



Newsletter

of the European Society for Artificial Organs

Letter from the President

ESAO Newsletter
January 2020

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Dear Members of European Society for Artificial Organs,

Let me take this opportunity to wish you all a **Happy and Prosperous Year 2020**. We are handing over the new issue of the ESAO Newsletter, which was edited, for the first time, by **Pedro Baptista**, our new Deputy Secretary General.

The beginning of the new year is a good occasion to summarize the previous year and outline plans for the next 12 months to come.

The ESAO activity in 2019 started with a Winter School on *"Bioartificial organs, organ support & stem cell-based therapies"* in Baden (Austria), which was devoted to artificial and bioartificial organs, mechanical cardiac support, stem cells, rheological aspects and damage of blood cells, organs on chips and organoids.

The main event of ESAO in 2019, i.e. the Annual Congress was held in Hannover (Germany). The program of the Congress was a good combination of plenary lectures, oral and poster sessions, workshops and symposia devoted to scientific problems related to development and improvement of artificial and bioartificial organs. The sessions and symposia covered not only the technologies and discoveries in artificial and biohybrid organs but also issues of regulatory approval of new devices, clinical trials, commercialization, education and career development of young investigators in yESAO. After good experiences from the congress in 2018, a **Round Table Discussion** was organized again in 2019. This time – to discuss possibilities of *"increasing the market of artificial organs from acute to chronic support"*. The **Rapid fire** poster sessions were arranged to increase attractiveness and exposure of poster presentations. For the first time, the ESAO Congress organizers provided a **conference app** to increase the convenience of all attendees. I would like to **acknowledge once again** the great work that **Birgit Glasmacher** and her team did, organizing an excellent scientific event and providing a friendly atmosphere.

The yESAO group was very active throughout the year 2019 by organizing networking meetings and lectures. During the Annual Congress, yESAO arranged a workshop with the unique possibility to perform a **hands-on-training** using mechanical circulatory support systems.

During the ESAO congress in Hannover, the busy and successful Presidency of **Cécile Legallais** ended. It is my great pleasure to thank Cécile for her hard work, dedication and commitment on behalf of all members of the Society. The 2019 was also the last year in which **Bengt Lindholm** served as a governor of ESAO. He deserves recognition for active participation in the work of the Board. As a result of the



election held during the Congress in Hannover, **Viktoria Weber** became the new President elect and the Board of Governors was strengthened by two new governors, **Marcus Granegger** and **Marc Müller**. Additionally, the Board decided to choose **Thomas Groth** as a new co-opted member. I sincerely congratulate Viktoria and all new members of the Board.

In 2019 the Society **intensified contacts with other scientific societies**, i.e. Tissue Engineering and Regenerative Medicine International Society (TERMIS) and European Society for Organ Transplantation (ESOT), which are interested in research in areas associated with artificial organs. Hopefully these contacts will result in closer cooperation and some common initiatives in the near future.

The impact factor of the **International Journal of Artificial Organs (IJAO)**, which is a trademark of our Society, has remained stable over the past few years, regardless of the disruption associated with the change of publisher. However, it should be a priority of our Society to increase the impact factor of the IJAO and make it the best journal in this field in the world, and thus, I would like to ask all members to submit good quality scientific manuscripts to IJAO for publication.

At the end of 2019 we were deeply saddened by the news that **Professor Klaus Affeld** passed away on November 19. He was one of the most prominent members of ESAO, the President of the Society in 1998-2000 and one of just a few awardees of the Emil Bücherl Award. We will miss him as an outstanding ESAO member, a dedicated scientist, forerunner in the field of heart support, but most of all, an exceptional person. Colleagues from Charité - Universitätsmedizin Berlin together with the ESAO Board are preparing an obituary that will be published in the International Journal for Artificial Organs.

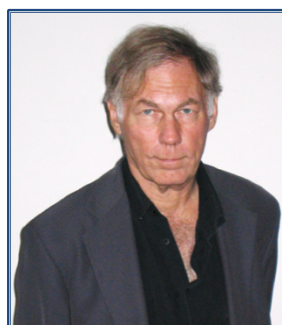
A Winter School on *“Materials, surface and cells: science and technology for bioartificial organs and tissue engineering”*, which will be held at **Lutherstadt Wittenberg (Germany) on February 26-29** is the first ESAO event scheduled for 2020. The program of the school includes session devoted to biopolymers, cellular microenvironments including engineering and bioengineering of cellular microenvironments, cells, materials and scaffolds as well as bioprinting, organ-on-chips and solid organ engineering. **It is still not too late** to register or even to submit a poster.

