18th International
Leksell Gamma Knife® Society Meeting
Amsterdam, May 15-19, 2016

SCIENTIFIC PROGRAM

Building Bridges - Changing the Paradigm of Care for Brain Disorders
SUNDAY MAY 15

15.00 – 17.00  Special Topic Educational Seminar
   Let’s Speak the Same Language: Standardization in Terminology, Contouring and Treatment Planning
   About Standardization  Michael Torrens Hygeia Hospital (Athens, Greece)
   About Contouring  Caroline Chung MD Anderson Cancer Center (Houston, USA)
   Treatment Planning  Ian Paddick Bupa Cromwell Hospital (London, UK)
   Jean Régis Hôpital de la Timone (Marseille, France)
   Moderators  Caroline Chung MD Anderson Cancer Center (Houston, USA)
   Vinicio Toledo San Javier Hospital (Guadalajara, Mexico)

18.30 – 21.00  Welcome Reception at Beurs van Berlage on Damrak no. 243
   (Within walking distance from all hotels)

MONDAY MAY 16

07.30 – 08.30  Early Morning Seminar #1 Cost Effectiveness - How does the Data Influence Reimbursement?
   Stephen Tatter Wake Forest University Baptist Medical Center (Winston-Salem, USA)
   Wim van der Meeren CEO of CZ Health Insurance (Tilburg, The Netherlands)
   Moderators  Bodo Lippitz iCera (Hamburg, Germany)
   Anna Likhacheva MD Anderson Cancer Center (Houston, USA)

07.30 – 08.30  Early Morning Seminar #2 Panel Debate Cavernous Malformations - Why does Everyone Remain Confused?
   Introduction  L. Dade Lunsford University of Pittsburgh (Pittsburgh, USA)
   Panelists  Yoshihisa Kida Ookuma Hospital (Nagoya, Japan)
   Gabor Nagy National Institute of Clinical Neurosciences (Budapest, Hungary)
   Roman Liscak Na Homolce Hospital (Prague, Czech Republic)
   Moderators  L. Dade Lunsford University of Pittsburgh (Pittsburgh, USA)
   Roberto Martinez-Alvarez Hospital Ruber Internacional (Madrid, Spain)

07.30 – 08.30  Early Morning Seminar #3 Gamma Knife Beams and Small Field Dosimetry - Can we do it Better?
   Current practice of the Leksell Gamma Knife small field dosimetry  Josef Novotny Na Homolce Hospital (Prague, Czech Republic)
   The implementation and implication of the new small field dosimetry formalism on Gamma Knife dosimetry.
   Hamza Benmakhlouf Karolinska Universitetssjukhuset (Stockholm, Sweden)
   Moderators  Ian Paddick Bupa Cromwell Hospital (London, UK)
   Paula L. Petti Washington Hospital Healthcare System (Fremont, USA)

08.40 – 08.50  Welcome and Opening Remarks
   Guus Beute and Patrick Hanssens St Elisabeth Hospital (Tilburg, the Netherlands)

08.50 - 09.10  How has Radiosurgery Changed Neurosurgery and Radiation Oncology?
   Minesh Mehta Miami Cancer Institute (Miami, USA)
   Moderators  Patrick Hanssens St Elisabeth Hospital (Tilburg, the Netherlands)
   Guus Beute St Elisabeth Hospital (Tilburg, the Netherlands)
Panel Debate: Vestibular Schwannomas
(15 minutes per speaker before panel discussion)

A Quarter of Change - the Impact of Gamma Knife Surgery on Neurotology
P. Ashley Wackym Legacy Good Samaritan (Portland, USA)

The Neurotologist’s Approach
William H. Slattery III House Ear Clinic (Los Angeles, USA)

How do Patients Decide what to do?
L. Dade Lunsford University of Pittsburgh (Pittsburgh, USA)

Panelists
Jean Régis Hôpital de la Timone (Marseille, France)
Pierre-Hugues Roche Hôpital de la Timone (Marseille, France)
Michael Link Mayo Clinic (Rochester, USA)

