FACULTY

Course Directors | Barrow Neurological Institute

Terry Fife, MD
Director, Barrow Balance Program

Peter Nakaji, MD
Director, Neurosurgery Residency Program

Jeremy Shefrin, MD, PhD
Chair of Neurology
Senior Vice President, BNI

Robert F. Spetzler, MD
President & CEO, BNI

Jonathan Russin, MD
Assistant Surgical Director
Center for Neurorestoration
Keck Medicine of USC

Sam Safavi-Abbasi, MD
Neurosurgeon
Flagstaff Neurosurgery

Michael Tymianski, MD, PhD,
FRCSM
Professor
Department of Surgery
University of Toronto

Dr. Nicholas Theodore, MD
Director, Neurotrauma Program
Chief, Neurosurgery Spine Section

Invited Faculty

Matthew O. Hebb, MD, PhD
Assistant Professor, Department of Clinical Neurological Sciences
University of Western Ontario

Mark Mahan, MD
Neurosurgeon, Peripheral Nerve and Spinal Disorders
University of Utah Health Care

Jonathan Russin, MD
Assistant Surgical Director
Center for Neurorestoration
Keck Medicine of USC

Sam Safavi-Abbasi, MD
Neurosurgeon
Flagstaff Neurosurgery

Robert Bowser, PhD
Chairman, Neurobiology
Professor, Neurology & Neurobiology

David Brachman, MD
Director
Division of Radiation Oncology

Joni Clark, MD
Interim Director
Barrow Stroke Program

James Frey, MD
Stroke Neurologist

Mark Garrett, MD
Neurosurgeon

Taro Kaibara, MD
Neurosurgeon

Kumar Kakarla, MD
Neurosurgeon

John Karis, MD
Director, MRI & Brain Imaging

Kerry Knievel, DO
Neurologist, Headache & Neuromuscular Disorders

Christina Kwasnica, MD
Brain Injury Medical Director
Neuro-Rehabilitation

Shaheeq Ladha, MD
Director
Gregory Fulton ALS Center

Andrew S. Little, MD
Co-Director, Barrow
Interdisciplinary Skull Base Team
and Barrow Pituitary Center

Shwetal Mehta, PhD
Principal Investigator
Laboratory of Glial Tumor Biology
Barrow Brain Tumor Research Center

Suraj Muley, MD
Director, Neuromuscular Program

Francisco A. Ponce, MD
Director
Center for Neuromodulation

Randall W. Porter, MD
Director, Interdisciplinary Skull Base Program

Marwan Sabbagh, MD
Director, Alzheimer’s Disease & Memory Disorders Division

Nader Sanai, MD
Director, Barrow Brain Tumor Research Center

Rita Sattler, MSc, PhD
Associate Professor
Department of Neurobiology

Courtney Schusse, MD
Neurologist

Holly Shill, MD
Director, Muhammad Ali Parkinson Center

Rachael Sirianni, PhD
Principal Investigator
NanoMedicine Laboratory

Kris A. Smith, MD
Medical Director, Gamma Knife

Laura Snyder, MD
Minimally Invasive Spine Surgeon

Michael A. Stein, MD
Incoming Director
Barrow MEG Center

David M. Treiman, MD
Professor of Neurology
Newsome Chair of Epileptology
Director, Epilepsy Program
Director, Laboratory for Translational Epilepsy Research

Luis M. Tumialán, MD
Minimally Invasive Spine Neurosurgeon

John E. Wanebo, MD
Neurosurgeon

William White, MD
Chief, Surgical Endocrinology
Surgical Director, Barrow Pituitary Center

Joseph M. Zabramski, MD
Chief, Cerebrovascular Surgery

Glynis Zeiman, MD
Neurologist

Faculty | Barrow Neurological Institute

Mark Agius, MD
Director
Neuroimmunology Division
Professor of Neurology

Felipe Albuquerque, MD
Assistant Director, Endovascular Neurosurgery Program

Lynn Ashby, MD
Interim Director
Neuro-Oncology Program

Robert Bowser, PhD
Chairman, Neurobiology
Professor, Neurology & Neurobiology

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Surgical Director, Barrow Pituitary Center

Joseph M. Zabramski, MD
Chief, Cerebrovascular Surgery

Glynis Zeiman, MD
Neurologist

WHO SHOULD ATTEND
Neurosurgeons, neurologists, residents and other healthcare providers with an interest in the application of best practices in the evaluation and appropriate treatment of patients with aneurysms, neurodegenerative diseases, various causes of stroke and utilizing DBS to treat Alzheimer’s disease.