In 2020, the Annual Congress of ESAO will take place at **Brunel University London, Uxbridge (UK) on September 8-12**. The motto of the congress is *“Uniting scientific minds towards lasting artificial organs”*. Now the time has come to register and submit abstracts *“showcasing your most recent collaboration, research, technological developments and clinical innovations that unite us and work towards this goal”* as we can read in the Welcome Letter, signed by **Ashraf W. Khir, the Congress President** and John R. Pepper, which is available on the web page of the congress (www.esao2020.org). Mark your calendars and plan to attend the Annual Congress of ESAO in London, Uxbridge demonstrating that the scientific community in the field of artificial organs is really united.

With my best personal regards,

Piotr Ładyżyński, ESAO President

In Memoriam



As sad news for all of us, Prof. Dr. Klaus Affeld passed away in Berlin, Germany, on November 19, 2019. He was the founder and supervisor of the Biofluid Mechanics Laboratory at the Charité – Universitätsmedizin Berlin. Under his guidance, the laboratory has been one of the leading research centers in the field of artificial organs for 34 years. In addition, Klaus was one of the first and most active members of our society, which was always a unique place for him to exchange new ideas and discuss his endeavors. He was a member of the Board of Governors of ESAO for 4 years, President of ESAO from 1998 until 2000 and Congress President of ESAO in 1995. Through his lively spirit, his curiosity and passion, he will be remembered as a great inspiration by many members of the society. As his friends and colleagues, we will miss his guidance and loyalty and bid farewell to a humorous, kind and dedicated scientist, but also to a very good friend. We will write an obituary in his memory that will be published in the next issue of the International Journal for Artificial Organs.

Update on the ESAO Board of Governors

During the ESAO Meeting in Hannover (September 3-7th, 2019) our President of the Society, Cécile Legallais, expressed her thanks to the **governor leaving the Board, Bengt Lindholm**.

At the same occasion, we could welcome Marcus Granegger and Marc Mueller as **new Board Governors**, while Gloria Gallego Ferrer was elected for a **second term** in the board. Pedro Baptista was also nominated the **Deputy Secretary General** of the Society.



Gloria Gallego Ferrer (Spain) is an Associate Professor at the Centre for Biomaterials and Tissue Engineering of the Polytechnic University of Valencia (UPV) (Spain) and senior researcher of the Biomedical Research National Networking Centre in Bioengineering, Biomaterials and Nanomedicine (CIBER-BBN) (Spain). She graduated in Industrial Engineering in 1997 and defended her PhD about the development of new hydrogels for prosthetic implants at Polytechnic University of Valencia (Spain) in 2001. Since 2000 she is professor at UPV and has led multidisciplinary research projects for the development of new biomaterials and scaffolds for the tissue engineering of articular cartilage, bone, corneal tissue and dentin or for the sustained release of drugs, in collaboration with clinical groups. She was visiting Professor at University of Zagreb in Croatia (2004) and at the 3Bs Research Group of the Universidade do Minho in Portugal (2009).

"My interests as board member of the ESAO are to contribute in the educational activities of the Society, by collaborating in the organization of winter schools or webinars. It is also of my interest to attract new members to the Society and assist the ESAO in whatever is considered suitable for me."



Marcus Granegger (Germany) is a biomedical engineer, working as a Postdoc at the Charité – Universitätsmedizin Berlin in the field of cardiovascular research with a passion for mechanical circulatory support (MCS). His research focuses on the interaction between the cardiovascular system and MCS devices and on the design of MCS to treat patient populations for which there is no other therapy, such as children with congenital heart defects. After obtaining his doctoral degree in 2013 in the group of Prof. Heinrich Schima at the Medical University of Vienna, he worked at BerlinHeart in a leading position in the R&D department. In 2017 he moved back to academia with post-doctoral positions at the University of Zurich and the Charité – Universitätsmedizin Berlin.

"Having been an active member of the yESAO for the last 8 years, I am enthusiastic to contribute to the future development of the ESAO. I want to dedicate my time on the Board of Governors to foster cooperation within the ESAO, leveraging the outstanding academic and industrial potential of the society, to realize the vision of novel MCS treatment options to meet unmet medical needs."

