North American Skull Base Society

27th Annual Meeting

“Mastery and Legacy in Skull Base Surgery: Lessons in Synchronicity”

March 3-5, 2017
The Roosevelt New Orleans, New Orleans, Louisiana

Pre-Meeting Course: March 1-2, 2017
LSU Health Sciences Center, New Orleans, Louisiana

PRESIDENT: Jacques Morcos, MD, FRCS, FAANS
PROGRAM CHAIRS: Mustafa K. Baskaya, MD & Zoukaa Sargi, MD, MPH
SCIENTIFIC PROGRAM COMMITTEE: Jacques Morcos, MD, FRCS, FAANS, President, Mustafa K. Baskaya, MD, Program Co-Chair, Zoukaa Sargi, MD, MPH, Program Co-Chair, Rony Aouad, MD, Ian Dunn, MD, Nagy Elsayyad, MD, Adam Folbe, MD, MS, Paul Gardner, MD, Kris Moe, MD, Jeffrey Sorenson, MD, Tonya Stefko, MD, George Wanna, MD & Samy Youssef, MD, PhD
PRE-MEETING COURSE CHAIRS: Carlos David, MD & Daniel Nuss, MD

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Welcome

DEAR COLLEAGUES:

It is with great joy that I welcome all of you to New Orleans for the 27th Annual Meeting of the North American Skull Base Society! If this meeting has broken records of attendance and abstract submissions, it is due to the expert help of the very talented staff at BSC, our Management Company, the dedication of a spectacular Scientific Program Committee, and last but not least, the contributions of all of you.

We are delighted to have more than 33 countries represented, 250 invited speakers and moderators, close to 187 oral abstracts (traditional and rapid fire), and 165 posters. We are also very thankful to have 28 industry partners exhibiting and we have exceeded 625 registrants.

But the success of a meeting is not only measured in quantity, but mostly in quality. The Scientific Program Committee, under the leadership of Mustafa K. Baskaya, MD and Zoukaa Sargi, MD, MPH, has met twice a month for the past year to plan and execute the wonderful scientific content of this Program Book. We have made a concerted effort to expand the scope of speakers to beyond North America. I would like to see the NASBS Meeting become one of the hubs for the international skull base community. We have also included more speakers from the world of oculoplastic/orbital surgery, neuroophthalmology and radiation oncology. I hope to see more representation from neuropathology, neuroradiology and other related disciplines in future years.

As always, our meeting will begin with a 2 day Pre-Meeting Cadaveric Course, made possible by the generosity of our Past President Dan Nuss, MD and the wonderful staff at Louisiana State University, and the leadership of Carlos David, MD. The format this year is based on anatomical location rather than technique. As the main meeting unfolds, we have built on the success of last year’s meeting, and decided to continue with the novel format of PechaKucha sessions, that allow more rapid fire, but distilled presentation of relevant information. We introduce for the first time rapid fire abstract presentations, a Lipton-style interview of leaders in our field, Constructive Criticisms sessions where your submitted surgical videos are critiqued/commented upon by chosen experts, Dinner Symposia sponsored by Industry partners and other features that we hope you will appreciate. We also took great care in trying to be as inclusive as possible in our choice of invited speakers. We are also highlighting, for the first time in our Annual Meetings, a “Women in Skull Base Surgery initiative”, with a dedicated special scientific session and increased participation of women at all levels. This is only part of a larger goal of attracting more female talent into our field, and recognizing the established and accomplished female surgeons in our midst. I am confident that this initiative will blossom further, year after year under my successors.

But perhaps the 2017 Meeting should and will be remembered for the Al Rhoton Memorial. After the loss of this giant of the field last February, it felt so appropriate to celebrate his life and contributions on the plenary stage of our meeting, in the presence of his family and fellows that he has trained from around the globe. The theme of the meeting is “Mastery and Legacy in Skull Base Surgery: Lessons in Synchronicity”. The legacy of Dr. Rhoton is indeed boundless and priceless. I also take great pride in welcoming my Honored Guests, Alan Crockard, MB, BCh, DSc, FRCS, FRCP, FDSRCS, Roberto Heros, MD, FACS and Fred Gentili, MD, MSc, FRCSC, FACS, celebrated leaders that have contributed to my personal growth, through their surgical mastery, inspiring personality and dedication to education. I regret that Bernard George, MD could not join their rank and be physically present with us, but he sends his best wishes to all.

I am very grateful to Lieutenant General Russel Honoré for accepting the task of Keynote Speaker. He will undoubtedly inspire us with lessons from the field and his days of orchestrating the relief efforts on the ground in New Orleans after the devastation left by Hurricane Katrina.

Lastly, how can we escape the allure of the City of New Orleans, a phoenix of a city risen from ashes, a story of survival, authentic food, and soulful music. Our gala night on Saturday will be celebrated at the iconic House of Blues. I am so excited to be seeing all of you in New Orleans, and thank each and every one of you for your support and contribution. The NASBS could not be in better shape.

Let the good times roll!

Jacques J. Morcos, MD, FRCS, FAANS
NASBS President, 2016-2017
January 2017
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GENERAL/CME INFORMATION

ANNUAL MEETING OBJECTIVES
At the conclusion of this activity, participants should be able to:
• Understand and explain most recent recommendations for management of skull base pathology.
• Describe recent advances in instrumentation and technology in skull base surgery.
• Gain knowledge in challenging skull base pathology from experienced leaders in the field.
• Collaborate in multidisciplinary working groups to identify state of the art management for select skull base pathology.
• Gain knowledge on optimal technical surgical management of complex skull base pathology through video analysis and expert critique of intraoperative video.
• Establish consensus statement on management of complex skull base pathology through review of existing medical literature.

WHO SHOULD ATTEND
The NASBS meeting is open to NASBS members and non-members.

TARGET AUDIENCE
• Head and neck surgeons, neurosurgeons, reconstructive surgeons, radiation oncologists, radiologists, medical oncologists, physical rehabilitation physicians, ophthalmologists, ocularplastic and orbital surgeons, neurologists, maxillofacial surgeons, maxillofacial prosthodontists, endocrinologists and other physicians treating patients with diseases of the skull base.
• Targeted allied health professionals will include physical therapists, oncology nurses, oral health specialists, occupational therapists, speech and language pathologists, optometrists, psychologists and anaplastologists.

CONTINUING MEDICAL EDUCATION CREDIT INFORMATION

Accreditation
This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of the American College of Surgeons and North American Skull Base Society. The American College of Surgeons is accredited by the ACCME to provide continuing medical education for physicians.

AMA PRA Category 1 Credits™
The American College of Surgeons designates this live activity for a maximum of 28.50 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

DISCLOSURE INFORMATION
In compliance with the ACCME Accreditation Criteria, the American College of Surgeons, as the accredited provider of this activity, must ensure that anyone in a position to control the content of the educational activity has disclosed all relevant financial relationships with any commercial interest. All reported conflicts are managed by a designated official to ensure a bias-free presentation. Please see the insert to this program for the complete disclosure list.
General/CME Information

MEMBERSHIP BENEFITS

• Scientific Journal: Members will receive the official journal of the society, *The Journal of Neurological Surgery Part B*, a bimonthly publication that contains peer reviewed original articles, review articles, and position papers. It also presents news and information on an international scope to keep members aware of recent and upcoming events, activities, and evolving developments in skull base surgery.

• Continuing Medical Education: Members will receive listings of continuing medical education opportunities in skull base surgery, as well as scientific courses sponsored by the NASBS and will receive reduced registration fees for national scientific meetings.

• Membership Directory: Online access to all members contact information.

• NASBS Website Access: Members will have access to Member-Only discussion areas on the Society’s website.

Please visit [http://www.nasbs.org/membership](http://www.nasbs.org/membership) for more information or email membership@nasbs.org.

WHY JOIN NASBS?

Membership is based on an interest in skull base surgery and related sciences. Individuals with backgrounds in neurosurgery, otolaryngology-head and neck surgery, radiology, neuroradiology, otology, neurotology, plastic and reconstructive surgery, and others interested in skull base diseases are welcome to apply.
Meeting Hours

REGISTRATION HOURS
Thursday, March 2, 2017
Friday, March 3, 2017
Saturday, March 4, 2017
Sunday, March 5, 2017

SPEAKER READY ROOM HOURS
Thursday, March 2, 2017
Friday, March 3, 2017
Saturday, March 4, 2017
Sunday, March 5, 2017

EXHIBIT HALL/POSTER HOURS
Friday, March 3, 2017
9:00 am – 3:35 pm  Exhibit Hall Open
9:30 am – 10:00 am  Refreshment Break in Exhibit
12:15 pm – 1:00 pm  Lunch for Non-Members in Exhibit Hall
3:05 pm – 3:35 pm  Refreshment Break in Exhibit Hall
3:35 pm – 6:00 pm  Break for Exhibitors/Exhibit Hall Closed
6:00 pm – 7:30 pm  Welcome Reception in Exhibit Hall

Saturday, March 4, 2017
9:00 am – 3:35 pm  Exhibit Hall Open
9:30 am – 10:00 am  Refreshment Break in Exhibit Hall
12:05 pm – 1:00 pm  Lunch/Poster Viewing in Exhibit Hall
3:05 pm – 3:35 pm  Refreshment Break in Exhibit Hall

Sunday, March 5, 2017
8:00 am – 11:00 am  Exhibit Hall Open
9:50 am – 10:20 am  Refreshment Break in Exhibit Hall

Past Presidents

1990  Paul J. Donald, MD
1991  Laligam N. Sekhar, MD
1992  Ivo P. Janecka, MD
1993  Peter G. Smith, MD, PhD
1994  Albert L. Rhoton, Jr., MD
1995  Hugh Curtin, MD
1996  Derald E. Brackmann, MD
1997  Ossam Al Mefty, MD
1998  Steven A. Newman, MD
1999  John P. Leonetti, MD
2000  Robert F. Spetzler, MD
2001  Ian T. Jackson, MD
2002  Vinod K. Anand, MD
2003  Jon H. Robertson, MD
2004  Jatin Shah, MD
2005  Patrick J. Gullane, MD
2006  Anil Nanda, MD
2007  Guy J. Petruzzelli, MD
2008  Franco DeMonte, MD
2009  Daniel Nuss, MD
2010  Peter Neligan, MD
2011  Dennis Kraus, MD
2012  Carl Heilman, MD
2013  Ehab Hanna, MD, FACS
2014  Michael Link, MD
2015  Carl Snyderman, MD, MBA
2016  Jacques Morcos, MD, FRCS, FAANS
Keynote Lecturer

Lt. GENERAL RUSSEL L. HONORÉ

Commander of Joint Task Force Katrina and Global Preparedness Authority

SATURDAY, MARCH 4, 10:30 AM – 11:20 AM

If anyone knows how to successfully lead and execute a mission, it’s Lt. General Russel Honoré, USA (Ret.), who saved a city by taking swift charge of military relief efforts in Hurricane Katrina–battered New Orleans in 2005.

Drawing from 37 years of military experience, General Honoré brings his bold, no-nonsense leadership approach to businesses and organizations to help them better identify and prepare for the challenges of the future. With an emphasis on the importance of innovation, risk assessment and social entrepreneurship, he provides valuable insight and strategies for the public and private sector to solve a broad array of issues—from jobs and energy to healthcare and technology. He also reveals leadership tactics that optimize efficiency and effectiveness of operations for all sectors and outlines the importance of developing the next generation of problem-solvers.


A senior scientist with the Gallup Organization, he is also an adjunct professor at Emory University, an independent director of Crawford & Company, and serves as chairman of the board for LA Bicentennial Commission, and as a member on the Louisiana Disaster Recovery Foundation Board. He is also the recipient of the Distinguished Service Award from the Military Order of the World Wars.

With meticulous perspective and quotable delivery, General Honoré captivates audiences with bold leadership strategies and insight on preparedness, the “New Normal,” and how the world has changed in the 10 years since Hurricane Katrina.
Honored Guest Lecturers

ROBERTO C. HEROS, MD, FACS

FRIDAY, MARCH 3, 11:45 AM – 12:15 PM

Roberto C. Heros was born in 1942 in Havana, Cuba. He left Cuba for exile after the Communist takeover in 1960. He participated as a paratrooper in the ill-fated Bay of Pigs invasion. After two years in prison, he was released as part of an exchange with the United States government. He attended medical school at the University of Tennessee where he graduated, first in his class, in 1968. Following an internship and first year general surgery residency at the Massachusetts General Hospital he joined the U.S. Air Force for two years with the rank of Major, USAF.

Dr. Heros had his Neurosurgical Residency at the Massachusetts General Hospital (MGH). After completion of his residency in 1977, he moved to the University of Pittsburgh as Assistant Professor. In 1980, he moved back to the MGH to become Director of Cerebrovascular Surgery. He moved through the academic ranks at Harvard to reach full professorship in 1989. At that time, he moved to the University of Minnesota as the Lyle A. French Professor and Chairman of the Department of Neurosurgery. At different times while at Minnesota he was also asked to serve as Acting Chairman of the Departments of Neurology and Urology and as Vice Chair of the Medical School Practice Plan. In 1995, Dr. Heros moved to the University of Miami as Professor, Program Director and Co-Chairman of the Department of Neurosurgery and founding Director of the University of Miami International Health Center.

Dr. Heros' major clinical, academic and research interest has been in cerebrovascular surgery. He has authored or co-authored four textbooks and has published over 200 refereed articles and approximately 70 textbook chapters dealing with cerebral aneurysms, arteriovenous malformations, experimental cerebral ischemia and skull base surgical approaches. His research has been in the area of cerebral protection from ischemia, particularly hemodilution; he held NIH funding as primary investigator in this area for 15 years and served the NIH in Study Sections and as a full member of the National Advisory Council of the NINDS. He has been Visiting Professor at over 70 institutions in this country and abroad and he has given over 500 invited national and international presentations. He holds honorary memberships in several Latin American and European neurosurgical societies and in the Japanese Neurosurgical Society.

Dr. Heros has been Chairman of the Editorial Board of Neurosurgery and Co-Chairman of the Editorial Board of the Journal of Neurosurgery and serves on the Editorial Board of seven other journals. He was the founding Chairman of the Brain Attack Coalition and the Neurovascular Committee of the World Federation of Neurological Societies (WFNS). He has served as Vice President of the Congress of Neurological Surgeons (CNS) and as President of American Association of Neurological Surgeons (AANS), the American Academy of Neurological Surgeons and the World Congress of the WFNS. He has been the Honored Guest of the CNS and of the Federation of Latin American Neurosurgical Societies and is Honorary President of the WFNS. In 2007 he won the coveted Parker J. Palmer “Courage to Teach” award of the ACGME. In 2010 he won the prestigious Cor Vitae Award of the American Heart Association for his contributions to Stroke Care. He was the 2010 AANS's Cushing Medalist. The Cushing Medal is the highest award given to a neurosurgeon by the AANS.

Dr. Heros stepped down as Co-Chair of the Department of Neurological Surgery in July 2015. He continues to be Program Director and continues to be active clinically. He has taken additional responsibilities at Jackson Health System as Senior Vice President and Chief Medical Officer.
Honored Guest Lecturers

ALAN CROCKARD, MB, BCH, DSC, FRCS, FRCP, FDSRCS

SATURDAY, MARCH 4, 10:00 AM – 10:30 AM

Alan Crockard graduated from the Queen's University Belfast in 1966 and 3 years later entered neurosurgical training there a few months before the outbreak of “civil unrest”. The Royal Victoria Hospital, situated in the centre of the troubled area, looked after the bulk of all injuries, civilian, paramilitary, police and military. The importance of a multidisciplinary approach and the, then, novel technique of Controlled Ventilation of severe head injuries was developed and published in the early 1970’s.

He moved to the Institute of Neurology London (Welcome Senior Research Fellow 1973/4) and the University of Chicago (first as NIH/MRC Fogarty Fellow 1974 then Assistant Professor 1975). He returned to Belfast as Senior Lecturer Neurosurgery until 1978 when he was appointed Consultant Neurosurgeon National Hospitals for Neurology and Neurosurgery, Queen Square, London. It was there that he became interested in Skull Base and Cranio-cervical pathology along with his colleagues in Anaesthesia, Neuroradiology, ENT, Maxillofacial and Orthopaedic Surgery. A wide range of unusual pathology was attracted from afar, allowing management protocols for these rare conditions to be established. Surgical Instruments for transoral surgery (Crockard) cranio-cervical fixation (Ransford) and fireoptic endonasal anaesthetic intubation (Calder) had their beginnings within this group at that time.

In the early 1990’s he spent more time developing cadaveric instruction for all surgeons and set up the Hill Surgical Workshops at the Royal College of Surgeons London and University of Western Australia (UWA), Perth. He was appointed Director of the Raven Department of Education at RCS London 1997-2003 and Professor of Neurosurgery in UWA 2001 and UC London 2002. From 2004-2007 he was the Director of Modernising Medical Careers and responsible for the introduction of UK Foundation training after the undergraduate years. He has authored over 350 scientific papers, 82 chapters and 4 books.

He now spends a great deal of time with his wife, Caroline, sailing and watching and photographing birds.

BRAINLAB DINNER SYMPOSIUM

“Surgical Innovations and Novel Technologies for Anterior, Middle and Posterior Fossa Skull Base Tumors”

MARCH 3, 2017, 7:30 PM – 9:30 PM, ROOSEVELT NEW ORLEANS HOTEL

SPEAKERS:
Orin Bloch, MD, Northwestern (Posterior Skull Base)
Isaac Yang, MD, UCLA (Middle Skull Base)
Manish Aghi, MD, UCSF (Anterior Skull Base)

This event is not part of the official program of the Annual NASBS Meeting.

There is no cost to attend the symposium. To register, please go to https://www.novaliscircle.org/events.

For more information, contact Rachel Hoeft at rachel.hoeft@brainlab.com.
Honored Guest Lecturers

FRED GENTILI, MD, MSC, FRCSC, FACS

SUNDAY, MARCH 5, 10:20 AM – 10:50 AM

Dr. Fred Gentili completed his medical training at the University of Toronto. After a surgical internship, he completed a Masters degree in the Institute of Medical Sciences at University of Toronto. Dr. Gentili entered Neurosurgical Training (Gallie Program) at the University of Toronto and completed his training and became a Fellow of the Royal College of Physicians and Surgeons of Canada (FRCSC) in 1980. He was awarded a McLaughlin Fellowship to pursue advanced training in skull base and micro-neurosurgery, completing clinical Fellowships at the University of Zurich with Professor G. Yasargil and at the National Hospital Queen Square in London England with Professor L. Symon in 1981. Dr. Gentili was certified by the American Board of Neurological Surgery in 1986 and is a Fellow of the American College of Surgeons (FACS).

Dr. Gentili joined the Neurosurgical staff at the Toronto General Hospital in 1982 and is currently Professor in the Division of Neurosurgery at the Toronto Western Hospital, University Health Network and University of Toronto. Dr. Gentili is a founding member of the North American Skull Base Society and a member of the Skull Base Surgery Committee of the World Federation of Neurosurgical Societies (WFNS) as well as a member of the WFNS Neuro-Endoscopy Committee. He helped establish the first interdisciplinary Skull Base Surgery Group in Canada at the University of Toronto and has promoted in collaboration with his ENT colleagues innovations in skull base surgery including endonasal endoscopic skull base techniques.

Dr. Gentili has been a dedicated teacher and educator having received numerous teaching awards. He is a member of local, national and international committees on education. He is currently the Director of Under-Graduate Surgical Education at University Health Network.

Dr. Gentili is the former Chair of the Examination Board on Neurosurgery of the Royal College of Physicians and Surgeons of Canada and is a former member of Evaluation Committee of the Royal College of Physicians and Surgeons of Canada. He is a member of the WFNS Education and Training Committee. He is a former member of the Advisory Board for Neurosurgery of the American College of Surgeons. He is a delegate to the WFNS representing the Canadian Neurosurgical Society. Dr. Gentili is a member of numerous Neurosurgical Societies and is on the Editorial Board of several International Journals.

He has received numerous honors/awards during his career including the Gold Medal from the University of Messina and the College of Physicians and Surgeons of Ontario Council Award recognizing clinical excellence in patient care. He has been the honored guest at many international meetings and has been visiting professor at multiple institutions in both North America and abroad. He was made an honorary member of the Italian Neurosurgical Society in 2005.

Dr. Gentili currently holds two Academic Chairs, the Alan and Susan Hudson Chair in Neuro-Oncology as well as the Crean Hotson Chair in Skull Base Surgery at the University of Toronto and University Health Network.

Dr. Gentili’s main interests are in Skull Base Surgery using both open and minimally invasive endoscopic techniques, Pituitary Surgery and Radiosurgery.
Scholarship Winners & Journal Awards

INTERNATIONAL TRAVEL SCHOLARSHIP WINNERS 2017

The International Travel Scholarship was first introduced at the NASBS 2016 Annual Meeting. The fellowship promotes international participation and gives the opportunity for international academic skull base surgeons to study at an NASBS Fellowship. Awardees receive $2,000 in travel funds and free registration to the annual meeting. For more information, please visit: www.nasbs.org/international-travel-scholarship. Submissions for the 2018 International Travel Scholarship will open in August 2017.

Amos Adeleye, MD
University of Ibadan
Nigeria

Suha Beton, MD
Ankara University Medical School
Turkey

Simple Bhadania, MD
Sanjay Gandhi Post Graduate Institute of Medical Sciences
India

JOURNAL AWARD: HIGHEST QUALITY PAPER – MOST FREQUENTLY CITED

Incidence and Survival Patterns of Sinonasal Undifferentiated Carcinoma in the United States – Chambers, Kyle J.; Lehmann, Ashton E.; Remenschneider, Aaron; Dedmon, Matthew; Meier, Josh; Gray, Stacey T.; Lin, Derrick T. Total Citation in 2016: 6

Round-the-Clock Surgical Access to the Orbit – Paluzzi, Alessandro; Gardner, Paul A.; Fernandez-Miranda, Juan C.; Tormenti, Matthew J.; Stefko, S. Tonya; Snyderman, Carl H.; Maroon, Joseph C. Total Citation in 2016: 6

Esthesioneuroblastoma: An Update on the UCLA Experience, 2002-2013 – Tajudeen, Bobby A.; Arshi, Armin; Suh, Jeffrey D.; Palma-Diaz, Miguel Fernando; Bergsneider, Marvin; Abemayor, Elliot; St John, Maie; Wang, Marilene B. Total Citation in 2016: 4

To Preserve or Not to Preserve the Orbit in Paranasal Sinus Neoplasms: A Meta-Analysis
Reyes, Camilo; Mason, Eric; Solares, C. Arturo; Bush, Carrie; Carrau, Ricardo Total Citation in 2016: 4

INSTITUTIONS WITH THE MOST PUBLICATIONS IN 2016

Princess Alexandra Hospital Brisbane: 8
David Geffen School of Medicine at University of California Los Angeles: 5
University of California Davis Medical Center: 5
University of Queensland: 5
Massachusetts Eye and Ear Infirmary: 4

Ohio State University: 3
University of North Carolina at Chapel Hill: 3
University of Pittsburgh: 3
University of Pittsburgh Medical Center: 3
University of Washington School of Medicine: 3

TOP 10 REVIEWERS IN 2016

Michael Link – completed 7 reviews
Nicholas Thomas – completed 7 reviews
Anil Nanda – completed 6 reviews
Vikram Prabhu – completed 6 reviews
John De Almeida – completed 5 reviews

Stephen Connor – completed 5 reviews
Takeshi Kawase – completed 5 reviews
Ben Panizza – completed 5 reviews
Carl Snyderman – completed 5 reviews
Paul Gardner – completed 4 reviews
Thank you to our valued members who have helped the NASBS continue to grow!

Below are the members who have sought out new members for our Society. Their commitment to the NASBS is the key to our success. We look forward to welcoming our new members at the New Member Reception at the House of Blues on Saturday, March 4 from 6:45 pm to 7:30 pm. Please help us reach even more Skull Base Programs in 2017-2018.

Nithin Adappa
Siviero Agazzi
Michelle Alonso-Basanta
Jeremiah Alt
Seilesh Babu
Mustafa K. Baskaya
Ricardo Carrau
Roy Casiano
Lola Chambless
Roukoz Chamoun
Fady Charbel
Roc Chen
Michael Chicoine
Will Curry
Kenneth De Los Reyes
Timothy Deklotz
Johnny Delashaw
Aaron Dumont
Ian Dunn
Ivan El-Sayed
Kadir Erkman
Christopher Farrell

Manuel Ferreira
Juan Fernandez-Miranda
Rick Friedman
Kelly Gallgher
Paul Gardner
Fred Gentili
Stacey Gray
Bharat Guthikonda
Ehab Hanna
Carl Heilman
Walter Jean
Amin Kassam
Takeshi Kawase
Daniel Kelly
Howard Krauss
Devyani Lal
Donald Lanza
Michael LaRouere
Edward Laws
Michael Lawton
Derrick Lin
Michael Link

James Liu
Sonya Malekzadeh
Eric Marvin
Michael McDermott
Erin McKean
Lattimore Michael
Madison Michael
Kris Moe
Jacques Morcos
Anil Nanda
Steven Newman
James Palmer
Vikram Prabhu
Gustavo Pradilla
Daniel Prevedello
Christopher Rassekh
Shaan Raza
Pablo Recinos
Jon Robertson
Marc Rosen
Robert Rosenwasser

Zoukaa Sargi
Theodore Schwartz
Laligam Sekhar
Raj Sindwani
Mark Smith
Carl Snyderman
C. Arturo Solares
Jeffrey Sorenson
Andrew Tassler
Philip Theodosopoulos
William Thorell
Brian Thorp
Harry Van Loveren
Jamie Van Gompel
Mark Van Poppel
Eugenia Vining
Eric Wang
Ricky Wong
Gelareh Zadeh
Adam Zanation
Faculty Listing

Apio Antunes, MD, MSc, PhD
Universidade Federal do Rio Grande do Sul
Porto Alegre, Rio Grande do Sul, Brazil

Rony Aouad, MD
University of Kentucky
Lexington, KY

Kenan Arnautovic, MD, PhD
Semmes Murphey Neurologic and Spine Institute
Memphis, TN

Moises Arriaga, MD
Louisiana State University
Metairie, LA

Albert Attia, MD
Vanderbilt University
Nashville, TN

Khaled Aziz, MD, PhD
Allegheny General Hospital
Pittsburgh, PA

Seilesh Babu, MD
Michigan Ear Institute
Farmington Hills, MI

Nicholas Bambakidis, MD
University Hospitals Case Medical Center
Cleveland, OH

Fred Barker, MD
Massachusetts General Hospital
Boston, MA

Garni Barkhoudarian, MD
Providence Saint John’s Health Center
Santa Monica, CA

Samuel Barnett, MD
University of Texas Southwestern Medical Center
Dallas, TX

Mustafa K. Baskaya, MD
University of Wisconsin Medical School & Public Health
Madison, WI

Donald Beahm, MD
University of Kansas Medical Center
Kansas City, KS

Robert Behr, MD
University of Marburg
Fulda, Germany

Arnau Benet, MD
University of California San Francisco
San Francisco, CA

Marvin Bergsneider, MD
University of California Los Angeles
Los Angeles, CA

Rita Bhatia, MD
University of Miami
Miami, FL

Linda Bi, MD, PhD
Brigham and Women’s Hospital
Boston, MA

Bryan Bienvenu, MD
Mary Bird Perkins Cancer Center
Baton Rouge, LA

Phil Bird, MD
Canterbury District Health Board
Christchurch, New Zealand

Ben Bleier, MD
Massachusetts Eye and Ear Infirmary
Boston, MA

George Bovis, MD
Illinois Gamma Knife Center
Northbrook, IL

Priscilla Brastianos, MD, PhD
Massachusetts General Hospital
Boston, MA

Gavin Britz, MD
The Methodist Hospital
Houston, TX

Ketan Bulsara, MD
Yale University
New Haven, CT

Emiro Caicedo-Granados, MD
University of Minnesota
Minneapolis, MN

Paul Camarata, MD
University of Kansas Medical Center
Kansas City, KS

Ricardo Carrau, MD
The Ohio State University Wexner Medical Center
Columbus, OH

Roy Casiano, MD
University of Miami
Miami, FL

Lola Chambless, MD
Vanderbilt University Medical Center
Nashville, TN

Roukoz Chamoun, MD
University of Kansas Medical Center
Kansas City, KS

James Chelnis, MD
New York Eye and Ear Infirmary of Mount Sinai
New York, NY

Michael Chicoine, MD
Washington University School of Medicine
St. Louis, MO

Francisco Civantos, MD
University of Miami
Miami, FL

David Clump, MD, PhD
University of Pittsburgh Medical Center
Pittsburgh, PA

Benedicto Colli, MD, PhD
Ribeirão Preto Medical School
Ribeirão Preto - SP, Brazil

William Couldwell, MD, PhD
University of Utah Health Care
Salt Lake City, UT

Alan Crockard, MB, BCh, DSc, FRCS, FRCP, FDSRCS
National Hospital for Neurology and Neurosurgery
Dorset, United Kingdom

Hugh Curtin, MD
Massachusetts Eye and Ear Infirmary
Boston, MA
# Faculty Listing

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
<th>City, Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carlos David, MD</td>
<td>Lahey Clinic</td>
<td>Burlington, MA</td>
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<td>John de Almeida, MD, MSc, FRCSC</td>
<td>University Health Network</td>
<td>Toronto, ON, Canada</td>
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<tr>
<td>Amir Dehdashti, MD</td>
<td>North Shore University Hospital</td>
<td>Manhasset, NY</td>
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<tr>
<td>Mark DeLacure, MD</td>
<td>New York University School of Medicine</td>
<td>New York, NY</td>
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<tr>
<td>Johnny Delashaw, MD, FAANS</td>
<td>Swedish Medical Center Brain and Spine Specialists</td>
<td>Seattle, WA</td>
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<tr>
<td>Franco DeMonte, MD</td>
<td>MD Anderson Cancer Center</td>
<td>Houston, TX</td>
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<tr>
<td>Anand Devaiah, MD</td>
<td>Boston University School of Medicine</td>
<td>Boston, MA</td>
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<tr>
<td>Christine Dinh, MD</td>
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<td>Miami, FL</td>
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<tr>
<td>Aaron Dumont, MD</td>
<td>Tulane University School of Medicine</td>
<td>New Orleans, LA</td>
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<tr>
<td>Ian Dunn, MD</td>
<td>Brigham and Women's Hospital</td>
<td>Boston, MA</td>
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<tr>
<td>Mark Eisenberg, MD</td>
<td>North Shore University Hospital</td>
<td>Great Neck, NY</td>
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<tr>
<td>Mohamed El Fiki, MD</td>
<td>Alexandria University</td>
<td>Alexandria, Egypt</td>
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<td>Mohamed Elhammady, MD</td>
<td>University of Miami</td>
<td>Miami, FL</td>
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<tr>
<td>Jean Anderson Eloy, MD</td>
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<td>Newark, NJ</td>
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<tr>
<td>Ivan El-Sayed, MD</td>
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<td>San Francisco, CA</td>
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<td>Nagy Elsayyad, MD</td>
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<td>Miami, FL</td>
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<tr>
<td>Kadir Erkmen, MD</td>
<td>Temple University School of Medicine</td>
<td>Philadelphia, PA</td>
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<td>Houston, TX</td>
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<tr>
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<td>Philadelphia, PA</td>
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<tr>
<td>Christopher Farrell, MD</td>
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<tr>
<td>Juan Fernandez-Miranda, MD</td>
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<td>Pittsburgh, PA</td>
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<tr>
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<tr>
<td>Sebastien Froelich, MD</td>
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<td>Paris, France</td>
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<tr>
<td>Takanori Fukushima, MD</td>
<td>Carolina Neuroscience Institute</td>
<td>Raleigh, NC</td>
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<tr>
<td>Gary Gallia, MD, PhD</td>
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<tr>
<td>Paul Gardner, MD</td>
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<td>Pittsburgh, PA</td>
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<tr>
<td>James Garrity, MD</td>
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<td>Rochester, MN</td>
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<tr>
<td>Fred Gentili, MD, MSc, FRCSC, FACS</td>
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<tr>
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<td>Hershey, NY</td>
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<tr>
<td>Steven Giannotta, MD</td>
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<td>Los Angeles, CA</td>
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<tr>
<td>Michael Gleeson, MD</td>
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<tr>
<td>John Golfinos, MD</td>
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<td>New York, NY</td>
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<tr>
<td>Juan Gomez-Amador, MD</td>
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<tr>
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<td>Boston, MA</td>
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<tr>
<td>Andre Grotenhuis, MD</td>
<td>Radboudumc Nijmegen University</td>
<td>Nijmegen, Netherlands</td>
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<tr>
<td>Samuel Gubbels, MD</td>
<td>University of Colorado Denver</td>
<td>Aurora, CO</td>
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<tr>
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<tr>
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<td>Bakirkoy, Istanbul, Turkey</td>
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<tr>
<td>Bharat Guthikonda, MD</td>
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<td>Shreveport, LA</td>
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</tbody>
</table>