Moderators
Jeroen Verheul St Elisabeth Hospital (Tilburg, the Netherlands)
Kevin McMullen Indiana University Health (Indianapolis, USA)

10.25 - 10.45 Coffee Break

10.45 - 12.05 Parallel General Scientific Session, Vascular Disorders
Moderators
Hideyuki Kano University of Pittsburgh (Pittsburgh, USA)
Dong Gyu Kim Seoul National University Hospital (Seoul, South Korea)

Advanced white matter imaging visualization modality for radiosurgery in eloquent brain areas
Giuseppe Kenneth Ricciardi Verona University Hospital (Verona, Italy)

A retrospective analysis of 356 cerebral cavernous venous malformations (CVM) treated with gamma knife: an evidence based dilemma.
Stuart Stokes The National Center of Stereotactic Neurosurgery (Sheffield, UK)

Pathological evaluation of radiation-induced vascular lesions: distinct from de novo cavernous hemangiomas?
Jong Hee Chang Yonsei University Health System (Seoul, South Korea)
Radiosurgery for arteriovenous malformations and the impact on headaches
Greg N. Bowden University of Pittsburgh (Pittsburgh, USA)

Complications in brain AVM treatment and Apolipoprotein E isoforms
Guus Beute St Elisabeth Hospital (Tilburg, the Netherlands)

Venoplasty broadens indications of Gamma Knife radiosurgery in treating DAVF with venous stenosis
Chung Jung Lin National Yang Ming University (Taipei, Taiwan)

Effects of radiosurgery for symptomatic cavernous malformations in comparison with the real natural history of symptomatic lesions. A multi-institutional retrospective study in Japan
Yoshishisa Kida Ookuma Hospital (Nagoya, Japan)

Volume-staged Gamma Knife radiosurgery for treatment of large cerebral AVMs
Giorgio Spatola Ospedale San Raffaele (Milan, Italy)

Use of artificial neural networks to predict the probability of developing new cerebral metastases after radiosurgery alone
Parisa Azimi Shahid Beheshti University of Medical Sciences (Tehran, Iran)

A multi-institutional prospective observational study of SRS for multiple brain metastases (JLG0901 study): part 1, long-term results for primary and secondary endpoints
Toru Serizawa Tokyo Gamma Knife Center (Tokyo, Japan)

A multi-institutional prospective observational study of SRS for multiple brain metastases (JLG0901 study): part 2, long-term results of irradiation-related complications and neurocognitive function
Masaaki Yamamoto Katsuta Hospital Mito GammaHouse (Hitachi-naka, Japan)

Dose-volume predictors of visual acuity reduction after SRS for uveal melanoma
Antonella Del Vecchio Ospedale San Raffaele (Milan, Italy)

Does modern management of malignant extracranial disease prolong survival also in patients with ≥3 brain metastases?
Bengt Karlsson Singapore National University Hospital (Singapore, Singapore)

The impact of lesion number and treatment volume on survival in melanoma brain metastases treated with stereotactic radiosurgery (SRS)
Shelley X. Bian University of Southern California (Los Angeles, USA)

Gamma Knife radiosurgery for brain metastases from pulmonary large cell neuroendocrine carcinoma (LCNEC): report of 63 patients meeting the inclusion criteria of the JLG0901 study
Takuya Kawabe Kyoto Prefectural University of Medicine (Kyoto, Japan)

Quality of Life and locoregional disease control following fractionated Stereotactic Body Radiation Therapy in previously irradiated recurrent head and neck cancer
Isabella Zhang Hofstra North Shore-LIJ School of Medicine (Manhasset, USA)

Leukoencephalopathy following stereotactic radiosurgery for brain metastases
Daniel M. Trifiletti University of Virginia (Charlottesville, USA)

No significant difference in local control and overall survival between adjuvant Stereotactic Radiosurgery and salvage Stereotactic Radiosurgery for brain metastases treated by Gross Total Resection and Gamma Knife Radiosurgery
Tavish Nanda Columbia University Medical Center (New York City, USA)

