ARTIFICIAL VISION 2017

THE INTERNATIONAL SYMPOSIUM ON VISUAL PROSTHETICS

Friday, 1st – Saturday, 2nd December, 2017

Aachen, Germany

FINAL PROGRAMME

Center for Technology
Aachen Europaplatz
www.artificial-vision.org

RWTH AACHEN UNIVERSITY | JÜLICH FORSCHUNGSZENTRUM

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ARTIFICIAL VISION 2017

AACHEN, AND THE EUREGIO AREA

The city of Aachen is the most western city in Germany close to the borders of The Netherlands and Belgium. Aachen has approx. 250,000 inhabitants and the University and the University Hospital are the largest workgiver here in Aachen. Aachen has a long history and you can still see significant witnesses of a time long ago, such as the cathedral with its beautiful and mystic octagon and the astonishing gothic city hall. But Aachen with its important historic phase of Charlemagne today is a young and vivid town with its university and the many students from various countries in the world. RWTH Aachen University is one of the leading technical universities in Europe with a strong focus on mechanical and electrical engineering but also on information technology and natural sciences. Aachen forms a cultural, industrial and also scientific cross border triangle together with Liege in Belgium and Maastricht in The Netherlands forming the EUREGIO area. Many cooperations exist between the institutions within this area.

The Artificial Vision Meeting is set to the beginning of December. Although the weather might not be perfect – in fact it could be cold and maybe rainy – it is worth to visit the cosy Christmas Market in the city. You should try “Printen”, a local biscuit speciality with a high “addiction” potential.

Aachen is also not far away from Cologne with its huge cathedral and its several concert halls and the province capital Düsseldorf with its important art and fashion scene. You can also reach the European capitals Paris and Brussels with a high speed train within a few hours.

There are also many more reasons to come and visit Aachen and we are looking forward to see you.

Dear Colleagues and Friends,

on behalf of the organizers of the 2017 Artificial Vision Meeting it is my pleasure to welcome you all here in Aachen/Germany. The Aachen Meeting on Artificial Vision was established to provide a platform for researchers to present and to discuss new data. It should also serve as a market place for people to meet, to exchange ideas and to find partners for joint projects.

The meeting covers a broad spectrum of aspects from retinal physiology, technology and microsystems engineering, biophysics and clinical ophthalmology. In this respect the Artificial Vision Projects are best practice examples for interdisciplinary translational research projects.

The development of visual prostheses started early some 60 – 50 years ago in a first phase and was „re-launched" in a second phase in the mid 90ies. Now we are looking forward to a third phase with emerging new technologies and deeper insights into the pathophysiology of the degenerated visual system. The second phase was extremely exciting because the ideas were transferred to clinical products and today we are able to analyze outcome data of the first and second generation retinal implants. Surely, the results are limited and maybe not within the range we all previously expected. However, there are previously blind patients performing extremely well with these implants. There is still a long and rough road ahead of us to further improve the concepts and the systems. What at least has been shown is that the concept of restoring visual percepts using implantable devices is working and that it is safe. Comparing the technological approach with genetic or cell based approaches it seems more and more evident that the biological approaches need some healthy structures in the retina. In the very advanced and late cases of retinal degeneration where all of the retinal photoreceptors are gone the prosthetic approach seems to be the only possible way.

We all wish that this symposium will be a great meeting for all the participants. We encourage everyone to attend this meeting and to get into contact with other researchers, making new contacts and friends. We are encouraging international networking between the groups and also between the worlds of "epi-", "sub-", "supra-", or cortical, or other approaches. At the end our goal is the same.

We are thankful for the industry for their generous support and also for the DFG for their support of this meeting.