**TABLE OF CONTENTS**
Faculty Listing

Stephen Haines, MD
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<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
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<tbody>
<tr>
<td>Jack Phan, MD, PhD</td>
<td>MD Anderson Cancer Center, Houston, TX</td>
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<tr>
<td>Carlos Pinheiro-Neto, MD, PhD</td>
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<tr>
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<tr>
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<tr>
<td>Vikram Prabhu, MD</td>
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<tr>
<td>Gustavo Pradilla, MD</td>
<td>Emory University School of Medicine, Atlanta, GA</td>
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<tr>
<td>Daniel Prevedello, MD</td>
<td>The OH State University, Columbus, OH</td>
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<tr>
<td>Ricardo Ramina, MD</td>
<td>Neurological Institute of Curitiba, Curitiba, Brazil</td>
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<tr>
<td>Christopher Rassekh, MD</td>
<td>University of Pennsylvania, Philadelphia, PA</td>
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<tr>
<td>Shaan Raza, MD</td>
<td>MD Anderson Cancer Center, Houston, TX</td>
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<tr>
<td>Elie Rebeiz, MD</td>
<td>Tufts Med Center, Boston, MA</td>
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<td>Pablo Recinos, MD</td>
<td>Cleveland Clinic, Cleveland, OH</td>
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<td>Vicente Resto, MD, PhD</td>
<td>University of Texas Medical Branch, Galveston, TX</td>
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<td>Jon Robertson, MD</td>
<td>Sammies Murphey Clinic, Memphis, TN</td>
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<td>Joseph Roche, MD</td>
<td>University of Wisconsin Medical School &amp; Public Health, Madison, WI</td>
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<td>Pamela Roehm, MD, PhD</td>
<td>Temple University School of Medicine, Philadelphia, PA</td>
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<td>Tom Roland, MD</td>
<td>New York University Langone Medical Center, New York, NY</td>
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<tr>
<td>Marc Rosen, MD</td>
<td>Thomas Jefferson University, Philadelphia, PA</td>
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<tr>
<td>Ronny Rotondo, MD</td>
<td>University of Florida Health Proton Therapy Institute, Jacksonville, FL</td>
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<td>Pablo Rubino, MD</td>
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<tr>
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<td>Zoukaa Sargi, MD, MPH</td>
<td>University of Miami, Miami, FL</td>
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<tr>
<td>Deanna Sasaki-Adams, MD</td>
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<tr>
<td>Marc Schwartz, MD</td>
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<td>Theodore Schwartz, MD</td>
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<tr>
<td>Askin Seker, MD</td>
<td>Marmura University, Instanbul, Turkey</td>
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<tr>
<td>Laligam Sekhar, MD</td>
<td>University of Washington, Seattle, WA</td>
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<tr>
<td>Stefano Sellari-Franceschini, MD</td>
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<td>Chandranath Sen, MD</td>
<td>New York University Medical Center, New York, NY</td>
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<tr>
<td>Mitesh Shah, MD</td>
<td>Goodman Campbell Brain and Spine, Indianapolis, IN</td>
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<tr>
<td>Jatin Shah, MD</td>
<td>Memorial Sloan-Kettering Cancer Center, New York, NY</td>
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<tr>
<td>Wenyin Shi, MD, PhD</td>
<td>Thomas Jefferson University, Philadelphia, PA</td>
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<tr>
<td>Charif Sidani, MD</td>
<td>University of Miami, Miami, FL</td>
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<tr>
<td>Raj Sindwani, MD</td>
<td>Cleveland Clinic Foundation, Cleveland, OH</td>
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<tr>
<td>Kris Smith, MD</td>
<td>Barrow Neurological Institute, Phoenix, AZ</td>
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<tr>
<td>Carl Snyderman, MD, MBA</td>
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<tr>
<td>Rachel Sobel, MD</td>
<td>Vanderbilt Eye Institute, Nashville, TN</td>
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<tr>
<td>C. Arturo Solares</td>
<td>Augusta University, Augusta, GA</td>
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<tr>
<td>Jeffrey Sorenson, MD</td>
<td>Semmes-Murphey Clinic, Memphis, TN</td>
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<tr>
<td>S. Tonya Stefko, MD</td>
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</tbody>
</table>
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<tr>
<th>Time</th>
<th>ROOSEVELT BALLROOM</th>
<th>CRESCENT CITY BALLROOM</th>
<th>ORPHEUM ROOM</th>
<th>CHAMBER I</th>
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<tr>
<td>7:30 am</td>
<td>MAIN TOPIC 1: Lateral Skull Base: How to Choose the Optimal Approach? (7:30 am – 8:35 am)</td>
<td>MAIN TOPIC 2: Vestibular Schwannomas in NF2: Surgery, Radiosurgery and Adjuvant Therapies (7:30 am – 8:35 am)</td>
<td>MAIN TOPIC 3: The Orbit: Access and Target for the Skull Base Surgeon (7:30 am – 8:35 am)</td>
<td>MAIN TOPIC 4: The Infratemporal Fossa: Surgical Anatomy and Approaches (7:30 am – 8:35 am)</td>
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<tr>
<td>8:45 am</td>
<td>EXPERT DEBATE 1: Vestibular Schwannomas: Controversies in Modern Management (8:45 am – 9:30 am)</td>
<td>EXPERT DEBATE 2: Optimal Strategy for Reconstruction after Endoscopic Skull Base Surgery (8:45 am – 9:30 am)</td>
<td>EXPERT DEBATE 3: Management of Challenging Meningiomas (8:45 am – 9:30 am)</td>
<td>EXPERT DEBATE 4: Chordomas: Optimal Approach and Multidisciplinary Management (8:45 am – 9:30 am)</td>
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<tr>
<td>9:30 am</td>
<td>Morning Break in Exhibit Hall (9:30 am – 10:00 am)</td>
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<tr>
<td>10:00 am</td>
<td>Dr. Albert L. Rhoton Memorial (10:00 am – 11:10 am)</td>
<td>Historical Video Narrative (11:10 am – 11:15 am)</td>
<td>Presidential Address (11:15 am – 11:45 am)</td>
<td>Honored Guest (11:45 am – 12:15 pm)</td>
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<td>12:20 pm</td>
<td>Lunch in Exhibit Hall (12:20 pm – 1:00 pm)</td>
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<td>1:00 pm</td>
<td>PECHA KUCHA 1: Vestibular Schwannomas (1:00 pm – 2:00 pm)</td>
<td>MASTER VIDEO 1: Microvascular Anastomosis, Bypass and Vascular Repair (1:00 pm – 2:00 pm)</td>
<td>PECHA KUCHA 2: Petroclival Meningiomas (1:00 pm – 2:00 pm)</td>
<td>MASTER VIDEO 2: Microsurgical Techniques in Cranial Nerve Preservation (1:00 pm – 2:00 pm)</td>
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<tr>
<td>2:05 pm</td>
<td>PECHA KUCHA 3: Chordomas (2:05 pm – 3:05 pm)</td>
<td>MASTER VIDEO 3: Approaches to the Cavernous Sinus and Meckel’s Cave (2:05 pm – 3:05 pm)</td>
<td>PECHA KUCHA 4: Ergonomics of Surgery and Instrumentation (2:05 pm – 3:05 pm)</td>
<td>MASTER VIDEO 4: Endoscope-Assisted Skull Base Surgery (2:05 pm – 3:05 pm)</td>
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<tr>
<td>3:05 pm</td>
<td>Refreshment Break in Exhibit Hall (3:05 pm – 3:35 pm)</td>
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<tr>
<td>3:35 pm</td>
<td>PROOFFERED PAPERS 1: Best of Anatomy (3:35 pm – 5:05 pm)</td>
<td>PROOFFERED PAPERS 2: Best of Vestibular Schwannomas (3:35 pm – 5:05 pm)</td>
<td>PROOFFERED PAPERS 5: Best of Functional Outcome and Quality of Life (3:35 pm – 5:05 pm)</td>
<td>PROOFFERED PAPERS 3: Best of Meningiomas I (3:35 pm – 5:05 pm)</td>
<td>PROOFFERED PAPERS 4 (Rapid Fire): Best of Pituitary Adenomas, Sellar and Suprasellar Lesions (3:35 pm – 5:55 pm)</td>
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<tr>
<td>5:10 pm</td>
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<td>CONSTRUCTIVE CRITICISM VIDEOS 2: Lateral Skull Base (5:10 pm – 5:55 pm)</td>
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**NASBS 27th Annual Meeting: FINAL PROGRAM 2017**

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<tr>
<th>Time</th>
<th>Roosevelt Ballroom</th>
<th>Crescent City Ballroom</th>
<th>Orpheum Room</th>
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<td><strong>Honored Guest</strong> (10:00 am – 10:30 am)</td>
<td><strong>Keynote Speaker</strong> (10:30 am – 11:20 am)</td>
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<td><strong>Business Lunch for Members in the Waldorf Astoria Ballroom</strong> (12:05 pm – 1:00 pm)</td>
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<td><strong>Pecha Kucha 7:</strong> Anterior Skull Base Meningiomas (2:05 pm – 3:05 pm)</td>
<td><strong>Master Video 7:</strong> Expanded Endonasal Approaches (2:05 pm – 3:05 pm)</td>
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<td><strong>Refreshment Break in Exhibit Hall</strong> (3:05 pm – 3:35 pm)</td>
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<td>3:35 pm</td>
<td><strong>Proffered Papers 7:</strong> Best of Basic Science and Biology (3:35 pm – 5:05 pm)</td>
<td><strong>Proffered Papers 8:</strong> Best of Meningiomas II (3:35 pm – 5:05 pm)</td>
<td><strong>Proffered Papers 9:</strong> Best of Sinonasal and Skull Base Malignancies (3:35 pm – 5:05 pm)</td>
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**Meeting Map**

**SUNDAY, MARCH 5, 2017**

<table>
<thead>
<tr>
<th>Time</th>
<th>ROOSEVELT BALLROOM</th>
<th>CRESCENT CITY BALLROOM</th>
<th>ORPHEUM ROOM</th>
<th>CHAMBER I</th>
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<tr>
<td>12:50 pm</td>
<td>Meeting Adjourned</td>
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</table>
FRIDAY, MARCH 3, 2017

6:00 am – 7:30 pm  Registration  Roosevelt Foyer

7:30 am – 8:35 am  MAIN TOPIC SESSIONS (Breakfast 7:00 am – 7:30 am)
Breakfast will be served outside all breakout rooms.

MAIN TOPIC 1: Lateral Skull Base: How to Choose the Optimal Approach?  Crescent City Ballroom
MAIN TOPIC 2: Vestibular Schwannomas in NF2: Surgery, Radiosurgery and Adjuvant Therapies  Orpheum Room
MAIN TOPIC 3: The Orbit: Access and Target for the Skull Base Surgeon  Chamber I
MAIN TOPIC 4: The Infratemporal Fossa: Surgical Anatomy and Approaches  Chamber II

8:45 am – 9:30 am  EXPERT DEBATE SESSIONS

EXPERT DEBATE 1: Vestibular Schwannomas: Controversies in Modern Management  Crescent City Ballroom
EXPERT DEBATE 2: Optimal Strategy for Reconstruction after Endoscopic Skull Base Surgery  Orpheum Room
EXPERT DEBATE 3: Management of Challenging Meningiomas  Chamber II
EXPERT DEBATE 4: Chordomas: Optimal Approach and Multidisciplinary Management  Chamber III

9:30 am – 10:00 am  Morning Break in Exhibit Hall  Roosevelt Ballroom

10:00 am – 11:10 am  Dr. Albert L. Rhoton Memorial  Crescent City Ballroom


11:15 am – 11:45 am  PRESIDENTIAL ADDRESS: Mastery and Legacy in Skull Base Surgery: Lessons in Synchronicity  Crescent City Ballroom
Jacques Morcos, MD, FRCS, FAANS

11:45 am – 12:15 pm  HONORED GUEST: Some Thoughts about Resident Mentorship: Challenges Facing the Surgeon-Educator  Crescent City Ballroom
Roberto Heros, MD, FACS

12:20 pm – 1:00 pm  Lunch in Exhibit Hall  Roosevelt Ballroom

1:00 pm – 2:00 pm  PECHA KUCHA SESSIONS/MASTER VIDEO SESSIONS

PECHA KUCHA 1: Vestibular Schwannomas  Crescent City Ballroom
MASTER VIDEO 1: Microvascular Anastomosis, Bypass and Vascular Repair  Orpheum Room
PECHA KUCHA 2: Petroclival Meningiomas  Chamber II
MASTER VIDEO 2: Microsurgical Techniques in Cranial Nerve Preservation  Chamber III

2:05 pm – 3:05 pm  PECHA KUCHA SESSIONS/MASTER VIDEO SESSIONS

PECHA KUCHA 3: Chordomas  Crescent City Ballroom
MASTER VIDEO 3: Approaches to the Cavernous Sinus and Meckel's Cave  Orpheum Room
PECHA KUCHA 4: Ergonomics of Surgery and Instrumentation  Chamber II
MASTER VIDEO 4: Endoscope-Assisted Skull Base Surgery  Chamber III

3:05 pm – 3:35 pm  Refreshment Break in Exhibit Hall  Roosevelt Ballroom

PROFFERED PAPER SESSIONS

PROFFERED PAPERS 1: Best of Anatomy  (3:35 pm – 5:05 pm)  Crescent City Ballroom
PROFFERED PAPERS 2: Best of Vestibular Schwannomas  (3:35 pm – 5:05 pm)  Orpheum Room
PROFFERED PAPERS 3: Best of Meningiomas I  (3:35 pm – 5:05 pm)  Chamber II
PROFFERED PAPERS 4: (Rapid Fire) Best of Pituitary Adenomas, Sellar and Suprasellar Lesions  (3:35 pm – 5:55 pm)  Chamber III
PROFFERED PAPERS 5: Best of Functional Outcome and Quality of Life  (3:35 pm – 5:05 pm)  Chamber I
Schedule-at-a-Glance

5:10 pm – 5:55 pm  CONSTRUCTIVE CRITICISM VIDEOS SESSION

CONSTRUCTIVE CRITICISM VIDEOS 1: Endoscopic Endonasal Approaches
CONSTRUCTIVE CRITICISM VIDEOS 2: Lateral Skull Base
CONSTRUCTIVE CRITICISM VIDEOS 3: Potpourri

Crescent City Ballroom
Orpheum Room
Chamber I

PROFFERED PAPER SESSION

PROFFERED PAPERS 6 (Rapid Fire): Best of Learning Curve, Training, Multidisciplinary Work and More (5:10 pm – 5:55 pm)

Chamber II

6:00 pm – 7:30 pm  Welcome Reception and Poster Viewing in Exhibit Hall
Roosevelt Ballroom

7:30 pm – 10:00 pm  Past Presidents’ Dinner (Invitation Only)

NASBS Skull Base Surgery SUMMER WORKSHOP

July 6-9, 2017 • LSU Health Sciences Center, New Orleans, LA

Do you have a Neurosurgery Resident or Head & Neck Fellow in need of Skull Base Surgery hands-on training? Then send them to the NASBS Skull Base Surgery Summer Workshop at LSU.

This course is not to be missed!
Registration will be first-come, first served and opens March 2017.

For more information, visit www.nasbs.org/nasbs-courses or contact NASBS Course Coordinator, Paula Kupiec, at 310-424-3326 ext. 161 or paula@nasbs.org.
SATURDAY, MARCH 4, 2017

6:30 am – 6:30 pm  Registration  
Roosevelt Foyer

7:30 am – 8:35 am  MAIN TOPIC SESSIONS  
(Breakfast 7:00 am – 7:30 am)  
Breakfast will be served outside all breakout rooms.

MAIN TOPIC 5: Benign Cavernous Sinus Tumors: Can We Agree on Management?  
Crescent City Ballroom
MAIN TOPIC 6: Challenging Tumors of the Jugular Foramen  
Orpheum Room
MAIN TOPIC 7: Petroclival Meningiomas: Philosophy, Techniques and Results  
Chamber II
MAIN TOPIC 8: Skull Base Reconstruction Techniques  
Chamber III

8:45 am – 9:30 am  EXPERT DEBATE SESSIONS

EXPERT DEBATE 5: How to Become and Train Great Skull Base Surgeons: An International Panel  
Crescent City Ballroom
EXPERT DEBATE 6: Pituitary Adenomas: The Right Approach, Endocrine Considerations and Recurrent Tumors  
Orpheum Room
EXPERT DEBATE 7: Craniopharyngiomas: Changing Roles of Surgery, Radiation and Novel Medical Treatments  
Chamber II
EXPERT DEBATE 8: Complex Head and Neck Malignancies: Controversies in Management  
Chamber III

9:30 am – 10:00 am  Morning Break in Exhibit Hall  
Roosevelt Ballroom

10:00 am – 10:30 am  HONORED GUEST: What the Skull Base has Taught Me  
Alan Crockard, MB, BCh, DSc, FRCS, FRCP, FDSRCS
Crescent City Ballroom

10:30 am – 11:20 am  KEYNOTE SPEAKER: Resilient Leadership: Prepare Today to Prevail Tomorrow  
Lt. General Russel L. Honoré  
Crescent City Ballroom

11:20 am – 12:05 pm  THE LIPTON INTERVIEW: A Glimpse into the Mind and Legacy of the Wise  
Crescent City Ballroom

12:05 pm – 1:00 pm  Business Lunch for Members  
Lunch in Exhibit Hall/Book Signing  
Waldorf Astoria Ballroom

1:00 pm – 2:00 pm  PECHA KUCHA SESSIONS/MASTER VIDEO SESSIONS

PECHA KUCHA 5: Sinonasal Malignancies  
Crescent City Ballroom
MASTER VIDEO 5: Temporal Bone Drilling: From Simple to Complex  
Orpheum Room
PECHA KUCHA 6: Orbital Tumors  
Chamber II
MASTER VIDEO 6: Reconstruction Techniques for Skull Base Defects: From Tiny to Huge  
Chamber III

2:05 pm – 3:05 pm  PECHA KUCHA SESSIONS/MASTER VIDEO SESSIONS

PECHA KUCHA 7: Anterior Skull Base Meningiomas  
Crescent City Ballroom
MASTER VIDEO 7: Expanded Endonasal Approaches  
Orpheum Room
PECHA KUCHA 8: Reconstructive Techniques: Know Your Toolbox!  
Chamber II
MASTER VIDEO 8: Intraoperative Complications: From Nuisances to Disasters  
Chamber III

3:05 pm – 3:35 pm  Refreshment Break in Exhibit Hall  
Roosevelt Ballroom
## Schedule-at-a-Glance

### PROFFERED PAPER SESSIONS

<table>
<thead>
<tr>
<th>Session</th>
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<tr>
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<td>PROFFERED PAPERS 8: Best of Meningiomas II</td>
<td>3:35 pm – 5:05 pm</td>
<td>Orpheum Room</td>
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<td>PROFFERED PAPERS 9: Best of Sinonasal and Skull Base Malignancies</td>
<td>3:35 pm – 5:05 pm</td>
<td>Chamber II</td>
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<td>PROFFERED PAPERS 10: Best of Large Series, Clinical Trials and Metanalyses</td>
<td>3:35 pm – 5:05 pm</td>
<td>Chamber III</td>
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<tr>
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<td>PROFFERED PAPERS 11 (Rapid Fire): Best of Surgical Techniques and Innovation</td>
<td>3:35 pm – 5:55 pm</td>
<td>Chamber I</td>
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### SPECIAL SESSIONS

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<tr>
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<td>PROFFERED PAPERS 12 (Rapid Fire): Best of Case Series</td>
<td>5:10 pm – 6:30 pm</td>
<td>Chamber III</td>
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### SUNDAY, MARCH 5, 2017

**6:45 pm – 7:30 pm**  
**New Member Reception with Leadership** (Invitation Only)  
*House of Blues*

**7:30 pm – 10:30 pm**  
**NASBS Social Event at House of Blues**

### SUNDAY, MARCH 5, 2017

**7:00 am – 12:30 pm**  
**Registration**  
*Roosevelt Foyer*

**7:00 am – 7:45 am**  
**Committee Meetings** *(Breakfast 7:00 am – 7:30 am)*  
*Breakfast will be served outside all breakout rooms.*

**7:45 am – 7:55 am**  
**Transition Break**

**7:55 am – 9:00 am**  
**MAIN TOPIC SESSIONS** *(Breakfast 7:00 am – 7:30 am)*  
*Breakfast will be served outside all breakout rooms.*

<table>
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**9:05 am – 9:50 am**  
**EXPERT DEBATE SESSIONS**

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<td>EXPERT DEBATE 12: Tumor Board: A Panorama of Skull Base Lesions</td>
<td>9:50 am – 10:20 am</td>
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**9:50 am – 10:20 am**  
**Morning Break in Exhibit Hall**  
*Roosevelt Ballroom*

**10:20 am – 10:50 am**  
**HONORED GUEST: Changes in the Landscape of Skull Base Surgery: Reflections on a 30 Year Career**  
Fred Gentili, MD, MSc, FRCSC, FACS  
*Crescent City Ballroom*

**10:50 am – 11:30 am**  
**Featured Scientific Presentations and Awards Ceremony**  
*Crescent City Ballroom*

**11:30 am – 12:45 pm**  
**State of the Art and Future of ...**  
*Crescent City Ballroom*

**12:45 pm – 10:30 pm**  
**NASBS 2018 Meeting in San Diego, CA**  
*Crescent City Ballroom*

**12:50 pm**  
**Meeting Adjourned**
Pre-Meeting Course

Open and Endoscopic Skull Base Surgery

March 1-2, 2017 • Louisiana State University Health Sciences Center
COURSE DIRECTORS: Carlos David, MD & Daniel Nuss, MD

The pre-meeting dissection workshop of the 27th Annual NASBS Meeting offers participants with hands-on cadaver dissection sessions and didactic sessions. Modules will take participants through open and endoscopic exercises to the central, lateral, and posterior skull base.

The two-day cadaveric course is to promote anatomical understanding and practice of complex approaches to the skull base. Where possible different approaches to the same region will be employed with the benefit of contrasting and comparing the achieved exposure.

At the conclusion of this course, participants will be able to:
- Demonstrate knowledge regarding the applicability, limitations and advantages of open versus endonasal approaches to the skull base.
- Execution of the approaches via microsurgical cadaveric dissection.
- Understand potential complications related to each approach.

LOCATION

Louisiana State University Health Sciences Center
2020 Gravier St.
New Orleans, LA 70112

SHUTTLES

Wednesday, March 1, 2017
- 7:00 am: Shuttle will pick up attendees at the Roosevelt Hotel and bring to LSU Health Sciences Center. The shuttle will leave on time, please be prompt.
- 6:15 pm: Shuttle will pick up attendees to LSU Health Sciences Center and return to the Roosevelt Hotel.

Thursday, March 2, 2017
- 7:00 am: Shuttle will pick up attendees at the Roosevelt Hotel and bring to LSU Health Sciences Center. The shuttle will leave on time, please be prompt.
- 5:45 pm: Shuttle will pick up attendees to LSU Health Sciences Center and return to the Roosevelt Hotel.

DISCLOSURE INFORMATION

In compliance with the ACCME Accreditation Criteria, the American College of Surgeons, as the accredited provider of this activity, must ensure that anyone in a position to control the content of the educational activity has disclosed all relevant financial relationships with any commercial interest. All reported conflicts are managed by a designated official to ensure a bias-free presentation. Please see the insert to this program for the complete disclosure list.
### Pre-Meeting Course Schedule

**WEDNESDAY, MARCH 1, 2017**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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</thead>
<tbody>
<tr>
<td>7:45 am – 8:00 am</td>
<td>Registration &amp; Breakfast</td>
</tr>
<tr>
<td>7:45 am – 8:00 am</td>
<td>Course Overview&lt;br&gt;Carlos David, MD &amp; Daniel Nuss, MD</td>
</tr>
<tr>
<td>8:00 am – 8:30 am</td>
<td>Transbasal Approaches&lt;br&gt;8:00 am Lecture: Anatomy of Anterior Skull Base – <em>Arnau Benet, MD</em>&lt;br&gt;8:15 am Transbasal Approach – Step by Step – <em>Albert Kim, MD</em></td>
</tr>
<tr>
<td>8:30 am – 9:00 am</td>
<td>Extended Endonasal Approaches&lt;br&gt;8:30 am Anatomy of Endonasal Approach – <em>Maria Peris-Celda, MD, PhD</em>&lt;br&gt;8:45 am Extended Endonasal Transplanum Approach – Step by Step – <em>Ralph Abi-Hachem, MD</em></td>
</tr>
<tr>
<td>9:00 am – 9:30 am</td>
<td>Prosection of Transbasal Approach&lt;br&gt;Bharat Guthikonda, MD</td>
</tr>
<tr>
<td>9:30 am – 10:30 am</td>
<td>Dissection by Participants</td>
</tr>
<tr>
<td>10:30 am – 11:00 am</td>
<td>Prosection of Extended Endonasal Approach&lt;br&gt;Ivan El-Sayed, MD &amp; Philip Theodosopoulos, MD</td>
</tr>
<tr>
<td>11:00 am – 12:00 pm</td>
<td>Dissection by Participants</td>
</tr>
<tr>
<td>12:00 pm – 1:00 pm</td>
<td>Lunch</td>
</tr>
<tr>
<td>1:00 pm – 1:30 pm</td>
<td>Cavernous Sinus&lt;br&gt;1:00 pm Anatomy of Cavernous Sinus – <em>Pablo Rubino, MD</em>&lt;br&gt;1:15 pm Dolenc Approach – Step by Step – <em>Ali Krisht, MD</em></td>
</tr>
<tr>
<td>1:30 pm – 2:00 pm</td>
<td>Orbit&lt;br&gt;1:30 pm Anatomy of Orbit – <em>Sara Wester, MD</em>&lt;br&gt;1:45 pm Transorbital Approach – Step by Step – <em>Darlene Lubbe, MD</em></td>
</tr>
<tr>
<td>2:00 pm – 2:30 pm</td>
<td>Prosection of Dolenc Approach&lt;br&gt;Ali Krisht, MD</td>
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<tr>
<td>2:30 pm – 3:30 pm</td>
<td>Dissection by Participants</td>
</tr>
<tr>
<td>3:30 pm – 4:00 pm</td>
<td>Prosection of Transorbital Approach&lt;br&gt;Kris Moe, MD</td>
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<tr>
<td>4:00 pm – 5:00 pm</td>
<td>Dissection by Participants</td>
</tr>
<tr>
<td>5:00 pm – 5:30 pm</td>
<td>Anterior Fossa, Orbit, and/or Cavernous Sinus Open Discussion&lt;br&gt;MODERATOR: Carlos David, MD&lt;br&gt;DISCUSSANTS: Ali Zomorodi, MD &amp; Ben Bleier, MD</td>
</tr>
<tr>
<td>5:30 pm – 6:15 pm</td>
<td>Reception for Attendees and Faculty</td>
</tr>
</tbody>
</table>
Pre-Meeting Course Schedule

THURSDAY, MARCH 2, 2017

7:45 am – 8:00 am  
Registration & Breakfast

7:45 am – 8:00 am  
Course Overview  
Carlos David, MD & Daniel Nuss, MD

8:00 am – 8:30 am  
Extended Middle Fossa Approaches  
8:00 am  Anatomy of Middle Fossa – Satoshi Matsuo, MD  
8:15 am  Kawase Approach – Step by Step - Chandra Sen, MD

8:30 am – 9:00 am  
Endonasal Approach to Petrous Apex  
8:30 am  Anatomy of Endonasal Transpterygoid Approach – Noritaka Komune, MD, PhD  
8:45 am  Endonasal Transpterygoid Approach – Step by Step – Roy Casiano, MD

9:00 am – 9:30 am  
Prosection of Kawase Approach  
James Liu, MD

9:30 am – 10:30 am  
Dissection by Participants

10:30 am – 11:00 am  
Prosection of Endonasal Transpterygoid Approach  
Rick Carrau, MD & Dani Prevedello, MD

11:00 am – 12:00 pm  
Dissection by Participants

12:00 pm – 1:00 pm  
Lunch

1:00 pm – 1:30 pm  
Far Lateral Approach  
1:00 pm  Anatomy of Foramen Magnum and Craniovertebral Junction – Ken Matsushima, MD  
1:15 pm  Far Lateral Approach – Samy Youssef, MD, PhD

1:30 pm – 2:00 pm  
Endonasal Approach to Craniovertebral Junction  
1:30 pm  Anatomy of Endonasal Approach to Craniovertebral Junction – Abuzer Gungor, MD  
1:45 pm  Endonasal Approach to Craniovertebral Junction – Step by Step – Zoukaa Sargi, MD, MPH

2:00 pm – 2:30 pm  
Prosection of Far Lateral Approach  
Gustavo Pradilla, MD

2:30 pm – 3:30 pm  
Dissection by Participants

3:30 pm – 4:00 pm  
Prosection of Endonasal Approach to Craniovertebral Junction  
Marc Rosen, MD & Jim Evans, MD

4:00 pm – 5:00 pm  
Dissection by Participants

5:00 pm – 5:30 pm  
Middle Fossa and Posterior Fossa Open Discussion  
MODERATOR: Carlos David, MD  
DISCUSSANTS: Rahul Mehta, MD, FRCS, John Golfinos, MD & Madison Michael, MD, FAANS, FACS
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:00 am – 7:30 pm</td>
<td>Registration</td>
<td>Roosevelt Foyer</td>
</tr>
<tr>
<td>7:30 am – 8:35 am</td>
<td>MAIN TOPIC SESSIONS (Breakfast 7:00 am – 7:30 am)</td>
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<tr>
<td></td>
<td>Breakfast will be served outside all breakout rooms.</td>
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</tbody>
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### MAIN TOPIC 1: Lateral Skull Base: How to Choose the Optimal Approach?

**Crescent City Ballroom**

**Moderator:** Ehab Hanna, MD  
**Speakers:** Kenji Ohata, MD, PhD, Laligam Sekhar, MD, Fred Telischi, MD, FACS, MEE & George Wanna, MD

- **Introduction** – Ehab Hanna, MD
- **Regional Pathology and Differential Diagnosis** – George Wanna, MD
- **Transtemporal Approaches** – Fred Telischi, MD, FACS
- **Orbito Zygomatic Osteotomy, Zygomatic Osteotomy and Subtemporal - Infratemporal Approach** – Laligam Sekhar, MD
- **Selecting the Optimal Approach** – Kenji Ohata, MD, PhD
- **Discussion – All**

This session will address the regional pathology and differential diagnosis of lateral skull base tumors, common surgical approaches, and selection of the optimal approach. This session should be attended by neurosurgeons and otolaryngologists who care for patients with lateral skull base pathology.

At the conclusion of this session, participants will be able to:
1. Distinguish among the various pathologic conditions of lateral skull base tumors.
2. Classify the various surgical approaches to the lateral skull base.
3. Choose the optimal surgical approach for a specific pathology in the lateral skull base.

### MAIN TOPIC 2: Vestibular Schwannomas in NF2: Surgery, Radiosurgery and Adjuvant Therapies

**Orpheum Room**

**Moderator:** Michael Link, MD  
**Speakers:** Fred Barker, MD, Steven Giannotta, MD, Samuel Gubbels, MD & Tom Roland, MD

- **Introduction** – Michael Link, MD
- **Discussion of Challenging Cases** – Fred Barker, MD
- **Discussion of Challenging Cases** – Steven Giannotta, MD
- **Discussion of Challenging Cases** – Samuel Gubbels, MD
- **Discussion of Challenging Cases** – Tom Roland, MD

This session will be an interactive case-based discussion of some of the challenging and controversial topics of managing patients with NF2. The moderator will present specific cases of patients with NF2 and then ask the expert panel specific questions to highlight the important management decisions. All providers involved in the counseling and management of NF2 patients should attend including, neurosurgeons, neurotologists, neuro-oncologists, radiation oncologists and rehabilitation specialists.

At the conclusion of this session, participants will be able to:
1. Evaluate patients with NF2 and prioritize their presenting and possible future symptoms.
2. Identify the broad range of treatment strategies available for patients with NF2.
3. Develop a logical and effective algorithm for the evaluation and management of patients with NF2.

