

**THE DETROIT INSTITUTE OF OPHTHALMOLOGY  
A DIVISION OF THE DEPARTMENT OF OPHTHALMOLOGY  
HENRY FORD HEALTH SYSTEM PRESENTS:**

**11<sup>TH</sup> *THE EYE AND THE CHIP***

**WORLD RESEARCH CONGRESS**

**PROGRAM AGENDA**

**SUNDAY, NOVEMBER 10, 2019**

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

- 7:00 - 8:00 a.m.      **CONTINENTAL BREAKFAST**
- 7:45 - 7:55 am      **WELCOME & INTRODUCTION**  
Paul Edwards, M.D. Chair, Department of Ophthalmology,  
Henry Ford Health System, Detroit, Michigan
- 7:55 - 8:00 am      **HOUSEKEEPING ANNOUNCEMENTS**  
David J. Goldman, M.D., M.B.A, Associate Medical  
Director, Detroit Institute of Ophthalmology, Director of  
Residency Program, Department of Ophthalmology, Henry  
Ford Health System, Detroit, Michigan

**Session One: Current Clinical Trials, Patient Outcomes and Experiences**

- MODERATOR – Lauren Ayton, Ph.D., University of Melbourne, Melbourne, Australia**
- 8:00 - 8:30 a.m.      Orion Visual Cortical Prosthesis System: One-Year  
Clinical Trial Results  
**Jessy Dorn, Ph.D., Second Sight, Sylmar, California**
- 8:30 - 9:00 a.m.      The Bionic Vision Technologies Suprachoroidal Retinal  
Prosthesis: Interim Clinical Results  
**Matthew Petoe, Ph.D., Bionic Vision Technologies, Melbourne, Australia**
- 9:00 - 9:30 a.m.      Photovoltaic Restoration of Sight in Age-related Macular  
Degeneration: One-Year Clinical Results  
**Daniel Palanker, Ph.D., Stanford University, Stanford, California**  
**Yannick Le Mer, M.D., Pixium-Vision, Paris, France**

- 9:30 - 10:00 a.m.     **BREAK**
- 10:00 - 10:30 a.m.    Towards a Cortical Visual Neuroprosthesis for the Blind:  
Preliminary Results in a Human  
**Eduardo Fernandez, M.D., Ph.D., University of Miguel  
Hernandez, Elche, Spain**
- 10:30 - 11:00 a.m.    The Perceptual Experience of Artificial  
Vision: Qualitative Reports of Epiretinal Implant Users  
**Cordelia Erickson-Davis, M.D., Stanford University  
Helma Korzybska, Ph.D. Candidate, Paris Nanterre  
University, Paris, France**
- 11:00 - 11:30 a.m.    **GROUP DISCUSSION**
- 11:30 - 12:30 p.m.    **LUNCH**

## **Session Two: Improving Patient Outcomes and Experiences with Current Generation Devices**

**MODERATOR – Gislin Dagnelie, Ph.D., Johns Hopkins  
Hospital, Baltimore, Maryland**

- 12:30 - 1:00 p.m.    Educational Techniques to Enhance Comprehension of Complex  
Information  
**Frank Lane, Ph.D., Illinois Institute of Technology, Chicago,  
Illinois**
- 1:00 - 2:00 p.m.    **PANEL – HOVER Update**  
**Members: Lauren Ayton, Ph.D., University of  
Melbourne, Australia  
Joseph Rizzo, M.D., Harvard Medical  
School, Boston, Massachusetts**
- 2:00 – 2:30 p.m.    Novel Vision Processing Method Facilitates Color-  
Contrast Object Detection in Participants Implanted with a  
Suprachoroidal Retinal Prosthesis  
**Nick Barnes, Ph.D., Bionic Vision Technologies, Melbourne,  
Australia**
- 2:30 - 3:00 p.m.    The Color Option  
**Vernon Towle, Ph.D., Illinois Institute of Technology, Chicago,  
Illinois**
- 3:00 - 3:30 p.m.    **BREAK**

