



Newsletter

of the *European Society for Artificial Organs*

Letter from the president

ESAO Newsletter
June 2016

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Sunny Eloot

Dear Members of European Society for Artificial Organs,

It is my pleasure to present you today our second issue of ESAO Newsletter that has been edited by our Secretary General Sunny Eloot.

In February, we had our **ESAO Board meeting** in Frankfurt at which important decisions were made. The Board of Governors (BoG) supported the launch of a **new website** of ESAO, which shall go online this summer. Joachim Jankowski and his team are currently preparing a **Wikipedia presentation** of ESAO. We also established a **LinkedIn account**, which is used to announce our congresses and schools, and any other news. I hope that these measures will increase the awareness of our society in the scientific community and will help to keep you, our valued members, up-to-date about recent developments.

Furthermore, during our BoG meeting, the previous ESAO Congress President Bart Meyns provided a final report showing that the congress in Leuven was a real success in scientific and financial terms. The Board of Governors expressed his sincere gratitude to him for the organisation of this excellent meeting! The President of the upcoming **ESAO Congress in Warsaw**, Piotr Ladyzynski, showed the general outline of the program with special symposia including the keynote speakers. More information on <http://esao2016.ibib.waw.pl>.

After our decision to appoint Volker Witt from Vienna as candidate for the Board of the **World Apheresis Association**, he was elected as Vice President Europe during the last assembly of WAA in April. Our sincere congratulations to Volker Witt!

Dimitrios Stamatialis proposed the establishment of a new **Working Group Bioartificial Organs**, which was highly welcomed by the Board of Governors and will be presented on the next General Assembly for final confirmation (see also p3).

We are very delighted to announce that **Gerhard Rakhorst** from the University Medical Centre Groningen has been appointed as Knight of the Order of the Netherlands Lion (see p2), and want to draw your attention to his organisation of the **Summer School** on Bridging Blood Pump Technologies with Organ Transplantation in Groningen from July 14-16, 2016 (<http://www.esaosummerschool2016.org>).

Finally, I would like to encourage you to submit your articles to **The International Journal of Artificial Organs**, the flagship of our society. More information about recent changes in the IJAO are explained by Andrea Remuzzi on p4.

I hope to see all of you during next ESAO Congress in Warsaw, which will offer an exciting and interesting program and invite you all kindly to attend this meeting.

With warm regards

Thomas Groth, President





On April 26th, Prof dr **Gerhard Rakhorst** received the rather unique title of '**Knight of the Order of the Netherlands Lion**'. This Dutch order of chivalry, established in 1815, is nowadays primarily used to recognise people with an exceptional record in science and with proven impact on the society.

Gerhard Rakhorst received this title because he was at the cradle of **donor organ perfusion**, prolonging significantly the preservation time of donor organs. Furthermore, he has numerous merits due to his different functions in universities, societies and networking groups. Getting this decoration while listening to all the words of praise of the different societies and organisations, made him feel emotional.

Already since he finished his studies of Veterinary Medicine, he has been involved in the development of artificial organs and organ support systems. He finished his scientific career as professor in Artificial Organs at the University Medical Centre Groningen and was CEO of the university spin-off Organ Assist BV, manufacturing machine perfusion systems for reactivation of donor organs.

As emeritus professor Artificial Organs he is still connected to the UMC Groningen and is the director of Goforit Medical BV, providing advice for life science projects and for the development of advanced medical equipment. Even on the age of 70, he is still focussing on the future, ever looking for innovation and collaboration in the different fields of biomedical engineering and artificial organs.

He was and still is of great importance for our society. Beside his significant scientific contributions, he was **president of ESAO** from 2004-2006. Driven by the words of the other big Dutch man Willem Kolff, saying 'when one understands the function of an organ, he/she must be able to mimic it mechanically' he is still looking for improvements, for finding the right pump for the right application. In this spirit, he is also organising the upcoming **2016 ESAO Summer School** on July 14-15 '**Bridging Blood Pump Technologies with Organ Transplantation. Did Kolff's dream come true?**'.



2016 ESAO Summer School: Did Kolff's dream come true?

Willem Kolff once stated that when one understands the function of an organ, he/she must be able to mimic it mechanically. Recently the surgeons of the Cardiothoracic department of the University Medical Centre of Utrecht made public that long term mechanical support shows as good results, in terms of survival and quality of life, as heart transplantation. Some centres have demonstrated that mechanical perfusion of donor organs improves the quality of these organs substantially, so the competition goes on. VADs become smaller and suitable for destination therapy. However, today machine perfusion devices use pumps that have been developed for totally other purposes. What if we can find the right pump for the right application? When you are interested in finding answers to these questions, we invite you to participate at the 2016 ESAO Summer School. Please register via:

www.esaosummerschool2016.org

Deadline for registration June 22, 2016

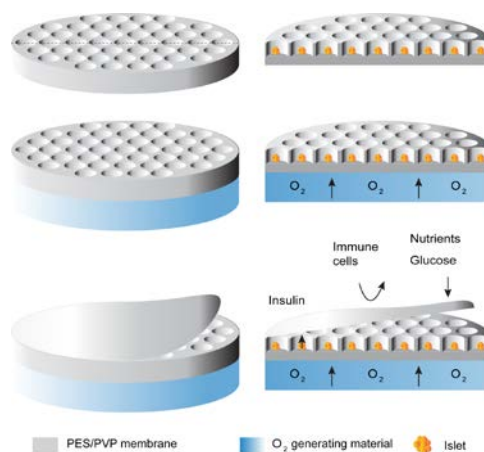
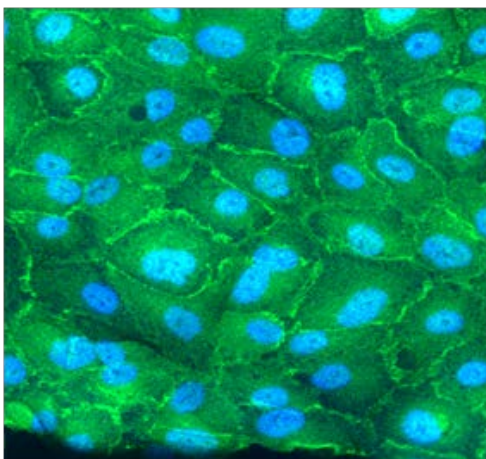