### MAIN TOPIC 3: The Orbit: Access and Target for the Skull Base Surgeon

**Chamber II**

**Moderator:** Michael McDermott, MD  
**Speakers:** Chrisfouad Alabiad, MD, Khaled Aziz, MD, PhD, Howard Krauss, MD & Sara Wester, MD

- **Introduction** – Michael McDermott, MD
- **Eyelid Approaches to Anterior Cranial Fossa** – Khaled Aziz, MD, PhD
- **Orbital Exenteration for Periorbital Skin Cancers, Prognostic Factors and Survival** – Sara Wester, MD
- **En Bloc Resection and Reconstruction for Lacrimal Tumors** – Chrisfouad Alabiad, MD
- **Endoscopic Approaches for Conditions of the Orbit** – Howard Krauss, MD
TABLE OF CONTENTS

Scientific Program

This one hour session will include four presentations surgical approaches to the orbit from three oculoplastic surgeons and a neurosurgeon. Open and endoscopic approaches to the orbit, lacrimal gland tumors and prognostic factors for outcome after orbital exenteration will be discussed.

At the conclusion of this session, participants will be able to:
1. Articulate the steps in eyelid approaches to anterior cranial base and outcomes.
2. Develop an understanding of orbital exenteration for tumors of the orbit, prognostic factors and outcomes.
3. Assess the utility of endoscopic approaches for conditions of the orbit and outcomes.

MAIN TOPIC 4: The Infratemporal Fossa: Surgical Anatomy and Approaches

MODERATOR: Dennis Kraus, MD
SPEAKERS: Ivan El-Sayed, MD, Michael Gleeson, MD, Andre Grotenhuis, MD & Daniel Nuss, MD

- Introduction – Dennis Kraus, MD
- Lateral Approaches to the Foramen Ovale and Jugular Foramen – Michael Gleeson, MD
- A Proposed Endoscopic Staging System of the Infratemporal Fossa – Ivan El-Sayed, MD
- Endoscopic Endonasal Approaches to the Infratemporal Fossa - A Neurosurgical Perspective – Andre Grotenhuis, MD
- Indications for Open Approaches and Reconstruction of the Infratemporal Fossa – Daniel Nuss, MD
- Discussion and Case Presentation – Dennis Kraus, MD

The panel will review a host of surgical approaches and resections for the many neoplasms that involve and originate in the infratemporal fossa. The multidisciplinary nature of the presentation will allow the attendee to access the many surgical approaches and determine the optimal surgical resection based on type of neoplasm and extent of the lesion. Upon completion of the panel, the attendee should be comfortable in understanding the multiple surgical approaches employed in infratemporal fossa surgery.

At the conclusion of this session, participants will be able to:
1. Articulate the complex anatomy of the infratemporal fossa including preservation of neurovascular structures.
2. Distinguish between the pros and cons of the different surgical approaches and the optimal use based on pathology and extent of disease.
3. Plan appropriate reconstruction of infratemporal fossa defects based on the extent of the lesion.

8:45 am – 9:30 am

EXPERT DEBATE SESSIONS

EXPERT DEBATE 1: Vestibular Schwannomas: Controversies in Modern Management

MODERATORS: John Golfinos, MD, Paul Camarata MD & Simon Angeli, MD
SPEAKERS: Seilesh Babu, MD, George Bovis, MD, Stephen Haines, MD, Roberto Leal Silveira, MD, Randall Porter, MD, Marc Schwartz, MD, Byron Thompson, MD & Elisabetta Zanoletti, MD

This session will explore the raging controversies over the management of an outwardly simple and benign disease. The session is aimed at enriching the knowledge of neurosurgeons from all fields as well as radiation oncologists, radiologists, neuro-oncologists and advanced practice practitioners.

At the conclusion of this session, participants will be able to:
1. Implement new decision-making ability in patients with vestibular schwannomas.
2. Understand the factors affecting quality of life in vestibular schwannoma patients.
3. Compare different treatment modalities in patients with vestibular schwannomas.

EXPERT DEBATE 2: Optimal Strategy for Reconstruction after Endoscopic Skull Base Surgery

MODERATORS: Gabriel Zada, MD, Pablo Recinos, MD & Adam Folbe, MD, MS
SPEAKERS: Ricardo Carrau, MD, Jean Anderson Eloy, MD, Stacey Gray, MD, Seth Lieberman, MD, Eric Wang, MD, Bradford Woodworth, MD & Adam Zanation, MD & Marilene Wang, MD

This expert debate session will feature expert panelists who will discuss optimal strategy for skull base reconstruction during endonasal endoscopic skull base surgery. A discussion regarding operative planning, techniques, adjunct measures, and rescue/salvage procedures will provide panelists’ thoughts on presented cases. Key topics will include indications for vascularized flap reconstruction, grafting materials, reconstruction techniques, and indications for CSF diversion. This session would be of particular interest to otolaryngologists and neurosurgeons practicing endoscopic endonasal surgery.
Scientific Program

At the conclusion of this session, participants will be able to:
1. Demonstrate an understanding of varying approaches and adjunct techniques for skull base reconstruction during endoscopic endonasal approaches.
2. Identify high-risk cases that may benefit from planning for vascularized flaps and/or CSF diversion.
3. Formulate a general algorithm to reconstruct the skull base for a variety of direct and extended EEA approaches.

EXPERT DEBATE 3: Management of Challenging Meningiomas

Chamber II
MODERATORS: William Couldwell, MD, PhD, FACS, Roukoz Chamoun, MD & Jamie Van Gompel, MD
SPEAKERS: Ossama Al-Mefty, MD, Nicholas Bambakidis, MD, Ian Dunn, MD, James Evans, MD, Carl Heilman, MD, Steve Howard, MD, PhD, Ali Krisht, MD & Patrick Wen, MD

This session will discuss the multidisciplinary management of complex skull base meningiomas in a case presentation format. The role of observation, surgery, radiation therapy, and medical management will be debated.

At the conclusion of this session, participants will be able to:
1. Articulate treatment options for difficult skull base meningiomas.
2. Identify the complications related to surgical treatment and radiation therapy.
3. Formulate multidisciplinary treatment plans for patients with complex skull base meningiomas.

EXPERT DEBATE 4: Chordomas: Optimal Approach and Multidisciplinary Management

Chamber III
MODERATORS: Philip Theodosopoulos, MD, Daniel Kelly, MD & Michael McDermott, MD
SPEAKERS: Amy Anstead, MD, Nagy Elsayyad, MD, Juan Fernandez-Miranda, MD, Sebastien Froelich, MD, Juan Gomez-Amador, MD, Norbert Liebsch, MD, PhD, Jianfeng Liu, MD, PhD & Chandranath Sen, MD

The session is designed as a concise but comprehensive review of chordoma management. Diagnosis, surgical and adjuvant treatment both at initial diagnosis and at recurrence will be discussed with a panel of experts. Open surgical and endoscopic techniques as well as patient outcomes will be discussed.

At the conclusion of this session, participants will be able to:
2. Identify the correct diagnosis.
3. Organize the treatment algorithm.

9:30 am – 10:00 am
Morning Break in Exhibit Hall

10:00 am – 11:10 am
Dr. Albert L. Rhoton Memorial

Roosevelt Ballroom
Crescent City Ballroom
MODERATORS: Jacques Morcos, MD, FRCS, FAANS & Jeff Sorenson, MD
SPEAKERS: Juan Fernandez-Miranda, MD, Maria Peris-Celda, MD, PhD, Toshio Matsushima, MD, PhD, Jacques Morcos, MD, FRCS, FAANS, Jeff Sorenson, MD & Xiaoguang Tong, MD

• Al Rhoton: A Human Being Like No Other – Jacques Morcos, MD, FRCS, FAANS
• The Rhoton Scientific Legacy – Jeff Sorenson, MD
• From the Anatomy Lab to the OR: The Value of Time Spent with Dr. Rhoton – Juan Fernandez-Miranda, MD
• Dr. Rhoton and Head and Neck Anatomy – Maria Peris-Celda, MD, PhD
• The Impact of Dr. Rhoton on China – Xiaoguang Tong, MD
• Dr. Rhoton’s Legacy – Toshio Matsushima, MD
• Conclusion – Jacques Morcos, MD, FRCS, FAANS

This session will summarize the entire body of work of the celebrated neurosurgeon, skull base surgeon and neuroanatomist, Dr. Al Rhoton, as described by several of his past fellows.

At the conclusion of this session, participants will be able to:
1. Relate to the vast spectrum of Dr. Rhoton’s contributions to the field of neuroanatomy.
2. Evaluate Dr. Rhoton’s influence in the training of more than 120 fellows.
3. Evaluate Dr. Rhoton’s impact on the study of different aspects of the skull base in different areas of the world.
Crescent City Ballroom

11:15 am – 11:45 am  **PRESIDENTIAL ADDRESS: Mastery and Legacy in Skull Base Surgery: Lessons in Synchronicity**  
Jacques Morcos, MD, FRCS, FAANS  
Crescent City Ballroom

11:45 am – 12:15 pm  **HONORED GUEST: Some Thoughts about Resident Mentorship: Challenges Facing the Surgeon-Educator**  
INTRODUCTION: Jacques Morcos, MD, FRCS, FAANS  
HONORED GUEST: Roberto Heros, MD, FACS  
Crescent City Ballroom

12:20 pm – 1:00 pm  **Lunch in Exhibit Hall**  
Roosevelt Ballroom

1:00 pm – 2:00 pm  **PECHA KUCHA SESSIONS/MASTER VIDEO SESSIONS**  
Crescent City Ballroom

**PECHA KUCHA 1: Vestibular Schwannomas**

MODERATORS: Michael Chicoine, MD & Anthony Zeitouni, MD  
SPEAKERS: Robert Behr, MD, Soha Ghossaini, MD, Pierre Hughes Roche, MD, John Lee, MD, Michael Link, MD, Pamela Roehm, MD, PhD, Mitesh Shah, MD & Byron Thompson, MD

- Natural History – Soha Ghossaini, MD  
- Retrosigmoid Approach – Mitesh Shah, MD  
- Middle Fossa Approach – Byron Thompson, MD  
- Translabyrinthine Approach – Pamela Roehm, MD, PhD  
- Role of Subtotal Resection – Michael Link, MD  
- Endoscopic Assisted Surgery – John Lee, MD  
- Role of Radiosurgery – Pierre Hughes Roche, MD  
- Recurrent Tumors – Robert Behr, MD

A review of the current state of the art for the management of vestibular schwannomas including discussion of the natural history, surgical techniques (including retrosigmoid, middle fossa, translabyrinthine, and endoscopic assisted approaches), and the role of radiosurgery. Also, included will be an assessment of the strategy of subtotal excision, and how to manage recurrent tumors.

At the conclusion of this session, participants will be able to:
1. Review the natural history of untreated vestibular schwannomas so as to identify for which patients the “watch and wait” strategy is most appropriate.
2. Review the published outcomes for patients undergoing surgery for vestibular schwannomas using various approaches and strategies so as to identify which techniques are best suited to which patients.
3. Review the published outcomes for patients undergoing treatment for vestibular schwannomas using surgery and radiosurgery so as to identify which techniques are best suited to which patients.

**MASTER VIDEO 1: Microvascular Anastomosis, Bypass and Vascular Repair**  
Orpheum Room

MODERATORS: Mark DeLacure, MD & Nicholas Bambakidis, MD  
SPEAKERS: Mustafa K. Baskaya, MD, Aaron Dumont, MD, Zoukaa Sargi, MD, MPH, Rokuya Tanikawa, MD & Mark Varvares, MD

- Introduction – Mark DeLacure, MD  
- Microvascular Repair of Vascular Injuries and Challenging Bypass Cases – Mustafa K. Baskaya, MD  
- Endovascular Repair – Aaron Dumont, MD  
- Bypass for Aneurysms – Rokuya Tanikawa, MD  
- Question & Answer – Mark DeLacure, MD  
- Introduction – Nicholas Bambakidis, MD  
- Microvascular Free Tissue Transfer – Zoukaa Sargi, MD, MPH  
- Non-Microvascular Reconstruction of the Skull Base – Mark Varvares, MD  
- Question & Answer – Nicholas Bambakidis, MD
This session should benefit practitioners and trainees at all levels in Neurosurgery, Otolaryngology-Head & Neck Surgery, and Plastic and Reconstructive Surgery. This session will deal with microvascular and non-revascularized reconstruction of the skull base using free tissue transfer techniques focusing on case selection, choice of flap, the vessel depleted recipient site, and the management of flap failure and complications.

The session will also cover microvascular repair of vascular injuries and challenging bypass scenarios, emphasizing case selection.

At the conclusion of this session, participants will be able to:
1. Select cases most appropriate for primary microvascular reconstructive techniques, and choose among flap options to accomplish this task.
2. Identify cases appropriate for vascular bypass techniques and integrate these plans in developing successful treatment plans for these patients.
3. Apply vascular repair techniques to the repair of injuries of the skull base.

**PECHA KUCHA 2: Petroclival Meningiomas**

**Chamber II**

**MODERATORS:** Moises Arriaga, MD & Paul Camarata, MD  
**SPEAKERS:** Roukoz Chamoun, MD, Christine Dinh, MD, Kadir Erkmen, MD, Juan Fernandez-Miranda, MD, Gustavo Isolan, MD, PhD, Robert Malyapa, MD, PhD, Lars Poulsgaard, MD & Ali Zomorodi, MD

- Introduction – Moises Arriaga, MD  
- Natural History – Lars Poulsgaard, MD  
- Transylvian Approaches – Ali Zomorodi, MD  
- Retrosigmoid Approach – Gustavo Isolan, MD  
- Anterior Petrosal Approach – Roukoz Chamoun, MD  
- Presigmoid Combined Approach – Kadir Erkmen, MD  
- Transcranial Modification – Christine Dinh, MD  
- Endoscopic Endonasal Approach – Juan Fernandez-Miranda, MD  
- Role of Radiation Treatment – Robert Malyapa, MD  
- Question and Answer – Paul Camarata, MD

This session will consider the natural history and treatment of petroclival meningiomas including open approaches, endoscopic approaches and radiation. This session is intended for neurosurgeons, otolaryngologists, neurotologists and radiation oncologists.

At the conclusion of this session, participants will be able to:
1. Articulate the natural history of Meningiomas.  
2. Implement open approaches including craniotomy alone and transtemporal approaches.  
3. Compare the role of endoscopic, radiation and open approaches.

**MASTER VIDEO 2: Microsurgical Techniques in Cranial Nerve Preservation**

**Chamber III**

**MODERATORS:** Gerald Lemole Jr, MD & Jon Robertson, MD  
**SPEAKERS:** Takanori Fukushima, MD, Michihiro Kohno, MD, Tiit Mathiesen, MD, PhD, Stefano Sellari-Franceschini, MD & Marcos Tatagiba, MD, PhD

- Glomus Jugulare Tumors – Marcos Tatagiba, MD, PhD  
- Petroclival Meningiomas – Takanori Fukushima, MD  
- Vestibular Schwannomas – Michihiro Kohno, MD  
- Clinoidal Meningiomas – Tiit Mathiesen, MD, PhD  
- Orbital Surgery – Stefano Sellari-Franceschini, MD

This session is targeted toward skull base surgeons utilizing surgical approaches around the cranial nerves. Special attention will be given to observations and techniques to preserve cranial nerve anatomy and function.

At the conclusion of this session, participants will be able to:
1. Discuss approaches to skull base regions and the associated cranial nerves.  
2. Demonstrate techniques for cranial nerve identification and monitoring.  
3. Identify techniques to preserve cranial nerve anatomy and function.
## Scientific Program

### PECHA KUCHA SESSIONS/MASTER VIDEO SESSIONS

**FRIDAY, MARCH 3**

### PECHA KUCHA 3: Chordomas

**Crescent City Ballroom**

**MODERATORS:** Siviero Agazzi, MD, MBA & Lori Lemonnier, MD  
**SPEAKERS:** Michelle Alonso-Basanta, MD, PhD, Franco DeMonte, MD, Gary Gallia, MD, PhD, Maurizio Iacoangeli, MD, David Jang, MD, Maria Koutourousiou, MD, Norbert Liebsch, MD, PhD & Georgios Zenonos, MD

- **Introduction – Siviero Agazzi, MD, MBA**
- **Natural History and Prognosis – Maria Koutourousiou, MD**
- **Transcranial Approaches: Posterolateral – Maurizio Iacoangeli, MD**
- **Transcranial Approaches: Anterolateral – Franco DeMonte, MD**
- **Endonasal Endoscopic Approaches: Anatomical Basis – David Jang, MD**
- **Endonasal Endoscopic Approaches: Technique and Results – Georgios Zenonos, MD**
- **Radiation Therapy: Photon – Michelle Alonso-Basanta, MD, PhD**
- **Radiation Therapy: Proton – Norbert Liebsch, MD, PhD**
- **Genetics and Novel Therapies for Chordomas – Gary Gallia, MD, PhD**

This session will review the most current management strategies for skull base chordomas from a surgical, oncological, radiation and genetic point of view. Surgeons, oncologist and radiation oncologist as well as any other specialty managing these complex tumors should attend this comprehensive review on the subject.

At the conclusion of this session, participants will be able to:
1. Categorize chordomas according to prognostic indicators.  
2. Define the different surgical strategies and understand selection criteria for each one of them.  
3. Integrate adjuvant therapies in the management of chordoma patients.

### MASTER VIDEO 3: Approaches to the Cavernous Sinus and Meckel’s Cave

**Orpheum Room**

**MODERATORS:** Mark Eisenberg, MD & Chandranath Sen, MD  
**SPEAKERS:** Ben Bleier, MD, William Couldwell, MD, PhD, Paul Gardner, MD, Ali Krisht, MD & Ricardo Ramina, MD, PhD

- **Orbital Surgery – Ben Bleier, MD**
- **Lateral Orbitotomy Approach to the Cavernous Sinus – William Couldwell, MD, PhD**
- **Endoscopic Approach to Cavernous Sinus and Meckel's Cave – Paul Gardner, MD**
- **Transcranial Approaches to Cavernous Sinus and Meckel’s Cave – Ali Krisht, MD**
- **Approaches to Meckel’s Cave – Ricardo Ramina, MD, PhD**

The Master Video sessions will feature exemplary case videos, presented by recognized surgical masters, to illustrate surgical approaches and techniques. Details regarding the nuances of operating in the region of Meckel's Cave and the cavernous Sinus will be discussed.

At the conclusion of this session, participants will be able to:
1. Identify cavernous sinus and Meckel's Cave Anatomy.  
2. Develop pre and post-operative management strategy for patients with cavernous sinus and Meckel's Cave Pathology.  
3. Identify patients requiring surgery on the cavernous sinus and Meckel's Cave.

### PECHA KUCHA 4: Ergonomics of Surgery and Instrumentation

**Chamber II**

**MODERATORS:** Vikram Prabhu, MD & Marc Rosen, MD  
**SPEAKERS:** Roy Casiano, MD, Carlos David, MD, Jason Hunt, MD, Amin Kassam, MD, Jacques Morcos, MD, FRCS, FAANS, Rokuya Tanikawa, MD, PhD, Marcos Tatagiba, MD, PhD & Bradford Woodworth, MD

- **Introduction – Vikram Prabhu, MD & Marc Rosen, MD**
- **Basic Ergonomics of Microsurgery – Rokuya Tanikawa, MD, PhD**
- **Ergonomics of Instrument Design – Roy Casiano, MD**
- **Ergonomics of EEA - Otolaryngology Perspective – Bradford Woodworth, MD**
- **Ergonomics of EEA - Neurosurgical Perspective – Amin Kassam, MD**
- **Ergonomics of Interhemispheric Approach – Carlos David, MD**
- **Ergonomics of Bypass Surgery – Jacques Morcos, MD, FRCS**
- **Ergonomics of Free Flap Surgery – Jason Hunt, MD**
- **Ergonomics of the Sitting Position – Marcos Tatagiba, MD, PhD**
This Pecha Kucha session will explore the ergonomic challenges faced by skull base surgeons from both otolaryngology and neurosurgery disciplines. Our panel will focus on improving attendees' understanding of the various strategies which can be employed to reduce fatigue and injury through improved surgical ergonomics.

At the conclusion of this session, participants will be able to:
1. Recognize the intrinsic ergonomic challenges and risks faced by skull base surgeons in a variety of practice situations.
2. Identify instrumentation, products, and strategies employed by the panelists to reduce fatigue during surgery.
3. Integrate diverse strategies to improve ergonomics in the attendees' specific practice situation.

**MASTER VIDEO 4: Endoscope-Assisted Skull Base Surgery**

**MODERATORS:** Ketan Bulsara, MD & Roukoz Chamoun, MD  
**SPEAKERS:** Sebastien Froelich, MD, Andre Grotenhuis, MD, PhD, Nikolai Hopf, MD, PhD, Kiyoshi Saito, MD, PhD & Charles Teo, MD

- Introduction – Ketan Bulsara, MD  
- Endoscope Assisted Surgery for Posterior Fossa/CPA Angle Lesions – Andre Grotenhuis, MD, PhD  
- Endoscopic Assisted Surgery for Deep Seated Skull Base Tumors – Sebastien Froelich, MD  
- Combined Microscopic and Endonasal Endoscopic Surgery for Skull Base Lesions – Kiyoshi Saito, MD, PhD  
- Eyebrow Approach – Charles Teo, MD

This session demonstrates through videos the benefit of using an endoscope as an adjunct for skull base surgery.

At the conclusion of this session, participants will be able to:
1. Recognize the utility of using endoscopes as adjuncts in skull base surgery.
2. Select appropriate indications for use of the endoscope as an adjunct in skull base surgery.
3. Compare the benefit of using an endoscope as a skull base surgery adjunct versus not using one at all.

3:05 pm – 3:35 pm  
**Refreshment Break in Exhibit Hall**

**PROFFERED PAPER SESSIONS**

**PROFFERED PAPERS 1: Best of Anatomy (3:35 pm – 5:05 pm)**

**MODERATORS:** Noberto Andaluz, MD & Zeina Korban, MD

**(3:35 pm – 4:05 pm)**

**001:** Olfactory Anatomy and Surgical Implications for the Preservation of Its Function. - Matias Gomez, MD, Ricardo Carrau, MD, Daniel Prevedello, MD, Brad Otto, MD, Alaa Montaser, MD, Diego Servian, MD, Lucas Lima, MD, Victor Leal de Vasconcelos, MD, Cristian Naudy, MD; Ohio State University

**002:** Internal Carotid Artery Exposure: An Anatomic Study of Endoscopic and Open Anterior Transfacial Approaches. - Cristine Klatt-Cromwell, Katherine Adams, Theodore Schuman, Brian Thorp, Charles Ebert, Deanna Sasaki-Adams, Matthew EWed, Adam Zanation; UNC Chapel Hill

**003:** Modular Classification of Endoscopic Endonasal Transsphenoidal Approaches: Quantitative Anatomical Study - Francesco Doglietto, MD, PhD,1 Francesco Belotti, MD,1 Andrea Bolzoni Villaret, MD,2 Alberto Schreiber, MD,2 Davide Lancini, MD,2 Marco Ferrari, MD,2 Vittorio Rampinelli, MD,2 Marco Ravanelli, MD,2 Roberto Maroldi, MD,3 Piero Nicolai, MD,3 Luigi F Rodella, MD, MSc,3 Marco M Fontanella, MD, MSc,3 Roberto Maroldi, MD,3 Unit of Neurosurgery, Department of Medical and Surgical Specialties, Radiological Sciences and Public Health, University of Brescia, Brescia, Italy, 1Unit of Otorhinolaryngology, Department of Medical and Surgical Specialties, Radiological Sciences and Public Health, University of Brescia, Brescia, Italy, 2Unit of Radiology, Department of Medical and Surgical Specialties, Radiological Sciences and Public Health, University of Brescia, Brescia, Italy, 3Section of Anatomy and Pathophysiology, Department of Clinical and Experimental Sciences, University of Brescia, Brescia, Italy

**004:** Compartmental Endoscopic Surgical Anatomy of the Inferior Intracanal Orbital Space - Alice Z Maxfield, MD, Christopher D Brook, MD, Marcel M Miyake, Benjamin S Bleier, MD; MEEI

Discussion – 5 minutes

**Proffered Paper 1 Continued (4:05 pm – 4:35 pm)**

**005:** Maxillary Strat Anatomy and Implications for a Transpterygoid Approach to the Middle Fossa - Melissa Stamates1, Ricky Wong2; 1University of Chicago, 2Northshore University Health System

**006:** The Ventral Perspective: Topographic Neurovascular Anatomy of the Cranial Base from Endoscopic Endonasal Perspective: The Median Sagittal Plane - Lior Gonen, MD, Srikant Chakravarthi, MD, MSc, Martin Corsten, MD, Amin B Kassam, MD; Aurora Neuroscience Innovation Institute
007: THE VENTRAL PERSPECTIVE: TOPOGRAPHIC NEUROVASCULAR ANATOMY OF THE CRANIAL BASE FROM AN ENDOSCOPIC ENDONASAL PERSPECTIVE: THE PARAMEDIAN REGION - Lior Gonen, MD, Srikanth S Chakravarthi, Martin Corsten, MD, Amin B Kassam, MD; Aurora Neuroscience Innovation Institute

008: SURGICAL ANATOMY OF THE MEDIAL WALL OF THE CAVERNOUS SINUS AND TECHNICAL NUANCES FOR ITS SURGICAL RESECTION - Stefan Lieber, MD1, Maximilianlo Nunez, MD1, Cristian Ferrareze Nunes, MD1, Eric W Wang, MD2, Carl H Snyderman, MD, MBA2, Paul A Gardner, MD1, Juan C Fernandez-Miranda, MD1; 1Department of Neurological Surgery, University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania, United States, 2Department of Otolaryngology, University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania, United States

Discussion – 5 minutes

Proffered Paper 1 Continued (4:35 pm – 5:05 pm)

009: DECOMPRESSION OF THE OPTIC CANAL VIA AN ENDOSCOPIC ENDONASAL VERSUS A TRANSCRANIAL APPROACH: A QUANTITATIVE ANALYSIS. - Steven L Gogela, MD1, Lee A Zimmer, MD, PhD2; Jeffrey T Keller, PhD2, Norberto Andaluz, MD1; 1University of Cincinnati, Mayfield Clinic, 2University of Cincinnati

010: MICRO SURGICAL RELATIONSHIPS BETWEEN INTERNAL CAROTID-PERIOR COMMUNICATING ARTERY ANEURYSMS AND SKULL BASE - Satoshi Matsuo1, Noritaka Komune2, So Takagishi1, Kenichi Matsumoto1, Sei Haga1, Takuya Inoue1, Albert L. Rhoton, Jr.2; 1Department of Neurosurgery, Kyushu Central Hospital, Fukuoka, Japan, 2Department of Neurosurgery, Saga Medical Center Koseikan, Saga, Japan

Discussion – 5 minutes

PROFFERED PAPERS 2: Best of Vestibular Schwannomas (3:35 pm – 5:05 pm) Orpheum Room

MODERATORS: Selilesh Babu, MD & Cordula Matthies, MD

(3:35 pm – 4:05 pm)

013: TRENDS OF CHANGE IN THE MANAGEMENT OF VESTIBULAR SCHWANNOMA - Andrew F Alalade, FRCS, FEBNS1, Nagina Subrati, MRCS1, Shakeel Saeed, MD, FRCS2, Robert Bradford, MD, FRCS2; 1The National Hospital for Neurology and Neurosurgery, 33 Queen Street, London WC1N 3BG, 2Royal National Throat, Nose and Ear Hospital, 330 Gray’s Inn Road, London WC1X 8DA

014: AUDIOLOGICAL OUTCOMES IN GROWING VESTIBULAR SCHWANNOMAS MANAGED EITHER CONSERVATIVELY, OR WITH STEREOTACTIC RADIOSURGERY - Thomas D Milner, Richard Locke, Georgios Kontorinis, John A Crowther; Queen Elizabeth University Hospital

(4:35 pm – 5:05 pm)

015: OUTCOMES OF COCHLEAR RADIATION DOSE ON HEARING PRESERVATION FOLLOWING STEREOTACTIC RADIOSURGERY AND FRACTIONATED RADIOTHERAPY IN VESTIBULAR SCHWANNOMA - Lawrance K Chung, BS, Winward Choy, BS, Nolan Ung, BS, Brittany Voth, MPH, Carlito Lagman, MD, Alessandra Gorgulho, MD, Stephen Tenn, PhD, Nader Pouratian, MD, Tania Kaprelian, MD, Michael Selch, MD, Antonio De Salles, MD, PhD, Quinton Gopen, MD, Isaac Yang, MD; University of California, Los Angeles

016: ASPIRIN, NONSTEROIDAL ANTI-INFLAMMATORY DRUGS AND VESTIBULAR SCHWANNOMA GROWTH - Jacob B Hunter, MD1, Brendan P O’Connell, MD, Marc L Bennett, MD, Alejandro Rivas, MD, George B Wanna, MD, Reid C Thompson, MD, David S Haynes, MD; Vanderbilt University Medical Center

Discussion – 5 minutes

Proffered Paper 2 Continued (4:05 pm – 4:35 pm)

017: HEARING LOSS IS MORE STRONGLY ASSOCIATED WITH PROTEIN ACCUMULATION IN THE LABYRINTH THAN WITH VESTIBULAR SCHWANNOMA GROWTH IN SMALL TUMORS: A PROSPECTIVE NATURAL HISTORY STUDY OF NEUROFIBROMATOSIS TYPE 2 - Gautam U Mehta, MD1, Robert L Walker III1, Carmen Brewer1, Kelly King1, Christopher Zalewski1, Gretchen Scott1, Sarah Benzo1, Ashok Asthagiri1, John Butman, MD1, Jeffrey Kim, MD2, Prashant Chittiboina, MD1; 1National Institutes of Health, 2Georgetown University School of Medicine

Scientific Program

019: POPULATION CHARACTERISTICS AND PROGRESSIVE DISABILITY IN NEUROFIBROMATOSIS TYPE 2 IN JAPAN - Kensho Iwatate; Fukushima Medical University

020: ACOUSTIC NEUROMA RECURRENCE AFTER TRANSLABYRINTHINE GROSS-TOTAL RESECTION - Brian C Rodgers, MD, Aaron A Metrailer, MD, Christopher Metz, MD, Seilesh Babu, MD, Dennis I Bojrab, MD, Michael J LaRouere, MD; Michigan Ear Institute

Discussion – 5 minutes

Proffered Paper 2 Continued (4:35 pm – 5:05 pm)

021: SURGICAL OUTCOME IN SMALLER SYMPTOMATIC VESTIBULAR SCHWANNOMAS. IS THERE A PLACE FOR SURGERY AS FIRST OPTION? - Amrit Chiluwal, MD, Alyssa Rothman, Maja Svrakic, MD, Amir R Dehdashti, MD, FACS; Northshore University Hospital

022: CORRELATES OF FACIAL NERVE OUTCOMES AFTER ACOUSTIC NEUROMA SURGERY: RESULTS OF A CONSECUTIVE SERIES AT A TERTIARY CARE CENTER. - Angela M Richardson, MD, PhD, Si Chen, MD, Manish Kuchakalla, Anish Bhavsar, Ashish Shah, MD, Michael E Ivan, MD, Adrien A Eshraghi, MD, Simon I Angeli, MD, Fred F Telischi, Jacques J Morcos, MD, FRCS, FAANS; University of Miami / Jackson Health System

023: AUDITORY BRAINSTEM IMPLANTS IN NEUROFIBROMATOSIS TYPE 2: EARLY AND LONG-TERM RESULTS - Cordula Matthies, Prof, MD, PhD1, Goetz Gelbrich, Prof, PhD2, Robert Mlynski, Prof, MD, PhD3, Rudolf Hagen, Prof, MD, PhD3, Wafaa Shehata-Dieler, Prof, MD, PhD3; 1Department of Neurosurgery, Julius-Maximilians University Hospital, Wuerzburg, Germany, 2Institute of Epidemiology and Biometrics, Julius-Maximilians University Wuerzburg, Germany, 3Department of Otorhinolaryngology, Julius-Maximilians University Hospital Wuerzburg, Germany

Discussion – 5 minutes

PROFFERED PAPERS 3: Best of Meningiomas I (3:35 pm – 5:05 pm) Chamber II

MODERATORS: James Evans, MD & Lori Lemonnier, MD

(3:35 pm – 4:05 pm)

024: DIFFERENTIATING MENINGIOMA GRADE BY IMAGING FEATURES ON MRI - Andrew T Hale, Li Wang, Megan K Strother, Lola B Chambless; Vanderbilt


026: INTRAOPERATIVE NEAR INFRARED FLUORESCENT VISUALIZATION OF MENINGIOMAS - John Y Lee, MD, John T Pierce, MS, Ryan Zeh, BA, Steve Cho, BS, Sunil Singhal, MD; University of Pennsylvania

