



*Fifth Annual*  
**Selected Topics in Neuroplastic  
& Reconstructive Surgery:**

*An International Symposium on Cranioplasty and  
Implantable Neurotechnology with Cadaver Lab*

*Presented by:*

Department of Plastic-Reconstructive Surgery  
& Department of Neurosurgery  
Section of Neuroplastic & Reconstructive Surgery  
Johns Hopkins University School of Medicine



*Jointly Provided by:*

Society of Neuroplastic Surgery

**November 2-3, 2019**

**General Session – November 2**

The Rotunda  
Joseph B. Martin Conference Center  
at Harvard Medical School  
Boston, Massachusetts

**Hands-on Lab – November 3**

Boston Bioskills Lab  
Boston, Massachusetts

**NEW  
THIS YEAR!  
Oral Abstract  
Session**

*This activity endorsed by:*

American Society of Maxillofacial Surgeons  
American Society of Plastic Surgeons  
Congress of Neurological Surgeons  
Global Neuro  
Society of Neuroplastic Surgery

This activity has been approved for *AMA PRA Category 1 Credits™*.



**JOHNS HOPKINS**  
MEDICINE

## DESCRIPTION

Modern-day cranioplasty, along with the burgeoning field of Neuroplastic and Reconstructive Surgery, is undergoing a significant paradigm shift related to various techniques, surgical advancements, implantable neurotechnology, and improved biomaterials. These changes have stimulated us to assemble premier thought leaders in various specialties including neurosurgery, neuroplastic surgery, craniofacial surgery, and plastic surgery to meet for the FIFTH annual symposium dedicated to the subjects of “cranioplasty”, “implantable neurotechnology”, and “neuroplastic surgery”—to be hosted this year at the Joseph B. Martin Conference Center at Harvard Medical School in Boston, Massachusetts. The faculty will gather to present evidence-based data on surgical approaches and state-of-the-art materials, engage and network within a broad array of colleagues and experts, and share high-yield experiences to help attendees improve their patient outcomes. Interactive panel discussions following each lecture will offer the opportunity to debate the evidence, exchange ideas, and gain invaluable insight to assist with the most challenging cases. This year’s symposium, along with an included abstract session, will engage an international faculty and audience consisting of neurosurgery, neuroplastic surgery, craniofacial surgery, plastic/reconstructive surgery, oral/maxillofacial surgery, biomedical engineering, neurology and neuro-oncology, to explore and elucidate the new insights and advances relative to skull reconstruction, cranial implants, and groundbreaking neurotechnologies.

## WHO SHOULD ATTEND

This activity is intended for residents, fellows and physicians in Neurosurgery, Neuroplastic and Reconstructive Surgery, Craniofacial Surgery, Plastic and Reconstructive Surgery, Otolaryngology—Head and Neck Surgery, Oral Maxillofacial Surgery and Biomedical Engineering.

## OBJECTIVES

After attending this activity, the participant will demonstrate the ability to:

- Create a cranioplasty reconstruction management plan with or without implants, from peri- to postprocedural care.
- Discuss recent advances in cranioplasty, implantable neurotechnology, and neuro-cranial reconstruction, and how you may incorporate them into your practice.
- Translate cranioplasty and implantable neurotechnology research findings to improved outcomes based on recent evidence based literature.
- Employ cooperative learning to analyze practice barriers and apply appropriate solutions.

## ACCREDITATION STATEMENT

The Johns Hopkins University School of Medicine is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.



## CREDIT DESIGNATION STATEMENT

The Johns Hopkins University School of Medicine designates this Live activity for a maximum of 13.5 *AMA PRA Category 1 Credits™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

## CREDITS

**American Nurses Credentialing Center (ANCC)** accepts *AMA PRA Category 1 Credits™* from organizations accredited by the ACCME.

**American Academy of Nurse Practitioners National Certification Program** accepts *AMA PRA Category 1 Credits™* from organizations accredited by the ACCME.

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## POLICY ON SPEAKER AND PROVIDER DISCLOSURE

It is the policy of the Johns Hopkins University School of Medicine that the speaker and provider globally disclose conflicts of interest. The Johns Hopkins University School of Medicine OCME has established policies that will identify and resolve conflicts of interest prior to this educational activity. Detailed disclosure will be made prior to presentation of the education.