Marc Müller (Germany), is currently chief engineer and postdoc at the Institute for Multiphase Processes at the Gottfried Wilhelm Leibniz University Hannover. He is a biomedical and mechanical engineer and his research focuses on the degradation of polymeric implants as well as on the processing of body-derived protein solutions and fabrication of patient-specific implants.

Together with Alessandra Molteni and Martin Maw (2018), he has been coordinating the yESAO activities since 2016. He was also part of the local organising committee of the ESAO 2019 in Hannover. His main task was to plan and schedule the scientific programme as well as handling the budgeting of the congress.



"I feel honoured that you had the confidence in me as a board member of the ESAO! Since joining the ESAO society, I was able to make numerous new friends and found great cooperation partners. My goal is to support the ESAO society in general and future local organisers of ESAO congresses in particular. There is an enormous potential in establishing a permanent infrastructure (e.g. abstract management systems) for future ESAO meetings, which would lead to less organisational effort and costs. This support from the society could enhance the number of applications for ESAO meetings, since local organisers could focus entirely on the scientific programme, while benefitting from a well-established ESAO infrastructure."

ESAO 2019 - Hannover (Germany)

The ESAO 2019 conference took place during September 3-7th 2019 in Hannover (Germany) and was organized by Prof. Prof. h.c. Dr.-Ing. Birgit Glasmacher, the co-chairs Prof. Jörg Vienken, Prof. Dr. med. Jan Schmitto and the Institute for Multiphase Processes. More than 370 participants from 27 different countries attended this year's meeting. With over 280 conference contributions including specific sessions, workshops and symposia in artificial and biohybrid technologies and discoveries, clinical trials, regulatory approval of new devices, scaling up, commercialisation, ageing society, career development of young investigators in yESAO, women leadership, education and outreach. This year's motto "Smartificial Devices for our Future" was represented with a multitude of interdisciplinary collaborations in engineering, physical, biological and medical sciences.



With an amount of 20 different sponsors the conference created an important link between science and the medical industry in the field of artificial organs.

Roland Graefe (Germany) was awarded the ESAO-SAGE Research Award. The GOLD-ESAO PhD Awards went to Leszek Pstraś (Poland), Seraina Anne Dual (Switzerland) and Sam Liao (Australia).

The welcome reception of the conference took place

at the historic location Welfenschloss where the opening lecture was held by Prof. Sami Haddadin with the title “Actuation, Motor Control and Learning in Robots and Humans”. Great plenary lectures were held by Prof. Cécile Legallais (France), Prof. Jos Vander Sloten (Belgium) and Prof. Karin Wardell (Sweden). Furthermore, this year’s conference had the chance to host invited lectures by Prof. Sudhir Kushwaha (USA), Prof. Thordur Helgasson (Iceland), Prof. Eyal Zussmann (Israel) and Prof. Jary Hyttinen (Finland). Next to the scientific exchange there were numerous social activities planned for guided city tours, get-togethers and last but not least, the Gala Dinner at the Palace in the baroque gardens of Herrenhausen.

yESAO 2019 - Hannover (Germany)

Ninety young researches from all over the world attended the annual yESAO conference in Hannover with the motto »Every Smart Device needs a network«. The meeting featured an interdisciplinary workshop that bridged the gaps between the sub-disciplines of the ESAO society. The workshop ended in a game show-like contest between the disciplines, in which the moderators Ben and Lucas brought both their organizational talent as well as their wits to bear. Two exciting keynotes were given by Prof. Jan Stange about the »Past, Present and Future of Liver Support Therapies« and Prof. Lucie White about the »Ethics of Chimeras«.



The undisputed highlight of the yESAO meeting was the surgical hands-on wetlab with the Conference Co-Chair: the world-renown cardiac surgeon Prof. Jan D. Schmitto. After a live presentation of a state-of-the-art LVAD implantation procedure on a ovine heart, mini wetlabs were set up and participants were guided through their first own first LVAD Implantation.

The organizers from Hannover managed to compile a highly entertaining social program throughout the entire ESAO conference, but specifically for the yESAO, there was a BBQ with university brewed yESAO beer and lawn games, as well as tours of Hannover.