027: CLINICALLY-ACTIONABLE MUTATIONS IN POSTERIOR SKULL BASE MENINGIOMAS - Sally R Williams1, Brandyn A Castro, MD1, Tyler T Lazaro1, Corey M Gill1, Naema Nayar2, Matthew P Froshc, MD, PhD2, Matthew Strickland, MD1, Daniel P Cahlil, MD, PhD3, Fred G Barker II, MD1, Priscilla K Brasianos, MD1; 1Massachusetts General Hospital Cancer Center, 2Massachusetts General Hospital Department of Pathology, 3Massachusetts General Hospital Department of Neurosurgery

Discussion – 5 minutes

Proffered Paper 3 Continued (4:05 pm – 4:35 pm)

028: CLINICAL OUTCOME AFTER ENDOSCOPIC ENDONASAL RESECTION OF PLANUM AND TUBERCULUM SELLA MENINGIOMAS - Khaled Elshazly, MD1, Varun R Kshettry, MD2, Christopher J Farrell, MD1, Gurston Nyquist, MD1, Marc Rosen, MD1, James J Evans, MD1; 1Thomas Jefferson University, 2Cleveland Clinic

029: THE ROLE OF STAGING IN ENDOCOSCOPIC ENDONASAL APPROACHES FOR LARGE AND GIANT ANTERIOR SKULL BASE MENINGIOMAS - Pradeep Setty, DO, Mathew Geltzeiler, MD, Andrea Hebert, MD, Georgios Zenonos, MD, Eric W Wang, MD, Carl H Snyderman, MD, Juan C Fernandez-Miranda, MD, Paul A Gardner, MD; University of Pittsburgh

030: ENDOCOSCOPIC TRANSPHENOIDAL VERSUS MICROSCOPIC TRANSCRANIAL APPROACH FOR ANTERIOR SKULL BASE MENINGIOMAS: A META-ANALYSIS - Is Muskens, BSc1, V Briceno, MSc2, Ti Ouwehand, BSc1, Wb Gormley, MD, MPH, MBA1, Ls Aglio, MD, MS1, Tr Smith, MD, PhD, MPH1, Ra Mekary, MSc, PhD2, MI Broekman, MD, JD, PhD1; 1Utrecht University Medical Center, Brain Center Rudolf Magnus, Utrecht, The Netherlands, 2MCPHS University, Boston, USA, 3Cushing Neurosurgery Outcomes Center, Brigham and Women's Hospital, Department of Neurosurgery Harvard Medical School, 4Department of Anesthesiology, Brigham & Women's Hospital, Harvard Medical School
**031: TUBERCULUM SELLA MENINGIOMAS: SURGICAL OUTCOMES, ENDOSCOPIC VS OPEN APPROACH, AND A PROPOSED TUMOR GRADING SCALE** - Stephen T Magill, MD, PhD1; Calixto-Hope G Lucas, BA1, Manish K Aghi, MD, PhD1, Philip V Theodosopoulos, MD1, Mitchell S Berger, MD1, Oreste de Divitis, MD2, Domenico Solari, MD2, Paolo Cappabianca, MD2, Luigi M Cavallo, MD, PhD2, Michael W McDermott, MD2; 1University of California, San Francisco, 2Universita degli Studi di Napoli Federico II, Naples, Italy

**Discussion – 5 minutes**

**032: BRACHYTHERAPY FOR RECURRENT HIGH-GRADE MENINGIOMAS: AN INSTITUTIONAL EXPERIENCE** - Pankaj Agarwalla, Matthew Koch, Trevor Royce, Kevin Oh, Helen Shih, Frederick Barker, William Curry, Jay Loeffler; Massachusetts General Hospital

**033: OVERALL SURVIVAL BENEFIT ASSOCIATED WITH ADJUVANT RADIOTHERAPY IN WHO GRADE II MENINGIOMA** - Chenyang Wang, MD, PhD1, Tania Kaprealian, MD1, John Suh, MD2, Charlotte Kubicky, MD, PhD2, Jeremy N Ciporen, MD3, Yiyi Chen, PhD4, Jerry J Jaboin, MD, PhD5; 1UCLA Department of Radiation Oncology, 2Cleveland Clinic Department of Radiation Oncology, 3OHSU Department of Neurosurgery, 4OHSU School of Public Health, 5OHSU Department of Radiation Medicine

**034: USING LOGISTIC REGRESSION AND A NOVEL MACHINE LEARNING TECHNIQUE TO PREDICT DISCHARGE STATUS AFTER CRANIOTOMY FOR MENINGIOMA** - Whitney F Muhlestein, BA1, Peter J Morone, MD, Justiss A Kallos, BS, MPhil, Lola B Chambless, MD; Vanderbilt University Medical Center

**Discussion – 5 minutes**

**PROFERRED PAPERS 4 (Rapid Fire): Best of Pituitary Adenomas, Sellar and Suprasellar Lesions**  
**Chamber III**

**(3:35 pm – 5:05 pm)**

**MODERATORS: Seth Lieberman, MD, Nirav Patel, MD, Jamie Van Gompel, MD & Gelareh Zadeh, MD, PhD, FRCS**

**(3:35 pm – 4:10 pm)**

**035: OUTCOMES OF PEDIATRIC CRANIOPHYARYNGIOMA RESECTIONS AFTER OPEN VERSUS EXPANDED ENDONASAL SURGICAL APPROACH** - Jennifer E Douglas, BA1, Bobby A Tajudeen, MD, MD2, Edward C Kuan, MD, MBA3, Marvin Bergsneider, MD4, Marilene B Wang, MD4, John Y.K. Lee, MD, MSCE5, James N Palmer, MD2, Nithin D Adappa, MD2, Phillip B Storm, MD6; 1University of Pennsylvania Perelman School of Medicine, 2University of Pennsylvania Department of Otorhinolaryngology-Head and Neck Surgery, 3University of California Los Angeles Department of Head and Neck Surgery, 4University of California Los Angeles Department of Neurosurgery, 5University of Pennsylvania Department of Neurosurgery, 6Children’s Hospital of Philadelphia, Division of Neurosurgery

**036: CRANIOPHYARYNGIOMAS: THE IMPORTANCE OF EARLY RECOGNITION OF THE PITUITARY STALK** - Daniel Seclen Voscoboinik1, Miguel Murali1,2, Eduardo Salas1,2, Maximiliano Nuñez1, Pablo Rubino1, Jorge Lambre1, Tito Cersosimo2; 1Hospital de Alta Complejidad en Red “El Cruce”, 2Hospital “Prof. A. Posadas”

**037: ENDOSCOPIC PITUITARY SURGERY - A RETROSPECTIVE REVIEW TO DETERMINE THE RISK FACTORS FOR CSF LEAK AND VASCULAR COMPLICATIONS** - Alistair Jukes, MD, Annika Mascarenas, MD, Alkis Psaltis, MD, PhD, PJ Wormald, MD, Stephen Florenai, MD, Stephen Santoreneos, MD; Royal Adelaide Hospital

**038: RATER RELIABILITY OF THE HARDY CLASSIFICATION FOR PITUITARY ADENOMAS IN THE MRI ERA** - Michael A Mooney, MD, Douglas A Hardesty, MD, John P Sheehy, MD, Roger Bird, MD, Kristina Chapple, PhD, William L White, MD, Andrew S Little, MD; Barrow Neurological Institute

**039: ENDOSCOPIC ENDONASAL APPROACH FOR PROLACTINOMA: OUTCOMES IN 56 PATIENTS** - Georgios Zenonos, MD1, Sam S Shin, MD, PhD2, Andrea Hebert, MD4, Phillip Choi, MD3, Amir Faraji1, Eric W Wang1, Juan C Fernandez-Miranda, MD1, Carl H Snyderman, MD, MS4, Paul A Gardner, MD1; 1University of Pittsburgh Department of Neurosurgery, 2Johns Hopkins University, Department of Neurology, 3UT Houston, Department of Neurosurgery, 4University of Pittsburgh, Department of Otorhinolaryngology

**040: COMPARISON OF MALE AND FEMALE PROLACTINOMA PATIENTS REQUIRING SURGICAL INTERVENTION** - Frederick Yoo, MD1, Edward C Kuan, MD1, Marvin Bergsneider, MD2, Marilene B Wang, MD4; 1Department of Head and Neck Surgery - UCLA, 2Department of Neurosurgery – UCLA

**041: ENDOSCOPIC ENDONASAL TRANSSPHENOIDAL FENESTRATION OF RATHKE CLEFT CYSTS IN CHILDREN** - Mohamed A Elzoghby, MD1, Matthew J Shepard, MD2, Erin N Kiehna, MD3, Spencer C Payne, MD2, John A Jane Jr., MD2; 1Ain Shams university, Cairo, Egypt., 2University of Virginia, Charlottesville, USA, 3Childrenen Hospital, Los Angeles, USA
042: OUTCOMES FOLLOWING ENDOSCOPIC RESECTION OF CRANIOPHARYNGIOMAS IN THE PEDIATRIC POPULATION - Andrew Thamboo, MD, MHSc, Vishal S Patel, BS, Jennifer L Quon, MD, Jayakar Nayak, MD, PhD, Peter H Hwang, MD, Michael Edwards, MD, Zara M Patel; Stanford University Medical Center
Discussion – 13 minutes

Proffered Paper 4 Continued (4:10 pm – 4:45 pm)
043: RNA DEEP SEQUENCING OF ADAMANTINOMATOUS CRANIOPHARYNGIOMA REVEALS MOLECULAR DIVERGENCE BETWEEN YOUNGER AND OLDER PATIENTS - Douglas Hardesty1, Ashish Yeri2, Taylor Beecroft2, Beth Hermes1, Jennifer Eschbacher, MD1, Kendall Jensen, PhD2, Peter Nakaji, MD1; 1Barrow Neurological Institute, 2Translational Genomics Research Institute
044: ENDOSCOPIC ENDONASAL APPROACH AS THE PRIMARY SURGICAL MANAGEMENT OF GIANT PITUITARY ADENOMAS - Khaled Elshazly, MD, Alan Siu, MD, Christopher Farrell, MD, Gurston Nyquist, MD, Marc Rosen, MD, James Evans, MD; Thomas Jefferson university hospital
045: THE EFFECT OF EARLY VS. LATE SURGERY ON CRANIAL NERVE FUNCTION IN PITUITARY APOPLEXY - Kevin A Cross, Brendan Fong, MD, Ananth S Vellan, MD, Julie Silverstein, MD, Michael R Chicoine, MD, Albert H Kim, MD, PhD; Washington University in St. Louis School of Medicine
046: CRANIAL 3D NEURONAVIGATION TO THE SELAR REGION: OUR EXPERIENCE AND PROOF OF PRINCIPLE. - A. Nimer Amr, MD, Sven R Kantelhardt, MD, Jens Conrad, MD; University of Mainz
047: DOES VOLUMETRIC RESECTION MATTER IN NON-FUNCTIONING MACROADENOMAS? - Joshua D Hughes, Marcus Gates, Kelly Koeller, Jamie J Van Gompel; Mayo Clinic
048: UTILIZING SURGICEL FOR SIMPLE CLOSURE OF POST-OPERATIVE SELAR DEFECTS: THE JEFFERSON EXPERIENCE - Vivek R Varma, BS1, Sanjeet V Rangarajan, MD, MEng1, Varun Kshettry, MD2, Marc R Rosen, MD1, James J Evans, MD1; 1Thomas Jefferson University Department of Otolaryngology-Head and Neck Surgery, 2Thomas Jefferson University Department of Neurosurgery
049: SURGEON IDENTIFICATION VS PATHOLOGICAL CONFIRMATION OF THE PITUITARY GLAND-TUMOR INTERFACE AND THE IMPACT OF GLAND SAMPLING ON POSTOPERATIVE ENDOCRINOLOGIC FUNCTION - Maria Peris-Celda, MD, PhD, Carlos D Pinheiro-Neto, MD, PhD, Tyler J Kenning; Albany Medical Center
Discussion – 13 minutes

Proffered Paper 4 Continued (4:45 pm – 5:20 pm)
050: RNA DEEP SEQUENCING OF ADAMANTINOMATOUS CRANIOPHARYNGIOMA REVEALS MOLECULAR DIVERGENCE BETWEEN YOUNGER AND OLDER PATIENTS - Douglas Hardesty1, Ashish Yeri2, Taylor Beecroft2, Beth Hermes1, Jennifer Eschbacher, MD1, Kendall Jensen, PhD2, Peter Nakaji, MD1; 1Barrow Neurological Institute, 2Translational Genomics Research Institute
051: RISK FACTORS FOR COMPLICATIONS AND LONG-TERM SEQELAE IN ENDOSCOPIC RESECTION OF PEDIATRIC CRANIOPHARYNGIOMA - Arjun K Parasher, MD1, Alan D Workman1, Steven G Brooks, MPH1, Jordan T Glicksman, MD1, Jennifer E Douglas1, Bobby A Tajudeen, MD2, Erin Alexander2, Kennedy W David, MD1, James N Palmer, MD1, Nithin D Adappa, MD1, Phillip B Storm, MD1; 1University of Pennsylvania, 2Rush, 3Children's Hospital of Philadelphia
052: SURGICAL OUTCOMES OF PRIMARY VERSUS REVISION TRANSSPHENOIDEAL RESSECTION FOR PITUITARY ADENOMAS AT A HIGH-VOLUME CENTER - Arjun Aggarwal, BS, Ankur Patel, MD, Yann-Fuu Kou, MD, Matthew Ryan, MD, Samuel L Barnett, MD; UT Southwestern
053: EFFECTIVENESS OF BILATERAL INFERIOR PETROSAL SINUSES SAMPLING IN TUMOR LATERALIZATION: INTRAOPERATIVE FINDINGS AND POSTOPERATIVE RESULTS. - Pablo Harker, MD, Oscar H Feo, MD, Manuel Giraldo-Grueso, Juan C Puentes, MD; Hospital Universitario San Ignacio
054: EXTENT OF RESECTION; VISUAL AND ENDOCRINOLOGICAL OUTCOMES FOR ENDOSCOPIC ENDONASAL SURGERY FOR RECURRENT PITUITARY ADENOMAS - Hyunwoo Do1, Varun Kshettry2, Alan Siu1, Irina Belinksy1, Christopher Farrell1, Gurston Nyquist1, Marc Rosen1, Jim Evans1; 1Thomas Jefferson University, 2Cleveland Clinic
055: PATTERNS OF PITUITARY INJURY DURING ENDOCPSIC TRANSSSPHENOIDEAL PITUITARY SURGERY: CORRELATION OF INTRA-OPERATIVE VIDEOS WITH ENDOCRINOLOGICAL OUTCOMES IN 76 PATIENTS - Solon Schur, MD, Salvatore Dimaio, MD; McGill University Health Center, Department of Neurosurgery
056: PREDICTING THE PROBABILITY OF DIAPHRAGMATIC DESCENT WITH VERY LARGE PITUITARY ADENOMAS - Marvin Bergsneider, MD, Wendy Huang, MD, David McArthur, PhD, MPH, Anthony Heaney, MD, Jeffrey D Suh, MD, Marileene B Wang, MD; UCLA David Geffen School of Medicine
057: USING CISS MRI SEQUENCE TO EVALUATE CAVERNOUS SINUS INVASION OF PITUITARY MACROADENOMAS - Min Lang, MS, Danilo Silva, MD, Varun R Kshettry, MD, Troy D Woodard, MD, Raj Sindwani, MD, Rupa G Juthani, MD, Pablo F Recinos, MD; Rose Ella Burhardt Brain Tumor and Neuro-Oncology Center, Neurological Institute, Cleveland Clinic
Discussion – 13 minutes
**Proffered Paper 4 Continued (5:20 pm – 5:55 pm)**

**058: OUTCOMES OF THE TRANSPHENOIDAL APPROACH FOR PITUITARY ADENOMAS IN ELDERLY PATIENTS** - S H Chen, MD, K Madhavan, MD, S Buttrick, MD, L Ching, BS, S Ali, BS, R Komotar; University of Miami

**059: NEUROENDOCRINOLOGICAL OUTCOMES FOLLOWING EARLY VERSUS DELAYED SURGERY FOR ACUTE PITUITARY APOPLEXY** - Martin Rutkowski, MD, Sandeep Kunwar, MD, Lewis Blevins, MD, Manish Aghi, MD, PhD; University of California, San Francisco, Department of Neurological Surgery

**060: REOPERATION FOR GROWTH-HORMONE SECRETING PITUITARY ADENOMAS: ENDONASAL ENDOSCOPIC SERIES AND SYSTEMATIC REVIEW OF THE LITERATURE** - Joao Paulo Almeida, MD,1 Armando Ruiz-Treviño, MD, Buqing Liang, MD,1 Sathwik Shetty, MD,1 Yu-Ning Chen, MD,1 Sacit B Omay, MD,1 Vijay K Anand, MD,2 Theodore H Schwartz, MD,1 'Department of Neurosurgery. Weill Cornell Medical College. New York Presbyterian Hospital. New York, NY, 2Department of Otolaryngology and , New York Presbyterian Hospital, New York, NY, USA.

**061: TIME TO BIOCHEMICAL REMISSION IN CUSHING’S DISEASE: A RETROSPECTIVE REVIEW OF “INTRACAPSULAR” VERSUS “EXTRACAPSULAR” RESECTIONS** - Ali O Jamshidi, MD, Luke Smith, MD, Jeeho D Kim, Daniel Prevedello, MD; The Ohio State University Medical Center

**062: PREDICTIVE FACTORS FOR RECURRENCE FOLLOWING ENDOSCOPIC TREATMENT OF CUSHING’S DISEASE** - Karolyn Au1, Ying Meng2, Suganth Suppiah2, George Klironomos1, Lior Gonen1, Fred Gentili1, Gelareh Zadeh1; 1Toronto Western Hospital, Toronto, Canada, 2University of Toronto, Toronto, Canada

**063: CSF LEAK RATE AFTER ENDOSCOPIC SKULL BASE TUMOR RESECTIONS IN CHILDREN: A SINGLE INSTITUTION EXPERIENCE.** - Javan J Nation, MD, Alexis Lopez, MD, Adam Deconde, MD, Michael Levy, MD; 1Rady Childrens/UCSD, 2UCSD

**046: 30 DAY METRICS FOLLOWING ENDOSCOPIC EXPANDED ENDOANASAL APPROACH FOR PITUITARY ADENOMAS** - Adish D Parikh, BS, Andrew J Rosko, MD, Melissa A Pynnonen, MD, Stephen E Sullivan, Erin L McKean, MD; The Ohio State University Medical Center

**Discussion – 11 minutes**

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**PROFERRED PAPERS 5: Best of Functional Outcome and Quality of Life (3:35 pm – 5:05 pm) Chamber I**

**MODERATORS: Stacey Gray, MD & Andrew Little, MD**

**064: THE MINIMALLY CLINICALLY IMPORTANT DIFFERENCE OF THE ANTERIOR SKULL BASE NASAL INVENTORY-12** - Andrew Little, MD1, Daniel Kelly, MD2, Garni Barkhoudarian, MD2, Nicholas Gravbrot, BS1, William White, MD1; 1Barrow Neurological Institute, 2John Wayne Cancer Institute

**065: QUALITY OF LIFE AFTER ENDOSCOPIC RESECTION OF MALIGNANT SINONASAL AND SKULL-BASE TUMORS** - Jordan T Glicksman, MD, MPH, FRCSC, Arjun K Parasher, MD, Steven G Brooks, Justina L Lambert, BA, Jenna E Bregman, BA, Alan D Workman, BA, James N Palmer, MD, Nithin D Adappa, MD; University of Pennsylvania

**066: A NOVEL SCALE FOR DESCRIBING VISUAL OUTCOMES IN PATIENTS FOLLOWING RESECTION OF LESIONS AFFECTING THE OPTIC APPARATUS-UNIFIED VISUAL FUNCTION SCALE** - Serge Makarenko, MD, BSc, Vincent Ye, BSc, Ryojo Akagami, MD, BSc, MHSc, FRCSC; Vancouver General Hospital

**067: ESTHESIONEUROBLASTOMA AND OLFACTORY PRESERVATION: DOES THIS UNICORN EXIST AND IS IT REASONABLE TO ATTEMPT SMELL PRESERVATION?** - Jamie J Van Gompel, Tarek Ryan, Josh Hughes, Janalee Stokken, Jeff Janus, Dan Price, Micheal J Link; Mayo Clinic Rochester, MN

**Discussion – 5 minutes**

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**Proffered Paper 5 Continued (4:05 pm – 4:35 pm)**

**068: LIFE QUALITY AFTER VESTIBULAR SCHWANNOMA SURGERY: IMPORTANCE OF FACIAL NERVE FUNCTION?** - Cordula Matthes, Prof, MD, PhD1, Robert Nickl, MD1, Jennifer Friedrich1, Goetz Gelbrich2, Maria Hummel, MD1, Rudolf Hagen, Prof, MD, PhD1, Ralf-Ingo Ernestus, Prof, MD, PhD1; 1Department of Neurosurgery, Julius-Maximilians University Hospital, Wuerzburg, Germany, 2Institute of Epidemiology and Biometrics, Julius-Maximilians University Wuerzburg, Germany, 3Department of Otorhinolaryngology, Julius-Maximilians University Hospital Wuerzburg, Germany

**069: COMPARATIVE COST ANALYSIS OF ENDOSCOPIC VERSUS MICROSCOPIC TRANSSPHENOIDAL SURGERY FOR PITUITARY ADENOMAS** - Chikezie I Eseonu, MD, Karim ReFaey, MD, Oscar Garcia, MPH, Alfredo Quinones-Hinojosa, MD; Johns Hopkins University

**Discussion – 5 minutes**
Scientific Program

**070: THE IMPACT OF TRANSSPHENOIDAL SURGERY ON NEUROCOGNITIVE FUNCTION: A SYSTEMATIC REVIEW** - Adnan Alsumali, MSc, David J Cote, BSc, Quentin R Regestein, MD, Erin Crocker, Abdalaziz Alzarea, BSPharm, Hasan A Zaidi, Wenya Linda Bi, MD, PhD, Hassan Y Dawood, BSc, Marike L Broekman, MD, PhD, JD, Martine J.E. van Zandvoort, PhD, Rania A Mekary, Timothy R Smith; 1MCPHS University, Boston, USA, 2Cushing Neurosurgery Outcomes Center, Brigham and Women's Hospital Department of Neurosurgery, Harvard Medical School, Boston, USA, 3Department of Psychiatry, Brigham and Women's Hospital, 1249 Boylston St., Boston, MA 02215, 4Department of Neurosurgery, University Medical Centre, Utrecht, The Netherlands

Discussion – 5 minutes

**071: QUALITY OF LIFE CHANGES FOLLOWING CONCURRENT SEPTOPLASTY AND/OR INFERIOR TURBINOPLASTY DURING ENDOCOPIC PITUITARY SURGERY** - Daniel Lee, Maria Peris-Celda, MD, PhD, Anna Butrymowicz, MD, Tyler Kenning, MD, Carlos Pinheiro-Neto; 1Albany Medical College, 2Department of Neurosurgery, Albany Medical Center, Albany, New York., 3Division of Otolaryngology / Head and Neck Surgery, Department of Surgery, Albany Medical Center, Albany, New York.

Discussion – 5 minutes

**072: SINO-NASAL QUALITY OF LIFE BEFORE AND AFTER ENDOCOPIC TRANSSPHENOIDAL SKULL-BASE SURGERY** - Vincent Wu, BHSc, Michael D Cusimano, MD, PhD, FRCS, DABNS, FACS, MHPE, John M Lee, MD, FRCS, MSc; 1School of Medicine, Queen's University, Kingston, Ontario, Canada, 2Department of Neurosurgery, University of Toronto, Toronto, Ontario, Canada, 3Department of Otolaryngology - Head and Neck Surgery, University of Toronto, Toronto, Ontario, Canada

Discussion – 5 minutes

**073: QUALITY OF LIFE AFTER ENDOCOPIC TRANSSPHENOIDAL PITUITARY SURGERY: RHINOLOGICAL OUTCOME EVALUATION** - Jens Conrad, MD, Jasmin Rezapour, Marco Blaese, Tilman Huppertz, Sven Becker, Ali Ayad; 1Department of Neurosurgery, 2Department of ENT

Discussion – 5 minutes

**074: LONG-TERM FACIAL NERVE OUTCOMES FOLLOWING MICROSURGICAL RESECTION OF VESTIBULAR SCHWANNOMAS IN PATIENTS WITH PRE-OPERATIVE FACIAL NERVE PALSY** - Michael A Mooney, MD, Christina Sarris, MD, Benjamin Hendricks, MD, Randall Porter, MD, Robert F Spetzler, MD, Kaith Almefty, MD; Barrow Neurological Institute

Discussion – 5 minutes

**075: DETERMINANTS OF QUALITY OF LIFE IMPROVEMENT AFTER PITUITARY SURGERY IN PATIENTS WITH ACROMEGALY** - Mostafa Fatehi, MD, MSc, Camille Hunt, BSc, Ryojo Akagami, MD; Vancouver General Hospital

Discussion – 5 minutes

**5:10 pm – 5:55 pm**

**CONSTRUCTIVE CRITICISM VIDEOS SESSION**

**CONSTRUCTIVE CRITICISM VIDEOS 1: Endoscopic Endonasal Approaches** - Crescent City Ballroom

MODERATORS: Lori Lemonnier, MD & John Jane, MD

SPEAKERS: Marvin Bergsneider, MD, Roy Casiano, MD, Amir Dehdashti, MD, Paul Gardner, MD, James Liu, MD & Eduardo Vellutini, MD

- Introduction – Lori Lemonnier, MD
- Dissection of Pituitary Adenoma Capsule – Eduardo Vellutini, MD
- EEA for Giant Pituitary Adenoma with Intraventricular Extension – Marvin Bergsneider, MD
- EEA for Craniopharyngioma – Amir Dehdashti, MD
- Giant Invasive Pituitary Adenoma – Paul Gardner, MD
- Anterior Skull Base Resection with Periorbita Resection – James Liu, MD
- Transorbital Endoscopic Repair of Bilateral Intracranial Frontal Mucoceles – Roy Casiano, MD

Constructive Criticism 1 utilizes video case presentations that employ endoscopic endonasal approaches in the treatment of complex skull base lesions. The speakers will critique the presentations and provide expert opinion on preferred methods of surgical management.

At the conclusion of this session, participants will be able to:

1. Appraise the role of the endoscopic endonasal approach to resection of sella lesions with suprasellar extension.
2. Evaluate the application of the endoscopic endonasal approach in anterior skull base resection.
3. Compare the endoscopic endonasal and transorbital approaches in the treatment of frontal sinus mucocele.
CONSTRUCTIVE CRITICISM VIDEOS 2: Lateral Skull Base  
MODERATORS: Ramachandra Tummala, MD & Michael Gleeson, MD  
SPEAKERS: Siviero Agazzi, MD, MBA, Simon Angeli, MD, Steven Giannotta, MD, Jens Lehmberg, MD, Michael Link, MD, Jacques Morcos, MD, FRCS, FAANS & March Schwartz, MD  

- Session Introduction – Ramachandra Tummala, MD  
- Left Medium Vestibular Schwannoma – March Schwartz, MD  
- Cystic Vestibular Schwannoma – Michael Link, MD  
- Middle Cranial Fossa Superior Semicircular Canal – Simon Angeli, MD  
- Extended Middle Cranial Fossa – Siviero Agazzi, MD, MBA  
- Intractable Neuralgic Ear Pain – Jens Lehmberg, MD  
- Resection of Jugular Foramen Tumor with Postauricular Transjugular Transsigmoid Approach – Steven Giannotta, MD  
- Resection of Extensive Chondrosarcoma – Jacques Morcos, MD, FRCS, FAANS  

In this session, several videos of operations involving the lateral skull base will be shown. The speakers in this session will offer their insights and constructive criticism regarding the surgical approach and techniques.  
At the conclusion of this session, participants will be able to:  
1. Develop a systematic method to review operative videos.  
2. Identify key steps in an operative video on which to focus.  
3. Compare various techniques of lateral skull base surgery after reviewing selective videos.

CONSTRUCTIVE CRITICISM VIDEOS 3: Potpourri  
MODERATORS: Dennis Kraus, MD & Rokua Tanikawa, MD  
SPEAKERS: Ossama Al-Mefty, MD, Takanori Fukushima, MD, Bharat Guthikonda, MD, Mitesh Shah, MD, Jeffrey Sorenson, MD & Charles Teo, MD  

- Introduction – Dennis Kraus, MD & Rokua Tanikawa, MD  
- Staged Resection of Large Petrocival Meningioma – Ossama Al-Mefty, MD  
- Median Suboccipital Subtonsillar Approach to the Lateral Brainstem – Mitesh Shah, MD  
- Resection of Superior Vervian Mass – Jeffrey Sorenson, MD  
- Microsurgical Treatment of Giant Trigeminal Schwannoma – Takanori Fukushima, MD  
- Combined Petrosal Approach for Resection of Giant Clival Chondroma – Bharat Guthikonda, MD  
- Giant Invasive Pituitary Adenoma – Charles Teo, MD  
- Discussion – All

The presentations will focus on videos as created by invited, master surgeons focusing on complex surgical skull base cases. The procedures will be critiqued by the moderators and other panelist in terms of indications for surgical management and the efficiency of the procedures displayed.  
At the conclusion of this session, participants will be able to:  
1. Convey the challenging aspect of decision making process for a number of complex skull base procedures.  
2. Choose the appropriate surgical approach for a number of complex skull base procedures.  
3. Distinguish the surgical technique which distinguishes the master skull base surgeon.

PROFFERED PAPERS 6 (Rapid Fire): Best of Learning Curve, Training, Multidisciplinary Work and More (5:10 pm – 5:55 pm)  
MODERATORS: Francisco Civantos, MD & Tiit Mathiesen, MD, PhD  
(5:10 pm – 5:25 pm)  
076: THE LEARNING CURVE IN ENDOSCOPIC ENDONASAL RESECTION OF CRANIOPHARYNGIOMAS - Varun R Kshettry, MD\textsuperscript{1}, Hyunwoo Do, MD\textsuperscript{2}, Khaled Elshazy, MD\textsuperscript{2}, Christopher Farrell, MD\textsuperscript{2}, Gurston Nyquist, MD\textsuperscript{2}, Marc Rosen, MD\textsuperscript{2}, James J Evans, MD\textsuperscript{2}; \textsuperscript{1}Cleveland Clinic, \textsuperscript{2}Thomas Jefferson University
077: QUANTIFICATION AND COMPARISON OF NEUROSURGICAL APPROACHES IN THE ANATOMY LABORATORY: DESCRIPTION AND VALIDATION OF A NOVEL, NAVIGATION-BASED METHOD - Francesco Doglietto, MD, PhD¹, Jimmy Qiu, BASc, MASc², Mayoorenda Ravichandiran, MD, BSc³, Ivan Radovanovic, MD, PhD⁴, Francesco Belotti, MD¹, Anne Agur, BScOT, MSc, PhD³, Gelareh Zadeh, MD, PhD⁴, Marco M Fontanella, MD¹, Walter Kucharczyk, MD, FRCPc², Fred Gentili, MD, MSc, FRCSc²; ¹Unit of Neurosurgery, Department of Medical and Surgical Specialties, Radiological Sciences and Public Health, University of Brescia, Brescia, Italy, ²Division of Neuroradiology, Toronto General Hospital - UHN, Toronto, Canada, ³Division of Anatomy, University of Toronto, Toronto, Canada, ⁴Division of Neurosurgery, Toronto Western Hospital - UHN, Toronto, Canada

078: 12-YEAR RETROSPECTIVE ANALYSIS OF 2,993 CONSECUTIVE SKULL BASE CASES - Perry T Mansfield, MD, FRCSC, Hannah G Goldman, Natalya Sarkisova, BSc; Senta Clinic

079: TRENDS IN PERIOPERATIVE MANAGEMENT OF ENDOSCOPIC SKULL BASE SURGERY PATIENTS - Brian C Lobo, MD², Brian D’Anza, MD¹, Pablo F Recinos, MD², Varun R Kshettry, MD², Carl H Snyderman, MD¹, Troy D Woodard, MD², Raj Sindwani, MD²; ¹Case Western Reserve University, ²Cleveland Clinic Foundation, ³University of Pittsburgh Medical Center

Discussion – 5 minutes

Proffered Paper 6 Continued (5:25 pm – 5:40 pm)

080: ENDOSCOPE IMAGE CAPTURE SYSTEM WITH MIRROLESS CAMERA - Wei Li¹, Arnau Benet², Ivan El-Sayed³; ¹Otolaryngology Dept, First Affiliated Hospital of China Medical University, ²Otolaryngology Minimally Invasive Skull Base Center, Otolaryngology Head and Neck Surgery, University California San Francisco

081: A SKULL BASE COURSE PARTICIPANTS’ EXPERIENCE WITH ENDOSCOPIC ENDONASAL CAROTID ARTERY INJURIES - Nicholas R Rowan, MD, Meghan T Turner, MD, Eric W Wang, MD, Juan Fernandez-Miranda, MD, Paul A Gardner, MD, Carl H Snyderman, MD, MBA; University of Pittsburgh Medical Center

082: THE VESTIBULAR SCHWANNOMA SURGERY LEARNING CURVE: MODERN SERIES OF A YOUNG NEUROSURGEON - Jens Lehmberg, Ehab Shibani, Bernhard Meyer; Neurosurgery Department, Technical University of Munich

Discussion – 5 minutes

Proffered Paper 6 Continued (5:40 pm – 5:55 pm)

083: MULTIDISCIPLINARY CRISIS MANAGEMENT OF CAVERNOUS CAROTID INJURY: THE VALUE OF DEBRIEF AND INDEPENDENT OBSERVATION - Brandon Lucke-Wold, PhD¹, Haley E Gillham, MS², Mark Baskerville, MD, JD, MBA³, William Cameron, PhD², Dawn Dillman, MD², L. Michele Noles, MD², Donn Spight, MD², Jeremy N Ciporen, MD²; ¹West Virginia University, ²Oregon Health & Science University

084: HIGH VOLUME MULTIDISCIPLINARY SURGICAL TEAM EXPERIENCE: REDUCED OPERATIVE TIMES AND BETTER PATIENT OUTCOMES. - Christian Eisert, MD¹, Tymon Tai², Laurel M Fisher, PhD², Steven L Giannotta, MD³, Rick A Friedman, MD, PhD³; ¹Keck USC Caruso Department of Otolaryngology - Head and Neck Surgery, ²Keck USC School of Medicine, ³Keck USC Department of Neurosurgery

085: ENDOSCOPIC SKULL BASE SURGEONS. PROFILE OF A NEW SUBSPECIALTY - Joao Paulo Almeida, MD¹, Sacit B Omay, MD¹, Armando Ruiz-Treviño, MD¹, Sathwik Shetty, MD¹, Yu-Ning Chen, MD¹, Buqing Liang, MD¹, Vijay Anand, MD², Theodore H Schwartz, MD¹; ¹Department of Neurological Surgery, Weill Cornell Medical College, New York Presbyterian Hospital, New York, New York, ²Department of Otolaryngology and, New York Presbyterian Hospital, New York, NY, USA

Discussion – 5 minutes

6:00 pm – 7:30 pm  Welcome Reception and Poster Viewing in Exhibit Hall  Roosevelt Ballroom

7:30 pm – 10:00 pm  Past Presidents’ Dinner (Invitation Only)
Scientific Program

SATURDAY, MARCH 4, 2017

6:30 am – 6:30 pm  | Registration  | Roosevelt Foyer
7:30 am – 8:35 am  | MAIN TOPIC SESSIONS (Breakfast 7:00 am – 7:30 am)  | Breakfast will be served outside all breakout rooms.