## GENERAL INFORMATION

### REGISTRATION

**Saturday, November 2, 2019 • 6:00 – 7:00 a.m.**

### LOCATION

#### The Rotunda

Joseph B. Martin Conference Center at Harvard Medical School  
77 Avenue Louis Pasteur  
Boston, Massachusetts 02115

*Johns Hopkins University is not affiliated with Harvard University, nor is this CME course hosted as a Harvard University program or activity.*

#### Boston Bioskills Lab

27 Drydock Avenue  
Boston, Massachusetts 02110

### FEES

**REGISTRATION CUT-OFF DATE: October 27, 2019**

**Register Online at: [hopkinscme.cloud-cme.com/aph.aspx?P=5&EID=18099](https://hopkinscme.cloud-cme.com/aph.aspx?P=5&EID=18099)**

Methods of Payment: We require full payment prior to the start of the activity. Payment by check or credit card must accompany the registration form prior to the activity. The registration fee includes instructional materials, continental breakfasts, refreshment breaks and lunches.

	Before September 1	After September 1
Physician – Saturday, November 2nd only	\$420	\$495
Physician – Sunday, November 3rd only	\$645	\$750
Physician – Saturday and Sunday	\$1,075	\$1,200
Residents*/Fellows*/Allied Health Professionals– Saturday, November 2nd only	\$85	\$95
Residents*/Fellows*/Allied Health Professionals– Sunday, November 3rd only	\$90	\$100
Residents*/Fellows*/Allied Health Professionals– Saturday and Sunday	\$170	\$190

*\*with verification of status*

You will receive a confirmation by e-mail. If you have not received it by October 27, 2019, call (410) 502-9636 to confirm that you are registered. A transcript of attendance will be available upon attestation of your credit hours and submission of the post activity online evaluation.

The Johns Hopkins University reserves the right to cancel or postpone any activity due to unforeseen circumstances. In this event, the University will refund the registration fee but is not responsible for travel expenses. Additionally, we reserve the right to change the venue to a comparable venue. Under such circumstances registrants will be notified as soon as possible.

### ABSTRACT SUBMISSION

**Award presentation for best abstract.**

**Submit your abstract by August 1st at**

**<https://hopkinscme.cloud-cme.com/aph.aspx?P=5&EID=18099>**

## LATE FEE AND REFUND POLICY

A \$50 late fee applies to registrations received after 5:00 p.m. ET on October 27, 2019. A handling fee of \$50 will be deducted for cancellation. An additional fee may apply for cancellation of other events, including workshops and social activities. Refund requests must be received by fax or mail by October 27, 2019. No refunds will be made thereafter. Transfer of registration to another Johns Hopkins activity in lieu of cancellation is not possible.

## SYLLABUS

The syllabus will be accessible online and via your mobile device in the CloudCME App prior to the activity.

## HOW TO OBTAIN CREDIT

Post activity, an online evaluation will be available to attendees to evaluate the activity and individual presentations and to identify future educational needs. Upon completion of the evaluation, the learner must attest to the number of hours in attendance. Credits earned will be added to the learner's transcript and immediately available for print. **The last day to access the evaluation and attest to your credits is December 17, 2019.**

An outcome survey will be sent to all physician attendees within two months post activity to assist us in determining what impact this activity had on the learner's practice.

## EMERGENCY CALLS

On November 2, 2019 direct emergency calls to the Hopkins registration desk, (617) 432-8990. On November 3, 2019 direct emergency calls to the Hopkins registration desk, (617) 409-7400. Messages will be posted for participants.

## AMERICANS WITH DISABILITIES ACT

The Johns Hopkins University School of Medicine fully complies with the legal requirements of the ADA and the rules and regulations thereof. Please notify us if you have any special needs.

### To Register or For Further Information

Register Online (credit card and eCheck)

[hopkinscme.cloud-cme.com/aph.aspx?P=5&EID=18099](http://hopkinscme.cloud-cme.com/aph.aspx?P=5&EID=18099)

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Organization Code: HopkinsCME

# PROGRAM

**SATURDAY, NOVEMBER 2, 2019**

- 6:00 – 7:00 Registration and Continental Breakfast  
7:00 – 7:10 **Welcome and Conference Goals**  
Chad Gordon, DO, FACS  
7:10 – 7:20 **Opening Remarks**  
Paul Manson, MD  
7:20 – 7:30 **Chairman's Welcome**  
Henry Brem, MD and Bob Carter, MD, PhD  
7:30 – 7:45 **Patient Experience with Neuroplastic Surgery**