Dimitrios Stamatialis - New Working Group 'Bioartificial Organs'

During the Board of Governors meeting last February, there was an unanimous voting in favour of the installation of the new working group 'Bioartificial Organs'. The chair of this working group is prof. dr. **Dimitrios Stamatialis** of the Department of Biomaterial Science and Technology in the MIRA Institute of the University of Twente in the Netherlands. Dimitrios Stamatialis' research is focused on bioartificial organs including artificial and bioartificial kidney devices, implantable bioartificial pancreas devices and organs on chips.

This working group will integrate and coordinate research, education, and innovation activities in the field of bioartificial organs. By combining biomaterials with cells, they aim to develop organs to assist or replace failing patients organs. Hence, the field of bioartificial organs requires a close interaction of a broad **range of disciplines** spanning from biomaterial science and engineering to biology and medicine.

The working group will include experts from all these disciplines and will regularly organise **symposia** in various international conferences, including the annual meetings of the ESAO, of the American Society for Artificial and Internal Organs (ASAIO), of the European Society for Biomaterials (ESB), and Euromembrane to promote the research activities in the field. They will also organise **training events** for young researchers entering the field as well as outreach activities to promote the activities of the group to a broader audience.



The working group might also be a platform for the preparation of **research proposals**, common key papers, or reviews, and has the intention to collaborate with other working groups like EUTox, Tissue Engineering, and Apheresis.

Among our ESAO members, already **different experts** expressed their interest in joining this new working group, i.e. T. Groth (Martin Luther University Halle-Wittenberg, Germany), R. Masereeuw (University of Utrecht, The Netherlands), J. Jankowski (RWTH Aachen University, Germany), L. Bartolo (ITM, Italy), H.D. Lemke (Excorlab, Germany), J. Vienken (Nephro Solutions, Germany), A. Remuzzi (University of Bergamo, Italy), and C. Legallais (University of Compiègne, France).

During the ESAO 2016, there will be a meeting of the working group where about its aim and activities will be discussed.

If you are interested in joining this working group, please contact Dimitrios Stamatialis:
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The **International Journal of Artificial Organs** is the official journal of the ESAO. The Journal publishes monthly peer-reviewed contributions on experimental and clinical investigations on artificial and bioartificial organs, from bench to bedside. The **mission of the IJAO** is to foster the development and optimisation of artificial organs in general, for implantation or use in procedures, to treat functional deficits of all human tissues and organs. The journal has a long tradition since the introduction of artificial organs in the clinical setting in the 70s. The rapid changes of these engineering and clinical developments have been the subject of the journal for more than four decades. In the beginning, the journal was characterised by **basic and applied research**, the basis of artificial organ development. Then there was an

important evolution towards the clinical use of artificial organs and medical devices.

Recently a further evolution took place in the field of artificial organs. Different factors are contributing in these changes of the field and have their impact on industrial and clinical level. The first trend that we have seen is the consolidation of conventional clinical use of artificial organs in the clinic, such as kidneys for hemodialysis, left ventricular assist devices as bridge to heart transplantation and the use of ECMO for different clinical conditions. These extensive **clinical applications** moved the focus of the field towards the problems related to the clinical use of these technologies and reduced as such the intensity of research and development in innovation of these artificial organs. Another important change in this field is the development of new knowledge and techniques for manipulating human cells *in vitro* and the possibility to engineer tissue outside the body. This research allowed combining different expertise and knowledge, from cellular and molecular biology to biomaterials and engineering, with the aim to study how to assemble bioartificial tissues and lately even **bioengineered organs**, adding specific biological functions to artificial organs. The last change that is taking place in the field of artificial organs and medical devices is the increasing impact of new and innovative technologies, from ICT to medical computing including sensors and systems to generate big data at clinical level. This change will affect the scenario in which medical devices will be used in the near future, with the possibility to improve personalised clinical management with an important impact on the quality of care of elderly patients.

In our attempt to follow more closely these changes in research and clinical context of artificial organs, the Editorial Board of the IJAO in conjunction with the ESAO Board **redefined the list of topics of the journal** that are now the following:

- Apheresis, dialysis and liver support
- Cardiac assist devices and artificial heart
- Artificial lung, ECMO and respiratory support
- Sensory organs and neural stimulation
- Tissue engineering, bioartificial organs and regenerative medicine
- Biomaterials and nanotechnology
- Personalised medicine and individualised care
- Mechanical prostheses, robotics and medical technology

The new definition of the Journal Sections will allow the reader to identify more precisely the context of each individual topic and will facilitate the authors to better identify the aims and scope of the journal. As can be seen from the list, the field of artificial organs is opening to more broad areas of technology in medicine in general and is considering not only purely artificial systems but also combinations of artificial and biological aspects. In addition, innovation in medical devices and materials will be joined to personalised care based on patients data generated to extended use of technology in the clinical practice. Finally, these changes in the editorial style will contribute to share information about interdisciplinary research and clinical applications of artificial systems for organ and tissue replacement.