During the congress, the winners of the 6th edition of the yESAO Exchange Award were able to present their work:

- N. Steuer (Aachen, Germany) & M. Bieri (Zuerich, Switzerland)
“Development and Validation of a PCU-Nonwoven-Covered Stent for a Minimally Invasive, Long-Term Stable Anastomosis”
- M. Castilho (Eindhoven, Netherlands), R. Moakes (Birmingham, UK)
“High-Resolution Printing of 3-D Collagen Based Composite Scaffolds form Improved Density and Structural Osteo-Implants”

Many thanks to all attendees and we look forward to seeing you next year in Uxbridge!
Ben, Martin & the yESAO core team



New Coordinator

This year, Marc and Alessandra completed their final term and handed over the torch of the yESAO coordinator to Martin, who already supported them last year. The yESAO community elected Ben Torner, as additional co-coordinator. Here is Ben, who introduces himself briefly:



"Dear yESAO and ESAO members,

My name is Ben Torner and I'm currently a research assistant at the University of Rostock. I'm dealing with numerical flow computations of blood flows (mainly in ventricular assist devices) and the complex topic of numerical blood damage modeling. I'm part of the yESAO since 2016 and member of the yESAO core team since 2018.

As a newly elected yESAO coordinator, I want to thank the yESAO community for their trust. I'm looking forward to the time as a yESAO coordinator and I am eager to help the yESAO and ESAO community as much as possible.

Best regards, Ben"

yESAO Core Team 2020

The coordinators are supported in their current and future activities by a diverse core team of 20 young researchers from Europe and Australia.

ESAO Winter School 2020 – Lutherstadt Wittenberg (Germany)

Our next Winterschool will be held in the town Wittenberg, Germany where Martin Luther lived and worked. The motto of the school is *"Materials, Surfaces & Cells: Science & Technology for Bio Artificial Organs and Tissue Engineering"* and will deal with fundamentals in material science, particularly biopolymers, the shaping of microenvironment of cells by engineering materials, scaffolds and implants and examples of their application in different areas of regenerative medicine including 3-D printing, Organ-on-Chip devices and solid organ engineering. The organizing committee managed to attract world-class speakers from Europe and other continents who will give talks on the state-of-the-art in the field. The meeting will also provide a nice platform for presentation of work of regular participants during two poster sessions with snacks and beverages, a get-together party as well as guided tours through the historical centre of the old town.

The venue is the Leucorea Wittenberg, which represents the oldest part of Martin Luther University founded more than 500 years ago, but equipped with modern lecture halls. Leucorea is located near the train station Lutherstadt Wittenberg, which can be easily reached from airports in Berlin or Leipzig. The Winterschool will take place from February 26-29, 2019. Registration and poster abstract submission is still open with reduced fees for yESAO and ESAO members at our website <https://www.esao.org/events/winterschool/>.



We inviting you heartily to join next ESAO Winterschool and hope to see you then next year in Lutherstadt Wittenberg.

With warm regards from Organizing Committee

Thomas Groth, Nuno Neves & Viktoria Weber

Report on Working Group: Heart Support

Since more than 60 years, cardiac surgeons and researchers have strived to create a fully implantable, durable, and total artificial heart (TAH) that can be used as a replacement therapy for terminal heart failure. However, today, the future of mechanical total heart replacement is still unclear. Therefore, the chairs of the working group Heart Support, Tom Verbelen (Belgium) and Simon Sonntag (Germany),



organized a TAH Symposium at the ESAO Congress 2019 in Hannover with the topic "TAH: Future of heart failure or failure of the future?". For the first time ever, high-ranking representatives from all relevant TAH companies worldwide came together to discuss the latest advances and challenges in this field: Francisco Arabia (Syncardia), Thomas Finocchiaro (ReinHeart), Azad Najar (Scandinavian Realheart), Daniel Timms (BiVACOR TAH), Barry Kuban (Cleveland Clinic CTAH), Piet Jansen, MD (CARMAT) and Guenes Dogan, MD (Hannover Medical School).

Report on Joint ESAO-ESOT activities –2019



In 2019 the first joint symposium between the European Society for Artificial Organs and the European Society for Organ Transplantation (ESOT) was organized by Tom Verbelen (Belgium), Simon Sonntag (Germany) and Cristiano Amarelli (Italy) in Hannover. Representatives of both societies came together to discuss “The true global need for (artificial) organs”: David Paredes (ESOT), Arne Neyrinck (ESOT), Cristiano Amarelli (ESOT), Cécile Legallais (ESAO), Heinrich Schima (ESAO) and Jan Schmitto (ESAO).