*\*Five minutes for Q&A have been incorporated into the program\**

## **Session 1: Discovery and Innovation in Neurotechnology**

*Moderators: Jaishri Blakeley, MD, William Curry, MD, and John Laterra, MD, PhD*

- 7:45 – 7:55 **Precision Medicine for Brain Tumors: Genomics as a Tool**  
Priscilla Brastianos, MD  
8:00 – 8:10 **Ultrasound Modulation of Blood-Brain Barrier**  
Chetan Bettegodwa, MD, PhD  
8:15 – 8:25 **Neuromodulation for Stroke Recovery**  
Andre Machado, MD, PhD  
8:30 – 8:40 **Sonolucent Cranial Implants**  
Andrea Machnitz, MD  
8:45 – 8:55 **Intracranial Ultrasound (IUS)**  
Netanel Ben-Shalom, MD  
9:00 – 9:15 Refreshment Break  
9:15 – 9:25 **Targeting Brain Cancer Stem Cells with mRNA Therapeutics**  
Hernando Lopez-Bartoni, MD  
9:30 – 9:40 **Nanoparticles for CNS Therapeutics**  
Jordan Green, PhD  
9:45 – 9:55 **Local Therapeutic Delivery in Brain Tumor Management**  
Jon Weingart, MD  
10:00 – 10:10 **Functional Cranial Implants with Power**  
Chad Gordon, DO, FACS  
10:15 – 10:45 **Fifth Annual Keynote Lectureship:  
Current Developments and Future Options  
for State-of-the-Art Brain Tumor Management**  
Bob Carter, MD, PhD

## **Session 2: Functional Neurosurgery and Cranial Implants**

*Moderators: Gregory Bergey, MD, Pablo Celnik, MD, and Michael Yaremchuk, MD*

- 10:45 – 10:55 **Brain-Computer Interfacing**  
Nathan Crone, MD  
11:00 – 11:10 **Braingate Neural Interface System**  
Leigh Hochberg, MD, PhD  
11:15 – 11:25 **Bilateral Neurostimulation for Quadriplegia**  
William S. Anderson, MD, PhD  
11:30 – 11:40 **Advances in Intracranial Technology for Epilepsy**  
Dennis Spencer, MD  
11:45 – 11:55 **Neuromodulation for Epilepsy**  
Ziv Williams, MD  
12:00 – 12:10 **Laser Thermal Ablation for Epilepsy**  
Mark Richardson, MD  
12:15 – 12:25 **Focused Ultrasound for Movement Disorders**  
Graeme Woodworth, MD, FACS  
12:30 – 1:00 Lunch

## **Session 3: Neurotechnology and Hydrocephalus**

*Moderators: Eric Arnaud, MD, Jay Loeffler, MD, and Paul Manson, MD*

- 1:00 – 1:10 **Neural Interfacing via Transparent Polymer Skulls**  
Suhasa Kodandaramaiah, PhD  
1:15 – 1:25 **Skin Sensing for Hydrocephalus Management**  
Matthew Potts, MD  
1:30 – 1:40 **Improving Outcomes with Hydrocephalus Shunts**  
Mark Luciano, MD, PhD  
1:45 – 1:55 **Updates in Optogenetics for Neuromodulation**  
Ed Boyden, PhD

- 2:00 – 2:10 **How to Integrate Neurotechnology Development with Neuroscience Delivery**  
Erol Veznedaroglu, MD
- 2:15 – 2:30 Refreshment Break

#### **Session 4: Pediatric Neurocranial Reconstruction and Neurotrauma**

*Moderators:* Richard Redett, III, MD, Jesse Taylor, MD, and Nicholas Theodore, MD

- 2:30 – 2:40 **Monobloc and LeFort Advancements**  
Anand Kumar, MD, FACS, FAAP
- 2:45 – 2:55 **Craniosynostosis and Pediatric Cranioplasty**  
Peter Taub, MD
- 3:00 – 3:10 **Management of Civilian Neurotrauma**  
Bizhan Aarabi, MD
- 3:15 – 3:25 **Managing Neurotrauma on the Battlefield**  
Albert Schuette, MD
- 3:30 – 3:40 **Considerations in the Military Cranioplasty**  
Gabriel Santiago, MD
- 3:45 – 3:55 **Scalp Expansion for Burn Patients**  
Matthias Donelan, MD