SYMPOSIUM GOAL
After participating in this symposium participants will be able to:
• Discuss the role of extracranial-intracranial bypass

42nd ANNUAL BARROW NEUROSCIENCE SYMPOSIUM
## PRE-SYMPOSIUM WORKSHOP | EC-IC COURSE: PART 1 | Tuesday | May 17, 2016

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:00 PM</td>
<td>Registration</td>
<td></td>
</tr>
<tr>
<td>1:30 - 2:15 PM</td>
<td>Welcome</td>
<td>Peter Nakaji, MD</td>
</tr>
<tr>
<td></td>
<td>Overview of EC-IC Bypass</td>
<td>Robert F. Spetzler, MD</td>
</tr>
<tr>
<td></td>
<td>Low-Flow Bypass Applications and Techniques</td>
<td>Joseph M. Zabramski, MD</td>
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<tr>
<td>2:15 PM</td>
<td>Refreshment Break</td>
<td></td>
</tr>
<tr>
<td>2:30 - 5:30 PM</td>
<td>Hands-On Experience: Silastic Models and Turkey Wing Arteries</td>
<td>Peter Nakaji, MD</td>
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<td>Robert F. Spetzler, MD</td>
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<tr>
<td></td>
<td></td>
<td>Joseph M. Zabramski, MD</td>
</tr>
<tr>
<td>5:30 PM</td>
<td>Adjournment</td>
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</tbody>
</table>

## PRE-SYMPOSIUM WORKSHOP | EC-IC COURSE: PART 2 | Wednesday | May 18, 2016

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:30 AM</td>
<td>Registration</td>
<td></td>
</tr>
<tr>
<td>8:00 - 9:15 AM</td>
<td>High-Flow Bypass Applications and Techniques</td>
<td>Peter Nakaji, MD</td>
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<td></td>
<td>Physiology and Flow in Bypass</td>
<td>Peter Nakaji, MD</td>
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<td>Bypass for MoyaMoya Disease</td>
<td>John E. Wanebo, MD</td>
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<tr>
<td></td>
<td>Bypass Case Review</td>
<td>Peter Nakaji, MD</td>
</tr>
<tr>
<td>9:15 AM</td>
<td>Refreshment Break</td>
<td></td>
</tr>
<tr>
<td>9:30 AM - 12:00 PM</td>
<td>Hands-On Experience: In Vivo and Placenta Models</td>
<td>Peter Nakaji, MD</td>
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<tr>
<td></td>
<td></td>
<td>John E. Wanebo, MD</td>
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<tr>
<td>12:00 PM</td>
<td>Adjournment</td>
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## 42nd ANNUAL BARROW NEUROSCIENCE SYMPOSIUM | Wednesday | May 18, 2016

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Speakers</th>
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<tbody>
<tr>
<td>1:00 PM</td>
<td>Registration</td>
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<tr>
<td>1:30 - 3:20 PM</td>
<td>Welcome</td>
<td>Robert F. Spetzler, MD</td>
</tr>
<tr>
<td></td>
<td>Rapid and Accurate Intraoperative Neuropathology</td>
<td>Peter Nakaji, MD</td>
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<td></td>
<td>Discussion</td>
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<td>Mechanisms of Arteriopathy in Moyamoya Disease</td>
<td>John E. Wanebo, MD</td>
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<td></td>
<td>Agony &amp; Ecstasy</td>
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<td></td>
<td>Lumbar Drainage for Spinal Cord Injury</td>
<td>Nicholas Theodore, MD</td>
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<td>A Neurosurgeon’s Perspective on Doctor-Patient Communication</td>
<td>Randall W. Porter, MD</td>
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<td>Transsphenoidal Surgery for Acromegaly and McCune Albright Syndrome</td>
<td>William White, MD</td>
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<tr>
<td>3:20 PM</td>
<td>Refreshment Break</td>
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<tr>
<td>3:50 - 4:50 PM</td>
<td>Overcoming Roadblocks in Minimally Invasive Spine Surgery</td>
<td>Laura Snyder, MD</td>
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<td>Neuroradiology Update</td>
<td>John Karis, MD</td>
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<td>Osteotomies for Spinal Deformity</td>
<td>Kumar Kakarla, MD</td>
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<tr>
<td></td>
<td>Agony &amp; Ecstasy</td>
<td>Sam Safavi-Abbasi, MD</td>
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<tr>
<td>4:50 PM</td>
<td>Adjournment</td>
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</table>

