Course Description
The course is designed to provide cutting edge medical knowledge and will focus on both basic and advanced topics and will cover scientific principles including DNA editing, (CRISPr Cas9) brain tumor biology and growth, vascular neogenesis, nanotechnology for tumor suppression, viral vectors for tumor destruction, and other new agents to target and destroy brain tumors. The faculty will discuss new therapies that are available and interpret the impact of recent clinical trial data on clinical practice as well as emerging precision medicine practices.

Course Learning Objectives
Upon conclusion of this program, participants should be able to:

• Recognize the signs and symptoms of cancer and primary and metastatic brain tumors
• Define tumor biology of primary and metastatic brain tumors as well as new scientific methods to destroy and neutralize tumor growth
• Provide cutting-edge updates in neuroscience, neuro-oncology and oncologic biology research
• Outline U.S. health challenges in patient care for the future of those with brain and other tumors and cancer

Intended Audience
This course is designed for neurologists, neurosurgeons, medical oncologists, neuropathologists, neurointerventional surgeons, radiation oncologists, pathologists, ARNPs/PAs, nurses and other health care personnel who are interested in this field.

Credit

ACCREDITATION STATEMENT
In support of improving patient care, Mayo Clinic College of Medicine and Science is accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC) to provide continuing education for the healthcare team.

CREDIT STATEMENT
AMA Mayo Clinic College of Medicine and Science designates this live activity for a maximum of 17.0 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

ANCC Mayo Clinic College of Medicine and Science designates this live activity for a maximum of 17.0 ANCC nursing contact hours. Nurses should claim only the credit commensurate with the extent of their participation in the activity.

AOA This program has been accredited by the American Osteopathic Association for 18.0 credits of AOA Category 2-A.

Other Health Care Professionals
A certificate of attendance will be provided to other health care professionals for requesting credits in accordance with state nursing boards, specialty societies, or other professional associations.

Registration
To register online, visit ce.mayo.edu/neuroonc2017. The registration fee includes tuition, comprehensive electronic course syllabus, continental breakfasts, break refreshments, reception, and lunch. Although it is not Mayo Clinic School of Continuous Professional Development (CPD) policy to limit the number of registrants for a course, conference room facilities may necessitate closing of enrollment; therefore, early registration is advised. A letter of confirmation will be sent upon receipt of payment and completed registration form.

Registration Fees

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<tr>
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<th>On or Before November 14, 2017</th>
<th>After November 14, 2017</th>
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<tbody>
<tr>
<td>Physicians and Scientists</td>
<td>$750</td>
<td>$850</td>
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<tr>
<td>ARNPs &amp; PAs, Residents, Fellows, RNs, Allied Health and Retirees</td>
<td>$400</td>
<td>$500</td>
</tr>
<tr>
<td>Public/Student (No CEUs or CMEs Awarded)*</td>
<td>$50 per day</td>
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*If you are not claiming continuing education credits, please contact the CME Department at 1-800-462-9633 to register by phone.
Travel and Lodging
Accommodations
Four Seasons Resort Orlando at Walt Disney World® Resort
10100 Dream Tree Boulevard
Buena Vista, FL 32836
407-313-7777

Four Seasons is offering rooms starting at $249 per night, plus tax for attendees and their guests. When calling to make a reservation, identify yourself as a participant of the Mayo Clinic Neurosurgical Symposium. Special room rates are available until the block is sold out or November 14, 2017, whichever comes first.

Mayo Clinic School of CPD is not responsible for expenses incurred by an individual who is not confirmed and for whom space is not available at the meeting. Costs incurred by the registrant such as airline or hotel fees or penalties are the responsibility of the registrant.

Faculty
Guest Faculty Listing
Albert Manero II, Ph.D.
Director of Limbitless Solutions
Robert McIver, PT, DPT, NCS
Brooks Rehabilitation
Kenneth Ngo, M.D.
Brooks Rehabilitation
Amanda Gammisch
Patient
Andres Hinojosa
Patient