Radiosurgery for intractable seizure associated with symptomatic cavernous malformations - long term follow-up results
Yoshishisa Kida Ookuma Hospital (Nagoya, Japan)

Trigeminal neuralgia secondary to intracranial lesions: a prospective series of 20 consecutive cases
Lucia Schwyzer Centre Hospitalier Universitaire Vaudois (Lausanne, Switzerland)
114 **Gamma Knife radiosurgical capsulotomy for OCD**
Selcuk Peker
Acibadem University (Istanbul, Turkey)

425 **The role of DTI (Diffusion Tensor Imaging) Pyramidal Tractography in Gamma Knife Thalamotomy Planning**
Antonio De Salles
Hospital do Coração (Sao Paolo, Brazil)

69 **Volumetric analysis of gamma capsulotomy for refractory OCD: lesion location predicts response**
Sameer A. Sheth
Columbia University Medical Center (New York City, USA)

297 **Gamma Knife radiosurgery for glossopharyngeal neuralgia: a bicentric Marseille-Lausanne experience of 21 patients**
Pierre-Yves Borius
Hôpital de la Timone, Aix Marseille University (Marseille, France)

78 **Early radiosurgery provides superior pain relief for trigeminal neuralgia patients**
L. Dade Lunsford
University of Pittsburgh (Pittsburgh, USA)

388 **Gamma Knife radiosurgery for the treatment of medical resistant OCD**
Giorgio Spatola
Ospedale S. Raffaele (Milan, Italy)

82 **Accuracy of the Gamma Knife treatment coordinates and outcomes for essential tremor**
Francisco J. Li
Swedish Radiosurgery Center (Seattle, USA)

364 **Gamma Knife thalamotomy for tremor: MR response variability at one year follow-up in a cohort of 142 consecutive patients**
Jean Régis
Hôpital de la Timone (Marseille, France)

14.45 – 15.05 Coffee Break

15.05 – 15.45 **General Scientific Session, Ophthalmology**

Moderators
Pavel Ivanov
International Institute of the Biological Systems (St Petersburg, Russia)

Ian Rennie
Royal Hallamshire Hospital (Sheffield UK)

226 **LGKRS for the treatment of uveal melanomas: results and complications in 135 patients followed-up for at least two years**
Antonio Nicolato
(Verona, Italy)

116 **Microinvasive tumor endoresection in combination with ocular stereotactic radiosurgery (SRS)**
Oleg Sinyavskiy
International Institute of the Biological Systems (St. Petersburg, Russia)

316 **The early change of protein expression in the rhesus optic nerves injured by a single dose/fractionation stereotactic radiosurgery**
Jing Chen
Westchina Hospital, Sichuan (Chengdu, China)

259 **Gamma Knife surgery for patients with orbital optic nerve gliomas**
Yanhe Li
Tianjin Medical University Second Hospital (Tianjin, China)

15.45 – 17.05 **Panel Debate: Brain Metastases**

(15 minutes per speaker before panel discussion)

**What are the Outstanding Questions on SRS for Brain Metastases?**
Jing Li
MD Anderson Cancer Center (Houston, USA)

**Individualized Medicine: Genetic Profiling, Systemic Therapies and SRS**
Manmeet Ahluwalia
Cleveland Clinic (Cleveland, USA)

Quality of Life and Cognition in Brain Metastases Management
Bente Skeie
Haukeland Hospital (Bergen, Norway)

Panelists
Martin Kocher
University of Cologne (Cologne, Germany)

Kevin McMullen
Indiana University Health (Indianapolis, USA)

Stephen Tatter
Wake Forest University Baptist Medical Center (Winston-Salem, USA)

Moderators
Minesh Mehta
Miami Cancer Institute (Miami, USA)

Veronica Chiang
Yale School of Medicine (New Haven, USA)
## Early Morning Seminar #1 Radiobiology of Radiosurgery
**The Theory**
- John Hopewell  University of Oxford (Oxford, UK)
- Douglas Kondziolka  NYU Langone Medical Center (New York City, USA)