MAIN TOPIC 5: Benign Cavernous Sinus Tumors: Can We Agree on Management?  | Crescent City Ballroom
MODERATOR: A. Samy Youssef, MD, PhD
SPEAKERS: Ossama Al-Mefty, MD, Steve Howard, MD, Daniel Prevedello, MD & Harry Van Loveren, MD

- Cavernous Sinus Meningiomas: What I Learned Over the Years – Harry Van Loveren, MD
- Non-Meningiomatous Cavernous Sinus Tumors: What is the Ideal Management? – Ossama Al-Mefty, MD
- The Role of Endoscopy in the Management of Benign Cavernous Sinus Tumors – Daniel Prevedello, MD
- Radiotherapy for Benign Cavernous Sinus Tumors: The Paradigm Shift – Steve Howard, MD

An expert group of panelists will discuss the most up to date management strategies for benign cavernous sinus tumors in light of advances in surgery, endoscopy and radiotherapy.

At the conclusion of this session, participants will be able to:
1. Identify the practice gap in managing benign cavernous sinus tumors.
2. Outcome analysis and comparison of the different management strategies.
3. Recommend a tailored treatment model for the different subgroups of pathologies.

MAIN TOPIC 6: Challenging Tumors of the Jugular Foramen  | Orpheum Room
MODERATOR: Amir Dehdashti, MD
SPEAKERS: Phil Bird, MD, PhD, Nagy Elsayyad, MD, Ana Kim, MD & Jon Robertson, MD

- Jugular Foramen Anatomy and Implication in Complication Avoidance during Surgery – Jon Robertson, MD
- Jugular Foramen Tumours - How Aggressive Should We Be? – Phil Bird, MD, PhD
- Challenging Tumors of the Jugular Foramen from Radiation Oncology Perspective: It is Vain to Do with More What Can Be Done with Fewer – Nagy Elsayyad, MD
- Jugular Foramen Tumors - Treatment Dilemmas – Ana Kim, MD
- Management of Complex Jugular Foramen Tumors- Panel Debate – Amir Dehdashti, MD

This session presents a multidisciplinary approach to tumors of the jugular foramen. Starting from an ENT perspective, to neurosurgical techniques evaluating surgical anatomy and complication avoidance, and the role of radiation in these tumors. The session is useful for neurosurgeons, neuro-otologists, radiation oncologists and health practitioners interested in posterior fossa surgery.

At the conclusion of this session, participants will be able to:
1. To learn the surgical anatomy and surgical techniques to foramen jugular tumors.
2. To understand the multidisciplinary approach to these lesions.
3. To optimize surgical outcome by considering less aggressive surgery in selected patients and adjunct treatment.

MAIN TOPIC 7: Petroclival Meningiomas: Philosophy, Techniques and Results  | Chamber II
MODERATOR: Anil Nanda, MD
SPEAKERS: Mustafa K. Baskaya, MD, Takanori Fukushima, MD, Pierre Hughes Roche, MD & Mark McDonald, MD

- Introduction – Anil Nanda, MD
- Technical Points in Resection of Petroclival Meningiomas – Takanori Fukushima, MD
- Role of Microsurgical Neuroanatomy in Selection of Approach to Complex Petroclival Meningiomas: Video Demonstration – Mustafa K. Baskaya, MD
- Long-Term Follow-Up, Complications and Functional Outcome after Microsurgery for Petroclival Meningiomas – Pierre Hughes Roche, MD
- Role of Radiosurgery and Chemotherapy in Treatment of Petroclival Meningiomas – Mark McDonald, MD
This session will address the varied philosophies, techniques, and results surrounding the surgical management of petroclival meningiomas. Residents, fellows, and interested medical students should attend.

At the conclusion of this session, participants will be able to:
1. Articulate the philosophical reasoning for different surgical approaches to petroclival meningiomas.
2. Identify the various surgical approaches to petroclival meningiomas.
3. Assess methods for avoiding and managing intraoperative complications of petroclival meningiomas.

**MAIN TOPIC 8: Skull Base Reconstruction Techniques**

**Chamber III**

**MODERATOR:** Ricardo Carrau, MD

**SPEAKERS:** Roy Casiano, MD, Elie Rebeiz, MD, Joseph Roche, MD & Theodore Schwartz, MD

- **Introduction – Ricardo Carrau, MD**
- **Free Tissue Grafting for the Reconstruction of Anterior Skull Base Defects – Roy Casiano, MD**
- **Middle Turbinate Flap for Coverage of Anterior Skull Base Defects – Elie Rebeiz, MD**
- **Gasket Seal and the Use of Lumbars Drains – Theodore Schwartz, MD**
- **Rotational Flaps and Free Tissue Transfers for Lateral Skull Base Defects – Joseph Roche, MD**
- **Interactive Discussion and Conclusions – Ricardo Carrau, MD**

The session will discuss the indications, advantages and disadvantages of various techniques used for the reconstruction of the skull base. This session is of interest to all skull base surgeons.

At the conclusion of this session, participants will be able to:
1. Discriminate between different reconstructive techniques.
2. Identify the advantages and caveats of various reconstructive techniques.
3. Employ appropriate adjunctive techniques.

**EXPERT DEBATE SESSIONS**

**EXPERT DEBATE 5: How to Become and Train Great Skull Base Surgeons:**

**Crescent City Ballroom**

**An International Panel**

**MODERATORS:** Jacques Morcos, MD, FRCS, FAANS, Shaan Raza, MD & Erin McKeen, BS, MD, MBA

**SPEAKERS:** Johnny Delashaw, MD, FAANS, Michael Gleeson, MD, PhD, Andre Grotenhuis, MD, PhD, Patrick Gullane, MD, CM, OOnt, MB, FRCS, FACS, Hon FRCS, Hon FRCSI, Ricardo Ramina, MD, PhD, Jatin Shah, MD, Carl Snyderman, MD, MBA & Atsunobu Tsunoda, MD

The session will allow a frank discussion among experts and leaders in the field to voice their opinions as to what are the ingredients that make up a well trained skull base surgeon, and how to ensure a legacy of master surgeons.

At the conclusion of this session, participants will be able to:
1. Articulate the ingredients that are felt to be essential to the formation of a great skull base surgeon.
2. Prioritize the goals that are felt by the experts to be most important in training residents.
3. Compare the profile of several great skull base surgeons and understand what the commonalities are.

**EXPERT DEBATE 6: Pituitary Adenomas: The Right Approach, Endocrine Considerations and Recurrent Tumors**

**Orpheum Room**

**MODERATORS:** Andrew Little, MD, Manish Aghi, MD, PhD & Gelareh Zadeh, MD, PhD, FRCS

**SPEAKERS:** Ayal Aizer, MD, Jeremiah Alt, MD, PhD, Mario Ammirati, MD, MBA, Michael Ivan, MD, Engelbert Knosp, MD, Jose Landeiro, MD, Wenyin Shi, MD, PhD & Brian Thorp, MD

In this session, pituitary surgery experts will debate key management principles in pituitary tumor patients. The panel will cover case presentations illustrating surgical approaches, endocrine concerns, and recurrent tumors. This session is appropriate for residents, neurosurgeons, radiation oncologists, endocrinologists, and other pituitary team members.
At the conclusion of this session, participants will be able to:
1. Identify surgical approaches for treating pituitary tumors.
2. Plan the correct diagnostic tests for postoperative hormone management.
3. Recommend the treatment options available for recurrent pituitary tumors.

**EXPERT DEBATE 7: Craniopharyngiomas: Changing Roles of Surgery, Radiation and Novel Medical Treatments**

**Chamber II**

**MODERATORS:** Daniel Prevedello, MD, Marvin Bergsneider, MD & John Jane, MD, PhD, FACS, FRCS

**SPEAKERS:** Apio Antunes, MD, MSc, PhD, Samuel Barnett, MD, Priscilla Brastianos, MD, PhD, Christopher Farrell, MD, Tyler Kenning, MD, Robert Malyapa, MD, PhD, Kenji Ohata, MD, PhD & Jeff Wisoff, MD

In this section the current treatment for craniopharyngiomas will be discussed. Moderators will present three to five craniopharyngioma cases illustrating particularly controversial issues promoting discussion among the panelists. The roster of panelists will discourse of each controversial and/or complicated case, with discussion directed by the moderators. The cases discussed will focus on the current available treatment options including surgery, with multiple possible approaches, radiation modalities, and novel medical treatments, including the possibility of BHAF inhibitors etc.

Input from the audience will be encouraged.

At the conclusion of this session, participants will be able to:
1. Point out new treatment for craniopharyngiomas.
2. Address the limitation of surgical treatment for craniopharyngiomas.
3. The importance of radiation and novel medical treatment on the management of craniopharyngiomas.

**EXPERT DEBATE 8: Complex Head and Neck Malignancies: Controversies in Management**

**Chamber III**

**MODERATORS:** Zoukaa Sargi, MD, MPH, Ehab Hanna, MD & Allan Vescan, MD

**SPEAKERS:** Donald Annino, MD, DMD, Francisco Civantos, MD, Mark DeLacure, MD, Daniel Nuss, MD, Jack Phan, MD, PhD, Christopher Rassekh, MD, Vicente Resto, MD, PhD & Aaron Wieland, MD

This session highlights controversies in management of head and neck malignancies with skull base involvement addressing surgical challenges, resectability and the role of non surgical modalities in the treatment of advanced disease. Discussion will be centered around case presentations covering different malignancies. Surgeons, radiologists, medical oncologists, radiation oncologists and other providers treating patients with skull base malignancies should attend.

At the conclusion of this session, participants will be able to:
1. Compare surgical resectability criteria between different types of malignancies involving the skull base.
2. Evaluate the role of non surgical treatments in the definitive management of selected malignancies with skull base involvement.
3. Recognize perineural invasion as significant challenge and a common reason for treatment failure in malignancies involving the skull base.

9:30 am – 10:00 am  **Morning Break in Exhibit Hall**

10:00 am – 10:30 am  **HONORED GUEST: What the Skull Base has Taught Me**

**INTRODUCTION:** Jacques Morcos, MD, FRCS, FAANS

**HONORED GUEST:** Alan Crockard, MB, BCh, DSc, FRCS, FRCP, FDSRCS

10:30 am – 11:20 am  **KEYNOTE SPEAKER: Resilient Leadership: Prepare Today to Prevail Tomorrow**

**INTRODUCTION:** Jacques Morcos, MD, FRCS, FAANS

**HONORED GUEST:** Lt. General Russel L. Honoré
11:20 am – 12:05 pm  **THE LIPTON INTERVIEW: A Glimpse into the Mind and Legacy of the Wise**  
*Crescent City Ballroom*  
**MODERATORS:** Jacques Morcos, MD, FRCS, FAANS  
**SPEAKERS:** Alan Crockard, MB, BCh, DSc, FRCS, FRCP, FDSRCS, Fred Gentili, MD, MSc, FRCSC, FACS, Roberto Heros, MD, FACS, Lt. General Russel L. Honoré, John Leonetti, MD, Daniel Nuss, MD, FACS & Jatin Shah, MD  

The panel is made up of the three Honored Guests of the Meeting, three Past Presidents of the NASBS, and the Keynote Speaker, Lieutenant General Russel Honoré. The Moderator will interview the panel in the famous format of the Lipton Interview style, probing the panelists with questions about personal leadership style, character traits, role modeling, lessons learned and advice to the younger generation.  

At the conclusion of this session, participants will be able to:  
1. Articulate the common traits of leaders and educators in skull base surgery and on the military battle field.  
2. Distinguish between winning and losing strategies in education and leadership.  
3. Employ effective techniques to better their approach to team building and problem solving.

12:05 pm – 1:00 pm  **Business Lunch for Members**  
*Waldorf Astoria Ballroom*  
**Lunch in Exhibit Hall/Book Signing**  
*Roosevelt Ballroom*  

1:00 pm – 2:00 pm  **PECHA KUCHA SESSIONS/MASTER VIDEO SESSIONS**  
*Crescent City Ballroom*  
**PECHA KUCHA 5: Sinonasal Malignancies**  
**MODERATORS:** Anand Devaiah, MD & Corinna Levine, MD, MPH  
**SPEAKERS:** Ralph Abi Hachem, MD, David Beahm, MD, Bryan Bienvenu, MD, David Clump, MD, PhD, John de Almeida, MD, MSc, FRCSC, Zeina Korban, MD, Derrick Lin, MD & Shirley Su, MD  

- Introduction – *Anand Devaiah, MD*  
- Role of Surgery – *David Beahm, MD*  
- Overview of Sinonasal Malignancies – *John de Almeida, MD, MSc, FRCSC*  
- ‘Open’ Anterior Craniofacial Resection – *Derrick Lin, MD*  
- Endoscopic Endonasal Approach – *Zeina Korban, MD*  
- Reconstruction – *Ralph Abi Hachem, MD*  
- Radiation Therapy – *David Clump, MD, PhD*  
- Chemotherapy – *Bryan Bienvenu, MD*  
- Treatment of Recurrent Sinonasal Malignancy – *Shirley Su, MD*  
- Case Presentation, Panel Discussion, Conclusion, Questions – *Corinna Levine, MD, MPH*  
- Case Presentation, Panel Discussion, Conclusion, Questions – *Anand Devaiah, MD*  

This session will employ the rapid-fire Pecha Kucha format to discuss key points in the diagnosis, management, and care of patients with sinonasal malignancy. We will integrate the overarching goals of the 2017 NASBS Annual Meeting in discussing surgical considerations, technical considerations, organ preservation, innovations in open surgery and endoscopic approaches, reconstruction, radiation therapy, chemotherapeutics, biological agents, and management of recurrent disease.  

At the conclusion of this session, participants will be able to:  
1. Convey innovative approaches in the diagnosis, treatment, and post-treatment management of sinonasal malignancies.  
2. Compare differences important in the diagnosis, treatment, and post-treatment for sinonasal malignancy.  
3. Synthesize any necessary changes in their current approach towards plans of care for sinonasal malignancies.
MASTER VIDEO 5: Temporal Bone Drilling: From Simple to Complex  
**Orpheum Room**
MODERATORS: Marcos Tatagiba, MD, PhD & George Wanna, MD  
SPEAKERS: Simon Angeli, MD, Samuel Gubbels, MD, John Leonetti, MD, Rahul Mehta, MD, FRCS & Fred Telischi, MD, FACS, MEE  
- Basic Mastoidectomy Techniques – Rahul Mehta, MD, FRCS  
- Temporal Bone Resection – John Leonetti, MD  
- Simple and Extended Middle Fossa Exposures – Samuel Gubbels, MD  
- Infracochlear Approaches – Fred Telischi, MD, FACS, MEE  
- Posterior Petrosal Exposures – Simon Angeli, MD  

The session will go over surgical video cases done by master surgeon. The video will be narrated, surgical steps, nuances and pitfalls will be discussed. Participants will have the chance to ask questions and discussed the cases.

At the conclusion of this session, participants will be able to:
1. Recognize the key anatomical structures during temporal bone drilling.  
2. Evaluate the potential risks and complications when performing temporal bone drilling.  
3. Develop safe surgical steps for complex approaches to the skull base.

PECHA KUCHA 6: Orbital Tumors  
**Chamber II**
MODERATORS: Khalid Aziz, MD, PhD & Tonya Stefko, MD  
SPEAKERS: Richard Allen, MD, PhD, James Chelnis, MD, Bita Esmaeli, MD, FACS, Howard Krauss, MD, Christian Matula, MD, PhD, Kris Moe, MD, FACS, Ronny Rotondo, MD & Jenny Yu, MD  
- Evaluation of Orbital Tumors – Bita Esmaeli, MD, FACS  
- Radiology of Orbital Tumors – James Chelnis, MD  
- Anterior Orbital Approaches – Jenny Yu, MD  
- Lateral Orbitotomy – Richard Allen, MD, PhD  
- Endoscopic Endonasal Approach for Orbital Tumors – Christian Matula, MD, PhD  
- Craniotomy for Orbital Tumors – Howard Krauss, MD  
- TONES – Kris Moe, MD, FACS  
- Role of Radiation – Ronny Rotondo, MD  

This Pecha Kucha session will present, in a very succinct manner, an overview of the evaluation and management of orbital tumors. Surgeons of all disciplines should attend.

At the conclusion of this session, participants will be able to:
1. Prioritize the treatment objectives of orbital masses.  
2. Plan appropriate multidisciplinary care for the patient with orbital disease.  
3. Organize appropriate workup of a patient who presents to any specialty with a mass of the orbit.

MASTER VIDEO 6: Reconstruction Techniques for Skull Base Defects: From Tiny to Huge  
**Chamber III**
MODERATORS: Ken Kazahaya, MD, MBA, FACS & James Liu, MD  
SPEAKERS: Peter Neligan, MD, Samuel Poore, MD, PhD, Elie Rebeiz, MD, Raj Sindwani, MD, FACS, FRCSC & Atsunobu Tsunoda, MD  
- Overview of Skull Base Defects and Principles of Repair – Atsunobu Tsunoda, MD  
- Use of Free Flaps to Repair Cranial Defects – Peter Neligan, MD  
- Maxillofacial Reconstruction – Samuel Poore, MD, PhD  
- Nasoseptal Flaps for Midline Skull Base Defects – Elie Rebeiz, MD  
- Reconstructive Options for Expanded/Lateral Endonasal Approaches – Raj Sindwani, MD, FACS, FRCSC  

In this video session, the presenters will show various techniques for reconstruction of skull base defects. Topics to be covered include classifying skull base defects and principles of repair. Use of free flaps for the repair of cranial defects, maxillofacial reconstruction, nasoseptal flap reconstruction for midline skull base defects, and reconstructive options for expanded/lateral endonasal approaches.
Scientific Program

At the conclusion of this session, participants will be able to:
1. Better ability to categorize skull base defects.
2. Better understanding of principles of repair of skull base defects and the application of these principles.
3. Demonstrate a variety of skull base reconstructive techniques.

2:05 pm – 3:05 pm  PECHA KUCHA SESSIONS/MASTER VIDEO SESSIONS

PECHA KUCHA 7: Anterior Skull Base Meningiomas  
Crescent City Ballroom
MODERATORS: Amy Anstead, MD & Carlos David, MD
SPEAKERS: Azam Ahmed, MD, Luis Carlos Alencastro, MD, Pablo Aljer, MD, Lola Chambless, MD, Askin Seker, MD, Kris Smith, MD, Marc Tewfik, MDCM, MSc, FRCS & Ramachandra Tummala, MD
- Classification – Askin Seker, MD
- Open vs. Endoscopic Approaches – Luis Carlos Alencastro, MD
- Subfrontal Approach for Olfactory Groove Meningioma – Ramachandra Tummala, MD
- EEA for Olfactory Groove Meningioma – Marc Tewfik, MDCM, MSc, FRCS
- Craniotomy for Tuberculum Sella Meningioma – Pablo Aljer, MD
- EEA for Tuberculum Sella Meningiomas – Azam Ahmed, MD
- Compare Eyebrow, Eyelid and Pterional Approaches for ASB Meningiomas – Lola Chambless, MD
- Role of Radiosurgery – Kris Smith, MD

This session will cover Anterior Skull Base Meningiomas and their classification, indications for open vs. endoscopic approach, multiple approach techniques and their comparison as well as the role of radiosurgery in their treatment. All practitioners who participate in the care of these complex cases should attend to add their insight.

At the conclusion of this session, participants will be able to:
1. Classify anterior skull base meningiomas.
2. Be knowledgeable about different approaches to anterior skull base meningiomas.
3. Know when radiation treatment is appropriate to use in ant skull base meningiomas.

MASTER VIDEO 7: Expanded Endonasal Approaches  
Orpheum Room
MODERATORS: Kenichi Oyama, MD, PhD & Daniel Kelly, MD
SPEAKERS: Ricardo Carrau, MD, Ivan El-Sayed, MD, Paul Gardner, MD, Jose Landeiro, MD & Darlene Lubbe, MD
- Introduction – Kenichi Oyama, MD, PhD
- Accessing the Cavernous Sinus – Jose Landeiro, MD
- Accessing the Orbit – Darlene Lubbe, MD
- Transpterygoid Approaches – Ivan El-Sayed, MD
- Accessing the Anterior Skull Base – Paul Gardner, MD
- Transclival Approaches – Ricardo Carrau, MD
- Conclusion – Daniel Kelly, MD

Video presentations by world famous experts in this field. This session covers entire endonasal skull base procedures, i.e. the coronal plane- and sagittal plane modules. Everybody should attend.

At the conclusion of this session, participants will be able to:
1. Demonstrate the wide range of applications of the expanded endonasal approach.
2. Convey the various pathologies that can be treated.
3. Articulate the limitations of each variant.
PECHA KUCHA 8: Reconstructive Techniques: Know Your Toolbox!  
MODERATORS: Erin McKean, BS, MD, MBA & Emiro Caicedo-Granados, MD  
SPEAKERS: Albert Attia, MD, Roy Casiano, MD, Gustavo Nogueira, MD, Carlos Pinheiro-Neto, MD, PhD, Samuel Poore, MD, PhD, C. Arturo Solares, MD, Donald Weed, MD, FACS & Adam Zanation, MD

- Nonvascularized Reconstruction – Roy Casiano, MD
- Anatomy of Flaps – Carlos Pinheiro-Neto, MD, PhD
- Local Flaps for Craniotomy – Samuel Poore, MD, PhD
- Free Flap Following Craniotomy – Donald Weed, MD, FACS
- Question and Answer – Erin McKean, BS, MD, MBA
- Local Flaps for EEA – Gustavo Nogueira, MD
- Scalp Flaps for EEA – Adam Zanation, MD
- Free Flap Following EEA – C. Arturo Solares, MD
- Impact of Radiation on Reconstruction – Albert Attia, MD
- Question and Answer – Emiro Caicedo-Granados, MD

The session will discuss reconstructive techniques in cranial base surgery, from nonvascularized free grafts through the reconstructive ladder to free tissue reconstruction. Patient and treatment factors impacting reconstruction will also be discussed.

At the conclusion of this session, participants will be able to:
1. Apply learning to reconstructions in future operations.
2. Recognize factors that impact reconstructive failures and successes.
3. Demonstrate an understanding of the reconstructive ladder.

MASTER VIDEO 8: Intraoperative Complications: From Nuisances to Disasters  
MODERATORS: Rony Aouad, MD & Sebastian Koga, MD 
SPEAKERS: Kenan Arnautovic, MD, PhD, Michael Chicoine, MD, Nikolai Hopf, MD, PhD, Madison Michael, MD, FAANS, FACS & Anil Nanda, MD

- Introduction – Rony Aouad, MD
- Intraoperative Complications of the Retrosigmoid Approach – Madison Michael, MD, FAANS, FACS
- The Paramedian Infratentorial Supracerebellar Keyhole Approach (PISKA) to Lesions of the Pineal Region – Nikolai Hopf, MD, PhD
- Microsurgical Resection of Brain Stem Hemangioblastoma – Kenan Arnautovic, MD, PhD
- Skull Base Meningiomas: Trials and Tribulations – Anil Nanda, MD
- Management of Vascular Injuries During Parasellar Approaches from Both the Endonasal Endoscopic and Transcranial Approaches – Michael Chicoine, MD
- Discussion and Question and Answer – Sebastian Koga, MD

This session consists of expert surgeons presenting short videos of different cases and approaches in skull base surgery with emphasis on discussing tips and tricks necessary for the prevention and management of intraoperative complications, such as vascular injuries.

At the conclusion of this session, participants will be able to:
1. Describe and manage potential intraoperative complications of the retrosigmoid approach
2. Manage vascular injuries during parasellar approaches from both the endonasal endoscopic and transcranial approaches.
**Scientific Program**

**PROFERRED PAPER SESSIONS**

**PROFERRED PAPERS 7: Best of Basic Science and Biology (3:35 pm - 5:05 pm)*** Crescent City Ballroom

(3:35 pm - 4:05 pm)

**086:** FIBRIN/THROMBIN PATCHES AND GLUES IN A PRE-CLINICAL MODEL OF ENDOSCOPIC SKULL BASE HAEMORRHAGE - Alistair Jukes, MD,1; Jae Murphy, MD,2; Sathish Psivan, MD,2; Stephen Santoreneo, MD,1; Alkis Psaltis, MD, PhD,1; Pj Worwmal, MD,2, 1Royal Adelaide Hospital, 2Queen Elizabeth Hospital

**087:** PLATELET ACTIVATION BY CRUSHED AND UNCRUSHED MUSCLE PATCH: FLOW CYTOMETRY ANALYSIS - Alistair Jukes, MD,1; Dijana Milijkovic, PhD,2; Alkis Psaltis, MD, PhD,2; Sarah Verugde, PhD,2; Pj Worwmal, MD,2, 1Royal Adelaide Hospital, 2Queen Elizabeth Hospital

**088:** GENE EXPRESSION SIGNATURE IN SINONASAL UNDIFFERENTIATED CARCINOMA - Yoko Takahashi, PhD,1; Diana Bell, MD,1; Frederico O Netto, DDS, MSc, PhD,1; Dong Xi Xie, MD, PhD,2; Dianna Roberts, PhD,1; Curtis Pickering, PhD,1; Jeffrey N Myers, MD, PhD,1; Ehab Y Hanna, MD,1; The University of Texas MD Anderson Cancer Center

**089:** APPLICATIONS OF DYNAMIC CT ANGIOGRAPHY - Saksham Gupta, BA1; Wenya L Bi, MD, PhD,1; Srinivasan Mukundan, MD, PhD,2; Oussama Al-Mefty,1; Ian F Dunn, MD,1; 1Department of Neurosurgery, Brigham and Women's Hospital, 2Department of Radiology, Brigham and Women's Hospital

**Discussion – 5 minutes**

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**Proffered Paper 7 Continued (4:05 pm - 4:35 pm)**

**090:** MACROPHAGE DENSITY PREDICTS FACIAL NERVE OUTCOME AND TUMOR GROWTH AFTER SUBTOTAL RESECTION OF VESTIBULAR SCHWANNOMA - Christopher S Graffeo, MD1, Avital Perry, MD,1; Aditya Raghunathan, MD1; Mark E Jentoft, MD1; Colin L Driscoll, MD1; Brian A Neff, MD1; Matthew L Carlson, MD1; Jeffrey T Jacob, MD2; Michael J Link, MD1; Jamie J Van Gompel, MD1, 1Mayo Clinic, 2Michigan Head & Spine Institute

**091:** MUTATION STATUS IN SINONASAL MUCOSAL MELANOMA - Moran Amit, MD, PhD,1; Samantha Tam, Yoko Takahashi, Diana Bell, Diana Roberts, Ehab Y Hanna, MD; The University of Texas MD Anderson Cancer Center

**092:** NATURAL HISTORY OF SPEECH AND SWALLOWING FUNCTION IN NEUROFIBROMATOSIS 2 INCLUDES HYPOGLOSSAL DYSFUNCTION - Sibi Rajendran, BS1; Beth Solomon, MS, CCSLP2; H Jeffrey Kim, MD1; Tianxia Wu, PhD2; Gretchen Scott, BSN, RN3; Sarah Benzo, BSN, RN3; Christina Hayes, CRNP3; John D Heiss, MD,4; Prashant Chittiboina, MD5; 1University of Kentucky College of Medicine, 2Speech and Pathology Service, National Institutes of Health Clinical Center, 3National Institute on Deafness and Communication Disorders, 4Office of Biostatistics, National Institute of Neurological Diseases and Stroke, 5Surgical Neurology Branch, National Institute of Neurological Diseases and Stroke

**093:** DO CRANIOPHYARYNGIOMA MOLECULAR SIGNATURES CORRELATE WITH CLINICAL CHARACTERISTICS? - Sacit Bulent Omay1; Yu-Ning Chen1; Joao Paulo Almeida1; Armando Saul Ruiz-Treviño1; John A Boockvar1; Philip E Stieg1; Jeffrey P Greenfield1; Mark M Souweidane1; Ashutosh Kacker2; David J Pisapia2; Vijay K Anand2; Theodore H Schwartz2; 1Department of Neurosurgery, Weill Cornell Medical College, New York Presbyterian hospital, New York, NY, 2Department of Otolaryngology, Weill Cornell Medical College, New York Presbyterian hospital, New York, NY, 3Department of Radiology, Weill Cornell Medical College, New York Presbyterian hospital, New York, NY, 4Department of Neurosurgery, Otolaryngology and Neuroscience, Weill Cornell Medical College, New York Presbyterian Hospital, New York, NY

**Discussion – 5 minutes**

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**Proffered Paper 7 Continued (4:35 pm - 5:05 pm)**

**094:** ATYPICAL PITUITARY ADENOMA: A CLINICOPATHOLOGIC CASE SERIES - Martin Rutkowski, MD, Ryan Alward, Rebecca Chen, Jeffrey Wagner, Arman Jahangiri, Derek Southwell, MD, Sandeep Kunwar, MD, Lewis Blewins, MD, Han Lee, MD, Manish Aghi, MD, PhD; University of California, San Francisco, Department of Neurological Surgery

**095:** PITUITARY DYSFUNCTION AFTER RADIATION FOR ANTERIOR SKULL BASE MALIGNANCIES: INCIDENCE AND SCREENING - Kyle K VanKoevering, MD1; Katayoon Sabetsarvestani2; Stephen Sullivan, MD1; Ariel Barkan, MD1; Erin L Mckean, MD1; 1University of Michigan, 2Michigan State University

**096:** GENETIC AND EPIGENETIC ALTERATIONS BETWEEN PITUITARY ADENOMA AND PITUITARY CARCINOMA - Garni Barkhoudarian, Xiaowen A Wang, Matthew Salomon, Diego Marzese, Wei H Hua, Daniel F Kelly, David Hoon; John Wayne Cancer Institute
097: GENOMIC LANDSCAPE OF HIGH-GRADE MENINGIOMAS - Wenya Linda Bi, MD, PhD, Noah Greenwald, Malak Abedalthagafi, MD, Peleg Horowitz, MD, PhD, Pankaj Agarwalla, MD, Will J Gibson, PhD, Ossama Al-Mefty, MD, Sandro Santagata, MD, PhD, Rameen Beroukhim, MD, PhD, Ian F Dunn; 1Brigham and Women's Hospital, 2The University of Chicago, 3Massachusetts General Hospital, 4Harvard Medical School, 5Dana Farber Cancer Institute Discussion – 5 minutes

PROFFERED PAPERS 8: Best of Meningiomas II (3:35 pm – 5:05 pm) Orpheum Room
MODERATORS: Anand Devaiah, MD & Michael McDermott, MD
(3:35 pm – 4:05 pm)

107: ENDOSCOPIC ENDONASAL VERSUS TRANSCRANIAL APPROACH TO TUBERCULUM SELLA AND PLANUM MENINGIOMAS IN A SIMILAR COHORT OF PATIENTS - Evan D Bander, MD, Hariminder Singh, MD, Colin B Ogilvie, BA, Ryan C Cusic, MD, David J Pisapia, MD, Apostolos John Tsiouris, MD, Vijay K Anand, Theodore H Schwartz; 1New York Presbyterian - Neurological Surgery, 2Stanford University School of Medicine, 3Weill Cornell Medical College

098: ANTERIOR MIDLINE SKULL BASE MENINGIOMAS: INTERHEMISPHERIC APPROACH VS THE DIFFERENT CLASSICAL SURGICAL APPROACHES. CLINICAL OUTCOMES - Juan Carlos Roa Montes De Oca, MD, Nathalie Zaidman, Michael Bruneau, MD, PhD, Olivier DeWitte; 1Complejo Asistencial Universitario de Salamanca, 2Hospital Erasme Bruxelles.