## Non-CME Presentation | Wednesday | May 18, 2016

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Speakers</th>
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</thead>
<tbody>
<tr>
<td>5:00 PM — Sonntag Pavilion</td>
<td>The Challenging Path from Scientific Discovery to the Market: Timescale, Costs, Pitfalls and Hopefully a Rewarding Conclusion</td>
<td>Robert Bowser, PhD</td>
</tr>
<tr>
<td>5:15 PM</td>
<td>Adjournment</td>
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</tr>
</tbody>
</table>

## ACCREDITATION
St. Joseph’s Hospital and Medical Center is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians. St. Joseph’s Hospital and Medical Center designates this live activity for a maximum of 20 AMA PRA Category 1 Credits™. Physicians should claim only credit commensurate with the extent of their participation in the activity.
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker(s)</th>
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</thead>
<tbody>
<tr>
<td>7:00 AM</td>
<td>Registration and Breakfast</td>
<td></td>
</tr>
<tr>
<td>7:55 AM</td>
<td>Welcome</td>
<td>Robert F. Spetzler, MD &amp; Jeremy Shefner, MD, PhD</td>
</tr>
<tr>
<td>8:00 - 10:00 AM</td>
<td>AVM Update, Stroke Update, The Barrow Mobile Stroke Unit, Stroke Prevention in Atrial Fibrillation, Medical Therapy for Cavernous Malformations, Rationale for Minimally Invasive Approaches to Intradural Extramedullary Lesions</td>
<td>Peter Nakaji, MD, Joni Clark, MD, Felipe Albuquerque, MD, James Frey, MD, Joseph M. Zabramski, MD, Luis M. Tumialán, MD</td>
</tr>
<tr>
<td>10:00 AM</td>
<td>Refreshment Break</td>
<td></td>
</tr>
<tr>
<td>10:30 AM - 12:00 PM</td>
<td>Use of hiPSCs to Study Disease Pathogenesis, Phase 0 for Brain Tumors, Stem Cells for Neuro-oncology, Stem Cells for ALS, Update on Radiation Trials for Brain Tumors</td>
<td>Rita Sattler, MSc, PhD, Nader Sanai, MD, Shwetal Mehta, PhD, Jeremy Shefner, MD, PhD, David Brachman, MD</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>Lunch</td>
<td></td>
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<tr>
<td>1:00 - 3:00 PM</td>
<td>Agony &amp; Ecstasy, Pseudotumor Cerebri, New Concepts in Epilepsy Treatment, Open vs. Laser Amygdallohippocampectomy: Proposal for a Clinical Trial, Utility of MEG in Planning Epilepsy Surgery, Neuromuscular and EMG for the Neurosurgeons</td>
<td>Taro Kaibara, MD, Kerry Knievel, DO, David Treiman, MD, Kris Smith, MD, Michael A. Stein, MD, Suraj Muley, MD</td>
</tr>
<tr>
<td>3:00 PM</td>
<td>Refreshment Break</td>
<td></td>
</tr>
<tr>
<td>3:30 - 5:05 PM</td>
<td>Dementia - New Directions for Therapy, DBS for Parkinson’s: implications of new expanded FDA labeling, Movement Disorders- Beyond DBS, Balance Disorders, Agony &amp; Ecstasy</td>
<td>Marwan Sabbagh, MD, Francisco Ponce, MD, Holly Shill, MD, Terry Fife, MD, Jonathan Russin, MD</td>
</tr>
<tr>
<td>5:05 PM</td>
<td>Adjournment</td>
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<tr>
<td>6:30 PM</td>
<td>Dinner at the Home of Dr. and Mrs. Spetzler</td>
<td></td>
</tr>
<tr>
<td>7:00 AM</td>
<td>Registration and Breakfast</td>
<td></td>
</tr>
<tr>
<td>7:15 AM</td>
<td>Resident Case Presentations (Non-CME)</td>
<td>Residents</td>
</tr>
</tbody>
</table>