**The Practice**
- Patrick Hanssens  St Elisabeth Hospital (Tilburg, the Netherlands)
- Paul Sperduto  University of Minnesota Medical Center (Minneapolis, USA)

### Moderators
- Patrick Hanssens  St Elisabeth Hospital (Tilburg, the Netherlands)
- Paul Sperduto  University of Minnesota Medical Center (Minneapolis, USA)

## Early Morning Seminar #2 Lesioning - Back to the Future
**Introduction**
- Jean Régis  Hôpital de la Timone (Marseille, France)
- Antonio De Salles  Hospital do Coração (Sao Paolo, Brazil)
- Marwan Hariz  National Hospital for Neurology and Neurosurgery (London, UK)

**Pros & cons of various lesioning tools**
- Jean Régis  Hôpital de la Timone (Marseille, France)
- Guus Beute  St Elisabeth Hospital (Tilburg, the Netherlands)

**Pros & cons of RF lesioning vs. DBS**
- Antonio De Salles  Hospital do Coração (Sao Paolo, Brazil)
- Marwan Hariz  National Hospital for Neurology and Neurosurgery (London, UK)

### Moderators
- Jean Régis  Hôpital de la Timone (Marseille, France)
- Guus Beute  St Elisabeth Hospital (Tilburg, the Netherlands)

## Panel Debate: Arteriovenous Malformations
**Genetical and Biological Factors of Rupture**
- Karin Klijn  Radboud University Utrecht (Utrecht, the Netherlands)
- Jason Sheehan  University of Virginia (Charlottesville, USA)

**What Factors Matter for Obliteration?**
- Karin Klijn  Radboud University Utrecht (Utrecht, the Netherlands)

**ARUBA Study - and now what?**
- Karin Klijn  Radboud University Utrecht (Utrecht, the Netherlands)
- Jason Sheehan  University of Virginia (Charlottesville, USA)
- Bruce E. Pollock  Mayo Clinic (Rochester, USA)
- L. Dade Lunsford  University of Pittsburgh (Pittsburgh, USA)

### Panelists
- Karin Klijn  Radboud University Utrecht (Utrecht, the Netherlands)
- Jason Sheehan  University of Virginia (Charlottesville, USA)
- Bruce E. Pollock  Mayo Clinic (Rochester, USA)
- L. Dade Lunsford  University of Pittsburgh (Pittsburgh, USA)

### Moderators
- Hidefumi Jokura  Furukawa Seiry Hospital (Osaka-City Miyagi, Japan)
- Enrico Motti  Clinica Villa Maria Cecilia (Cotignola, Italy)

## Coffee Break

## General Scientific Session, Vascular Disorders
**Moderators**
- Serge Blond  Hôpital Roger Salengro (Lille, France)
- Karin Klijn  Radboud University Utrecht (the Netherlands)

###session 400
**Treatment strategy of cerebral arteriovenous malformation: Gamma Knife surgery combined endovascular surgery**
- Osamu Nagano  Chiba Cerebral and Cardiovascular Center (Chiba, Japan)

###session 360
**Comparison of linear accelerator (Linac) and Gamma Knife dosimetric indices in the radiosurgical treatment of cerebral AVM patients**
- Sara Rahnema  Emory University (Atlanta, USA)

###session 129
**Gamma Knife radiosurgery treatment of ‘in vivo’ rabbit model aneurysms**
- James R. Connor  Pennsylvania State University College of Medicine (Hershey, USA)

###session 27
**Application 2D frameless angiography in planning Gamma Knife radiosurgery for AVMS**
- Alexandra Dalechina  Moscow Gamma Knife Center (Moscow, Russia)

###session 218
**Triple magnetic resonance angiography for confirmation of obliteration following Gamma Knife radiosurgery for arterial-venous malformations of the brain**
- Alvaro Rochas-Villabona  National Hospital for Neurology and Neurosurgery (London, UK)

###session 91
**Incidence and management of late radiation-induced complications after arteriovenous malformation radiosurgery**
- Bruce E. Pollock  Mayo Clinic (Rochester, USA)