Sincerely,

Peter Walter
RWTH Aachen University

together with **Wilfried Mokwa**, **Frank Müller**, and **Andreas Offenhäusser**

Date
Friday, 1st December, 2017, 13:00 h – 18:40 h
Saturday, 2nd December, 2017, 09:30 h – 18:15 h

Opening hours congress office
Friday, 1st December, 2017, 12:00 h – 18:40 h
Saturday, 2nd December, 2017, 08:30 h – 18:15 h

Opening hours industrial exhibition
Friday, 1st December, 2017, 13:00 h – 18:40 h
Saturday, 2nd December, 2017, 08:30 h – 16:00 h

Official Language
English

Venue
Center for Technology Aachen Europaplatz
Dennewartstraße 25-27
52068 Aachen, Germany

Lecture hall
Auditorium

Homepage and Online Registration
www.artificial-vision.org

Hotel Booking
See hotel on the registration form
(or online www.artificial-vision.org)

Scientific programme and further information
Prof. Dr. Peter Walter
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RWTH Aachen University, Medical Faculty
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Organization
Congress-**O**rganisation **G**erling GmbH
Werftstraße 23, 40549 Düsseldorf, Germany
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ATTENDANCE FEE

Registration	Before 1st December	On site
International symposium attendance fee	EUR 200,–	EUR 220,–
Reduced rate for PhD students and residents*	EUR 120,–	EUR 140,–

*PhD Students and residents must supply a letter of verification as proof of training. The letter has to be sent to the congress organization prior to the meeting.

The attendance fee covers the costs for coffee breaks, lunch, and the conference dinner (accompanying person EUR 50,–). Incl. VAT and excl. foreign transfer fees.

Payment
by bank transfer (bank details are quoted on your confirmation and invoice. Please do not transfer money without noting your invoice number!) PayPal or by credit card: VISA, AMERICAN EXPRESS, MASTERCARD

Important notes for participants

If you register late or on site, we cannot guarantee for lunch and participation at the social program.

You are encouraged to apply for the meeting either online, by mail or by fax.
Cancellation for the symposium has to be made via e-mail or via fax (+49 (0) 2 11 / 59 35 60) by 27th November, 2017. In any case an administration fee of EUR 22,– has to be paid. After this date no refunds can be made.

Changes, errors and misprints excepted.

INFORMATIONS FOR SPEAKERS

Presentations 15 min presentation incl. discussion

Projection Microsoft PowerPoint presentation on CD/DVD/USB-Stick or own notebook.
video codecs: Quicktime 7.7.9®, Windows Media Player 12.0®

Friday, 1st December, 2017

20:00 h **Conference Dinner**
Drehturm Belvedere
Belvedereallee 5, 52070 Aachen


Quelle: Drehturm

Price per person (incl. dinner and drinks):

Participant	included in the attendance fee, but due for notification
Accompanying person	EUR 50,–
Bus transfer from the congress venue:	19:30 h
Return:	approx. 23:30 h

Friday, 1st December, 2017

13:00 h **Come Together**

14:00 h **Prof. Dr. med. Peter Walter**
(Department of Ophthalmology, RWTH Aachen University, Aachen/D)
Welcome Note

Univ.-Prof. Dr. rer. nat. Stefan Uhlig
(Dean of the Medical Faculty RWTH Aachen University)
Welcome Note

Dr.-Ing. Damian Dudek (German National Research Agency DFG)
Welcome Note

Helma Gusseck (Pro Retina Germany and Pro Retina Foundation)
Welcome Note

14:40 h ▼ 16:40 h **1st Session**
Retinal Degeneration and Retina Stimulation – Basics
Chair: **Frank Müller** (Jülich/D)
Daniel Rathbun (Tübingen/D)

01 **Daniel Rathbun** (University of Tübingen, Institut for Ophthalmic Resource, Tübingen/D)
Tickling the retina: Subthreshold stimulation of targeted ganglion cell types