ESOT is the umbrella organization under which all European transplant activities are organized. The global shortage of donor organs is recognized as one of the major public health challenges. The World Health Organization estimates that only 10% of the worldwide need for organ transplantation is being met. During the symposium, the panel discussed how machines can reshape the future of transplantation from different clinical perspectives, including organ transplantation, cell therapy, artificial organ and tissue engineered organs.

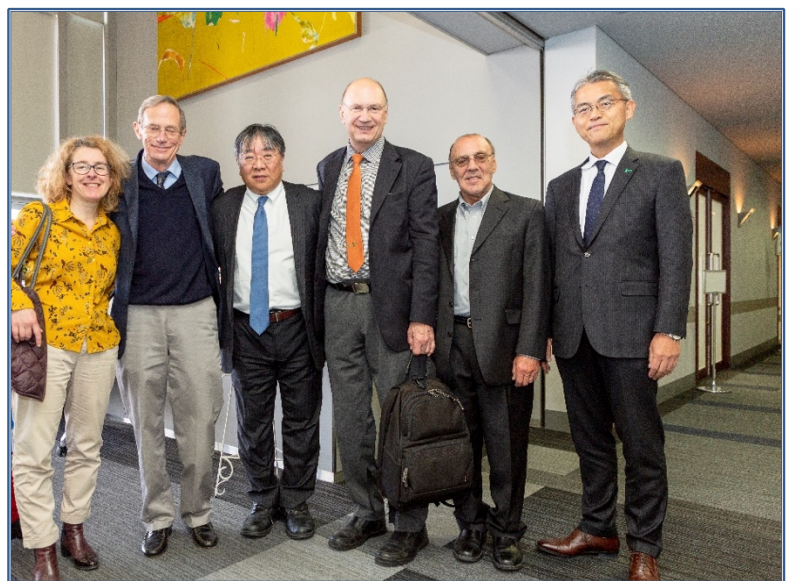
In return, Cécile Legallais and Dimitrios Stamatialis, chair of the Bioartificial Organs WG @ESAO, were invited to participate to the “Inspire and Drive session : Engineering the future” organized by Christiano Amarelli and Simon Sonntag at the ESOT congress held in Copenhagen (15-18 Sept 2019).

Report from last IFAO Board Meetings –2019



The IFAO Formal Board Meeting was held in Osaka, Japan in conjunction with IFAO-JSAO congress, on November 12, 2019. The board welcomes two new members,

Prof. Takashi Nishimura from Ehime, as representative from JSAO and myself, as ESAO representative. Prof. Peter Wearden (Orlando), Prof. Heinrich Schima (Vienna) and Prof. Thomas Groth (Halle) were elected from 2020-2021 as Chairman, Vice-Chairman, Secretary-Treasurer, respectively. It is also



the place here to thank our great friend Steve Ash, who is now leaving the board after an extensive work as Secretary-Treasurer.

Besides the classical activity of IFAO, we discuss in the board about the support to give to the Kidney Health Initiative (KHI) initiative in the U.S., and similar programs in Japan and Europe. KHI is a cooperative effort between ASN and FDA, to promote innovation in the therapy of CKD and ESRD. In order to promote the interests of KHI and IFAO, IFAO suggested to create sessions at three member society meetings in 2020 which focus on new approaches to treatment of uremia and potential improvements in dialysis therapy, co-organized with KHI. If such focus on kidney is efficient, we could then, under IFAO umbrella, do the same for other organs' support.

The next informal Board meeting of IFAO is during the IFAO-ASAIO Congress in Chicago, June 10-13, 2020.



At the IFAO-JSAO congress, numerous presentations on the latest “hot” topics were made by participants from Asia, Europe and North America, under the umbrella of IFAO. A specific session was dedicated on the “Futur-ability” of artificial organs, where economical, ethical and technological aspects were challenged. Prof. Bernd Stegmayer, and Prof. Jörg Vienken were also involved in the organization of several sessions.

I would like here to deeply thank the congress presidents, Prof. Yoshiki Sawa, MD., and Prof. Koichi Toda, from the Department of Cardiovascular Surgery, Osaka University Graduate School of Medicine), for their tremendous warm welcome, including many social events.

Cécile Legallais,
New Board Member, IFAO



Announcements