#### **Session 5: Neuroplastic Surgery and Cranial Implants**

*Moderators:* Branko Bojovic, MD, Kevin Emerick, MD, and Mutaz Habal, MD

- 4:00 – 4:10 **Migraine Surgery for Neuropathic Pain**  
William Austen, Jr., MD
- 4:15 – 4:25 **3D Printing of Cranial Implants**  
Peter Liacouras, PhD
- 4:30 – 4:40 **The Cranium and its Golden Rule**  
Rafael Tamargo, MD
- 4:45 – 5:15 **Oral Abstract Presentations**  
*Moderator:* Judy Huang, MD and William Hoffman, MD
- 5:15 – 5:30 **Closing Remarks**  
Chad Gordon, DO, FACS

### **SUNDAY, NOVEMBER 3, 2019**

#### **LAB**

- 7:00 – 7:45 Registration and Continental Breakfast
- 7:45 – 7:55 **Welcome and Faculty Overview**  
Chad Gordon, DO, FACS
- 8:00 – 9:45 **Session I: Neurosurgical Approaches to the Craniofacial Skeleton**
1. Burr hole for Ventriculostomy Placement
  2. Pterional Craniotomy for Trauma
  3. Parasagittal Craniotomy
  4. Bifrontal Craniotomy for Frontal Sinus Trauma
  5. Orbito-zygomatic Osteotomy
  6. Occipital Craniotomy
  7. Posterior Fossa Craniotomy
- 9:45 – 10:00 Refreshment Break
- 10:00 – 11:45 **Session II: Neurocranial Reconstruction and Cranioplasty Technique**
1. Bifrontal Cranioplasty for Frontal Bone/Frontal Sinus Trauma
  2. Pterional Cranioplasty Reconstruction with Customized Cranial Implant
  3. Hemicraniectomy Cranioplasty Reconstruction with Customized Cranial Implant
  4. Single-stage Cranioplasty with Alloplastic Implant
  5. Temporal Hollowing Correction with Methyl Methacrylate
  6. Complex Scalp Reconstruction for Large Defects
- 11:45 – 12:00 Closing Remarks
- 12:00 Adjourn

## ACTIVITY DIRECTORS

### JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE

#### **Chad Gordon, DO, FACS**

Director, Neuroplastic & Reconstructive Surgery  
Associate Professor of Plastic Surgery  
and Neurosurgery  
Fellowship Director, Neuroplastic &  
Reconstructive Surgery (Plastic Surgery)  
Co-Director, Multidisciplinary Adult Cranioplasty  
Center (MACC)

#### **Judy Huang, MD**

Vice-Chair and Professor of Neurosurgery  
Fellowship Director, Neuroplastic &  
Reconstructive Surgery (Neurosurgery)  
Co-Director, Multidisciplinary Adult Cranioplasty  
Center (MACC)

### HARVARD MEDICAL SCHOOL

#### **William Curry, MD**

Professor of Neurosurgery  
Director, Neurosurgical Oncology  
Co-Director,  
Mass General Neuroscience  
Massachusetts General Hospital

#### **Michael Yaremchuk, MD**

Clinical Professor of Surgery  
Chief, Craniofacial Surgery  
Massachusetts General Hospital

## FACULTY

### JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE

#### **William S. Anderson, MD, PhD**

Associate Professor of Neurosurgery

#### **Chetan Bettegowda, MD, PhD**

Associate Professor of Neurosurgery  
Director, Meningioma Center

#### **Gregory Bergey, MD**

Professor of Neurology  
Director, Johns Hopkins Epilepsy Center

#### **Jaishri Blakeley, MD**

Professor of Neurology  
Director, The Johns Hopkins Comprehensive  
Neurofibromatosis Center

#### **Henry Brem, MD**

Professor of Neurosurgery  
Director, Department of Neurosurgery

#### **Justin Caplan, MD**

Assistant Professor of Neurosurgery

#### **Pablo Celnik, MD**

Professor of Physical Medicine and  
Rehabilitation  
Director, Center of Excellence in Stroke  
Treatment, Recovery and Rehabilitation

#### **Nathan Crone, MD**

Professor of Neurology  
Co-Director, Epilepsy Fellowship Program

#### **Jordan Green, PhD**

Professor of Biomedical Engineering,  
Ophthalmology, Oncology, Neurosurgery,  
Materials Science & Engineering, and Chemical  
& Biomolecular Engineering