02 **Anna-Marina van der Meer**[1], F. Müller[2], S. Johnen[1], P. Walter[1] ([1]Department of Ophthalmology, RWTH Aachen University, Aachen/D, [2]Institute of Complex Systems, Cellular Biophysics, ICS-4, Forschungszentrum Jülich GmbH, Jülich/D)
Establishment and Characterization of a UV-induced Photoreceptor Degeneration Mouse Model

03 **Jana Gehlen**[1], S. Esser[1], C. Haselier[2], K. Schaffrath[2], S. Johnen[2], P. Walter[2], F. Müller[1] ([1]Institute of Complex Systems, Cellular Biophysics, ICS-4, Forschungszentrum Jülich, Jülich/D, [2]Department of Ophthalmology, RWTH Aachen University, Aachen/D)
Pharmacological manipulation of oscillatory activity in the retina of the retinitis pigmentosa mouse model rd10

04 **Archana Jalligampala**[1,2,3], C. Kelbsch[1], K. Stingl[2], T. Strasser[2], T. Peters[2], E. Zrenner[1,3], B. Wilhelm[2], D.L. Rathbun[1,3] ([1]Experimental Retinal Prosthetics Group at Institute for Ophthalmic Research University of Tübingen, Tübingen/D, [2]Pupil Research Group at the Centre for Ophthalmology, University Hospitals Tübingen, Tübingen/D, [3]Centre for Integrative Neuroscience at University of Tübingen, Tübingen/D)
Acknowledging Non-monotonicity: Working towards understanding electrical response types in mouse retinas

05 **Mahdi Sadeghi**[1,2], Z. Hosseinzadeh[1,2], D.L. Rathbun[1,2] ([1]University of Tübingen, Tübingen/D, [2]Eye hospital, Experimental Retinal Prosthetics Group, Tübingen/D)
A discussion of the RGC classification toolbox and preliminary data

06 **Wadood Haq**, A. Speck, S. Basavaraju, J. Dieter, E. Zrenner (University of Tübingen, Institute for Ophthalmic Research, Tübingen/D)
Electrically Activated Dormant Photoreceptors Elicit Network-Mediated Responses in Different Types of Ganglion Cells

07 **Kim Schaffrath**[1], S. Diarra[1], J. Gehlen[2], F. Müller[2], P. Walter[1], S. Johnen[1] ([1]Department of Ophthalmology, University Hospital RWTH Aachen, Aachen/D, [2]Institute of Complex Systems, Cellular Biophysics, ICS-4, Forschungszentrum Jülich, Jülich/D)
Modulation of electrical activity in the retina of the rd10 mouse model using neuroprotective drugs

08 **Christine Haselier**[1], S. Biswas[2], S. Rösch[3], G. Thumann[4], F. Müller[2], P. Walter[1] ([1]Department of Ophthalmology RWTH Aachen University Aachen, Aachen/D, [2]Institute of Complex Systems Cellular Biophysics ICS-4 Forschungszentrum Jülich, Jülich/D, [3]Clinical Department of Small Animals University of Leipzig, Leipzig/D, [4]Département des neurosciences cliniques Service d'ophthalmologie Hôpitaux universitaires de Genève, Geneva/CH)
The Electrical Stimulation Efficiency of Retinal Ganglion Cells in Degenerated Mouse Retina Depends on Specific Patterns of Spontaneous Activity

16:40 h **Coffee break in the industrial exhibition**

17:10 h **2nd Session**
▼
18:40 h **Systems, Tools and Technology**

Chair: **Alfred Stett** (Reutlingen/D)
Gregg Suaning (Sydney/AUS)

09 **Kazim Hilmi Or** (Private Office of Ophthalmology, Istanbul/TR)
Better Edge Perception through Acutance Use in Image Interpolation may be Beneficial for Artificial Vision Patients

10 **Mahmut Emin Celik**, E. Aydin (Electrical Electronics Engineering Department, Faculty of Engineering, Gazi University, Ankara/TR)
MATLAB Based Computational Tool for Inductive Coil Link Parameters in Retinal Prosthesis