###session 371
**Orbital tumors treated with Gamma Knife radiosurgery**
- Xiaoyu Wang  Westchina Hospital, Sichuan University (Chengdu, China)

###session 357
**A meta-analysis comparing outcomes in the ARUBA trial to those following Gamma Knife surgery for unruptured Untreated AVMs.**
- Bengt Karlsson  Singapore National University Hospital (Singapore, Singapore)
415 Proposed Phase I/II Study of expanded 70% isodose volume for AVM Radiosurgery
Ajay Niranjan University of Pittsburgh (Pittsburgh, USA)

10.00 – 11.30 Parallel General Scientific Session, Benign Tumors
Moderators Jeroen Verheul St Elisabeth Hospital (Tilburg, the Netherlands)
Yoshiyasu Iwai Osaka City General Hospital (Osaka, Japan)

247 Retrospective study of large sporadic vestibular schwannomas (VS) treated with Gamma Knife. Is it worth stretching the boundaries?
Geza Z. Mezey Royal Hallamshire Hospital (Sheffield, UK)

323 Dosimetric comparison of different treatment modalities for stereotactic radiosurgery of meningioma
Thierry Gevaert UZ Brussel (Brussels, Belgium)

77 Hearing sub-classification predicts long-term auditory outcomes after radiosurgery for vestibular schwannoma patients with good hearing
L. Dade Lunsford University of Pittsburgh (Pittsburgh, USA)

10 Gamma Knife surgery for trigeminal schwannoma: clinical analysis in 52 cases
Junzhao Sun Navy General Hospital (Beijing, China)

431 Volumetric changes and clinical outcome for petroclival meningiomas after primary treatment with Gamma Knife Radiosurgery.
Suan Te Lie Gamma Knife Center Tilburg, St Elisabeth Hospital (Tilburg, the Netherlands)

19 Gamma Knife radiosurgery for Koos grade 4 vestibular schwannomas
David Mathieu Université de Sherbrooke (Sherbrooke, Canada)

108 Volumetric and metabolic responses of pituitary adenoma after Gamma Knife surgery
Sarah Lonneville Hôpital Erasme (Brussels, Belgium)

186 Stereotactic radiosurgery for patients with cranioopharyngiomas: a multi-institutional retrospective study in Japan (JLGK1303)
Takahiko Tsugawa Nagoya Kyoritsu Hospital (Nagoya, Japan)

293 Radiation treatment of vestibular schwannoma and development of secondary intracranial malignancy appears coincidental rather than causative
Michael J. Link Mayo Clinic (Rochester, USA)

11.40 – 11.50 Pioneers in Radiosurgery Award
Introduced by: Dan Leksell (Stockholm, Sweden)

11.50 – 12.40 Lunch

12.40 – 13.05 GROUP PHOTO – taken in Main Room

13.05 – 13.35 Lars Leksell Lecture
What Defines a Pioneer, Innovator and Entrepreneur?
John Adler Stanford University Medical Center (Stanford, USA)
Introduced by: Christer Lindquist Bupa Cromwell Hospital (London, UK)

13.35 – 14.20 SRS for Ocular Disorders: State of the Art
Ocular Melanoma and Choroidal Metastases
Ian Rennie Royal Hallamshire Hospital (Sheffield, UK)

Microinvasive Tumor Endoresection in Combination with Ocular SRS
Oleg Sinyavskiy International Institute of the Biological Systems (St. Petersburg, Russia)

Moderators Gabor Nagy National Institute of Clinical Neurosciences (Budapest, Hungary)
Roman Liscak Na Homolce Hospital (Prague, Czech Republic)

14.20 – 15.30 SRS for Obsessive Compulsive Disorder
Todd Isaacson (Shenandoah, USA) (12 min)
Gerry Radano (Scarsdale, USA) (12 min)
Steven Rasmussen Rhode Island Hospital (Providence, USA) (15 min)
Antonio Carlos Lopes  Instituto de Psiquiatria, Sao Paulo University (Sao Paulo, Brazil)  (15 min)