#### **John Lattera, MD, PhD**

Professor of Neurology  
Co-Director, Brain Cancer Program  
Johns Hopkins Sidney Kimmel Comprehensive  
Cancer Center

#### **Hernando Lopez-Bartoni, MD**

Assistant Professor of Neurology

#### **Mark Luciano, MD, PhD**

Professor of Neurosurgery  
Director, Cerebral Fluid Center

#### **Paul Manson, MD**

Distinguished Professor of Plastic and  
Reconstructive Surgery

#### **Andrea Machnitz, MD**

Assistant Professor of Radiology and  
Radiological Science

#### **Kerry-Ann Mitchell, MD, PhD**

Neuroplastic and Reconstructive Surgery Fellow

#### **Debraj Mukherjee, MD, MPH**

Assistant Professor of Neurosurgery  
Director, Neurosurgical Oncology  
Johns Hopkins Bayview Medical Center

#### **Richard Redett, III, MD**

Professor of Plastic and Reconstructive Surgery  
Co-Director, Brachial Plexus Clinic  
Kennedy Krieger Institute

#### **Rafael Tamargo, MD**

Walter E. Dandy Professor of Neurosurgery

#### **Nicholas Theodore, MD**

Professor of Neurosurgery  
Director, Neurosurgical Spine Center

#### **Jon Weingart, MD**

Professor of Neurosurgery  
Director, Neurosurgical Operating Room

### HARVARD MEDICAL SCHOOL

#### **William Austen, Jr., MD**

Professor of Surgery  
Chief, Plastic and Reconstructive Surgery  
Chief, Division of Burn Surgery  
Massachusetts General Hospital

#### **Branko Bojovic, MD**

Assistant Professor of Plastic and  
Reconstructive Surgery

#### **Priscilla Brastianos, MD**

Assistant Professor of Medicine  
Assistant Physician in Medicine,  
Hematology/Oncology  
Massachusetts General Hospital

#### **Bob Carter, MD, PhD**

Professor of Neurosurgery  
Harvard Medical School  
Chief, Neurosurgery Service  
Massachusetts General Hospital

#### **Matthias Donelan, MD**

Associate Professor of Surgery  
Chief of Staff  
Shriners Hospitals for Children – Boston

#### **Kevin Emerick, MD**

Assistant Professor of Otolaryngology

#### **Leigh Hochberg, MD, PhD**

Senior Lecturer on Neurology  
Professor of Engineering  
Brown University  
Director, Center for Neurotechnology and  
Neurorecovery, Neurocritical Care and Acute  
Stroke Services  
Department of Neurology  
Massachusetts General Hospital  
Director, VA Rehabilitation R&D Service  
Providence VA Medical Center

#### **Jay Loeffler, MD**

Herman and Joan Suit Professor  
of Radiation Oncology  
Chief, Radiation Oncology  
Massachusetts General Hospital

#### **Ziv Williams, MD**

Associate Professor in Neurosurgery

## GUEST

### **Bizhan Aarabi, MD**

Professor of Neurosurgery  
University of Maryland School of Medicine  
Baltimore, Maryland

### **Eric Arnaud, MD**

Team Coordinator  
Plastic and Aesthetic Surgery  
Center for Cranio-Facial Malformations  
Necker Children's Hospital  
Paris, France

### **Dean Ad-Ei, MD**

Senior Lecturer, Department of Surgery  
Sackler School of Medicine, Tel Aviv University  
Director, Department of Plastic Surgery  
and Burns  
Rabin Medical Center  
Tel Aviv, Israel

### **Netanel Ben-Shalom, MD**

Neurosurgery Chief Resident  
Rabin Medical Center  
Petah Tikva, Israel

### **Ed Boyden, PhD**

Associate Professor of Biological Engineering  
and Brain and Cognitive Sciences  
Y. Eva Tan Professor in Neurotechnology  
Massachusetts Institute of Technology  
Cambridge, Massachusetts

### **Jan-Karl Burkhardt, MD**

Assistant Professor of Neurosurgery  
Baylor College of Medicine  
Houston, Texas

### **Joseph Carey, MD**

Assistant Professor of Surgery  
Division of Plastic and Reconstructive Surgery  
Keck School of Medicine  
University of Southern California  
Los Angeles, California