11 **Pascal Raffelberg**[1], A. Erbslöh[1], R. Viga[1], R. Kokozinski[1,2] ([1]University Duisburg Essen, Electronic Components and Circuits, Duisburg/D, [2]Fraunhofer Institute of Microelectronic Circuits and Systems, Duisburg/D)
Towards a Monolithic Integrated Stimulator with Integrated Image Sensor for a Wide Angle Retina Implant

12 **Alfred Stett**[1], R. Daschner[1], A. Rothermel[2], R. Rudorf[1], S. Rudorf[1] ([1]Retina Implant AG, Reutlingen/D, [2]Institute of Microelectronics, University of Ulm, Ulm/D)
Performance of the light-detecting and stimulating chip of the subretinal implant Alpha AMS

FRIDAY

13 **Andreas Erbslöh**[1], P. Raffelberg[1], R. Viga[1], R. Kokozinski[1,2], A. Grabmaier[1,2] ([1]University Duisburg Essen, Electronic Components and Circuits, Duisburg/D, [2]Fraunhofer Institute of Microelectronic Circuits and Systems, Duisburg/D)
Evaluation of an Enhanced Electrical Charge Controlled Stimulation Method for Retinal Bipolar Cells

14 **Marta Airaghi Leccardi**[1], L. Ferlauto[1], N.A.L. Chenais[1], M. Bevilacqua[1], T.J. Wolfensberger[2], K. Sivula[3], D. Ghezzi[1] ([1]Medtronic Chair in Neuroengineering, Center for Neuroprosthetics, Institute of Bioengineering, School of Engineering, École Polytechnique Fédérale de Lausanne, Lausanne/CH, [2]Hôpital Ophtalmique Jules Gonin, Université de Lausanne, Lausanne/CH, [3]Laboratory for Molecular Engineering of Optoelectronic Nanomaterials, Institute of Chemical Sciences and Engineering, School of Basic Science, École Polytechnique Fédérale de Lausanne, Lausanne/CH)
Design and validation of a foldable and photovoltaic wide-field epiretinal prosthesis

18:40 h **End of the scientific program on Friday**

20:00 h **Conference dinner**

FRIDAY

Saturday, 2nd December, 2017

09:30 h ▼ 11:30 h **3rd Session**

Data from preclinical experiments

Chair: **Takeshi Morimoto** (Osaka/J)
Tibor Karl Lohmann (Aachen/D)

15 **Gregg Suaning**[1], A. Barriga-Rivera[2] ([1]University of Sydney, Sydney/AUS, [2]University of Pable de Olavide, Division of Neuroscience, Sevilla/E)
Progress towards delivering visual percepts from the suprachoroidal space

16 **Takeshi Morimoto**[1], H. Kanda[1], K. Hozumi[2], K. Nishida[2], T. Fujikado[1] ([1]Department of Applied Visual Science, Osaka University Graduate School of Medicine, Osaka/J, [2]Department of Ophthalmology, Osaka University Graduate School of Medicine, Osaka/J)
Development and evaluation of a wide-field dual-array suprachoroidal-transretinal stimulation (STS) prosthesis system

17 **Tibor Karl Lohmann**, F. Haiss, C. Barz[1,3], C. Werner, A.M. van der Meer, K. Schaffrath, A.C. Schnitzler, G. Rößler, F. Waschkowski, W. Mokwa, P. Walter[1] (Department of Ophthalmology, University Hospital RWTH Aachen, Aachen/D, Institute for Materials in Electrical Engineering I, RWTH Aachen University, Aachen/D, Institute for Neuroscience and Medicine INM-2, Research Centre Jülich/D)
The Very Large Array Retinal Stimulator: A final update

18 **Seif Eldawlatly**, E. Mounir, B. Abdullah, H.M.K. Mahdi (Computer and Systems Engineering Department, Faculty of Engineering, Ain Shams University, Cairo/EGY)
An encoding model of visual and electrical stimuli in rat lateral geniculate nucleus: A deep learning approach