**Neurosurgery — Goldman Auditorium**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker(s)</th>
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</thead>
<tbody>
<tr>
<td>8:30 AM</td>
<td>3-D Case Presentations</td>
<td>Robert F. Spetzler, MD</td>
</tr>
<tr>
<td>9:30 AM</td>
<td>Refreshment Break</td>
<td></td>
</tr>
<tr>
<td>10:00 - 11:45 AM</td>
<td>Peripheral Nerve Surgery, Agony &amp; Ecstasy, Emerging Therapies for Chordoma, Agony &amp; Ecstasy, Rehabilitation for Neurosurgery, Agony &amp; Ecstasy, Headache 2016 - What Neurosurgeons Need to Know</td>
<td>Mark Mahan, MD, Matthew O. Hebb, MD, PhD, Andrew S. Little, MD, Michael Lynianski, MD, PhD, FRCSC, Christina Kwasnica, MD, Mark Garrett, MD, Courtney Schusse, MD</td>
</tr>
<tr>
<td>11:45 AM</td>
<td>Adjournment</td>
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**Neurology — Sonntag Pavilion**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 - 11:00 AM</td>
<td>Neuro-immunology Update, Clinical Trials for Brain Tumors in 2016, Concussion, What’s New in Neuromuscular Therapy?</td>
<td>Mark Agius, MD, Lynn Ashby, MD, Glynnis Zeiman, MD, Shaferz Ladh, MD</td>
</tr>
<tr>
<td>11:00 AM</td>
<td>Adjournment</td>
<td></td>
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</tbody>
</table>
Registration Form
42nd Annual Barrow Neuroscience Symposium | May 17-20, 2016
Register Early! Take advantage of discounted registration fees.
For more information: www.barrowneuro.org

<table>
<thead>
<tr>
<th>Early Bird Registration</th>
<th>Pre and Onsite Registration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deadline 4/2/16</td>
<td>After 4/2/16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pre-Symposium Extracranial and Intracranial Workshop (Limited to 20 participants)</th>
</tr>
</thead>
<tbody>
<tr>
<td>**Tuesday-Wednesday</td>
</tr>
<tr>
<td>Physician</td>
</tr>
<tr>
<td>Resident / Fellow</td>
</tr>
</tbody>
</table>

| Barrow Neuroscience Symposium | Wednesday - Friday | May 18-20, 2016 |
|---------------------------------|--------------------|
| Physician                       | $350               | $425          |
| Resident / Fellow               | $125               | $200          |
| NP / PA / CNRN                  | $250               | $325          |
| Alumni                          | $275               | $325          |

| BNI Alumni and Attendee Dinner | Thursday | May 19, 2016 |
|--------------------------------|----------|
| Alumni / Attendee              | $50      | $50          |

Mail or Fax your registration form and payment to:
Lindsey Possehl | Conference Planning Office
Barrow Neurological Institute | 350 West Thomas Road | Phoenix, Arizona 85013 USA | Fax: 602.294.5028

Prefix (Dr., Mr., Ms.) Name________________________ Degree________________________
Professional Title (Director, Neurosurgeon, etc.)________________________
Company / Institution_____________________________________________________________________________________________
Address____________________________________________________ City___________________ State______ Zip_____________
Telephone_________________________________________________ Fax__________________________
Email Address____________________________________________________________________________________________________

Check or money order payable to: St. Joseph’s Hospital and Medical Center (in US funds drawn on a US bank ONLY) A $20 charge applies to checks returned for insufficient funds.

Visa   MasterCard   American Express
Card Number___________________________________________ Expiration Date_______________________

Cardholder’s Name (if corporate card, give company name)________________________ Cardholder’s Signature and Billing Zip Code

For more information contact Lindsey Possehl | Email: Lindsey.Possehl@DignityHealth.org | 602.406.3067

Refund Policy: A refund, less $75.00 processing fee, will be made for cancellations submitted in writing prior to April 2, 2016. No refunds will be made thereafter. Barrow reserves the right to cancel or change any program for due causes. Cancellation of a program by Barrow will result in a full refund of tuition. Barrow and SJHMC are not responsible for the refund of travel or hotel expenses under any circumstance.

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From local hotel information and area recommendations to dining reservations and transportation arrangements, LesConcierge saves you valuable time so you can enjoy what’s most important to you. Contact the Concierge at 602.406.4949, or email at concierges@dignityhealth.org.

Dining
Phoenix is home to some of the world’s finest chefs and the best restaurants offering your taste buds the opportunity to try everything from Thai to Mexican to traditional American cuisine. To learn more about the dining options you will have during your stay in Phoenix, visit www.azcentral.com/ent/dining.

Shopping
There are many venues to shop in Phoenix, including the Biltmore Fashion Park, Kierland Commons, Desert Ridge Marketplace, Scottsdale Fashion Square, Chandler Fashion Center, The Borgata of Scottsdale and endless smaller boutiques throughout the state.

Dress
Dress for all sessions is business casual. Temperatures in Phoenix in May average from 92 degrees during the day to 60 degrees at night. Please keep in mind that meeting room temperatures vary, so wear layered clothing to ensure your comfort.
350 West Thomas Road
Phoenix, AZ 85013