### **Jason Gerrard, MD**

Assistant Professor of Neurosurgery and  
Neuroscience  
Chief, Functional Neurosurgery  
Yale University School of Medicine  
New Haven, Connecticut

### **Mutaz Habal, MD**

Research Professor  
University of South Florida  
Adjunct Professor of Material Science  
University of Florida  
Director, Tampa Bay Craniofacial Center  
Tampa, Florida

### **Sagi Harnoff, MD**

Director, Neurosurgery  
Rabin Medical Center  
Tel Aviv, Israel

### **William Hoffman, MD**

Professor of Surgery  
Chief, Division of Plastic and  
Reconstructive Surgery  
Stephen J. Mathes, MD Endowed Chair in  
Plastic and Reconstructive Surgery  
University of California San Francisco  
San Francisco, California

### **Suhasa Kodandaramaiah, PhD**

Assistant Professor in Mechanical Engineering  
University of Minnesota  
College of Science & Engineering  
Minneapolis, Minnesota

### **Anand Kumar, MD, FACS, FAAP**

Dewayne Greenwood Richey II Endowed  
Professor of Plastic Surgery and Pediatrics  
Case Western Reserve University  
School of Medicine  
Cleveland, Ohio

### **Peter Liacouras, PhD**

Director of Services  
3D Medical Applications Center  
Walter Reed National Military Medical Center  
Bethesda, Maryland

### **Andre Machado, MD, PhD**

Chairman, Neurological Institute Charles and  
Christine Carroll Family Endowed Chair in  
Functional Neurosurgery  
Cleveland Clinic  
Cleveland, Ohio

### **Chima Oluigbo, MD**

Associate Professor of Neurosurgery  
and Pediatrics  
George Washington University  
School of Medicine  
Washington, DC

### **Matthew Potts, MD**

Assistant Professor of Neurological Surgery  
Northwestern University  
Feinberg School of Medicine  
Chicago, Illinois

### **Mark Richardson, MD**

Associate Professor of Neurological Surgery  
Director, Epilepsy and Movement  
Disorders Program  
Brain Modulation Laboratory  
University of Pittsburgh School of Medicine  
Pittsburgh, Pennsylvania

### **Gabriel Santiago, MD**

Attending Neuroplastic Surgeon  
Department of Otolaryngology  
United States Navy  
Portsmouth, Virginia

### **Albert Schuette, MD**

Assistant Program Director  
Neurosurgery  
Walter Reed National Military Medical Center  
Bethesda, Maryland

### **Vladimir Shapira, MD**

Invited Lecturer  
Haifa University  
Attending Neurosurgeon  
Department of Neurosurgery  
Rambam Hospital  
Haifa, Israel

### **Dennis Spencer, MD**

Harvey and Kate Cushing  
Professor of Neurosurgery  
Chief, Epilepsy Surgery  
Director, Epilepsy Fellowship  
Director, Pituitary Surgery  
Yale School of Medicine  
New Haven, Connecticut

### **Peter Taub, MD**

Professor of Surgery,  
Pediatrics and Neurosurgery  
Mount Sinai School of Medicine  
New York, New York

### **Jesse Taylor, MD**

Peter Randall Endowed Chair of Plastic Surgery  
Chief, Division of Plastic and  
Reconstructive Surgery  
Co-Director, Craniofacial Program  
Co-Director, Cleft Lip and Palate Program  
Children's Hospital of Philadelphia  
Philadelphia, Pennsylvania

### **Erol Veznedaroglu, MD**

Robert A. Groff Chair in Neurosurgery  
Director, Drexel Neurosciences Institute  
Drexel Neurosciences Institute  
Philadelphia, Pennsylvania

### **Amir Wolff, MD**

Attending Surgeon  
Department of Oral & Maxillofacial Surgery  
Rambam Health Campus  
Haifa, Israel

### **Graeme Woodworth, MD, FACS**

Professor of Neurosurgery  
University of Maryland School of Medicine  
Baltimore, Maryland



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**Total amount enclosed \$** \_\_\_\_\_

The registration fee includes instructional materials and food and beverage. For registrations received after 5:00 p.m. ET on October 27, 2019, include a \$50 late fee. On-site registrations are payable only by credit card.

**PAYMENT TYPE**

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*Fifth Annual*

## **Selected Topics in Neuroplastic & Reconstructive Surgery:**

*An International Symposium on Cranioplasty and  
Implantable Neurotechnology with Cadaver Lab*

**November 2-3, 2019**



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