Mayo Clinic Faculty Listing
Thomas G. Brott, M.D.
Paul D. Brown, M.D.
Guojun Bu, Ph.D.
Jan C. Buckner, M.D.
Robert B. Diasio, M.D.
Stephen C. Ekker, Ph.D.
W. David Freeman, M.D.
Neill Graff-Radford, M.D.
Robert B. Jenkins, M.D., Ph.D.
Richard Joseph, M.D.
Betty Kim, M.D., Ph.D.
Keith L. Knutson, Ph.D.
Ian Parney, M.D., Ph.D.
Ronald C. Petersen, M.D., Ph.D.
Alfredo Quiñones-Hinojosa, M.D.
Ronald Reimer, M.D.
Steven Rosenfeld, M.D., Ph.D.
Owen A. Ross, Ph.D.
Jann N. Sarkaria, M.D.
Kristin R. Swanson, Ph.D.
Oliver Tobin, M.B., B.Ch., BAO, Ph.D.
Joon H. Uhm, M.D.
**Thursday, December 14, 2017**

**Neuroscience Discoveries**

7:00 - 7:45 a.m.  Continental Breakfast & Exhibits

7:45 - 8:00  Welcome & Announcements

Joon H. Uhm, M.D.

8:00 - 8:30  The Neuro-Oncology Program at Mayo Clinic Cancer Center; A Vision for the Future

Robert B. Diasio, M.D.

8:30 - 9:00  Tailoring Radiation for Tumors

Paul D. Brown, M.D.

9:00 - 9:30  Targeting Go and Grow in Glioblastoma

Steven Rosenfeld, M.D., Ph.D.

9:30 - 9:45 Q&A

Robert B. Diasio, M.D., Paul D. Brown, M.D. and Steven Rosenfeld, M.D., Ph.D.

9:45 - 10:00  Refreshment Break & Exhibits

10:00 - 10:30  Understanding the Germline and Somatic Pathogenesis of Gliomas

Robert B. Jenkins, M.D., Ph.D.

10:30 - 11:00  Minimally Invasive Neurosurgery for Epilepsy Patients

Robert E. Wharen, Jr., M.D.

11:00 - 11:30  Advances in Chemotherapy for High Grade Gliomas

Joon H. Uhm, M.D.

11:30 - 11:45  Q&A

Robert B. Jenkins, M.D., Ph.D., Robert E. Wharen, Jr., M.D., Ph.D. and Joon H. Uhm, M.D.

11:45 - 12:45  Buffet Lunch, Networking, & Exhibits

12:45 - 1:15  Biomarkers for Alzheimer’s Disease

Ronald C. Petersen, M.D., Ph.D.

1:15 – 1:45  Vascular Risk Factors for Alzheimer’s Disease

Guojun Bu, Ph.D.

1:45 - 2:15  Present and Future Rx of Alzheimer’s Disease

Neill Graff-Radford, M.D.

2:15 - 2:30  Q&A

Ronald C. Petersen, M.D., Ph.D., Guojun Bu, Ph.D. and Neill Graff-Radford, M.D.

**Friday, December 15, 2017**

**Neurosurgical/Oncology Breakthroughs**

7:00 - 7:45 a.m.  Continental Breakfast & Exhibits

7:45 - 8:00  Welcome & Announcements

W. David Freeman, M.D.

8:00 - 8:30  Advances in Chemoradiation for Patients with Low Grade Gliomas

Jan C. Buckner, M.D.

8:30 - 9:00  The Influence of Blood Brain Barrier Heterogeneity on Treatment Efficacy in Brain Tumors

Jann N. Sarkaria, M.D.

9:00 - 9:30  State of the Art—Future Therapies for Glioblastoma Multiforme

Alfredo Quiñones-Hinojosa, M.D.

11:45 - 12:45  Buffet Lunch, Networking, & Exhibits

12:45 - 1:15  Biomarkers for Alzheimer’s Disease

Ronald C. Petersen, M.D., Ph.D.

1:15 – 1:45  Vascular Risk Factors for Alzheimer’s Disease

Guojun Bu, Ph.D.

1:45 - 2:15  Present and Future Rx of Alzheimer’s Disease

Neill Graff-Radford, M.D.

2:15 - 2:30  Q&A

Jan C. Buckner, M.D., Jann N. Sarkaria, M.D. and Alfredo Quiñones-Hinojosa, M.D.

2:30 - 2:45  Refreshment Break & Exhibits

Genetics of Cerebrovascular Disease

Owen A. Ross, Ph.D.

3:15 – 3:45  Molecular Medicine and the Free-fall in Cerebrovascular Mortality

Thomas Brott, M.D.