- 3:30 - 4:00 p.m. Temporal Dithering of Epiretinal Stimulation to Optimize Artificial Vision  
**Nishal Shah, M.Sc., Stanford University, Stanford, California**
- 4:00 - 4:30 p.m. Applications of Deep Learning AI to Neural Signal Analysis, Sight Perception, Device Design and Neural Stimulation Patterning  
**Greg Auner, Ph.D. Wayne State University, Henry Ford Health System, Detroit, Michigan**
- 4:30 - 5:00 p.m. Pulse Trains to Percepts: The Challenge of Creating a Perceptually Intelligent World Based on Cortical Stimulation of Early Visual Areas  
**Ione Fine, Ph.D., University of Washington, Seattle, Washington**
- 5:00 - 6:00 p.m. **PANEL - TBD**
- 6:30 - 9:00 p.m. **BARTIMAEUS DINNER**
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## **MONDAY, NOVEMBER 11, 2019**

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

- 7:00 - 8:00 a.m.      **CONTINENTAL BREAKFAST**
- 7:45 – 7:55 a.m.      **WELCOME & INTRODUCTION**  
Philip C. Hessburg, M.D., Medical Director, Detroit  
Institute of Ophthalmology, Henry Ford Health System,  
Grosse Pointe, Michigan
- 7:55 – 8:00 a.m.      **HOUSEKEEPING ANNOUNCEMENTS**  
David Goldman, M.D., M.B.A, Associate Medical  
Director, Detroit Insitute of Ophthalmology, Director of  
Residency Program, Department of Ophthalmology, Henry  
Ford Health System, Detroit, Michigan

### **Session Three: Next Generation Devices**

**MODERATOR – James Weiland, Ph.D. University of  
Michigan, Ann Arbor, Michigan**

- 8:00 - 8:30 a.m.      Intracortical Visual Prosthesis (ICVP): Progress Towards the  
Clinical Trial  
**Philip Troyk, Ph.D., Illinois Institute of Technology, Chicago,  
Illinois**
- 8:30 - 9:00 a.m.      OptoViS: Optogenetic Visual Cortical Prosthesis  
**Patrick Degenaar, Ph.D., Newcastle University, Newcastle,  
United Kingdom**
- 9:00 - 9:30 a.m.      Towards the Development of a Micro-coil Based Cortical Visual  
Prosthesis  
**Shelley Fried, Ph.D., Massachusetts General Hospital, Boston,  
Massachusetts**
- 9:30 - 10:00 a.m.      **BREAK**
- 10:00 - 10:30 a.m.      The High Resolution Imaging Retinal Prosthesis (HARP4k) --  
Status Update on Tissue Tolerance  
**Long-Sheng Fan, Ph.D., Iridium Medical Technology Co., Ltd.,  
Taiwan, Republic of China**
- 10:30 - 11:00 a.m.      Real-time Beam Trajectory Control for Fully Wireless Optically  
Powered Epiretinal Prostheses

**Ross Cheriton, Ph.D., Australia – Canada Bionic Vision  
Collaboration, Ontario, Canada**

11:00 -11:30 a.m. **GROUP DISCUSSION**

11:30 - 12:30 p.m. **LUNCH**

## **Session Four: Next Generation Devices and Materials**

**MODERATOR - Daniel Rathbun, Ph.D., Henry Ford Health  
System Bionics and Vision Lab, Detroit, MI**

12:30 - 1:00 p.m. A Silk Fibroin Biohybrid Thalamic Visual Neuroprosthesis. First  
Steps for the Development of the Biohybrid Retina  
**Fivos Panetsos, Ph.D., VISNE, Madrid, Spain**

1:00 – 2:00 p.m. **PANEL – Cortical Protheses**  
**Members: Avi Caspi, Ph.D., Jerusalem College of Technology,  
Jerusalem, Israel**  
**Patrick Degenaar, Ph.D., University of Newcastle,  
Newcastle, United Kingdom**  
**Eduardo Fernandez, M.D., Ph.D., University of  
Miguel Hernandez, Elche, Spain**  
**Shelley Fried, Ph.D., Massachusetts General  
Hospital, Harvard Medical School, Boston MA**  
**Phil Troyk, Ph.D., Illinois Institute of Technology,  
Chicago, Illinois**

2:00 - 2:30 p.m. The Diamond Eye: Architecture and Reduction to Practice  
**Steven Praver, Ph.D., Australia-Canada Bionic Vision  
Consortium, Victoria, Australia**

2:30 - 3:00 p.m. A Fully Wireless 288 Electrodes Retinal Implant with an Optical  
Data and Power Link with Ultrananocrystalline Diamond  
Electrodes  
**William LeMaire, Ph.D., Canada-Australia Bionic Vision  
Consortium, Sherbrooke, Canada**

