

**TENTATIVE AGENDA  
THE BRAIN AND THE CHIP 2024  
WORLD RESEARCH CONGRESS PROGRAM SCHEDULE**

**Meeting venue (refer to the map at the end):**

University Miguel Hernandez  
Edificio INNOVA  
Avda de la Universidad, s/n  
Elche, Alicante (Spain)

**MONDAY, NOVEMBER 11, 2024**

(Presentations are 20-minutes long, plus a 10-minute Q & A – Challenge period)

- 8:30 - 9:00 am            **WALK-IN AND REGISTRATION**
- 9:00 - 9:30 am            **WELCOME & INTRODUCTION**  
Government officials and Academic authorities
- 9:30 - 10:00 am    **Neurohistology and the evolution of pathology**  
Santiago Ramón y Cajal Agueras, M.D.Ph.D., Hospital Vall d’Hebron, Barcelona, Spain

**Session One: Advanced Sensory-Motor prostheses**

Moderator: Juan Antonio Barcia, M.D., Ph.D., Hospital Clínico San Carlos, Madrid, Spain

- 10:00 - 10:30 am    **Brain Machine Interfaces: the development and design of therapeutic devices**  
David Bjanec, Ph.D., California Institute of Technology, California
- 10:30 - 11:00 am    **Sensory restoration for improved motor control of prostheses**  
Robert Gaunt, Ph.D., University of Pittsburgh, Pennsylvania
- 11:00 – 11:30 am    **Expanding the repertoire of artificial touch: local geometric features via patterned microstimulation of human S1**  
Giacomo Valle, Ph.D., Chalmers University of technology, Gothenburg, Sweden
- 11:30 - 12:00 am.    BREAK

**Session Two: Cognitive Prostheses**

Moderator: Pieter Roelfsema, M.D. and Ph.D., Netherlands Institute Neuroscience, Amsterdam

- 12:00 - 12:30 am    **Cognitive Neuroprosthetics: Comparisons of posterior parietal and motor cortex activity In humans**  
Richard Andersen, Ph.D., California Institute of Technology, California
- 12:30 - 1:00 pm      **Cognitive implanted Brain-Computer interface in prefrontal cortex**  
Luke Bashford, Ph.D., Newcastle University, UK
- 1:00 - 1:30 pm      **Biasing perception through electrical stimulation in the human temporal lobe**  
Florian Mormann, M.D. and Ph.D., University Bonn, Germany
- 1:30 - 3:00 pm      Lunch

**Session Three: Brain plasticity, other cortical implants and retinal implants**

Moderator: Julio Mayol, M.D., Ph.D., Hospital Clínico San Carlos, Madrid, Spain

- 3:00 – 3:30 pm **Engineering Brain connectivity patterns for therapeutics**  
Yanik Mehmet Fatih, Ph.D., Swiss Federal Institute of Technology (ETH), Zurich, Switzerland.
- 3:30 – 4:00 pm **How multisensory integration, neuroplasticity and AI can help improve performance and Integration of brain implants**  
Amir Amedi, Ph.D., Reichman University, Tel Aviv, Israel
- 4:00 – 4:30 pm **Neuromodulation-induced cortical prehabilitation**  
Jose María Tormos, M.D., Ph.D., Universidad Católica de Valencia, Valencia, Spain
- 4:30 - 5:00 pm BREAK
- 5:00 – 5:30 pm **12-months results after implantation of the PRIMA subretinal microchip for the treatment of GA**  
Andrea Cusumano, M.D., Ph.D., University Rome Tor Vergata, Rome, Italy
- 5:30 – 6:00 pm **Towards auditory cortical implants for hearing impaired**  
Brice Bathellier, Ph.D., French National Centre for Scientific Research (CNRS), Paris, France
- 6:00 – 7:00 pm **QUICKFIRE POSTER PRESENTATIONS: Group “A”**

**“The Brain’s Symphony”:**

9:00- 10:30 pm. **The Brain’s Symphony: A musical spectacle at Gran Teatro Elche (open to the public)**

**TUESDAY, NOVEMBER 12, 2024**

(Presentations are 20-minutes long, plus a 10-minute Q & A – Challenge period)

**Session Four: Bridging the gap: End user perspectives**

Moderator: Journalist to be determined

9:00 - 10:00 am. **Round-table.** Participants: Scott Imbrie, Chicago, Illinois (USA); David Sánchez, President Federation of Association for Hereditary Retinal Dystrophies (Spain); Representant of the Spanish National Organization for the Blind.