19 **Viviana Rincón Montes**[1], J. Gehlen[2], S. Lück[3], W. Mokwa[3], F. Müller[2], P. Walter[4], A. Offenhäusser[1] ([1]Institute of Complex Systems, Bioelectronics, ICS-8, Forschungszentrum Jülich/D, [2]Institute of Complex Systems, Cellular Biophysics, ICS-4, Forschungszentrum Jülich/D, [3]Department of Materials in Electrical Engineering 1, RWTH Aachen University, Aachen/D)
Retinal recordings with penetrating multielectrode arrays

20 **Hiroyuki Kanda**[1], T. Miyoshi[2], T. Morimoto[1], T. Fujikado[1] ([1]Dept. of Applied Visual Science, Graduate School of Medicine, Osaka University, Suita/J, [2]Dept. Of Integrative Physiology, Graduate School of Medicine, Osaka University, Suita/J)
Temporal patterns of single-unit responses from on- and off-cells in the lateral geniculate nucleus elicited by suprachoroidal-transretinal stimulation

21 **Larissa Höfling**[1,2], F. Jetter[1,2], P. Berens[3,4,5], G. Zeck[1] ([1]Neurophysics Research Group, Natural and Medical Sciences Institute, University of Tübingen, Tübingen/D, [2]Graduate School of Neural Information Processing, University of Tübingen, Tübingen/D, [3]Institute of Ophthalmic Research, University of Tübingen, Tübingen/D, [4]Centre for Integrative Neuroscience, University of Tübingen, Tübingen/D, [5]Bernstein Center for Computational Neuroscience, University of Tübingen, Tübingen/D)
Temporal filters of electrically stimulated retinal ganglion cells

22 **Daniel Rathbun** (Institute for Ophthalmic Research, Centre for Ophthalmology, University of Tübingen, Tübingen/Germany.)
Exploring the separation of ON and OFF responses in normal and degenerated mouse retina stimulated electrically

11:30 h **Coffee break in the industrial exhibition**

12:00 h **4th Session**
▼
13:00 h **Clinical Experiences:**
Subretinal & Suprachoroidal approaches
Chair: **Takashi Fujikado** (Osaka/J)
Florian Gekeler (Stuttgart/D)

23 **Katarina Stingl**[1], R. Schippert[2], K.U. Bartz-Schmidt[1], D. Besch[1], T.L. Edwards[3], F. Gekeler[1,4], R.E. MacLaren[3], J. Roider[5], H. Sachs[6], E. Zrenner[1,7] ([1]Centre for Ophthalmology, University of Tübingen, Tübingen/D, [2]Retina Implant AG, Reutlingen/D, [3]Nuffield Laboratory of Ophthalmology, Oxford Eye Hospital, Oxford University Hospitals NHS Foundation Trust, University of Oxford, Oxford/UK, [4]Klinikum Stuttgart – Katharinenhospital, Eye Hospital, Stuttgart/D, [5]Department of Ophthalmology, University of Kiel, Kiel/Germany, [6]Klinikum Dresden Friedrichstadt, University Teaching Hospital, Eye Hospital, Dresden/D, [7]Werner Reichardt Centre for Integrative Neuroscience, University of Tübingen, Tübingen/D)
Functional Results of the Subretinal Implant RETINA IMPLANT Alpha AMS

24 **Florian Gekeler**[1,2], K. Stingl[2], R. MacLaren[3], H. Sachs[4], E. Zrenner[2], K.U. Bartz-Schmidt[2] ([1]Department of Ophthalmology, Katharinenhospital, Stuttgart/D, [2]Center for Ophthalmology, University of Tübingen, Tübingen/D, [3]Oxford University, Oxford/UK, [4]Städtisches Klinikum Dresden, Dresden/D.)
Explantations and Re-implantations in Patients with Active Subretinal Implants