3:00 - 3:30 p.m. **BREAK**

3:30 - 4:00 p.m. In-vitro Study and Capacitive Behavior of Photovoltaic, Subretinal  
Implant with 3D Carbon Electrodes  
**Rasmus Davidsen-Schmidt, Ph.D., Technical Univerity of  
Denmark, Lyngby, Denmark**

- 4:00 - 4:30 p.m.      Nanowire Arrays Restore Vision in Blind Mice  
**Jiayi Zhang, Ph.D., Fudan University, Shanghai, China**
- 4:30 – 5:00 p.m.      Expanding the Restorative Capacity of Visual Prostheses Beyond  
Retinal Diseases: Neurofibromatosis as an Iconic Example  
**Steven Stasheff, M.D., Ph.D., National Institute of Health  
National Eye Institute, Bethesda, Maryland**
- 5:00 – 5:30 p.m.      **GROUP DISCUSSION**
- 5:30 –7:30 p.m.      **POSTER PRESENTATIONS AND COCKTAIL HOUR**
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## **TUESDAY, NOVEMBER 12, 2019**

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

7:00-8:00 a.m.            **CONTINENTAL BREAKFAST**

7:55 a.m.                **HOUSEKEEPING ANNOUNCEMENTS**

David J. Goldman, M.D., M.B.A., Associate Medical Director,  
Detroit Institute of Ophthalmology, Director of Residency Program,  
Department of Ophthalmology, Henry Ford Health System,  
Detroit, Michigan

### **Session Five: Understanding the Degenerate Retina and Visual Pathway**

**MODERATOR- Eberhart Zrenner, M.D., University of Tuebingen, Tuebingen, Germany**

8:00 - 8:30 a.m.        Electrical Response Clustering of Mouse Retinal Ganglion Cells  
**Daniel Rathbun, Ph.D., Henry Ford Bionics and Vision Lab, Detroit, Michigan**

8:30 - 9:00 a.m.        Experimentally Constrained Predictions of the Efficacy of a Global Activity Shaping Strategy  
**Martin Spencer, Ph.D., Bionic Vision Technologies, Melbourne, Australia**

9:00 - 9:30 a.m.        Replicating a More Physiological Retinal Neural Code Using High-Rate Electrical Stimulation  
**Tianruo Guo, Ph.D., University of New South Wales, Sydney, Australia**

9:30 - 10:00 a.m.       **BREAK**

10:00 - 10:30 a.m.      Real Time Imaging of the Microglia Response to Electrical Overstimulation of the Retina Under Epiretinal Stimulus Electrodes  
**Ethan Cohen, Ph.D., US FDA, Silver Spring, Maryland**

10:30 - 11:00 a.m.      Cortical Interactions Between Prosthetic and Natural Retinal Responses – Implications for Restoration of Central Vision  
**Yossi Mandel, M.D., Ph.D., Bar-Ilan University, Ramat Gan, Israel**

11:00 - 11:30 a.m.      **GROUP DISCUSSION**

11:30 - 12:30 p.m.      **LUNCH AND POSTER AWARDS**

## **Session Six: Where to from here?**

**MODERATOR – Edward O’Malley, M.D., Department of Ophthalmology, Henry Ford Health System, Detroit, MI**

- 12:30 - 1:00 p.m.      The Challenge to Meet the Expectations of Patients, Ophthalmologists and Public Healthcare Systems with Current Retinal Prostheses  
**Eberhart Zrenner, M.D., University of Tuebingen, Tuebingen, Germany**
- 1:00 – 2:00 pm      **PANEL – Where to From Here? Challenges and Opportunities**  
**Members: Joseph Rizzo, M.D., – *Mini- Symposium***  
                                 **Harvard Medical School, Boston, Massachusetts**  
**Robert Greenberg, M.D., Ph.D. - *Lessons Learned***  
                                 **Alfred Mann Foundation, Valencia, California**  
**Alfred Stett, M.D., Reutlingen, Germany**  
**Philip Troyk, Ph.D., Illionis Institute of Technology**  
**Eberhart Zrenner, M.D., University of Tuebingen, Germany**
- 2:00 – 2:30 p.m.      **Wrap -up – Plans for 2021!!**  
                                 Lauren Ayton, Ph.D.  
                                 David J. Goldman, M.D., M.B.A.  
                                 Philip C. Hessburg, M.D.  
                                 Roseanne Horne  
                                 Edward O’Malley, M.D.  
                                 Joseph Rizzo, M.D.  
                                 Philip Troyk, Ph.D.  
                                 James Weiland, Ph.D.