Moderators:  Christer Lindquist  Bupa Cromwell Hospital (London, UK)
             Roberto Martinez-Alvarez  Hospital Ruber Internacional (Madrid, Spain)

15.30 – 15.50  Coffee Break

15.50 – 16.50  General Scientific Session, Functional Disorders

Moderators  Rick Schuurman  Academic Medical Center (Amsterdam, Netherlands)
             Antonio De Salles  Hospital do Coração (Sao Paolo, Brazil)

222  Stereotactic radiosurgery for glossopharyngeal neuralgia: an international multicenter study
    Hideyuki Kano  University of Pittsburgh (Pittsburgh, USA)

389  Gamma Knife Thalamotomy for Essential Tremor and Parkinson’s Disease
    Sebastian M. Dzierzecki  Centrum Gamma Knife Warsaw (Warsaw, Poland)

409  Gamma Knife posterior hypothalamotomy for refractory aggressiveness
    Bernardo Perez  Centro Medico Imbanaco (Cali, Colombia)

395  Gamma Knife capsulotomy: analysis of 72 treatments from five centres
    Ian Paddick  Bupa Cromwell Hospital (London, UK)

377  Safety of STN Gamma Knife radiosurgery for Parkinson’s disease: preliminary results of a prospective study
    Jean Régis  Hôpital de la Timone (Marseille, France)

135  The impact of cobalt-60 source age on biologically effective dose in Gamma Knife thalamotomy
    Benjamin H. Kann  Yale School of Medicine (New Haven, USA)

15.50 – 16.50  Parallel General Scientific Session, Malignant Disorders

Moderators  Jason Sheehan  University of Virginia (Charlottesville, USA)
             Matthew Foote  Gamma Knife Centre of Queensland (Brisbane, Australia)

317  Two-staged Gamma Knife radiosurgery for large metastatic brain tumors
    Kazuyasu Alta  Kyoto Prefectural University of Medicine (Kyoto, Japan)

12  Statistical analysis of radio-induced effects after SRS for uveal melanoma: a mono-institutional analysis
    Antonella Del Vecchio  Ospedale San Raffaele (Milan, Italy)

256  Gamma Knife, linac photons, or protons? Treatment planning comparison for skull base fractionated stereotactic radiosurgery
    Jing Li  MD Anderson Cancer Center (Houston, USA)

72  Three-stage Gamma Knife treatment for relatively large metastatic brain tumors
    Masaaki Yamamoto  Katsuta Hospital Mito GammaHouse (Hitachi-naka, Japan)

351  Gamma Knife radiosurgery for brainstem metastases
    Yin Wook Kim  Seoul National University Hospital (Seoul, South Korea)

60  Modulation of radio-sensitivity in human glioblastoma via cadherin-based cell-cell interaction
    Christopher Cifarelli  West Virginia University (Morgantown, USA)

18.30  Boats leave for Banquet at the Scheepvaartmuseum (National Maritime Museum)
08.00 – 08.45 Early Morning Seminar #1 Gold Standards Gone Rusty: RCT’s in the Era of Big Data
From randomized trials to Registries: How practice makes real progress
Douglas Kondziolka NYU Langone Medical Center (New York City, USA)
From clinical trials to real-world evidence: The future is set
Caroline Chung MD Anderson Cancer Center (Houston, USA)
Big Data: Useful facts or foolish fashion?
Hester Lingsma Erasmus MC Kanker Instituut (Rotterdam, the Netherlands)

Moderators
Martin van den Bent Erasmus MC Kanker Instituut (Rotterdam, the Netherlands)
Minesh Mehta Miami Cancer Institute (Miami, USA)

08.00 – 08.45 Early Morning Seminar #2 Radiation Related Oncogenesis
The Risk Ian Paddick Bupa Cromwell Hospital (London, UK)
The Data Jeremy Rowe Royal Hallamshire Hospital (Sheffield, UK)

Moderators
Veronica Chiang Yale School of Medicine (New Haven, USA)
John Hopewell University of Oxford (Oxford, UK)