25 **Takashi Fujikado**[1], T. Endo[2], K. Hozumi[2], H. Kanda[1], T. Morimoto[1], M. Hirota[2], M. Ozawa[3] ([1]Applied Visual Science, Osaka University, Osaka/J, [2]Ophthalmology, Osaka University Graduate School of Medicine, Osaka/J, [3]Nidek Co., Gamagori/J)
Outcome measure of clinical trial of retinal prosthesis by suprachoroidal-transretinal stimulation (STS) for patients with hand-motion vision

26 **Matthew Petoe**[1,2], D. Nayagam[1,2,3], M. Shivdasani[1,2], J. Villalobos[1,2], O. Burns[1], P. Thien[1,2], S. Epp[1], C. McGowan[1], R.A. Williams[3,4], C.M. Salinas-LaRosa[4], C. Abbott[5,6], A. Brandli[5,6], J. Yeoh[5,6], M. Korikkar[1], S. Titchener[1], P. Seligman[1,2], W. Kentler[7], N. Barnes[8,9], J. Walker[8], R. Dengate[8], A. Scott[8], C. Luu[5,6], L. Ayton[5,6], C. Williams[1,2], R. Shepherd[1,2], P. Allen[5,6] ([1]Bionics Institute, East Melbourne/AUS, [2]Medical Bionics Department, University of Melbourne, Mebourne/AUS [3]Department of Pathology, University of Melbourne, Melbourne/AUS, [4]Department of Anatomical Pathology, St Vincent's Hospital Melbourne,Melbourne/AUS, [5]Centre for Eye Research Australia, Royal Victorian Eye and Ear Hospital, Melbourne/AUS, [6]Ophthalmology, University of Melbourne, Department of Surgery, Melbourne/Australia, [7]School of Engineering, University of Melbourne/AUS, [8]Data61, Canberra/AUS, [9]Research School of Engineering, Australian National University, Canberra/AUS)
Engineering and Evaluation of a Suprachoroidal Retinal Prosthesis

13:00 h **Lunch break in the industrial exhibition**

14:00 h ▼ **15:45 h** — **5th Session**

Clinical Experiences: Epiretinal and Cortical Approaches

Chair: **Eduardo Fernandez** (Elche/E)
Peter Walter (Aachen/D)

27 **Emin Özmert**, B. Baskak, R. Arslanta, Y. Kır, A. Ku¹man, Z. Baran (Ankara University Department of Ophthalmology and Brain Research Center, Ankara University, Ankara/TR)
Measurement of visual cortex activity with near infrared spectroscopy after endoscope assisted ARGUS II epiretinal prosthesis implantation in retinitis pigmentosa patients

28 **Laura Cinelli**, S. Rizzo (Azienda Ospedaliero-Universitaria Careggi SOD Oculistica, Firenze/I)
Argus II Implant in Patients Presenting a Posterior Staphyloma

29 **Arnaud Lesimple**, M. Flourence, Argus II study group (Second Sight Medical Products, Lausanne/CH)
Visual function performances and outcomes of patients with some residual vision implanted with the Argus II Retinal Prosthesis

30 **Nilufer Koyluoglu Unal**[1], F. Akkan[2], E. Altındag[3], R. Arslantas[4], Y.Z. Arslan[5] ([1]Medical School of Istinye University, Liv Hospital International, Istanbul/TR, [2]Etiler Dunyagoz Hospital, Istanbul/TR, [3]Medical School of Istanbul Bilim University, Istanbul/TR, [4]Baskent University, Ankara/TR, [5]Department of Mechanical Engineering, Istanbul University, Istanbul/TR)
ARGUS II retinal implant application in a patient with history of epilepsy

31 **Dilek Güven**, M. Demir, D. Özcan, S. Tiryaki Demir, H. Kacar, S. Cevher (Sisli Hamidiye Etfal Training and Research Hospital Department of Ophthalmology, Istanbul/TR)
Clinical evaluation of two retinitis pigmentosa (RP) patients implanted with Argus II retinal prosthesis