**Session Five: Beyond the retina**

Moderator: Andrea Cusumano, M.D., Ph.D., University Rome Tor Vergata, Rome, Italy

- 10:00 – 10:30 am **Characterizing visual neurons beyond classical parametric stimuli using deep digital twins**  
Fabian Sinz, Ph.D., Georg-August-University Göttingen, Göttingen, Germany
- 10:30 – 11:00 am **Reconstructing and disrupting the neurodynamic basis of real word vision**  
Avniel Ghuman, Ph.D., University of Pittsburgh, Pittsburgh, Pennsylvania
- 11:00 – 11:30 am **Brain-controlled navigation in a virtual 3D environment**  
Peter Janssen, M.D., Ph.D., KU Leuven, Leuven, Belgium

11:30 – 12:00 am **A 1024-channel Utah-array based visual prostheses in NHPs**  
Xing Chen, Ph.D., University of Pittsburgh, Pittsburgh, Pennsylvania

12:00 - 12:15 am BREAK

**Session Six: Visual prostheses: Clinical trials I**

Moderator: Avi Caspi, Ph.D., Jerusalem College of Technology, Jerusalem, Israel

12:15 – 12:45 am **Stimulation of visual cortex in humans (tentative title)**  
Daniel Yoshor, M.D. and Ph.D., University of Pennsylvania, Philadelphia, Pennsylvania

12:45 – 1:15 pm **Lessons learned and challenges remaining for developing functional visual cortical prostheses (tentative title)**  
Denisse Oswald, Ph.D., University of Pennsylvania, Philadelphia, Pennsylvania

1:15 – 1:45 pm **Restoration of visual consciousness in people who are blind**  
Pieter Roelfsema, M.D. and Ph.D., Netherlands Institute Neuroscience, Amsterdam.

1:45 - 3:00 pm Lunch

**Session Seven: Visual prostheses: Clinical trials II**

Moderator: Patrick Degenaar, Ph.D., Newcastle University, Newcastle upon Tyne, UK

3:00 –3:30 pm **Extended periodid idling of camera-based stimulation improves grating-acuity task performance with the Intracortical Visual Prosthesis (ICVP)**  
Michael Barry, Ph.D., Illinois Institute of Technology, Chicago, Illinois.

3:30 – 4:00 pm **The characteristics of visual perceptions induced by intracortical electrical stimulation in blind individuals**  
Leili Soo, Ph.D., University Miguel Hernandez, Elche, Spain

4:00 – 4:30 pm **Exploring neural correlates of visual perception for enhanced bidirectional cortical visual prostheses design**  
Fabrizio Grani, Ph.D., University Miguel Hernandez, Elche, Spain

4:30 - 5:00 pm. BREAK

**Session Eighth: Neuroethics**

Moderator: Ione Fine, Ph.D., University of Washington & University of Leeds, Seattle and Leeds.

5:00 – 5:30 pm **Researchers' Neuroethical Perspectives on Brain-Based Visual Prostheses: Psychosocial Impacts, Post-Trial Access, Public Attitudes, and Enhancement Potential**  
Peter Zuk, Ph.D., University of Texas at Arlington, Arlington, TX

5:30 – 6:00 pm **The future human in the age of AI: Re-thinking super-technology, trans-humanism, and post-truth**  
Alex Gomez, Ph.D., Institute of Neuroscience, Alicante, Spain

6:00 – 6:30 pm **Neurotechnology and neurorights**  
Rafael Yuste, M.D. and Ph.D., University Columbia, New York.

