></td>
</tr>
<tr>
<td>A biodegradable collagen cell carrier stabilize tissue-engineered urothelium for pre-clinical application</td>
</tr>
<tr>
<td><strong>P-093</strong>  <strong>Matthias Schweinlin</strong> <em>(Würzburg, Germany)</em></td>
</tr>
<tr>
<td>Establishment of primary human gut models in vitro</td>
</tr>
<tr>
<td><strong>P-094</strong>  <strong>Holger Koch</strong> <em>(Leipzig, Germany)</em></td>
</tr>
<tr>
<td>Implantation of decellularized esophagus scaffold patches in piglets: a pilot study</td>
</tr>
<tr>
<td><strong>P-095</strong>  <strong>Alexander van Asbeck</strong> <em>(Würzburg, Germany)</em></td>
</tr>
<tr>
<td>Establishment of a long-term organotypic culture of adult murine pancreas tissue</td>
</tr>
<tr>
<td><strong>P-096</strong>  <strong>Jakob Kreutner</strong> <em>(Würzburg, Germany)</em></td>
</tr>
<tr>
<td>Magnetic Resonance Imaging - a Tool for Planning and Monitoring Implants in Maxillofacial Surgery</td>
</tr>
<tr>
<td><strong>P-097</strong>  <strong>Daniel Weber</strong> <em>(Würzburg, Germany)</em></td>
</tr>
<tr>
<td>Dynamic 3D imaging of the free moving human knee using a retrospective self-gated sequence with a quasi-random sampling scheme</td>
</tr>
</tbody>
</table>
Antagonistic activities of growth factors - A key for cartilage maintenance?

Systems Biology for tissue engineering of mesenchymal stem cells - integrating novel experimental methods and mathematical modelling

Ion doped bioactive glass derived scaffolds for bone tissue engineering

Advanced approaches for the application of bioactive glasses in bone tissue engineering