099: HOW TO APPROACH THE ANTERIOR MIDLINE MAGNUM FORAMEN MENINGIOMAS? MANAGEMENT OF VERTEBRAL AND BASILAR ARTERIES AS WELL AS THE BULBAR NERVES. - Paulo H Pires de Aguiar, PhD, Giovanna Matricardi, BA, Iracema Estevão, BA, Fabio Nakasone, MD, Tatiana A Vlás Boas, MD, Daniel A Gripp, MD, Marcos Perocco, MD, Marcos V Maldaun, PhD, Bruno Camporeze; 1Santa Paula and Oswaldo Cruz Hospital, Sao Paulo Brazil, 2Pontifical catholic University of Sao Paulo, 3Bragança Medical School, Sao Francisco University

100: TUBERCULUM SELLAR MENINGIOMA: IS THERE AN IDEAL APPROACH? - Paulo H Pires de Aguiar, PhD, Pedro da Silva Junior, MD, Iracema Estevão, BA, Giovanna Matricardi, BA, Daniel A Gripp, MD, Natally M Santiago, MD, Bruno Camporeze; 1Santa Paula Hospital and Oswaldo Cruz Hospital, Sao Paulo Brazil, 2Bragança Paulista Medical School, Sao Francisco University, Sao Paulo, Brazil, 3Pontifical catholic University of Sorocaba, Sao paulo, Brazil Discussion – 5 minutes

Proffered Paper 8 Continued (4:05 pm – 4:35 pm)

101: OLFATORY GROOVE MENINGIOMA RECURRENCE AFTER ENDONASAL ENDOSCOPIC SURGERY: CASE REPORT AND UPDATED LITERATURE REVIEW - Sathwik R Shetty, MD, Armando S Ruis-trevino, MD, Sacit B Omay, MD, Joao P Almeida, MD, Buqing Liang, MD, Yu-ning Chen, MD, Theodore H Schwartz, MD; Weil Cornell Medical College

103: SURGICAL TREATMENT OF TENTORIAL MENINGIOMAS: AN OUTCOME ANALYSIS - Devi P Patra, MD, MCH, MRCS, Shylamal C Bir, MD, PHD, FAHA, Tanmoy K Maiti, MD, MCH, Subhash Konar, MD, MCH, Christina Notarianni, MD, Bharat Guthikonda, MD, Anil Nanda, MD, MPH, FACS; Louisiana State University Health Sciences Center, Shreveport, LA, USA

104: ENDONASAL ENDOSCOPIC BONY DECOMPRESSION, LIMITED TUMOR REMOVAL AND STEREOTACTIC RADIATION THERAPY IN INVASIVE PARASELLAR MENINGIOMAS TO IMPROVE CRANIAL NEUROPATHY AND ENDOCRINOPATHY - Walavan Sivakumar, BJorn Lobo, MD, Xin Zhang, MD, Fan Zhao, MD, Eisenberg Amy, MSN, Santosh Kesari, MD, PhD; Robert Wollman, MD, Lisa Chaiken, MD, Pejman Cohan, MD, Chester Griffiths, MD, Garni Barkhoudarian, MD, Daniel Kelly, MD; 1University of Utah, 2Pacific Neurosciences Institute

105: RESIDUAL AND RECURRENT DISEASE AFTER ENDOSCOPIC ENDONASAL APPROACH TO MIDLINE ANTERIOR SKULL BASE MENINGIOMAS - Pradeep Setty, DO, Georgios Zenonos, MD, Mathew Geltzeiler, MD, Andrea Hebert, MD, Eric W Wang, MD, Carl H Snyderman, MD, Juan C Fernandez-Miranda, MD, Paul A Gardner, MD; University of Pittsburgh Discussion – 5 minutes

Proffered Paper 8 Continued (4:35 pm – 5:05 pm)

106: LARGER MENINGIOMA SIZE AT PRESENTATION IS ASSOCIATED WITH HIGHER TUMOR GRADE - Stephen T Magill, MD, PhD, Ricky Chae, Manish K Aghi, MD, PhD, Philip V Theodosopoulos, MD, Michael W McDermott, MD; University of California, San Francisco

108: RADIATION INDUCED MENINGIOMA: A SINGLE INSTITUTION'S EXPERIENCE AND LITERATURE REVIEW - Owais Ahmad, MD, Philip Tatham, Bsc, Joshua Osbun, MD, Manuel Ferreira, MD, PhD; University of Washington
109: RADIOPHASIC PREDICTION OF MENINGIOMA GRADE AND GENOMIC PROFILE - Wenyia Bi, MD, PhD1, Thibaud Corroller2, Noah F Greenwald1, Elizabeth Huynh3, Malak Abedalthagafi, MD1, Ayal Aizer, MD1, Sandro Santagata, MD, PhD1, Ossama Al-Mefty, MD1, Brian Alexander, MD1, Ian F Dunn, MD1, Raymond Huang, MD, PhD1, Hugo Aerts, PhD2; 1Brigham and Women’s Hospital, 2Dana Farber Cancer Institute, 3Harvard Medical School

Discussion – 5 minutes

PROFFERED PAPERS 9: Best of Sinonasal and Skull Base Malignancies (3:35 pm – 5:05 pm) Chamber II

MODERATORS: Stella Lee, MD & Donald Weed, MD, FACS

(3:35 pm – 4:05 pm)

110: CHEMORADIATION IN LOCALLY ADVANCED MAXILLARY SINUS SQUAMOUS CELL CARCINOMA: A RETROSPECTIVE STUDY AND REVIEW OF LITERATURE - Ameya A Asarkar, MD, Juraj Berkovic, MD, Federico Ampil, MD, Glenn Mills, MD, Cherie Ann Nathan, MD; LSU Health Sciences Center – Shreveport

111: INCIDENCE OF CERVICAL LYMPH NODE METASTASIS AND ITS ASSOCIATION WITH OUTCOMES IN PATIENTS WITH SINONASAL MUCOSAL MELANOMA - Moran Amit, Samantha Tam, Shirley Y Su, Michael E Kupferman, Diana Roberts, Ehab Hanna; MD Anderson Cancer Center

112: THE ROLE OF ADJUVANT TREATMENT IN SINONASAL MUCOSAL MELANOMA - Moran Amit, Samantha Tam, Shaan M Raza, Franco DeMonte, Shirley Y Su, Michael E Kupferman, Diana Roberts, Ehab Hanna; MD Anderson Cancer Center

113: ADJUVANT INTENSITY-MODULATED RADIOTHERAPY (IMRT) FOR SINONASAL MUCOSAL MELANOMA: A SINGLE-INSTITUTION RETROSPECTIVE EXPERIENCE - Stephanie M Yoon, BS1, Kevin Nead, MD2, Alexander Lin, MD2, John N Lukens, MD2, Robert A Lustig, MD2, James N Palmer, MD3, Nithin D Adappa, MD3, Michelle Alonso-Basanta, MD, PhD2; 1Temple University Lewis Katz School of Medicine, 2Department of Radiation Oncology, University of Pennsylvania, 3Department of Otorhinolaryngology, University of Pennsylvania

Discussion – 5 minutes

Proffered Paper 9 Continued (4:05 pm – 4:35 pm)

114: DELAYING POST-OPERATIVE RADIATION IN LOW GRADE ESTHESIONEUROBLASTOMA: IS IT WORTH THE WAIT? - Vijay Agarwal, MD, Joshua D Hughes, MD, Robert Foote, MD, Eric Moore, MD, Janalee Stokken, MD, Jeffrey Janus, MD, Michael J Link, MD, Jamie J Van Gompel, MD; Mayo Clinic

115: SKULL BASED SURGERY AND INTENSITY MODULATED PROTON THERAPY (IMPT) ACHIEVE EXCELLENT CANCER CONTROL RATES FOR COMPLEX TUMORS - Steven Frank, MD, Adam Garden, Rong Ye, Shirley Su, Merrill Kies, David Rosenthal, Michael Kupferman, Pierre Blanchard, Jack Phan, David Fuller, Brandon Gunn, Quynh-Nhu Nguyen, Ehab Hanna; MDACC

116: SURVIVAL OUTCOMES OF INFRATEMPORAL FOSSA TUMORS: SINGLE INSTITUTION EXPERIENCE - C. Arturo Solares1, Sherif Shaaban2, J.Kenneth Byrd3, Michael Groves; 1Emory University, 2Augusta University

117: THE ROLE OF 18FDG PET/CT IN ROUTINE SURVEILLANCE FOLLOWING TREATMENT OF SINONASAL NEOPLASMS - Alan D Workman, Arjun K Parasher, MD, Jordan T Glicksman, MD, Steven G Brooks, MPH, David W Kennedy, MD, James N Palmer, MD, Nithin D Adappa, MD; University of Pennsylvania

Discussion – 5 minutes

Proffered Paper 9 Continued (4:35 pm – 5:05 pm)

118: WOUND AND RADIATION COMPLICATIONS IN CRANIOFACIAL RESECTION OF SINONASAL TUMORS - Marcus Gates, Joshua Hughes, Michael J Link; Mayo Clinic

119: UNINTENDED CONSEQUENCES OF PROTON BEAM RADIATION FOR SINONASAL MALIGNANCIES - Re Arffa2, Dc Lanza, MD2, G Call, MD1, L Tarrats, MDID2, A Solyar, MD2, N Caballero, MD2, J Justice2; 1St Anthony’s Hospital, 2Sinus & Nasal Institute of Florida

120: RISK FACTORS IN SHORT TERM MORTALITY IN SINONASAL SQUAMOUS CELL CARCINOMA: A REVIEW OF THE NATIONAL CANCER DATABASE - Carol Yan, Arjun Parasher, Jason Brant, Jordan Glicksman, James Palmer, Steven Cannady, Jason Newman, Nithin Adappa; University of Pennsylvania

121: ETHNIC AND SOCIOECONOMIC DISPARITIES IN SINONASAL MALIGNANCY: AN ANALYSIS OF READMISSION RATES AND MORTALITY - Arjun K Parasher, MD1, Alan Workman1, Jason Brant, MD1, Jordan Glicksman, MD1, Alfred M Iloreta, MD1, Satish Govindaraj, MD2, Steven Cannady, MD1, Jason Newman, MD1, David W Kennedy, MD1, Bert O’Malley, MD1, James N Palmer, MD1, Nithin D Adappa, MD1; 1University of Pennsylvania, 2Icahn School of Medicine at Mount Sinai

Discussion – 5 minutes
PROFFERED PAPERS 10: Best of Large Series, Clinical Trials and Metaanalyses (3:35 pm – 5:05 pm)  Chamber III

MODERATORS: David Beahm, MD & Andrew Little, MD

(3:35 pm – 4:05 pm)
122: RANDOMIZED, DOUBLE-BLINDED, PLACEBO-CONTROLLED TRIAL COMPARING TWO MULTIMODAL OPIOID-MINIMIZING PAIN MANAGEMENT REGIMENS FOLLOWING TRANSSPHENOIDAL SURGERY - Andrew Little, MD; Barrow Neurological Institute

123: HYPOPHYSITIS: PRESENTING CHARACTERISTICS AND OUTCOMES OF 146 PATIENTS - Bryan Iorgulescu, MD, Saksham Gupta, Hasan Zaidi, MD, Edward R. Laws, MD, Timothy Smith, MD, PhD; Brigham and Women's Hospital

124: SOCIOECONOMIC FACTORS AFFECTING DISCHARGE STATUS OF PATIENTS UNDERGOING TRANSSPHENOIDAL ADENOHYPOPHYSECTOMY (TSA) - Chelsea S Hamill, MD, Kevin J Sykes, PhD, Jennifer A Villwock, MD, Roukoz B Chamoun, MD, David D Beahm, MD; University of Kansas Medical Center

125: HEADACHE RESOLUTION AFTER RATHKE CLEFT CYST RESECTION: A SYSTEMATIC REVIEW AND META-ANALYSIS - Njoud Altuwaijri, PharmD, Nayan Lamba, BSc, Walaa Albenayan, PharmD, Michael Acosta, Hassan Y Dawood, BSc; 1MCPHS University, Boston, USA, 2Cushing Neurosurgery Outcomes Center, Brigham and Women's Hospital Department of Neurosurgery, Harvard Medical School, Boston, USA

Discussion – 5 minutes

Proffered Paper 10 Continued (4:05 pm – 4:35 pm)
126: EFFICACY OF TRANSSPHENOIDAL SURGERY IN ACHIEVING BIOCHEMICAL CURE OF GROWTH HORMONE-SECRETING PITUITARY ADENOMAS AMONG PATIENTS WITH CAVERNOUS SINUS INVASION: A SYSTEMATIC REVIEW AND META-ANALYSIS - Vanessa Briceno, MSc, Hasan A Zaidi, MD, Joanne A Doucette, MS, MSLIS, Kaho B Onomichi, MSc, Amer Aleshidi, MSc, Rania A Mekary, MSc, PhD, Timothy R Smith; 1MCPHS University, Boston, USA, 2Cushing Neurosurgery Outcomes Center, Brigham and Women's Hospital Department of Neurosurgery, Harvard Medical School, Boston, USA

127: SURGICAL MANAGEMENT OF INTRACRANIAL EPIDERMOID TUMORS. LESSONS LEARNED FROM 334 CASES OVER 3 DECADES - Goh Inoue, MD, Mary Cobb, MD, Peter Grossi, MD, Allan H Friedman, MD, Takanori Fukushima, MD; Duke University Department of Neurosurgery

128: OUTCOME OF THE MICROSURGICAL TREATMENT OF 221 PARACLINOID ANEURYSMS - Ali Krisht, Svetlana Pravdenkova, MD; Arkansas Neuroscience Institute

129: ENDONASAL TRANSSPHENOIDAL RESECTION OF NONFUNCTIONING PITUITARY ADENOMAS: A RETROSPECTIVE SINGLE CENTER SERIES OF 411 PATIENTS - Brett Goodfriend, BA, Daniel Kramer, MD, Daniel Donoho, MD, Joshua Bakhsheshian, MD, Daniel F Kelly, MD, Michael Lin-Brande, BS, John D Carmichael, MD, Martin H Weiss, MD, Gabriel Zada, MD; USC Keck School of Medicine

Discussion – 5 minutes

Proffered Paper 10 Continued (4:35 pm – 5:05 pm)
130: PREVENTION AND TREATMENT OF CSF-LEAK IN ENDONASAL SKULL BASE SURGERY. - Bakhtiyar Pashaev, MD, Dmitry Bochkarev, MD, Valery Danilov, MD, Vladimir Krasnozhen, MD, Andrey Alekseev, MD, Gulnar Vagapjva; 1Kazan Medical State University, 2Interregional Clinical Diagnostic Center, 3Kazan Medical State Academy

131: AN ALGORITHM FOR THE USE OF THE FREE TISSUE GRAFT AS A RECONSTRUCTIVE TECHNIQUE IN THE ENDOSCOPIC ENDONASAL APPROACH FOR PITUITARY TUMORS - Andrea M Hebert, MD, MPH, Mathew Getzeller, MD, Pradeep Setty, MD, Georgios Zenonos, MD, Juan C Fernandez-Miranda, MD, Paul A Gardner, MD, Carl H Snyderman, MD, Eric W Wang, MD; University of Pittsburgh Medical Center

132: A SYSTEMATIC REVIEW OF CLOSURE TECHNIQUES IN LATERAL SKULL BASE SURGERY - Alexander Malone, Michael Randall, BS, Kestutis P Boyev, MD; University of South Florida Department of Otolaryngology - Head & Neck Surgery

133: AN ALGORITHM FOR SELlar RECONSTRUCTION FOLLOWING TRANSNASAL TRANSSPHENOIDAL SURGERY: A REVIEW OF 300 CONSECUTIVE CASES - Edward C Kuan, MD, Frederick Yoo, MD, Pratik B Patel, MD, Brooke M Su, MD, Marvin Bergsneider, MD, Marilene B Wang, MD; UCLA

Discussion – 5 minutes
### Scientific Program

**Proffered Papers 11 (Rapid Fire): Best of Surgical Techniques and Innovation** *(3:35 pm – 5:55 pm) Chamber I*

**MODERATORS:** Nagy Elsayyad, MD, Howard Krauss, MD, Deanna Sasaki-Adams, MD & Raj Sindwani, MD

**(3:35 pm – 4:10 pm)**

**134: RETROSIGMOID SUPRAJUGULAR APPROACH FOR JUGULAR FORAMEN TUMORS WITH INTRAFORAMINAL INVASION: SURGICAL SERIES OF 14 CASES** - Ken Matsushima¹, Michihiro Kohno¹, Shigeo Sora, MD²; ¹Tokyo Medical University, ²Tokyo Metropolitan Police Hospital

**135: THE OMENTUM FREE TISSUE TRANSFER: A COMPPELLING OPTION FOR CRANIOFACIAL & CRANIAL BASE RECONSTRUCTION** - Peter Costantino, MD¹, David Shamouelian, MD¹, Tristan Tham, MD¹, Robert Andrews, MD², Dec Wojciech, MD²; ¹New York Head & Neck Institute, ²Lenox Hill Hospital

**136: THE CLINICAL UTILITY OF OCULAR COHERENCE TOMOGRAPHY IN EVALUATION AND MANAGEMENT OF SKULL BASE DISORDERS** - Howard R Krauss, MD, SM¹, Daniel F Kelly, MD, Garni Barkhoudarian, MD, Santosh Kesari, MD, PhD, Chester F Griffiths, MD, FACS, Elizabeth Flores, COA; Pacific Neuroscience Institute (PNI)

**137: MINIMALLY INVASIVE EXPOSURE OF THE INFRATEMPORAL MAXILLARY ARTERY FOR EXTRACRANIAL-INTRACRANIAL BYPASS** - Roberto Rodriguez Rubio, MD¹, Halima Tabani, MD, Michael T Lawton, MD, Olivia Kola, Sonia Yousef, Ivan El-Sayed, MD, Arnau Benet, MD; UCSF

**138: USE OF A TENTORIAL SLING FOR MICRAVASCULAR DECOMPRESSION OF THE TRIGEMINAL NERVE IN PATIENTS WITH TRIGEMINAL NEURALGIA: A NOVEL OPERATIVE TECHNIQUE AND REPORT OF CLINICAL OUTCOMES** - Jeffrey A Steinberg, MD¹, Jayson Sack, MD², Bayard Wilson¹, Bob Carter, MD, PhD³, John Alksne¹; ¹University of California at San Diego, ²University of South Florida

**140: SURGICAL PLANNING OF TEMPORAL BONE SKULL BASE DEFECTS USING 3-D PATIENT SPECIFIC MODELS** - Angela L Zhang¹, Carleton Eduardo Corrales, MD², Jayender Jagadeesan, PhD²; ¹Cornell University, ²Brigham and Women's Hospital

*Discussion – 13 minutes*

**Proffered Paper 11 Continued (4:10 pm – 4:45 pm)**

**141: HEARING PRESERVATION DURING ANTERIOR PETROSECTOMY: THE “COCHLEAR SAFETY LINE”** - Halima Tabani, MD, Xiaoming Guo, MD, Dylan Griswold, Sonia Yousef, MD, Ali Tayebi Meybodi, MD, Jose Juan Gonzalez Sanchez, MD, Michael T Lawton, MD, Arnau Benet, MD; UCSF

**142: THE FUTURE OF INTRA-OPERATIVE NEUROMONITORING IN SKULL BASE SURGERY: INTRAOPERATIVE FLASH VISUAL EVOKED POTENTIALS A NOVEL TECHNIQUE AIMING TO REDUCE THE RISK OF INTRAOPERATIVE VISUAL PATHWAY INJURY** - Fahad Alkherayf, Idara Edem, David Houlden, Chantal Turgeon, Shaun Kilty, Charles Agbi, Andre Lamothe; University of Ottawa

**162: SSEM (SSEP) AND TCEMEP NEUROMONITORING IN NEUROSURGERY: TECHNOLOGICAL ADVANCEMENT WITH NAVIGATION** - Ernesto Lima, MD¹, Srikant S Chakravarthi, MD, MSc², Bernard A Cohen, PhD¹, Amin B Kassam, MD²; ¹Neurological Monitoring Associates, LLC and St. Luke's Medical Center, ²Aurora Neuroscience Innovation Institute

**144: EVALUATION OF INTRANASAL FLAP PERFUSION BY INTRAOPERATIVE ICG FLUORESCENCE ANGIOGRAPHY** - Mathew Geltzeiler, Ana Carolina Igami Nakassa, MD, Pradeep Setty, MD, George Zenonos, MD, Anrea Hebert, MD, Eric Wang, MD, Juan Fernandez-Miranda, Carl Snyderman, MD, Paul Gardner, MD; University of Pittsburgh Medical Center

**145: INTRAOPERATIVE NEAR-INFRARED VISUALIZATION OF SKULL BASE TUMORS USING ENDOCOSPIC TECHNIQUES** - John Y Lee, MD, John T Pierce, MS, Ryan Zeh, BA, Steven Cho, BS, Sunil Singhal, MD; University of Pennsylvania

**147: NEAR INFRARED FOLATE-TARGETED, INTRAOPERATIVE VISUALIZATION OF PITUITARY ADENOMA** - John Lee, MD, MSCE. Steve Cho, BS, Ryan Zeh, BA, John Pierce, MS, Maria Martinez-Lage, MD, Kim O Learned, MD, Sunil Singhal, MD, Philip Low, PhD, Caitlin White, MD, Julia Kharlip, MD, Peter Snyder, MD, Jason G Newman, MD, Nithin Adappa, MD, James Palmer, MD, M S Grady, MD; University of Pennsylvania

**153: USEFULLNESS OF INDOCYANINE GREEN FLUORESCENCE ENDOOSCOPY FOR INTRAOPERATIVE DIFFERENTIATION OF INTRACRANIAL TUMORS AND ADJACENT STRUCTURES** - Ana Carolina Igami Nakassa, MD, Eric W Wang, MD, Juan C Fernandez-Miranda, MD, Carl H Snyderman, MD, Paul A Gardner; University of Pittsburgh Medical School

*Discussion – 13 minutes*
Proffered Paper 11 Continued (4:45 pm – 5:20 pm)

149: ENDOSCOPIC SUPRA-ETHMOIDAL APPROACH FOR ANTERIOR CRANIAL BASE RESECTION: TAILORING THE APPROACH FOR MAXIMUM EXPOSURE WITH PRESERVATION OF NASAL STRUCTURES. - Maria Peris-Celda, MD, PhD1, Tyler Kenning, MD1, Carlos Pinheiro-Neto, MD, PhD2; 1Department of Neurosurgery, Albany Medical Center, Albany, New York., 2Division of Otolaryngology / Head and Neck Surgery, Department of Surgery, Albany Medical Center, Albany, New York.

150: TAILORED MIDLIME SUPRA-ORBITAL CRANIOTOMY FOR ANTERIOR SKULL BASE TUMORS: ANATOMIC DESCRIPTION OF A NEW SURGICAL TECHNIQUE AND CASE SERIES - Michael M Safaee, MD, Michael W McDermott, MD, Arnau Benet, MD, Philip V Theodosopoulos, MD; University of California, San Francisco

151: MINIMALLY INVASIVE APPROACHES TO THE LATERAL Cavernous Sinus and Meckel’s Cave: Comparison of Transorbital and Subtemporal Endoscopic Techniques. - Lucas R Lima, MD, Diego Servian, MD, Joel S Beckett, MD, Carlito Lagman, MD, Brad Otto, MD, Ricardo Carrau, MD, Daniel Prevedello, MD; Ohio State University

152: A METHOD OF LOCATING THE DEHISCENCE DURING MIDDLE FOSSA APPROACH FOR SUPERIOR SEMICIRCULAR CANAL DEHISCENCE SURGERY - Lawrance K Chung, BS, Joel S Beckett, MD, Carlito Lagman, MD, Seung J Lee, BS, Timothy T Bui, BS, Thien Nguyen, BS, Brittany L Voth, MPH, Bilwaj Gaonkar, PhD, Quinton Gopen, MD, Isaac Yang, MD; University of California, Los Angeles

146: ATLAS BASED ANATOMICAL REGION SEGMENTATION FOR MINIMALLY INVASIVE SKULL BASE SURGERY OBJECTIVE MOTION ANALYSIS - Yangming Li, Richard A Harbison, Randall A Bly, Ian M Humphreys, Blake Hannafor, Kris Moe; University of Washington

154: IS THE CHIASM - PITUITARY CORRIDOR IMPORTANT FOR ACHIEVING GROSS TOTAL RESECTION IN CRANIOPHARYNGIOMAS? - Sacit Bulent Omay, MD1, João Paulo Almeida, MD1, Yu-Ning Chen, MD1, Sathwik R Shetty, MD1, Buqing Liang, MD1, Shilei Ni, MD1, Vijay K Anand, MD2, Theodore H Schwartz2; 1Department of Neurological Surgery, Weill Cornell Medical College, New York Presbyterian Hospital, New York, New York., 2Department of Otolaryngology, Weill Cornell Medical College, New York Presbyterian Hospital, New York, New York, 3Department of Neurological Surgery, Otolaryngology, Neuroscience, Weill Cornell Medical College, New York Presbyterian Hospital, New York, NY

155: A NOVEL MINIMALLY INVASIVE APPROACH TO THE MIDDLE CRANIAL FOSSA: SURGICAL TECHNIQUE AND CLINICAL OUTCOMES - Ruwan Kiringoda, MD, Osama M Tarabichi, MD, Elliott D Kozin, MD, Daniel J Lee, MD; Massachusetts Eye and Ear Infirmary

Discussion – 13 minutes

Proffered Paper 11 Continued (5:20 pm – 5:55 pm)

156: THE NOVEL USE OF 3D RECONSTRUCTION AND IMMERSIVE NEURONAVIGATION FOR RESECTION OF SKULL BASE LESIONS IN ENDOSCOPIC ENDONASAL SKULL BASE SURGERY - Alfred Illoreta, MD, Katelyn Stepan, MD, Josh Ziegler, Anthony Costa, MD, Joshua Bederson, MD, Raj Shrivastava, MD; Icahn School of Medicine at Mount Sinai

157: PERIORBITAL SUSPENSION FOR ENDOASO ENDOSCOPIC ACCESS TO THE LATERAL PORTION OF THE FRONTAL ANTERIOR SKULL BASE - Cem Meco, MD, FEBORLHNS, Professor, Chairman1, Suha Beton, MD, FEBORLHNS, Assistant Professor2, Hazan Granados-Garcia, MD, FEBORLHNS3, Sathwik R Shetty, MD1, Buqing Liang, MD1, Shilei Ni, MD1, Vijay K Anand, MD2, Theodore H Schwartz2; 1Department of Neurological Surgery, Weill Cornell Medical College, New York Presbyterian Hospital, New York, New York, 2Department of Otolaryngology, Weill Cornell Medical College, New York Presbyterian Hospital, New York, New York, 3Department of Neurological Surgery, Otolaryngology, Neuroscience, Weill Cornell Medical College, New York Presbyterian Hospital, New York, NY

159: MULTIORTAL COMBINED TRANSORBITAL AND ENDOSCOPIC ENDONASAL APPROACH TO MIDDLE CRANIAL FOSSA: SURGICAL ANATOMY AND TECHNIQUE - Halima Tabani, MD, Xin Zhang, MD, PhD, Michael T Lawton, MD, Sonia Yousef, Olivia Kola, Ivan El-Sayed, MD, Arnau Benet, MD; UCSF

160: A CADEACER STUDY TO EVALUATE THE REACHES OF FAR LATERAL AND EXPANDED ENDONASAL ENDOASO APPROACHES TO THE BRAINSTEM. DOES A COMBINED APPROACH RESULT IN BETTER VISUALIZATION VERSUS EITHER APPROACH ALONE? - Edward Yap, MD, Adeolu Olasunkami, MD, Michael Cools, MD, Martin Piazza, MD, Randaline Barnett, MD, Brian Thorp, MD, Deanna Sasaki-Adams; UNC

161: ENDOASO TECHNIQUE FOR THE RESECTION AND REPAIR OF MALIGNANT SINONASAL TUMORS INVOLVING BOTH THE ANTERIOR SKULL BASE AND THE PERIORBITA. - Corinna G Levine, MD, MPH, Roy Casiano, MD, FACS; University of Miami
Scientific Program

**SPECIAL SESSION 1: Building a Community: Women in Skull Base Surgery**

**Crescent City Ballroom**

**MODERATOR:** Tonya Stefko, MD

**SPEAKERS:** Lola Chambless, MD, Soha Ghossaini, MD, Devyani Lal, MD, Erin McKean, BS, MD, MBA & Gelareh Zadeh, MD, PhD, FRCS

- **Teamwork** – Erin McKean, BS, MD, MBA
- **Mentorship** – Devyani Lal, MD
- **Research** – Gelareh Zadeh, MD, PhD, FRCS
- **Networking** – Soha Ghossaini, MD
- **Pregnancy, Parenthood, and the Skull Base Surgeon** – Lola Chambless, MD
- **Open Discussion with Audience and Speakers** – Tonya Stefko, MD

This session will address some of the issues faced by any junior skull base surgeon. The topics include some specific to women who are pregnant or have children, but are relevant to all senior faculty mentors and to all less senior surgeons. This is broadly aimed toward anyone who 1.) seeks to bring along junior partners in our field, 2.) seeks to improve his or her understanding of the issues pertaining to themselves or their workers who are women and surgeons.

At the conclusion of this session, participants will be able to:

1. Recognize the challenges faced by each of us, no matter our gender, as we move from junior to more senior in our groups.
2. Prepare our more junior partners, regardless of gender, for productive and rewarding careers in our field.
3. Choose to support frank discussion in the workplace of how we are able to be prepared for the unexpected demands of our workplace and our outside interests.

**SPECIAL SESSION 2: Advances in Skull Base Imaging: Techniques, Applications, Differential Diagnoses and Surgical Relevance**

**Orpheum Room**

**MODERATORS:** Ketan Bulsara, MD & Hugh Curtin, MD

**SPEAKERS:** Martin Aichholzer, MD, Rita Bhatia, MD, Ann Jay, MD, Edward Kassel, DDS, MD, FRCPC, FACR, Claudia Kirsch, MD & Eugene Yu, MD

- **Advances in MRI: Pearls and Pitfalls of 1.5 vs. 3 Tesla and New Sequences** – Claudia Kirsch, MD
- **PET/MRI, Dual Energy and Cone Beam CT** – Hugh Curtin, MD
- **Angiography of Skull Base Lesions- Concepts and Advances Specific Regions** – Ketan Bulsara, MD
- **Navigating the Skull Base - Imaging Pearls and Pitfalls** – Ann Jay, MD
- **Vascularisation of Skull Base Tumors and Their Impact on Anterolateral Approaches to the Skull Base** – Martin Aichholzer, MD
- **Imaging of Petrous Apex and Jugular Fossa** – Rita Bhatia, MD
- **Central Skull Base: Normal Anatomy and Congenital Variants** – Edward Kassel, DDS, MD, FRCPC, FACR
- **Things Not to Miss in the Central Skull Base** – Eugene Yu, MD

Special Session on advances in Skull Base Imaging, utilizing new techniques, applications and the differential diagnosis of pathology that may occur in this complex region and the surgical relevance.