6:30 – 7:30 pm **QUICKFIRE POSTER PRESENTATIONS : Group “B”**

## **WEDNESDAY, November 13, 2024**

(Presentations are 20-minutes long, plus a 10-minute Q & A – Challenge period)

### **Session Nine: Visionary ventures**

Moderator: Amir Amedi, Ph.D., Reichman University, Tel Aviv, Israel

- 9:00 – 9:30 am **Neuralink visual prosthesis**  
Daniel Adams, Ph.D., Neuralink, Fremont, California
- 9:30 – 10:00 am **ReVision implant: developing a high resolution cortical visual prosthesis**  
Frederik Ceyskens, Ph.D., ReVision Implant N.V., Amsterdam, the Netherlands
- 10:00 – 10:30 am **Innovations in vision restoration through LGN targeted prosthesis**  
Bert Monna, Ph.D., Phosphoenix B.V., Amsterdam, the Netherlands
- 10:30 -11:00 am. BREAK

### **Session Ten: Current technologies to stimulate and modulate brain activity**

Moderator: Eduardo Fernandez, M.D., Ph.D., University Miguel Hernandez, Spain

- 11:00 – 11:30 am **Surgery in and around the visual pathways: the eye doesn't see what the brain doesn't know**  
Pablo Gonzalez, M.D. Ph.D., Hospital General Universitari Alicante, Alicante, Spain
- 11:30 – 12:00 am **Future directions in neuromodulation**  
Antonio Gutierrez, M.D. Ph.D., Hospital la Fe, Valencia, Spain
- 12:00 – 12:30 am **Understanding the brain network in states of presence using deep electrodes in epilepsy surgery**  
Rafael García de Sola, M.D. Ph.D., Hospital Ntra Sra del Rosario, Madrid, Spain

### **Session Eleven: New technologies for cortical prosthetic vision (I)**

Moderator: Leili Soo, Ph.D., University Miguel Hernandez, Elche, Spain

- 12:30 – 1:00 pm **Deep reinforcement learning for evaluation and optimization of prosthetic vision**  
Richard van Wezel, Ph.D., Radboud University, Nijmegen, the Netherlands
- 1:00 – 1:30 pm **Event-based sensor enables high-speed, low-latency, wearable eye tracker for cortical visual prostheses**  
Avi Caspi, Ph.D., Jerusalem College of Technology, Jerualem, Israel
- 1:30 - 2:30 pm. Lunch

### **Session Twelve: New technologies for cortical prosthetic vision (II)**

Moderator: Peter Janssen, M.D., Ph.D., KU Leuven, Leuven, Belgium

- 2:30 – 3:00pm **Neuromorphic sensors and processors for prosthesis**  
Shih-Chii Liu, Ph.D., Institute of Neuroinformatics, University of Zurich & ETH Zurich, Switzerland
- 3:00 –3:30 pm **I-See: improving intra-cortical visual prostheses through complex coding and integration of Spontaneous states**  
Udo Ernst & David Rotermund, Ph.Ds., University Bremen, Bremen, Germany

3:30 – 4:00 pm **Talking to the brain in its own language: decoding functional representation in V1 from Spontaneous activity**  
Jan Antolik, Ph.D., Charles University, Prague, Czechia

4:00 – 4:30 pm **Pulse trains to percepts: How virtual patients can be used to describe the perceptual effects of human visual cortex stimulation**  
Ione Fine, Ph.D., University of Washington & University of Leeds, Seattle and Leeds.

4:30 - 5:00 pm BREAK

**Session Thirteen: Closed-loop stimulation**

Moderator: Richard van Wezel, Ph.D., Radboud University, Nijmegen, the Netherlands

5:00 – 5:30 pm **Closed loop communication with the visual cortex**  
Patrick Degenaar, Ph.D., Newcastle University, Newcastle upon Tyne, UK

5:30 – 6:00 pm **Control of electrically evoked neural activity via deep neural networks in human visual cortex**  
Jacob Granley & Pehuen Moure, UC Santa Barbara, California and Swiss Federal Institute of Technology (ETH), Zurich, Switzerland

6:00 – 6:30 pm **Design lessons for next-generation cortical implants**  
Antonio Lozano, Ph.D., Netherlands Institute Neuroscience, Amsterdam, Netherlands

6:30 – 7:00 pm Group Discussion & End Meeting

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