32 **Kim Schaffrath**, H. Schimitzek, P. Walter (Department of Ophthalmology, University Hospital RWTH Aachen, Aachen/D)
Surgery-associated adverse events of Argus II retinal prosthesis system

33 **Eduardo Fernandez**[1,2], A. Alfaro[2,3] ([1]Bioengineering Institute, Miguel Hernández University of Elche, Elche/E, [2]CIBER-BBN, Madrid/E, [3]Department of Neurology, Hospital Vega Baja, Orihuela/E)
Development of a Cortical Visual Prosthesis for the Blind: Pre-clinical studies

15:45 h **Coffee break in the industrial exhibition**

16:00 h ▼ **18:00 h** — **6th Session**

Improvements, Modifications and New Ideas

Chair: **Shelley I. Fried** (Boston/USA)
Gislin Dagnelie (Baltimore/USA)

34 **Kenta Hozumi**[1], T. Endo[2], M. Hirota[3], H. Kanda[3], T. Morimoto[3], K. Nishida[1], T. Fujikado[3] ([1]Department of Ophthalmology, Osaka University Graduate School of Medicine, Osaka/J, [2]Osaka Women's and Children's Hospital, Osaka/J, [3]Department of Applied Visual Science, Osaka University Graduate School of Medicine, Osaka/J)
Evaluation of reaching movement and mobility with a prosthetic vision simulator

SATURDAY

35 **Gislin Dagnelie**[1], M. Barry[1], A. Caspi[2], A. Roy[2], P. Gibson[3], K. Kramer[3] ([1]Johns Hopkins University, Baltimore/USA, [2]Second Sight Medical Products, Sylmar/USA, [3]Minnesota Health Solutions & Advanced Medical Electronics Corp, Minneapolis/USA)
Visual prostheses with higher functionality by simplifying the visual input

36 **Shelley I. Fried**[1,2], S.W. Lee[2] ([1]Boston VA HealthCare System, Boston/USA, [2]Department of Neurosurgery, Massachusetts General Hospital, Harvard Medical School, Boston/USA)
Towards a micro-coil based cortical visual prosthesis

37 **Christine L. Zolli**[1,2] ([1]Rutgers University, New Jersey/USA, [2]Wills Eye Hospital – Jefferson Medical School, Philadelphia/USA)
Monoconal (Vertical) Theory of Color Vision Emphasizing Physics – Glaucoma Artificial Vision Prosthesis

38 **Manuela Schiek**[1], O.S. Abdullaeva[1], F. Balzer[2], M. Schulz[3], A. Luetzen[3], J. Parisi[1], K. Dedek[4] ([1]Institute of Physics, University of Oldenburg, Oldenburg/D, [2]University of Southern Denmark, Denmark/DK, [3]Kekule Insitute for Organic Chemistry and Biochemistry, University of Bonn, Bonn/D, [4]Institute for Biology and Environmental Sciences, University of Oldenburg, Oldenburg/D)
Design of Model Artificial Organic Photoreceptors for Photo-Electrical Stimulation of Neuronal Cells

39 **Sabine Diarra**[1], F. Waschkowski[2], A. Garcia Moreno[2], Z. Izsvák[3], Z. Ivics[4], G. Thumann[5], U. Schnakenberg[2], F. Müller[6], W. Mokwa[2], P. Walter[1], S. Johnen[1] ([1]Department of Ophthalmology, University Hospital RWTH Aachen, Aachen/D, [2]Institute for Materials in Electrical Engineering I, RWTH Aachen University, Aachen/D, [3]Max Delbrück Center for Molecular Medicine in the Helmholtz Society, Berlin/D, [4]Paul-Ehrlich-Institute, Langen/D, [5]University of Geneva, University Hospitals of Geneva, Department of Ophthalmology, Geneva/CH, [6]Institute of Complex Systems, Cellular Biophysics, ICS-4, Forschungszentrum Jülich GmbH, Jülich/D)
The use of microelectrode arrays for non-viral, transposon-mediated, electroporation-based gene transfer in rd10 mouse retinae – An interdisciplinary approach

