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The International Journal of Artificial Organs

Organ and tissue replacement: from bench to bedside

Abstracts from the 44th ESAO and 7th IFAO Congress
6-9 September 2017, Vienna, Austria
Congress President and Guest Editor: Heinrich Schima

40

1977-2017 Anniversary year

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Aims and scope

The International Journal of Artificial Organs (IJAO) is the official Journal of the European Society for Artificial Organs (ESAO). The International Journal of Artificial Organs publishes monthly peer-reviewed research and clinical, experimental and theoretical contributions to the field of artificial and bioartificial organs and medical devices. The mission of the journal is to foster the development and clinical application of artificial and bioartificial organs, medical devices or procedures, to treat organ and tissue functional deficits.

The topics of interest range from the initial concept and interdisciplinary research to clinical application, and are grouped in the following independent sections managed by highly qualified Section Editors:

Apheresis, dialysis and liver support

This section focuses on devices and procedures for blood detoxification processes using membranes or sorbents, such as hemodialysis, hemofiltration, hemodiafiltration, plasmapheresis, immune apheresis, leukoapheresis, and processes for plasma procurement and the preparation of plasma derivatives. The section includes systems for blood detoxification and support of liver metabolic failure.

Cardiac assist devices and artificial heart

This section deals with left ventricular assist devices, trans-apical by-pass, extra-corporeal heart assist devices, total artificial heart, valve implants, vascular prostheses, and organ perfusion equipment and techniques.

Artificial lung, ECMO and respiratory support

This section focuses on prostheses and procedures for the treatment of acute and chronic respiratory failure, development and clinical use of ECMO systems.

Sensory organs and neural stimulation

This section covers artificial and bioartificial tissues and organs to replace/correct sensory deficits (e.g., ear, eye etc.), as well as nerve and central nervous system stimulation.

Tissue engineering, bioartificial organs and regenerative medicine

This section focuses on the development, characterization and use of bioengineered tissues and organs, and on techniques to investigate and promote tissue or organ self-regeneration including cell therapies.

Biomaterials and nanotechnology

This section deals with the development, manufacturing, modification, and characterization of synthetic and natural materials with controlled properties, down to the nanometer scale, that make them capable of contacting body fluids and cells for prosthetic and therapeutic applications.

Personalized medicine and individualized care

This section covers genomic, proteomic, metabolomic and computational characterization of pathological conditions, and on how this information may be used to custom tailored treatments based on artificial, bioartificial and tissue engineered organs.

Mechanical prostheses, robotics and medical technology

This section deals with the development and clinical use of mechanical prostheses and robotic systems, as well with new and emerging medical technologies for assistance of patients with organ or tissue failure, in need of rehabilitation and disease prevention.

Author information and manuscripts submission

Full author information and tutorials are available online at www.artificial-organs.com.

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6-9 September 2017 - Vienna, Austria

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ESAO and IFAO 2017



44th Annual Congress of the
European Society for Artificial Organs



7th Congress of the
International Federation for Artificial Organs

*"Artificial Organs
in the orchestra of life"*

Final Program



Ludwig Boltzmann Cluster
Cardiovascular Research



MEDICAL UNIVERSITY
OF VIENNA

Friday, September 8 / 09:30-10:00 / Hall 1

PL2 Plenary Session 2

Chair K. Dasse; Louisville, US

- 09:30 PL3 **The Bionic Hand: Coupling the Brain to Prostheses**
O. Aszmann; Vienna, AT
- 10:00 PL4 **Mechanical Cardiac Support and Cardiac Rhythm Management: A Marriage of two Technologies**
M. Hess; Minneapolis, US

Friday, September 8 / 11:00-12:30 / Hall 2

A22 *Symposium: Numerical Modelling: Design, Optimization and Functional Characterization of VAD's*

Chair 1 F. Consolo; Milan, IT

Chair 2 L. Wiegmann; Zürich, CH

- 11:00 O84 **Past and Future of Blood Damage Modelling in Biofluid Mechanics Laboratory**
L. Goubergrits; Berlin, DE
- 11:12 O85 **Strain-Based Blood Damage Modeling – Current Status and Future Perspectives**
L. Pauli; Aachen, DE
- 11:24 O86 **Computational fluid dynamic analyses and in vitro assessment of a novel microfluidic flow-based assay**
A. Dimasi; Milano, IT
- 11:36 O87 **Numerical modeling of the thrombogenic potential of altered hemodynamics at the left ventricular apex-LVAD interface based on non-invasive patient-specific imaging techniques**
F. Consolo; Milano, IT
- 11:48 O88 **Numerical design improvement and experimental testing of a small VAD**
K. Fraser; Bath, GB
- 12:00 O89 **Influence of pump design variations on hydraulic performance and blood damage: a computational fluid dynamics analysis**
L. Wiegmann; Zurich, CH
- 12:12 O90 **Robust computational tools to improve the development process of mechanical circulatory support**
T. Kaufmann; Aachen, DE
- 12:24 Summary

Friday, September 8 / 11:00-12:30 / Hall 4

B22 *Emerging Applications in Extracorporeal Therapies*

Chair 1 K. Derfler; Vienna, AT

Chair 2 Y. Wu; Seattle, US

- 11:00 IL **Lp(a), a risk factor for cardiovascular disease a successful treatment with LDL apheresis**
K. Derfler; Vienna, AT
- 11:30 IL **Extracorporeal therapies in the stem cell transplantation setting**
V. Witt; Vienna, AT
- 11:50 IL **Selective apheresis of C-reactive protein: a new treatment option for myocardial infarction, stroke, pancreatitis, Crohn's disease, after bypass surgery and rheumatic diseases**
A. Sheriff; Berlin, DE
- 12:10 IL **CytoSorb in liver failure**
B. Tyczynski; Essen, DE

Friday, September 8 / 11:00-12:30 / Hall 3

C22 *Symposium: Nanomedicine*

Chair 1 T. Groth; Halle, GE

Chair 2 G. Gallego-Ferrer; Valencia, ES

- 11:00 IL **Two Decades of Commercializing Nanomedicine for Artificial Organs**
T. Webster; Boston, US
- 11:25 IL **3D Printing of Advanced Photopolymers in Tissue Engineering**
S. Baudis; Vienna, AT
- 11:45 O91 **Immobilization strategies with glycosaminoglycans-polymeric drug conjugate on biomaterials for anti-inflammatory purposes**
H. Al-Khoury; Halle (Saale), DE
- 12:00 O92 **Electrospinning of fibres for nanomedical applications**
A. Repanas; Halle (Saale), DE
- 12:15 O93 **Vascular grafts with defined fiber orientations**
C. Grasl; Vienna, AT