At the conclusion of this session, participants will be able to:

1. Assess the advantages and disadvantages of 1.5 Tesla versus 3.0 Tesla MRI.
2. Compare the advantages of using either 1.5 Tesla versus 3.0 Tesla MRI in imaging the skull base.
3. Demonstrate new techniques and sequences for MRI imaging of the skull base.
SPECIAL SESSION 3: Benign Intracranial Hypertension: Etiopathology, Imaging, Differential Diagnosis and Management  
MODERATORS: Vikram Prabhu, MD & Siviero Agazzi, MD, MBA  
SPEAKERS: Linda Bi, MD, PhD, James Garrritty, MD, Matthew Kay, MD, Steven Newman, MD, Deanna Sasaki-Adams, MD & Charif Sidani, MD

- Clinical Presentation – Linda Bi, MD, PhD
- Etiology and Pathogenesis – Deanna Sasaki-Adams, MD
- Review of Imaging Findings for Benign Intracranial Hypertension – Charif Sidani, MD
- Neuro-Ophthalmological Findings – Matthew Kay, MD
- Medical Management – Steven Newman, MD
- Surgical Management: Shunting Techniques – Vikram Prabhu, MD
- Surgical Management: Optic Nerve Sheath Fenestration – James Garrritty, MD

This session will focus on the etiology and pathogenesis, clinical presentation, and medical and surgical management of idiopathic or benign intracranial hypertension.

At the conclusion of this session, participants will be able to:
1. Categorize the pathogenesis and clinical manifestations of benign intracranial hypertension.
2. Select the best diagnostic tests and medical management for this condition.
3. Apply the optimal surgical strategy with an understanding of the risks and benefits.

PROFFERED PAPERS SESSION

PROFFERED PAPERS 12 (Rapid Fire): Best of Case Series (5:10 pm – 6:30 pm)

MODERATORS: Ehab Hanna, MD, Carl Heilman, MD, Corinna Levine, MD, MPH & Daniel Prevedello, MD

(5:10 pm – 5:30 pm)

163: THE ROLE OF THE ENDOSCOPIC ENDONASAL APPROACH IN THE TREATMENT OF TRIGEMINAL SCHWANNOMAS - Georgios A Zenonos, MD1, Efstathios Kondylis, MS1, Pradeep Setty, DO1, Juan C Fernandez-Miranda, MD1, Eric W Wang, MD2, Carl H Snyderman, MD, MS2, Paul A Gardner, MD1; 1University of Pittsburgh Department of Neurosurgery, 2University of Pittsburgh Department of Otorhinolaryngology

164: IATROGENIC SEEDING OF CLIVAL CHORDOMA AFTER ENDOSCOPIC ENDONASAL SURGERY. - Georgios Zenonos, MD1, David Fernandes-Cabral, MD1, Mathew Geltzeiler, MD2, Eric W Wang, MD2, Juan C Fernandez-Miranda, MD1, Carl H Snyderman, MD, MS2, Paul A Gardner, MD1; 1University of Pittsburgh Department of Neurosurgery, 2University of Pittsburg Department of Otorhinolaryngology

165: GAMMA KNIFE RADIOSURGERY IN PATIENTS WITH CUSHING’S DISEASE AND NELSON’S SYNDROME - Joshua D Hughes, MD, Michael J Link, MD, Bruce E Pollock, MD; Mayo Clinic

166: A COMPARATIVE ANALYSIS OF SURGICAL REPAIR OF ANTERIOR AND LATERAL CRANIAL BASE MENINGOENCEPHALOCELES - James H Mooney1, Varun R Kshettry, MD2, Sanjeev Rangarajan, MD3, Mindy Rabinowitz, MD3, Thomas O Willcox, MD3, Gurston Nyquist, MD3, Christopher Farrell, MD2, Marc Rosen, MD3, James J Evans, MD2; 1Temple University, 2Cleveland Clinic, 3Thomas Jefferson University

169: MULTIMODALITY MANAGEMENT OF TRIGEMINAL SCHWANNOMAS AND QUALITY OF LIFE OUTCOMES-A SINGLE INSTITUTION EXPERIENCE - Serge Makarenko, MD, BSc, Vincent Ye, BSc, Ryojo Akagami, MD, BSc, MSc, FRCS; Vancouver General Hospital

170: POST-OPERATIVE SINUS THROMBOSIS IN THE SETTING OF SKULL BASE AND PARASAGITTAL SURGERY - Rajeev Sen, BA1, Carolina G Benjamin, MD2, John G Golfinos, MD2, Chandranath Sen, MD2, John T Roland, MD2, Daniel Jethanamest, MD2, Donato Pacione, MD2; 1NYU School of Medicine, 2NYU Langone Medical Center

Discussion – 4 minutes

Proffered Paper 12 Continued (5:30 pm – 5:50 pm)

171: NEUROENDOVASCULAR PROCEDURES FOR SKULL BASE NEOPLASIA - Adam A Dmytriw, MD, MSc, Jin Soo A Song, MD, Aditya Bharatha, MD; St. Michael’s Hospital

172: BILAYER BUTTON GRAFT FOR ENDOSCOPIC REPAIR OF HIGH-FLOW CRANIAL BASE DEFECTS - Vivek R Varma, BS1, Sanjeet V Rangarajan, MD, MEng1, Alan Siu, MD2, Mindy R Rabinowitz, MD1, Gurston G Nyquist, MD1, James J Evans, MD2, Marc R Rosen, MD1; 1Thomas Jefferson University, Department of Otolaryngology-Head and Neck Surgery, 2Thomas Jefferson University, Department of Neurosurgery
Scientific Program

173: RISK OF POSTOPERATIVE CEREBROSPINAL FLUID LEAK IN REUSED NASOSEPTAL FLAPS - Ana Carolina Igami Nakassa, MD1, Joseph D Chabot, DO2, David Tiago Fernandes Cabral, MD1, Carl H Snyderman, MD, MBA1, Paul A Gardner1; 1University of Pittsburgh School of Medicine, 2St Cloud Hospital

174: THE ROLE OF FRONTAL SINUS DRAF PROCEDURES IN ENDOSCOPIC FRONTOETHMOID DURA REPAIRS - Suha Beton, Hazan Basak, Selcuk Mulazimoglu, Hasay Guliyev, Babur Kucuk, Irfan Yorulmaz, Cem Meco; Ankara University

175: VENOUS SINUS COMPROMISE AFTER PRE-SIGMOID, TRANSPETROSAL APPROACH FOR SKULL BASE TUMORS: A STUDY ON THE ASYMPTOMATIC INCIDENCE AND REPORT OF A RARE DURAL ARTERIOVENOUS FISTULA AS SYMPTOMATIC MANIFESTATION. - Walter C Jean, MD1, Daniel R Felbaum2, Andrew B Stemer2, Michael Hoa, MD2, Jeffrey Kim, MD2; 1George Washington University Hospital, 2Georgetown University Hospital

Discussion – 4 minutes

Proffered Paper 12 Continued (5:50 pm – 6:10 pm)

176: ENDOSCOPIC ENDONASAL SKULL BASE SURGERY FOR 38 PEDIATRIC CASES: ANKARA UNIVERSITY EXPERIENCE - Gokmen Kahilogullari, MD, PhD1, Cem Meco, MD2, Suha Beton, MD2, Murat Zaimoglu, MD1, Hazan Basak, MD2, Agahan Unlu, MD1; 1Ankara University, Department of Neurosurgery, 2Ankara University, Department of Otolaryngology HNS

177: HIGH GROSS TOTAL RESECTION RATE IN CLIVAL CHORDOMAS VIA TRANSNASAL PURE ENDOSCOPIC APPROACH - Jens Lehmburg, Ehab Shiban, Bernhard Meyer; Neurosurgery Department, Technical University of Munich

178: THE PREVALENCE OF SUPERIOR SEMICIRCULAR CANAL DEHISCENCE IN PATIENTS WITH CEREBROSPINAL FLUID OTORRHEA WITH AND WITHOUT MASTOID ENCEPHALOCELE - Melissa S Oh1, Esther X Vivas, MD2, Patricia A Hudgins, MD, FACR2, Douglas E Mattox, MD1; 1Emory University School of Medicine, Atlanta, GA, 2Department of Radiology, Emory University School of Medicine, Atlanta, GA, 3Department of Otolaryngology-Head and Neck Surgery, Emory University School of Medicine, Atlanta, GA

179: SURGICAL BIOPSY OF INDETERMINATE LESIONS OF THE CAVERNOUS SINUS AND MECKEL'S CAVE: DIAGNOSIS AND THERAPEUTIC IMPACT - Joshua D Hughes, Joseph Kapurch, Jamie Van Gompel, Michael J Link; Mayo Clinic

180: LOWER CRANIAL NERVE SCHWANNOMAS: MICROSURGICAL OUTCOMES IN A MODERN COHORT - Vijay Agarwal, MD, Patrick Maloney, MD, Avital Perry, MD, Christopher Graffeo, MD, Michael J Link, MD; Mayo Clinic

Discussion – 4 minutes

Proffered Paper 12 Continued (6:10 pm – 6:30 pm)

181: OUTCOME OF THE TREATMENT OF BASILAR APEX ANEURYSMS USING ADVANCED TRANSCAVERNOUS MICROSURGICAL CLIPPING155 - Ali Krisht, Svetlana Pravdenkova, MD; Arkansas Neuroscience Institute

182: LITTLE INSIGHTS FROM BIG DATA: RISK AND MISCONCEPTION REGARDING CEREBROSPINAL FLUID LEAK AFTER RESECTION OF SKULL BASE MENINGIOMAS - Avital Perry, Christopher S Graffeo, Panagiotis Kerezoudis, Fredric B Meyer, Mohammad Bydon, Michael J Link; Mayo Clinic Rochester

183: SPONTANEOUS CEREBROSPINAL FLUID RHINORRHEA, IS A LUMBAR DRAIN INDICATED? - Abdullah Albader, Ghassan AIOky, Roy Casiano; university of Miami

184: INITIAL MANAGEMENT OF SKULL BASE CHORDOMAS: DOES EARLY ACCESS TO MULTI-DISCIPLINARY CARE AFFECT OUTCOME? - Jacob Freeman, MD, Franco DeMonte, MD, Shaan M Raza, MD; The University of Texas MD Anderson Cancer Center

185: MANAGEMENT OF RECURRENT SKULL BASE CHORDOMAS: AN ANALYSIS OF FACTORS AFFECTING PROGRESSION FREE AND OVERALL SURVIVAL - Shaan M Raza, MD, Jacob L Freeman, MD, Franco DeMonte, MD; The University of Texas M.D. Anderson Cancer Center

Discussion – 4 minutes

6:45 pm – 7:30 pm New Member Reception with Leadership (Invitation Only)

House of Blues

7:30 pm – 10:30 pm NASBS Social Event at House of Blues
SUNDAY, MARCH 5, 2017

7:00 am – 12:30 pm  **Registration**

7:00 am – 7:45 am  **Committee Meetings** *(Breakfast 7:00 am – 7:30 am)*

7:55 am – 9:00 am  **MAIN TOPIC SESSIONS** *(Breakfast 7:00 am – 7:30 am)*

### MAIN TOPIC 9: Key Hole Skull Base Surgery: Anterior, Middle and Posterior Fossa

**MODERATOR:** Garni Barkhoudarian, MD

**SPEAKERS:** Azam Ahmed, MD, Maurizio Iacoangeli, MD, John Lee, MD & Charles Teo, MD

- **Introduction – Garni Barkhoudarian, MD**
- **Eyebrow Supraorbital Craniotomy for Anterior Skull Base Tumors – Azam Ahmed, MD**
- **Combined Minimally Invasive Key Hole Supraorbital and Endoscopic Endonasal Approaches for Anterior Skull-Base Lesions – Maurizio Iacoangeli, MD**
- **Endoscopic Retrosigmoid Craniotomy for Cerebellopontine Angle Tumors – John Lee, MD**
- **The Trans-Tentorial Approach: From Above and Below – Charles Teo, MD**

This session will provide a comprehensive overview of minimally invasive and endoscope assisted approaches to skull-base lesions in the anterior, middle and posterior fossa. Participants should include neurological surgeons, ENT surgeons, ophthalmologists, neuroradiologists and radiation oncologists.

At the conclusion of this session, participants will be able to:
1. Demonstrate the eyebrow supraorbital craniotomy and implement this approach for the management of anterior fossa and middle fossa tumors.
2. Demonstrate the posterior fossa keyhole craniotomies and implement this approach for posterior fossa lesions.
3. Implement neuroendoscopy and various capacities to the operations.

### MAIN TOPIC 10: Sinonasal Cancers: Classification, Management and Results in 2017

**MODERATOR:** Franco DeMonte, MD

**SPEAKERS:** Ralph Abi Hachem, MD, MSc, Bryan Bienvenu, MD, Adam Folbe, MD, MS & Ian Witterick, MSc, FRCSC

- **Overview – Franco DeMonte, MD**
- **Squamous Cell Carnioma and Adenocarcinoma of the Paranasal Sinuses – Ralph Abi Hachem, MD, MSc**
- **Esthesioneuroblastoma – Adam Folbe, MD**
- **SNUC and Neuroendocrine Carcinomas of the Paranasal Sinuses – Bryan Bienvenu, MD**
- **Minor Salivary Gland Tumors of the Paranasal Sinuses – Ian Witterick, MSc, FRCSC**

Following an introductory overview the members of the panel will discuss several of the most common sinonasal malignancies. Modern classifications incorporating molecular data will be discussed as will implications of these newest classification schema on patient management and on expected patient outcomes.

At the conclusion of this session, participants will be able to:
1. Distinguish between different pathologies and their differing outcomes.
2. Construct management paradigms based on classification schema.
3. Predict patient outcome of chosen management paradigm.

### MAIN TOPIC 11: Craniocervical Junction: Pathologies, Imaging and Approaches

**MODERATOR:** James Evans, MD

**SPEAKERS:** Michael Ivan, MD, Claudia Kirsch, MD, Toshio Matsushima, MD, PhD & Carl Snyderman, MD, MBA

- **Imaging and Main Pathologies – Claudia Kirsch, MD**
- **The Anatomy of the Lateral Foramen Magnum and Transcondylar Fossa Approach – Toshio Matsushima, MD, PhD**
- **Lateral Approaches to the Clivus and CV Junction – Michael Ivan, MD**
- **Endonasal Approach – Carl Snyderman, MD, MBA**
This presentation will focus on the congenital, traumatic, and neoplastic pathologies and the imaging modalities that are used to identify pathology.

At the conclusion of this session, participants will be able to:
1. Identify and classify congenital anomalies of the craniocervical junction.
2. Recognize traumatic pathology in the skull base on imaging.
3. Evaluate neoplastic processes that may affect the craniocervical junction.

**MAIN TOPIC 12: Trigeminal Neuralgia and Hemifacial Spasm: Management and Results**

*Chamber III*

**MODERATOR:** Ian Dunn, MD  
**SPEAKERS:** Mario Ammirati, MD, MBA, Ali Ayyad, MD, FRCS, Stephen Haines, MD & Jens Lehmberg, MD

- **Overview – Ian Dunn, MD**  
- **The Role of Pre-Operative Imaging in Trigeminal Neuralgia and Hemifacial Spasm – Stephen Haines, MD**  
- **Results of Microvascular Decompression and Gamma Knife in Cranial Nerve Disorders – Mario Ammirati, MD, MBA**  
- **Endoscope-Assisted Microvascular Decompression – Ali Ayyad, MD, FRCS**  
- **Recurrent Facial Pain after MVD: What are Our Best Options – Jens Lehmberg, MD**

This session will focus on established and contemporary approaches to the management of trigeminal neuralgia and hemifacial spasm. Topics to be discussed will include but will not be limited to the role of pre-operative imaging in patient selection, minimally invasive surgical approaches to microvascular decompression, comparative outcomes of accepted treatment modalities, the role of gamma knife in the management armamentarium, and discussion of the treatment refractory patient. Any practitioner seeing patients with trigeminal neuralgia or hemifacial spasm should find this stimulating.

At the conclusion of this session, participants will be able to:
1. Appraise the role of pre-procedure imaging in the management of patients with trigeminal neuralgia and hemifacial spasm.
2. Assess and compare the outcomes of microvascular decompression, percutaneous approaches, and gamma knife.
3. Evaluate treatment options in patients with recurrent symptoms after microvascular decompression.

**9:05 am – 9:50 am EXPERT DEBATE SESSIONS**

**EXPERT DEBATE 9: Vascular Considerations in Skull Base Surgery: Arteries (Preserve, Sacrifice or Bypass), Veins and Preoperative Tumor Embolization**

* Crescent City Ballroom

**MODERATORS:** Kadir Erkmen, MD, Harry Van Loveren, MD & Ali Sultan, MD  
**SPEAKERS:** Mustafa K. Baskaya, MD, Gavin Britz, MD, Aaron Dumont, MD, Pascal Jabbour, MD, Edgar Nathal, MD, Felix Pahl, MD, PhD, Nirav Patel, MD & Ramachandra Tummala, MD

Skull base surgeons, fellows, residents are ideal for this session. We will discuss the cases that involve not only the skull base but associated vascular structures and the approach to dealing with these structures.

At the conclusion of this session, participants will be able to:
1. Develop an understanding of the vascular structures as they pertain to tumors.
2. Identify potential pitfalls in approaching tumors.
3. Manage complications as it relates to vascular injury.

**EXPERT DEBATE 10: Complications in Skull Base Surgery: Avoidance and Management**

* Orpheum Room

**MODERATORS:** James Liu, MD, Quynh-Nhu Nguyen, MD & Jeffrey Sorenson, MD  
**SPEAKERS:** Rony Aouad, MD, Amir Dehdashti, MD, Patrick Gullane, MD, CM, OOnt, MB, FRCSC, FACS, Hon FRACS, Hon FRCS, Hon FRCS, Juan Larranaga, MD, John Leonetti, MD, Diego Mendez-Rosito, MD, Jatin Shah, MD & A. Youssef, MD, PhD

This session emphasizes the importance of recognizing intraoperative and postoperative complications that can occur in skull base surgery. The participants should be able to identify potential pitfalls, how to avoid complications, and strategies to manage the complications when they occur.
Scientific Program

At the conclusion of this session, participants will be able to:
1. Identify potential pitfalls and complications during skull base surgery.
2. Develop a paradigm of how to avoid common complications encountered in skull base surgery.
3. Be able to identify and successfully manage a complication once it occurs intraoperatively or postoperatively.

EXPERT DEBATE 11: Surgery in and Through the Orbit: Techniques and Controversies
CHAMBER II

MODERATORS: Kris Moe, MD, FACS, Christian Matula, MD, PhD & Khaled Aziz, MD, PhD
SPEAKERS: Jean Anderson Eloy, MD, James Chelnis, MD, Bita Esmaeli, MD, FACS, Matthew Kay, MD, Mike Kazim, MD, Steven Newman, MD, Rachel Sobel, MD & Tonya Stefko, MD

This session will provide a broad discussion of treatment of orbital and adjacent structures within the context of skull base pathology. This will include new developments in the field such as endoscopic surgery within the orbit, and use of the orbit as a minimally disruptive endoscopic portal to adjacent structures within the skull base and brain. The session will be of interest to residents, fellows, and experienced attendees in neurological surgery, ophthalmology, and otolaryngology / head and neck surgery.

At the conclusion of this session, participants will be able to:
1. Articulate characteristic of the type and location of pathology that makes it amenable to orbital and transorbital surgical approaches.
2. Compare means of preoperative surgical planning in preparation for these procedures.
3. Compare the various surgical approaches that are available to access this pathology, as well as the assistive technologies that are available.

EXPERT DEBATE 12: Tumor Board: A Panorama of Skull Base Lesions
CHAMBER III

MODERATORS: Mohamed Elhammady, MD, Mark Eisenberg, MD & Devyani Lal, MD
SPEAKERS: Robert Behr, MD, Benedicto Colli, MD, PhD, Mohamed El Fiki, MD, Gerald Lemole Jr, MD, Darlene Lubbe, MD, Madison Michael, MD, FAANS, FACS, Yoshihiro Natori, MD & Eduardo Vellutini, MD

Expert panelists will be presented with various skull base lesions and asked to discuss the differential diagnosis, management options, and surgical approaches. This session will be valuable to neurosurgeons, Neuro-otologists, endoscopic sinus surgeons, medical and radiation oncologists.

At the conclusion of this session, participants will be able to:
1. Recognize and differentiate various skull base pathologies.
2. Discuss management options for various skull base lesions.
3. Understand various surgical approaches and their limitations.

9:50 am – 10:20 am Morning Break in Exhibit Hall Roosevelt Ballroom

10:20 am – 10:50 am HONORED GUEST: Changes in the Landscape of Skull Base Surgery: Reflections on a 30 Year Career Crescent City Ballroom
INTRODUCTION: Jacques Morcos, MD, FRCS, FAANS
HONORED GUEST: Fred Gentili, MD, MSc, FRCSC, FACS

10:50 am – 11:30 am Featured Scientific Presentations and Awards Ceremony Crescent City Ballroom
PRESENTERS: Mustafa K. Baskaya, MD, Jacques Morcos, MD, FRCS, FAANS & Zoukaa Sargi, MD, MPH

FEATURED SCIENTIFIC PRESENTATIONS

186: COSTS AND PERIOPERATIVE OUTCOMES ASSOCIATED WITH OPEN VERSUS ENDOSCOPIC RESECTION OF SINONASAL MALIGNANCIES WITH SKULL BASE INVOLVEMENT – Terence S Fu, MBA1, Eric Monteiro, MD2, Ian Witterick, MD, MSc3, Allan Vescan, MD, MSc3, Gelareh Zadeh, MD, PhD2, Fred Gentili, MD, MSc2, John R de Almeida, MD, MSc2; 1University of Toronto, Faculty of Medicine, 2Department of Neurosurgery, University of Toronto, Toronto, ON, Canada, 3Department of Otolaryngology – Head and Neck Surgery, University of Toronto, Toronto, ON, Canada
### Scientific Program

**187: KINASE ACTIVITY IN RECURRING PRIMARY CHORDOMAS AND CHONDROSARCOMAS: IDENTIFICATION OF NOVEL PATHWAYS OF ONCOGENESIS AND POTENTIAL DRUG TARGETS** – Philip D Tatman, BS, Joshua Osbun, MD, Youssef Yakkoui, MD, PhD, Sumanpreet Kaur, MS, Donald Born, MD, PhD, Owais Ahmad, MD, Jing Zhang, MD, PhD, Manuel Ferreira, MD, PhD; Univeristy of Washington

**188: INTERDISCIPLINARY TREATMENT AND TRAINING CONCEPT IN A SERIES OF 502 VESTIBULAR SCHWANNOMAS** – Cordula Matthes, Prof, MD, PhD, Maria Hummel, MD, Robert Nickl, MD, José M Perez-Téjon, MD, Mario Loehr, MD, PhD, Giles Hamilton Vince, Prof, MD, PhD, Ralf-Ingo Ernestus, Prof, MD, PhD, Rudolf Hagen, Prof, MD, PhD; Department of Neurosurgery, Julius-Maximilians University Hospital, Wuerzburg, Germany

**189: ANALYSIS OF FAILURE IN PATIENTS WITH SINONASAL MUCOSAL MELANOMA** – Moran Amit, Samantha Tam, Shaan M Raza, Franco DeMonte, Shirley Su, Michael E Kupferman, Diana Roberts, Ehab Hanna; MD Anderson Cancer Center

**190: COMPARISON OF GROSS TUMOR RESECTION RATE BETWEEN ENDOSCOPIC TRANSPHENOIDAL SURGERY VERSUS MICROSCOPIC TRANSPHENOIDAL SURGERY FOR PATIENTS WITH PITUITARY ADENOMAS: A METAANALYSIS.** – Reem Almutairi, MSc1, Hasan A Zaidi, MD2, David J Cote, BSc2, Erin Crocker2, Marike L Broekman, MD, PhD, JD2, Rania A Mekary1, Timothy R Smith2; 1MCPHS University, Boston, USA, 2Cushing Neurosurgery Outcomes Center, Brigham and Women's Hospital Department of Neurosurgery, Harvard Medical School, Boston, USA

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<tr>
<td>11:30 am – 12:45 pm</td>
<td>State of the Art and Future of ... Moders: Jacques Morcos, MD, FRCS, FAANS &amp; Ian Witterick, MSc, FRCS</td>
<td>Crescent City Ballroom</td>
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<td></td>
<td>SPEAKERS: Albert Attia, MD, Ali Sultan, MD, Fred Telischi, MD, MEE, FACS, George Wanna, MD &amp; Gelareh Zadeh, MD, PhD, FRCS</td>
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<td>• Introduction – Jacques Morcos, MD, FRCS, FAANS</td>
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<td>• State of the Art and Future of ... Robotics in Skull Base Surgery – George Wanna, MD</td>
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<td>• State of the Art and Future of ... Hearing Rehabilitation – Fred Telischi, MD, MEE, FACS</td>
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<td>• State of the Art and Future of ... Precision Medicine and Molecular Genetics for Skull Base Tumors – Gelareh Zadeh, MD, PhD, FRCS</td>
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<td>• State of the Art and Future of ... Endovascular Management of Skull Base Lesions – Ali Sultan, MD</td>
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<td>• Conclusion – Ian Witterick, MSc, FRCS</td>
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Each of the 5 chosen speakers will summarize the state of the art in the topic assigned to them, but most importantly tell the audience what the future holds for the specific topic.

At the conclusion of this session, participants will be able to:
1. Articulate the state of the art and future of robotics in skull base surgery.
2. Articulate the state of the art and future of hearing rehabilitation and molecular genetics in skull base surgery.
3. Articulate the state of the art and future of endovascular surgery and radiation oncology in skull base surgery.

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<td>12:45 pm – 12:50 pm</td>
<td>NASBS 2018 Meeting in San Diego, CA</td>
<td>Crescent City Ballroom</td>
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<td>SPEAKER: Ian Witterick, MD, MSc, FRCS</td>
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<tr>
<td>12:50 pm</td>
<td>Meeting Adjourned</td>
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Exhibit Hall Floor Plan
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<th>Exhibitor Profiles</th>
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<td><strong>Acclarent, Inc.</strong></td>
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KARL STORZ is a leader in endoscopy equipment and instrumentation for a range of specialties, including neurosurgery. We offer instrumentation for neurosurgery technologies that emphasize procedural efficiencies and successful outcomes. Our product lines offer innovative solutions for use in a broad range of minimally invasive approaches, including skull base surgery.

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BEST BASIC SCIENCE

090: MACROPHAGE DENSITY PREDICTS FACIAL NERVE OUTCOME AND TUMOR GROWTH AFTER SUBTOTAL RESECTION OF VESTIBULAR SCHWANNOMA – Christopher S Graffeo, MD, Avital Perry, MD, Aditya Raghunathan, MD, Mark E Jentoft, MD, Colin L Driscoll, MD, Brian A Neff, MD, Matthew L Carlson, MD, Jeffrey T Jacob, MD, Michael J Link, MD, Jamie J Van Gompel, MD; Mayo Clinic, Michigan Head & Spine Institute

BEST INTERNATIONAL

053: EFFECTIVENESS OF BILATERAL INFERIOR PETROSAL SINUSES SAMPLING IN TUMOR LATERALIZATION: INTRAOPERATIVE FINDINGS AND POSTOPERATIVE RESULTS. – Pablo Harker, MD, Oscar H Feo, MD, Manuel Giraldo-Grueso, Juan C Puentes, MD; Hospital Universitario San Ignacio

BEST CLINICAL

COMBINED PROJECT WINNERS

111: INCIDENCE OF CERVICAL LYMPH NODE METASTASIS AND ITS ASSOCIATION WITH OUTCOMES IN PATIENTS WITH SINONASAL MUCOSAL MELANOMA – Moran Amit, Samantha Tam, Shirley Y Su, Michael E Kupferman, Diana Roberts, Ehab Hanna; MD Anderson Cancer Center

112: THE ROLE OF ADJUVANT TREATMENT IN SINONASAL MUCOSAL MELANOMA – Moran Amit, Samantha Tam, Shaan M Raza, Franco DeMonte, Shirley Y Su, Michael E Kupferman, Diana Roberts, Ehab Hanna; MD Anderson Cancer Center

189: ANALYSIS OF FAILURE IN PATIENTS WITH SINONASAL MUCOSAL MELANOMA – Moran Amit, Samantha Tam, Shaan M Raza, Franco DeMonte, Shirley Su, Michael E Kupferman, Diana Roberts, Ehab Hanna; MD Anderson Cancer Center
P001: MULTIPORTAL TRANSNASAL AND TRANSCRANIAL COMBINED APPROACH TO PARA-JUGULAR FORAMEN LESIONS. COMPARISON OF SIX APPROACHES AND CLINICAL CASES – Kentaro Watanabe, MD, Moujahed Labidi, MD, Shunya Hanakita, MD, PhD, Damien Bresson, MD, Sébastien Froelich, MD; Department of Neurosurgery, Lariboisière hospital

P002: ANATOMY OF THE MEDIAL ORBIT AND VARIOUS APPROACHES TO ACCESS IT – Osamu Akiyama, MD, Akihide Kondo, MD1, Hajime Arai, MD1, Albert L Rhoto, Jr., MD1; 1Department of Neurosurgery, Juntendo University, Tokyo, Japan; 2Department of Neurological Surgery, University of Florida, Gainesville, Florida

P003: ENDOSCOPIC TRANSMAXILLARY TRANS-ALISPHENOID APPROACH TO THE MECKEL’S CAVE - AN ANATOMICAL STUDY. – Huy Q Truong, MD1, Xical Sun, MD, PhD2, Emrah Celtikci, MD1, Hamid Borghaei-Rayazi, MD, PhD1, Eric W Wang, MD3, Carl H Snyderman, MD, MBA1, Paul A Gardner, MD1, Juan C Fernandez-Miranda, MD1; 1Department of Neurosurgery, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania, 2Department of Otolaryngology-Head and Neck Surgery, Eye, Ear, Nose and Throat Hospital, Shanghai Medical College, Fudan University, Shanghai 200031, China, 3Department of Otolaryngology - Head and Neck Surgery, University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania

P004: ADVENTITIAL ADHERENCY: HISTOPATHOLOGY OF THE DISTAL DURAL RING – Christopher S Graffeo, MD, Avital Perry, William R Copeland, MD, Aditya Raghunathan, MD, Michael J Link, MD; Mayo Clinic

P005: CRANIAL NERVE DECOMPRESSION IN CAVERNOUS SINUS TUMORS: A LEGO-LIKE CONCEPT REPRESENTATION – Jai D Thakur1, Christopher Storey, Bharat Guthikonda, Anil Nanda, Professor; LSUHSC Shreveport

P006: TO DRILL OR NOT TO DRILL. PROMINENCE OF THE SUPRAMEATAL TUBERCLE AND ITS IMPACT ON MICROVASCULAR DECOMPRESSION FOR TRIGEMINAL NEURALGIA-A PROPOSED CLASSIFICATION SYSTEM. – Gautam Rao1, Christopher Primiani1, Jayson Sack, MD1, Ramsey Ashour, MD1, Silviero Agazzi, MD1, Harry van Loveren, MD1; 1University of South Florida, 2Seton Brain and Spine Institute

P007: COMPARATIVE ANATOMIC SKULL BASE APPROACHES TO THE NASOPHARYNX AND PHARYNGEAL AERODIGESTIVE TRACT – Katherine Adams, Cristine Klatt-Cromwell, Theodore Schuman, Brian Thorp, Charles Ebert, Deanna Sasaki-Adams, Matthew Ewend, Adam Zanation; UNC Chapel hill

P008: SURGICAL ANATOMY FOR ENDOSCOPIC ENDONASAL APPROACH TO THE VENTROLATERAL SKULL BASE LESIONS – Kenichi Oyama, MD, PhD1, Yudo Ishii1, Shigeuyuki Tahara2, Takehiro Watanabe3, Toshio Hirohata1, Makoto Katsumo1, Daniel M Prevedello4, Ricardo L Carrau4, Sebastien Froelich5, Akio Morita1, Akira Matsuno1; 1Department of Neurosurgery, Teikyo University School of Medicine, Tokyo, Japan, 2Department of Neurological Surgery, Nippon Medical School, Tokyo, Japan, 3Department of Neurosurgical, The Ohio State University, 4Department of Otolaryngology The Ohio State University, 5Department of Neurosurgery, Lariboisière Hospital, Paris VII-Diderot University, Paris, France