40 **Michael Oeverhaus**, D. Dekowski, M. Stöhr, J. Holtemeyer, B. Schaperdoth-Gerlings, J. Esser, A. Eckstein (Department of Ophthalmology, University Hospital Essen, Essen/D)
Evaluation of a retinal imaging laser eye wear

41 **Peter Walter** (Department of Ophthalmology, RWTH Aachen University, Aachen/D)
Prerequisites for future vision implants

18:00 h **Peter Walter** (Department of Ophthalmology, RWTH Aachen University, Aachen/D)
Closing Remarks & Farewell

18:15 h **End of Artificial Vision 2017**
The International Symposium on Visual Prosthetics

SATURDAY

Marta Airaghi Leccardi
EPFL
Chemin des Mines 9
1202 Genf
Switzerland

Laura Cinelli
Azienda Ospedaliero
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SOD Oculistica
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Dr. Gislin Dagnelie
Johns Hopkins University
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Dipl.-Biol. Sabine Diarra
Augenklinik der RWTH
Pauwelsstraße 30
52074 Aachen
Germany

Dr. Ing. Damian Dudek
Deutsche
Forschungsgemeinschaft e.V.
(DFG)
Kennedyallee 40
53175 Bonn
Germany

Dr. Seif Eldawlatly
Faculty of Engineering,
Ain Shams University
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11517 Cairo
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Andreas Erbslöh
Universität Duisburg-Essen
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From Aachen Main Station take a taxi to Technologiezentrum at Europaplatz

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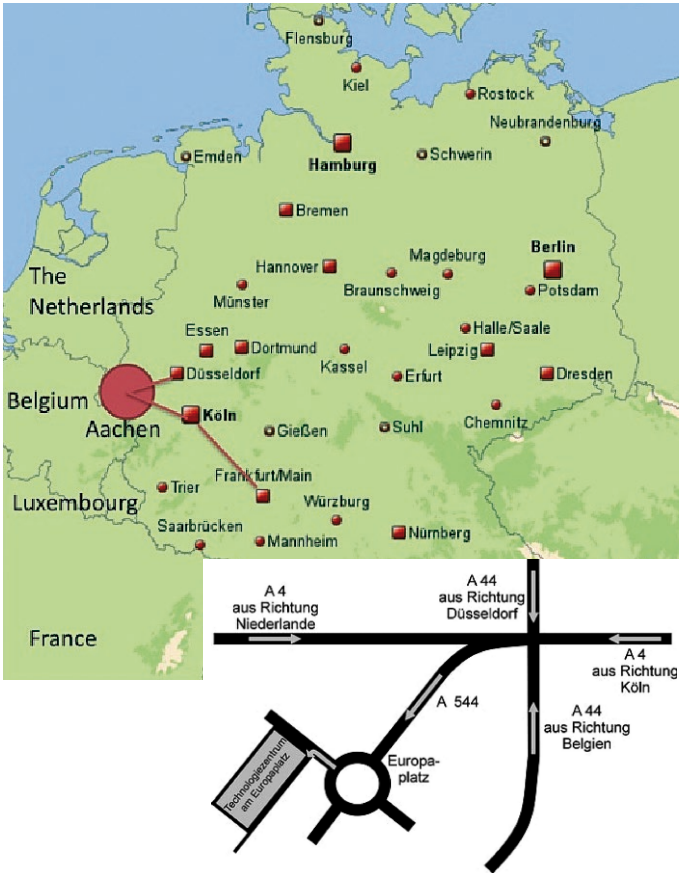

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1st – 2nd DECEMBER, 2017
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