3:45 - 4:15  How to Join the Genome Writers Guild

Stephen Ekker, Ph.D.

4:15 – 4:30  Adjourn

4:30 - 5:30  E-Poster and Abstract Presentations

5:30 - 6:30 p.m.  Welcome Reception (Sponsored by NW Bio)
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker(s)</th>
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<tbody>
<tr>
<td>10:00 - 10:30</td>
<td>Every Patient Deserves Their Own Equation</td>
<td>Kristin R. Swanson, Ph.D.</td>
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<tr>
<td>10:30- 11:00</td>
<td>Surgery and Immunology for Brain Tumors</td>
<td>Ian Parney, M.D., Ph.D.</td>
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<tr>
<td>11:00 - 11:30</td>
<td>System Therapy for Brain Metastases in Melanoma Patients</td>
<td>Richard W. Joseph, M.D.</td>
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<tr>
<td>11:30 - 11:45</td>
<td>Q&amp;A</td>
<td>Kristin R. Swanson, Ph.D., Ian Parney, M.D., Ph.D. and Richard W. Joseph, M.D.</td>
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<tr>
<td>11:45 - 12:45 p.m.</td>
<td><strong>Buffet Lunch, Networking, &amp; Exhibits</strong></td>
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<tr>
<td>12:45 - 1:15</td>
<td>Cancer Immunity</td>
<td>Keith L. Knutson, Ph.D.</td>
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<tr>
<td>1:15 – 1:45</td>
<td>Tumefactive Multiple Sclerosis Variants</td>
<td>W. Oliver Tobin, M.B., B.Ch., BAO, Ph.D.</td>
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<tr>
<td>1:45 - 2:15</td>
<td>Q&amp;A</td>
<td>Keith L. Knutson, Ph.D. and W. Oliver Tobin, M.B., B.Ch., BAO, Ph.D.</td>
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<tr>
<td>2:15 - 2:30</td>
<td>Refreshment Break &amp; Exhibits</td>
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<tr>
<td>2:30 – 3:00</td>
<td>Innovative Technologies in NeuroRehabilitation</td>
<td>Kenneth Ngo, M.D.</td>
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<td>3:00 - 3:30</td>
<td>Neuroanatomic Acupuncture in the 21st Century: Getting The Point</td>
<td>Ronald Reimer, M.D.</td>
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<td>3:30 – 3:45</td>
<td>Q&amp;A</td>
<td>Kenneth Ngo, M.D. and Ronald Reimer, M.D.</td>
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<tr>
<td>3:45 – 4:45</td>
<td>My Journey- The Patient Centered Q&amp;A with</td>
<td>Alfredo Quiñones-Hinojosa, M.D., Amanda Gammisch and Andres Hinojosa</td>
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<tr>
<td>4:45</td>
<td>Adjourn</td>
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<tr>
<td>4:45- 5:45</td>
<td>E-Poster and Abstract Presentations</td>
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**Saturday, December 16, 2017**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker(s)</th>
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<tbody>
<tr>
<td>7:15 - 8:00 a.m.</td>
<td>Continental Breakfast &amp; Exhibits</td>
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<tr>
<td>8:00 - 8:15</td>
<td>Welcome &amp; Announcements</td>
<td>W. David Freeman, M.D.</td>
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<tr>
<td>8:15 - 9:00</td>
<td>Exoskeleton</td>
<td>Robert McIver, PT, DPT, NCS</td>
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<td>9:00 – 9:30</td>
<td>Q&amp;A and Demonstration</td>
<td>Robert McIver, PT, DPT, NCS</td>
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<tr>
<td>9:30 – 9:45</td>
<td>Refreshment Break &amp; Exhibits</td>
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<tr>
<td>9:45 - 10:15</td>
<td>UCF Next Generation Bionics Laboratory--- Bringing Bionic Arms to Life for Girls and Boys</td>
<td>Albert Manero II, Ph.D. Director of Limbitless Solutions</td>
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<td>Q&amp;A</td>
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<td><strong>Albert Manero and Guests:</strong> Alex Pring</td>
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<tr>
<td>10:15 - 10:30</td>
<td>Q&amp;A</td>
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<tr>
<td>10:30 a.m.</td>
<td>Closing Announcements and Adjourn</td>
<td>Alfredo Quiñones-Hinojosa, M.D.</td>
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<tr>
<td>10:45 Adjourn</td>
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