P009: MICROSURGICAL ANATOMY OF THE JUGULAR PROCESS: CADAVERIC AND RADIOLOGICAL STUDY – Noritaka Komune1, Satoshi Matsu, PhD2, Miki Koichi, MD2, Albert L Rhoto, Jr3; 1Department of Otorhinolaryngology, Graduate School of Medical Sciences, Kyushu University, Japan, 2Department of Neurosurgery, Kyushu Central Hospital, Fukuoka, Japan, 3Department of Neurosurgery, Graduate School of Medical Sciences, Fukuoka University, Japan, 4Department of Neurosurgery, University of Florida College of Medicine, Gainesville, Florida

P010: OLFATORY GROVE MENINGIOMAS : ENDOSCOPIC ENDONASAL CORRIDORS BASED ON ANATOMICAL LANDMARKS FOR OLFACTION REVISED. – Matias Gomez, MD, Ricardo Carrau, MD, Daniel Prevedello, MD, Brad Otto, MD, Lucas Lima, MD, Diego Servian, MD, Alaa Montaser, MD, Victor Leal de Vasconcelos, MD, Cristian Naudy, MD; Ohio State University

P011: EXPANDING THE ENDOSCOPIC TRANSPTERYGOID CORRIDOR TO THE PETROCLIVAL REGION: ANATOMICAL STUDY AND VOLUMETRIC COMPARATIVE ANALYSIS – Samy Youssef, MD, PhD2, Jacob L Freeman, MD1, Steven Craig Quattlebaum, MD1, Vijay R Ramakrishnan, MD1, Ciro Vasquez, MD2; 1University of Colorado Department of Otolaryngology, 2University of Colorado Department of Neurosurgery

P012: SYNCHRONOUS TUMORS OF THE CEREBELLOPONTINE ANGLE – Christopher S Graffeo, MD, Avital Perry, MD, William R Copeland III, MD, Caterina Giannini, MD, PhD, Brian A Neff, MD, Colin L Driscoll, MD, Michael J Link, MD; Mayo Clinic

P013: HISTOPATHOLOGY OF FACIAL NERVE PARALYSIS IN MALIGNANT TUMORS INVOLVING THE TEMPORAL BONE. – Felipe Santos, MD; Mass Eye and Ear

P015: TIMING OF POSTOPERATIVE CSF LEAK AFTER SKULL BASE SURGERY IN PATIENTS WITH OBSTRUCTIVE SLEEP APNEA – Terence M Zimmermann, MD, MPH, Chris Marcellino, MD, Katie Van Abel, MD, Jamie Van Gompel, MD, Michael Link, MD, Erin O'Brien, MD, Janalee Stokken, MD; Mayo Clinic

P016: NOVEL TRANSPHENOIDAL IMPLANT PLUS ACELLULAR DERMIS GASKET SEAL CLOSURE IN PATIENTS UNDERGOING TRANSPHENOIDAL RESECTION OF SELVAR LESIONS – Brendan M Fong, MD, Silverstein Julie, MD, Mcjunkin Jonathan, MD, Albert H Kim, MD, PhD; Washington University

P017: CEREBROSPINAL FLUID RHINORRHEA AFTER SYSTEMIC ERLOTINIB CHEMOTHERAPY FOR METASTATIC LUNG CANCER: A FAMILIAR PROBLEM FROM AN UNFAMILIAR CULPRIT – Douglas A Hardesty, MD2, Andre Beer-Furlan, MD2, Ali O Jamshidi, MD2, Brad Otto, MD2, Daniel Prevedello, MD2; 1Barrow Neurological Institute, 2Ohio State Wexner Medical Center
P018: SPONTANEOUS CEREBROSPINAL FLUID LEAK PRECIPITATING CATASTROPHIC AND COMPLICATED VENOUS SINUS THROMBOSIS – Avital Perry, Christopher S Graffeo, William R Copeland III, Waleed Brinjikji, Jonathan M Morris, Harry J Cloft, Alejandro A Rabinstein, Michael J Link; Mayo Clinic Rochester

P019: UNIQUE APPLICATION OF A KNOWN TECHNIQUE: USE OF ABDOMINAL DERMAL-FAT GRAFTS IN DURAL RECONSTRUCTION AFTER TRANSPHENOIDAL SURGERY FOR THOSE WITH INTRAOPERATIVE CSF LEAKS – F Yap, MD, M Ewend, MD, A Zanation, MD, D Sasaki-Adams, MD; UNC

P021: COMPLICATIONS OF ADVANCED KADISH STAGE ESTHESIONEUROBLASTOMA: SINGLE INSTITUTION EXPERIENCE AND LITERATURE REVIEW – Sheri Palejwala1, Saurabh Sharma, MD2, Christopher H Le, MD2, Eugene Chang, MD2, G. Michael Lemole, Jr., MD; 1University of Arizona, Division of Neurosurgery, 2University of Arizona, Department of Otolaryngology

P022: POSTOPERATIVE BRACHIAL PLEXUS INJURY FOLLOWING RETROSIGMOID EXCISION OF A VESTIBULAR SCHWANNOMA: REVIEW OF INSTITUTIONAL CASE SERIES – R S Lumb, BMBS, FANZCA1, V Nagaratnam, MBBS, MRCP, FRCA1, R Bradford, MBBS, MD, FRCS2; 1Imperial Health NHS Trust, 2University College London Hospitals

P023: TREATMENT OF A TRAUMATIC PSEUDONEUROSYM WITH A PIPELINE EMBOLIZATION DEVICE: CASE REPORT AND REVIEW OF THE LITERATURE – Derrick Umansky, MD; Tulane Medical Center

P024: COMPLEX SKULL BASE RECONSTRUCTION IN KADISH D ESTHESIONEUROBLASTOMA: CASE REPORT – Sheri K Palejwala1, Saurabh Sharma, MD2, Christopher H Le, MD2, Eugene Chang, MD2, Audrey B Erman, MD2, G. Michael Lemole, Jr., MD; 1University of Arizona, Division of Neurosurgery, 2University of Arizona, Department of Otolaryngology

P025: ADVANTAGES AND COMPLICATIONS OF FISCH PARTIAL MASTOIDO-TYMPECTOMY FOR TUMORS OF THE RETROMANDIBULAR FOSSA AND POST-STYLOID SPACE – Dominic I Catalano, Michael B Gluth, Associate, Professor; The University of Chicago

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Albert L. Rhoton, Jr., M.D., 1932–2016

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Early Years

Albert L. Rhoton, Jr. was born in the family home, a log cabin in Parvin, Kentucky, in the hills of Appalachia on November 18, 1932. He was delivered with the assistance of a midwife for the fee of one bag of corn. There was no other healthcare available in that region of Kentucky and once, when young Al was feared to have pneumonia, his father walked 20 miles to consult a physician who prescribed castor oil, as this was before antibiotics; fortunately, he made a full recovery. The home had no electricity and water had to be fetched from a nearby spring. The Rhoton children—Al, his brother, and sister—attended a two-room school house in the hills. Dr. Rhoton’s parents understood the importance of education, and his mother and father traveled to attend Berea College to complete their secondary education. His father then attended the University of Kentucky, where he obtained a Master’s degree in Chemistry. During this time, Al’s mother taught in the local school house to support the family financially, even though she didn’t have a formal degree. When Al was 10 years old, the family moved to Akron, Ohio, where his father was able to find employment as a chemist, and they became city dwellers. It was customary at that time that children from Appalachia were held back a grade when they entered the city school district, but Mrs. Rhoton would not allow it. Al Jr. promptly went on to fail the 5th grade which he then repeated and passed; in bemused retrospect, Dr. Rhoton once surmised he was the only neurosurgeon to fail the 5th grade and then go on to graduate at the top of his medical school class. Dr. Rhoton’s father was fond of telling his son, “Every day you should go to work.” Al’s first job was as a paper boy, and he held several other after school jobs in Akron. In 2010, Dr. Rhoton once commented on how his father’s philosophy must have stuck with him, because in 40 years at the University of Florida he only took one sick day—a day in which he underwent a procedure requiring general anesthesia.

College Years

Following high school graduation, Al Rhoton, Jr. moved to Columbus, Ohio to attend Ohio State University, with the plan to get a chemistry degree, like his father. To support himself, he worked cleaning laboratories, washing dishes, and taking on an array of other menial tasks. One summer, he got a job working for The Boy’s Club at a settlement house organizing activities and helping disadvantaged youth, and he found the experience transforming. He changed his major to social work, with the plan that he would dedicate his life to this type of work. During his last semester of college, before completing his degree, he took a class in physiologic psychology taught by Donald Meyer—a course that sparked a lifelong passion for studying the brain. That semester, he decided to become a neurosurgeon. He switched his major and enrolled in premed courses; classes that were significantly more difficult than offered in the social work curriculum. He flunked all his mid-terms that first semester. He realized he would have to work less and study more, which presented a significant financial burden, but with the help of friends and family he was able to buck up down, finish the prerequisites, and win acceptance to Ohio State Medical School. He also received an offer to interview at Washington University in St. Louis and hitchhiked to St. Louis, where he was offered a spot and started medical school at Wash U in 1955. It was during medical school that he met an occupational therapy student, Joyce Leah, and the two were married after a three-year courtship.

Internship and Residency

After graduating first in his class, Dr. Rhoton completed a one-year general surgery internship at Columbia Presbyterian Hospital in New York City, 1959–1960. Although this year was spent only doing general surgery rotations, he was keenly aware of the prestigious Neurologic Institute across the street, and made friends with many of the residents. He was granted an additional year in New York, during which he worked with the Institute’s neurosurgeons and researchers, before returning to St. Louis to commence neurological residency under the mentorship of Dr. Henry Schwartz at Barnes Hospital in 1962. He completed residency in 1965 and would later remark that he...
never saw a vestibular schwannoma resected with preservation of the facial nerve, and never saw a pituitary tumor resected with functional preservation of the normal gland. Recall, this was before the availability of hormone replacement therapy, meaning those operations often resulted in significant postoperative morbidity or even death. Although driven to study neuroanatomy since his college days, it was during his final year of residency that Dr. Rhoton was able to truly embrace that pursuit, with a mind toward making his operations safer, gentler, and more accurate.

**Early Career**

Fortunately for Dr. Rhoton, the Mayo Clinic was looking to improve their training program by adding a neuroanatomy laboratory rotation to the residency, and offered him a position after he completed his residency (Fig. 1). The Rhotons then moved to Rochester, Minnesota with their four young children—three of whom would go on to obtain Doctor of Medicine (M.D.) degrees, with the fourth completing registered nurse training. From 1966 to 1972, Dr. Rhoton honed his surgical skills by maintaining a very busy clinical practice, predominantly treating trigeminal neuralgia and intra and extra-axial brain tumors. He also began to study and report his findings from anatomical studies of the brain and temporal bone. However, the schedule of clinic one day followed by surgery the next; five or even six days a week left precious little time for research. In parallel, Dr. Rhoton felt increasingly compelled by a desire to do “medical mission work,” or serve an area without access to the high level of surgery he was seeing at Mayo, in short, he wanted to build something from scratch.

The opportunity arose in 1972 to accept the position of Chief of Neurosurgery at University of Florida in Gainesville. The small-town life of this north central Florida community appealed immensely to the Rhotons, who were also eager to leave their snow shovels behind, and Dr. Rhoton joined Frank Garcia as a two-man division within the Department of Surgery. The modest resources afforded the two neurosurgeons included two secretaries and one operating room, where they could work 3 days a week. That first year they had two applicants for residency, including Arthur Day, M.D., who not only completed training in Gainesville, but went on to become a prominent member of their staff as a cerebrovascular neurosurgeon. Those early years demanded an extraordinary effort to provide the breadth of neurosurgical care to the central Florida community, yet Dr. Rhoton never abandoned his desire to build a neuroanatomy laboratory. The division had limited funding, to say the least, and the Dean had little resources to support them. However, Dr. Rhoton was able to identify a private donor who gave $20,000 to support the laboratory. This sparked a desire to discover other donors to aid the research mission, which culminated in the Keene family donation of one million dollars.

**Chairmanship**

During his 26 years at the helm of Neurosurgery at the University of Florida, Dr. Rhoton realized incredible growth and accomplishments in the department. First of all, he moved neurosurgery from a division under general surgery to a department. By the time he handed over the reins to Dr. Friedman, Dr. Rhoton had accumulated roughly 20 million dollars in endowment funding, which helped support 11 endowed professorships in almost every subspecialty of neurosurgery. He encouraged his faculty to serve organized neurosurgery, and he proved an essential role model in that regard.

Over his career, Dr. Rhoton was a member of almost every neurosurgical and anatomical society, serving as President of The Congress of Neurological Surgeons, The Florida Neurosurgical Society, The American Association of Neurological Surgeons, The Society of Neurological Surgeons, and the North American Skull Base Society. In addition, he served other roles in all the major societies while ascending to their presidencies, and was on countless committees nationally, internationally, and at the University of Florida, serving as chairman of 48. He gave his time tirelessly to patient run advocacy groups such as the Trigeminal Neuralgia Association and the Acoustic Neuroma Association, and was visiting professor at 67 different institutions on five continents. None of this, of course, slowed his academic productivity, and Dr. Rhoton’s curriculum vitae lists 508 publications. A compilation of his clinical and anatomic experience culminated in his text, “Cranial Anatomy and Surgical Approaches,” which has been translated into Portuguese and Chinese.

All of this, combined with the great notoriety he brought to his department and program, further resulted in his being named honorary member of almost all international neurosurgical societies, and receiving neurosurgery’s highest awards. Included in this auspicious list is the Cushing Medal from the AANS, the Olivecrona Medal from the Swedish Neurosurgical Society, the Medal of Honor from the Neurosurgical Society of America, the Jamieson Medal from the...
Neurosurgical Society of Australasia, the Medal of Honor from the World Federation of Neurosurgical Societies, and the Founders Laurel Award from the CNS, to name only a few.

Even more inspiring than his leadership and academic output was Dr. Rhoton’s kind and caring manner with patients facing the awesome and frightening prospect of a neurosurgical procedure. Dr. Rhoton often emphasized that the best ally in the treatment of complex neurosurgical disorders is a well-informed patient. He admonished any neurosurgeon to always close a discussion with a patient and their family with the query, “Have I answered all your questions?”

What Dr. Rhoton truly meant to all of us in the field of skull base surgery, and medicine as a whole, defies prose. Dr. Jacques Morcos, current President of the North American Skull Base Society, has done a wonderful job expressing our sense of loss in his eulogy published in this issue. Additionally, Dr. Jon Robertson, a lifelong friend and colleague, adds his special perspective; Dr. Juan Carlos Fernandez-Miranda, a former Rhoton fellow, shares insight into what it was like to study and work with Dr. Rhoton; and Dr. Jeff Sorensen provides an account of the on-going effort to catalog and preserve Dr. Rhoton’s incredible body of work for generations to come.
In Memoriam to Dr. Al Rhoton: You Will Be Missed

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It is with a complete and utter sense of loss and sadness that I write to you, as the newly elected North American Skull Base Society (NASBS) President, to announce the passing of a giant figure from the world of neurosurgery, skull base surgery, neuroanatomy, and medicine in general. Albert L. Rhoton, one of the most celebrated neurosurgeons and past presidents of the NASBS, left us on February 21, 2016. It is customary, at this point in the eulogy of a man of such stature, to proceed and list a lifetime of professional accomplishments. But then Al Rhoton is no ordinary giant, even among the giants. Because of this, this eulogy will break with tradition, for this man was simply incomparable. Instead of starting with the achievements of his mind, I would like to reflect first on the indelible memories left by his heart.

“You give but little, when you give of your possessions. It is when you give of yourself that you truly give,” said Khalil Gibran, the Lebanese-American literary genius. There was no more authentic and sincere giver than Al Rhoton, the greatest of all educators. With the excitement of a child with no care in the world, and the generosity of a fountain that would not stop flowing; with an innocence never seen in a man of his years, and a kindness seldom offered by a figure larger than life; with a sincerity that knew no bounds, and a gentleness that contrasted his figure; with a passion disguised as serenity, and civility mistaken for passivity; with all these and many other remarkable attributes, the “Encyclopedia Rhoton-ica” gave and gave and kept giving. He taught a lot, taught often, taught with love. He taught us all, from when we started in the field to when we retired from the field. He travelled far, he spoke to few and spoke to many. He spoke in shacks and spoke in castles. The joy was equal. No task was too onerous, no hurdle was too difficult when teaching was at stake. He never said no, he loved all, he had no temper; he had equanimity, he had resolve, he oozed integrity; he had faith, in man and in God; his brand of goodness simply dwarfed the most pious among us. Next to this man, we are all sinners, in our religious or moral lives.

It is often said, and quite correctly, that life is not fair, for the most undeserving men seem to summit and conquer mount success. Well, for once, life is fair, for the humblest of its servants broke the mold and shone like a beacon. The boy born in a shack in Parvin, Kentucky never forgot his roots, and in spite of him not seeking honors and recognitions, they found him. How could they miss him? He has served as President of the American Association of Neurological Surgeons (AANS), Congress of Neurological Surgeons (CNS), the Society of Neurological Surgeons, Florida Neurological Society, the North American Skull Base Society, the International Interdisciplinary Congress on Craniofacial and Skull Base Surgery, the International Society for Neurological Technology and Instrument Intervention, and the International Society for the Study of Microsurgical Anatomy. He has also served as Vice Chairman of the American Board of Neurological Surgeons, Chairman of the Joint Section on Cerebrovascular Surgery, Governor of the American College of Surgeons, and a member of the neurosurgery appeals panel of the Accreditation Council for Graduate Medical Education. He received an Alumni Achievement Award from the Washington University School of Medicine, the Cushing Medal of the AANS, the Medal of Honor of the World Federation of Neurosurgical Societies, and the Golden Neuron Award of the World...
Academy of Neurological Surgery. He has also received the Founders’ Laurel Award and been the honored guest of the CNS. He has been the honored guest or elected to honorary membership in more than 20 neurosurgical societies throughout the world. He has served on the editorial board of more than one dozen journals and has authored more than 400 articles and 2 books. He has also trained legions of adoring neurosurgeons.

Perhaps the best way to remember the man is to never forget the remarkable and inspirational story—undoubtedly known to many of you—he liked to tell about becoming a doctor and his dedication to medicine. He used to say that if God had come to earth and had told him as a young man: “Al, if you knew, at the beginning of your life, that you had to go through 12 years for schooling, 4 years of undergraduate education, 4 years of medical school, 7 years of residency, sit through countless exams, sacrifice family and social life, and that at the end of all these harrowing years, you at last would become a neurosurgeon; but that all this studying and suffering was for the sake of saving the life of, not thousands, but only a single patient, would you go through it?”

With the sincerity and tenacity of a man of vocation, Al would answer “Yes, I would absolutely do it,” unequivocally. When my resident heard him tell this story, she teared. I almost did. For she and I knew, we were in the presence of a special man. She and I knew there was no other mortal who would give the same answer and mean it.

Dear Al, if heaven exists, we know you made it there and have already started feverishly rearranging and reclassifying its anatomy, to the dismay of all its angels! You may have left us, but we will never have to remember you, for remembrance implies forgetting at first. How can we forget you? Like the fabric of space-time that engulfs us, you created for us the fabric of neuroanatomy and the tools to operate on it, in that “gentle, delicate, accurate” way. Like a true messiah of sorts, you revealed hidden truths to us. Your prodigious intellect has bequeathed thousands of images and notes for posterity. The entire medical community will spend the coming years celebrating and benefiting from your achievements. The NASBS will honor you and celebrate you in our upcoming 2017 annual meeting. Your boyhood dreams have been realized multiple folds. But you have failed—if it can be called a failure—in one regard, and that is simply because of your unique humility. You thought that all you were teaching us all these years were anatomical maps and facts and techniques, a window to your mind. Little could you suspect, in your self-effacing demeanor, that your even greater contribution, for generations to come, is to have enriched our hearts too, by allowing us—unknowingly—a window of exposure into one of the greatest medical souls that have ever lived.

Jacques J. Morcos, MD, FRCS, FAANS
President, NASBS
Dr. Al Rhoton, Jr.: Friend, Mentor, and Colleague

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Albert L. Rhoton was born in the hard years of the Great Depression of the United States, in the Kentucky hills of Appalachia, to proud parents with little means. His character was shaped by the struggles of his family to survive and advance themselves through hard work and education. From these humble beginnings, Dr. Rhoton rose to become an icon in neurosurgery because of his leadership skills and tremendous contributions to neurosurgical education and research. Along his career path he remained a humble and caring individual who recognized and respected others. He was unselfish with his time to speak to those who sought his advice, and gave of himself tirelessly to share his knowledge and life experiences of an academic neurosurgical career spanning a half century.

In his 1990 American Association of Neurological Surgeons (AANS) presidential address, Neurosurgery in the Decade of the Brain, Dr. Rhoton spoke of the miracle of neurosurgery, “I would like to reflect on the joy and excitement of being allowed to participate in the miracle we call neurosurgery. In my early years, I never imagined that life would yield such an exciting mission as being a physician or a neurosurgeon. Our work is done in response to the idea that human life is sacred, that it makes sense to spend years of one’s life in study in order to be able to help others. Our training brings into harmony a knowledgeable mind, a skilled set of hands, and a well-trained eye, all guided by a caring human being. The skills we use have been described as the most delicate, the most fateful, and to the layman, the most awesome of any profession.” On acquiring the skills of a well-trained neurosurgeon: “Competence and compassion need to be developed simultaneously, as the giant oak develops its root system along with its leaves and branches. Competence without compassion is worthless.” As a religious experience: “The brain is the crown jewel of creation and evolution. It is a source of mystery and wonder. Mind and brain are the source of happiness, knowledge, and wisdom. The brain is not the seat of the soul, but it is through the brain and mind that we become aware of our own soul.” A prayer for physicians sent to him by one of his patients: “Lord, Thou Great Physician, give skill to my hands, clear vision to my mind, kindness and sympathy to my ears. Give me singleness of purpose, strength to lift at least a part of the burden of my suffering fellow men, and a true realization of the rare privilege that is mine.”

Our paths crossed through our leadership roles in organized neurosurgery, having both served as President of the AANS and North American Skull Base Society. He was a senior advisor and role model for me as I followed his large footsteps. Teaching roles in various skull base courses with Dr. Rhoton in the 1990s influenced my starting the annual North American Skull Base Society Resident Skull Base course in Memphis in 2002. He faithfully attended every course we held to give his three-dimensional (3D) neuro microanatomical lectures, teach, and inspire the faculty members and each resident that attended. The faculty of our annual courses felt privileged to work with him. It was an honor, and we each looked forward to these annual courses, for he treated us as family (►Figs. 1–3).

Recognizing the importance of preserving Dr. Rhoton’s 3D neuro microanatomical lectures for future neurological education, I began to discuss with him how this might occur in 2008. He was reluctant to work with either of the two major neurological organizations because of personal and political loyalties, which I understood. The complexities of archiving the enormous volume of his neuroanatomical material in a format that could accurately present his life’s work as he wished, had too many challenges: How much would it cost? Who would do the work? Would he retain ownership and have control of how his lectures would be presented?

The turning point came with the introduction of 3D televisions and their associated digital formats in 2010 that could be used to display his stereoscopic images synchronized with a recording of his voice to preserve his wonderful 3D lectures. With financial backing and the support of the leadership of the AANS, Dr. Jeff Sorenson, Dr. William Couldwell, and I began the process which led to the development of the Rhoton Collection. To move forward with this project required the acceptance on the part of Dr. Rhoton that this was the right way to preserve his wonderful legacy of neuroanatomical instruction. His desire was to have his life's
work serve as a teaching platform, available to everyone worldwide at no cost. Our commitment was to achieve his wish and honor our mentor and friend.

Every enhanced lecture prepared by Dr. Sorenson for the Rhoton Collection was personally reviewed and approved by Dr. Rhoton. This required multiple visits by our team to Gainesville spanning a period of 5 years. Dr. Rhoton trusted Dr. Sorenson to be the producer and director of the Rhoton Collection. His long hours of work, technical and artistic skills, made this effort possible.

The numerous weekends that I traveled with Dr. Sorenson to Gainesville were precious times spent with Dr. Rhoton. At the end of the day working on lecture material at the Brain Institute, we would go to Dr. Rhoton's

Fig. 1 Some of the usual faculty at the many skull base dissection courses held in Memphis; from left to right: Drs. Franco DeMonte, Anil Nanda, Michael Link, Dr. Rhoton, Jon Robertson, John Golfinos, and Bill Couldwell.

Fig. 2 Dr. Rhoton enjoyed instructing in the lab as much as giving his 3-D lectures in the auditorium.
favorite local restaurant, Mildred’s Big City Food. There we would discuss the various stages of the Rhoton Collection, and he was always excited to tell us about new neuro microanatomical studies that his fellows were producing in his laboratory. But more importantly, we talked about each of our careers spanning three generations, our friends, and our families.

Our last visit came 2 weeks before his death. He was pale and weak, but his mind was sharp. We spent the morning at the Brain Institute reviewing a lecture on orbital anatomy he had prepared during the past year that would be ready for release at the coming 2016 AANS annual meeting. Later that evening we met for our usual dinner at Mildred’s Big City Food. We had a great time. It was raining as we left the restaurant, but no one rushed to leave. Dr. Rhoton hugged each of us, and wished us safe travel home.

The measure of a man’s attributes can be judged by the depth of the friendships which he has made. Albert L. Rhoton’s friends were legion and their feelings ran very deep. Among the bright miles which good fortune has at times cast in my direction, I consider being counted among his friends and colleagues the brightest of all.

Fig. 3  Push up contests were often on the agenda in Memphis, which Dr. Rhoton usually won, even though he was well into his 8th decade.
Prof. Rhoton: Master and Mentor

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It is with great sorrow, but profound gratitude that I write these words in remembrance of Prof. Albert L. Rhoton Jr. Using his own expression, not in my wildest dreams I could have imagined working closely with him, one of the greatest medical souls that have ever lived. I had the unique privilege of spending two extraordinary years in his laboratory, and here, a decade later, I would like to illustrate what it was like and what it meant to be his fellow.

Prof. Rhoton established his microneuroanatomy laboratory at Mayo Clinic in the late 1960s, as he would say “not to write a paper, but to improve the life of my patients.” In 1974, he created his microsurgery education center at the University of Florida, with a missionary leitmotiv: “Every Second of Every Day,” he wanted to train and teach enough surgeons in microsurgical neuroanatomy and techniques so that there would be someone having surgery during every second of every day that was being made better because of his influence (Fig. 1). After 42 years with more than 100 fellows, more than 500 scientific articles, and thousands of lectures later, there is no question he has accomplished that goal: patients all over the world will continue benefiting from Prof. Rhoton’s work forever.

When I started training in Prof. Rhoton’s laboratory in 2005, he was a living legend, the father of microsurgical neuroanatomy, and mentor for many world-class neurosurgeons (Fig. 2). I remember vividly the initial meeting in his office to discuss the goals for my fellowship, and there I felt for the first time his magic aura of love and kindness that would irradiate and comfort everyone around—like the giant oak that gives shadow and protects from the bright sun. “Other than working in the lab, you may want to visit Florida’s coast and Disneyworld with your wife,” he said with that smile that would illuminate your soul. We had sold everything we had back in Spain to fund our stay and work in Prof. Rhoton’s laboratory looking for microsurgical training and anatomical knowledge, and we found so much more. Since then, every single week we spent with him and his family was unique and special. All fellows and families particularly enjoyed those pizza parties at Rhoton’s that Mrs. Joyce Rhoton organized to celebrate every fellow graduation (Fig. 3). Dr. Rhoton was a devoted family man and he tremendously enjoyed being around and playing with children (Fig. 4). Joyce, his wife for 58 years, is the great woman behind the great man. Her dedication and support, always by his side, is a key aspect of Prof. Rhoton’s successful biography (Fig. 5).

The working philosophy in the laboratory was defined by Prof. Rhoton’s description of the brain as the crown jewel of creation and his quest for beauty and perfection. I attended my first days in the laboratory observing with astonishment the exquisite dissections that the fellows were performing. I found out then that those extremely beautiful and unreal...
pictures from his articles and books were actually real and they were being crafted right there in front of me. The laboratory was filled with mysticism and stoicism, as we would spend countless hours, days, weeks, aiming to create an anatomical piece of work worthy of Prof. Rhoton’s appreciation. At the beginning, we did not fully understand the importance of accurate and meticulous dissections, but early on Dr. Rhoton would clearly explain: “We want perfect anatomical dissections, because we want perfect surgical operations,” he wanted us to create the perfect anatomical pictures that would replicate a perfect surgical approach, step by step, layer by layer. We then understood that a precisely done microdissection, where our brains would invest many hours and days studying and imprinting every single anatomical structure and their spatial relationships, is worth more than several repeated dissections done not so diligently. Even more, we realized that Prof. Rhoton was always looking to supplement his already precious collection of anatomical dissections with yet another elegant three-dimensional view of a certain anatomical region that he could use to teach the intricate beauty of microsurgical neuroanatomy to the next privileged audience, eagerly waiting to learn from him in any corner of the neurosurgical world. He would, in fact, welcome any new additions to his collection as a kid would with a new toy, with such great joy that would make every effort truly worthwhile (►Fig. 6).

His primary goal was not to write articles, but to train microneurosurgeons (►Fig. 7). However, early on his

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**Fig. 2** Prof. Rhoton in 2010 at the entrance of the McKnight Brain Institute of the University of Florida.

**Fig. 3** Fellow graduation party at Rhoton’s in 2006. Note that Dr. Rhoton and Ms. Laura Dickinson, his personal assistant, are both wearing Japanese kimonos.

**Fig. 4** Dr. Rhoton rocking two little Japanese girls with a blanket during a pizza party.

**Fig. 5** Dr. and Mrs. Rhoton in 2008.
career, he realized the wide impact his articles would have in the development of microneurosurgery. Thereafter, he would consistently work on one article after the other, redefining surgical approaches and classifying anatomical regions from a microsurgical point of view to cover the vast majority of cranial surgery and anatomy. I watched him many times working patiently over and over again on the same projects and paying close attention to every little detail from labeling pictures to editing articles written by fellows with English as a second language. The beauty and perfection of the pictures he used for his articles, were just an extension of his own beauty and perfection. His monumental work is a fundamental masterpiece of contemporary neurosurgery and we should all try to stand on his shoulders to continue his work in our own way as neurosurgery continues evolving.

His role and his influence in neurosurgery have been appropriately compared with that of Lorenzo de Medicis during the Renaissance of Arts in Florence, Italy, since both were directly responsible for an extraordinary development of their respective fields. We could also propose a comparison to Santiago Ramon Y Cajal, Spanish physician scientist and father of Neuroscience, because both employed tenacious work and creative art to develop a whole new field and their own school of artistic science (Fig. 8). We could go beyond and compare Prof. Rhoton with a fictional personage such as Master Yoda, since both were masters of competence and compassion, and the most respected leaders in their respective worlds; their main difference is that Dr. Rhoton actually existed.

Dr. Rhoton would always look at the bright good side of things, always positive, encouraging us to be and do our best. He made us better by being at his side. I never heard him complaining or criticizing anyone or anything. Even in situations that were clearly not fair and would irritate anybody, his greatness was always way above and beyond. Negative feelings, complaints, aggravations, those were for the common people, definitely not for him. Once he confidently told me, as if it were a secret, his Kantian ethic maxim: “Juan, you know, it is good to behave in a way that makes everybody around want you to succeed, from the cleaning lady that visits the office daily, to your neurosurgery associates.” This teaching, too, remains with me every day, as I realize how difficult it is to emulate my mentor.

Prof. Rhoton left us the way he lived: working until the end with a smile on his face—working on an article on Friday, doing his taxes on Saturday, and going to sleep, forever, on Sunday. He will always live in our minds and souls to teach us once again that competence and compassion should guide our profession, which we need to keep working hard, go to the laboratory to train ourselves and others, be gentle, safe, and accurate in the operating room, and practice love and kindness with our patients.
SAVE THE DATE!

Pre-Meeting Course: February 14-15, 2018

PRESIDENT: Ian Witterick, MD, MSc, FRCSC

North American Skull Base Society

28th Annual Meeting

February 16-18, 2018, Loews Coronado Bay, Coronado, California

Pre-Meeting Course: February 14-15, 2018

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NASBS will be accepting online submissions for oral or poster presentations. Topics include:

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- Meningiomas
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- Quality of Life
- Radiosurgery
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- Temporal Bone/Acoustic Tumors
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For general information regarding the meeting, please contact Adriana Michaels at adriana@nasbs.org.