08.55 – 10.25 General Scientific Session Physics & QA
MAIN ROOM
Moderators
Ian Paddick Bupa Cromwell Hospital (London, UK)
John Flickinger University of Pittsburgh (Pittsburgh, USA)

128 Robotic path finding techniques in stereotactic radiosurgery treatment optimization
Dionne M. Aleman University of Toronto (Toronto, Canada)

325 Frameless targeting of arteriovenous malformations using cerebral vessel tree: evaluation of the vessel tree stability over time
Thierry Gevaert UZ Brussel (Brussels, Belgium)

392 Assessment of reproducibility of patient positioning using mask immobilization on the Leksell Gamma Knife Icon
Ruth A. Smith Bristol Gamma Knife Centre (Bristol, UK)

197 Assessment of contouring variability using the STAPLE-method and observer sensitivity/specificity parameters
Helena Sandström Karolinska Institutet (Stockholm, Sweden)

144 Adaptive fractionated stereotactic radiotherapy using Gamma Knife Icon (a-gkFSRT): phantom studies
Florian Stieler University Medical Center Mannheim (Mannheim, Germany)

385 Evaluation of the geometric accuracy of the Leksell Gamma Knife Icon
Jonas Johansson (Stockholm, Sweden)

93 To evaluate systematic difference between TMR10 and convolution based algorithm for autoshielding in GK Perfexion
Yoichi Watanabe University of Minnesota (Minneapolis, USA)

168 3D assessment of the effects of high density embolization material on the absorbed dose in the target for Gamma Knife radiosurgery of AVM
Yoichi Watanabe University of Minnesota (Minneapolis, USA)

150 Assessment of variety detectors for relative output factors measurement of the Leksell Gamma Knife Perfexion and independent Monte Carlo calculation
Josef Novotny Na Homolce Hospital (Prague, Czech Republic)

08.55 – 10.25 Parallel General Scientific Session, Malignant Tumors
Moderators
Masaaki Yamamoto Katsuta Hospital Mito GammaHouse (Hitachi-naka, Japan)
Siegler Leenstra St Elisabeth Hospital (Tilburg, the Netherlands)

249 Up-front “leading edge” Gamma Knife radiosurgery to tumor migration pathways in 170 patients with glioblastoma multiforme: a novel adjunctive therapy
Christopher Duma Hoag Hospital (Newport Beach, USA)

54 Complications after stereotactic radiosurgery for brain metastases: incidences and correlating factors
Masaaki Yamamoto Katsuta Hospital Mito GammaHouse (Hitachi-naka, Japan)

84 Indications and efficacy of Gamma Knife stereotactic radiosurgery for recurrent glioblastoma: two decades of institutional experience
Brandon S. Imber Northwestern University (Chicago, USA)

170 Radiographic response of melanoma brain metastases to Gamma Knife varies by type of systemic immune checkpoint inhibitor used
Jack M. Qian Yale University School of Medicine (New Haven, USA)

120 Stereotactic irradiation of optic pathway/hypothalamic gliomas: do we need to fractionate?
Amr El-Shehaby Nasser Institute (Cairo, Egypt)

20 Demonstration of differential clinical radiosensitivity based upon mutation profile in metastatic melanoma treated with stereotactic radiosurgery
Ranjit S. Bindra Yale School of Medicine (New Haven, USA)

406 Risk of extracranial secondary cancer after radiosurgery: comparison of Gamma Knife Perfexion, Cyberknife and Novalis
Alison Cameron Bristol Gamma Knife Center (Bristol, UK)

368 Quality of life of patients with brain metastasis who received either surgery with/without whole brain radiotherapy or gamma knife radiosurgery
Xiaoyu Wang Westchina Hospital, Sichuan University (Chengdu, China)

417 "Cure" of Intracranial Metastases of less than 100 mm^3 Treated by Stereotactic Radiosurgery
Amparo Wolf NYU Langone Medical Centre (New York City, USA)

10.25 – 10.45 Coffee Break

10.45 - 10.55 International Gamma Knife Research Foundation (IGKRF) - an Update
L. Dade Lunsford University of Pittsburgh (Pittsburgh, USA)

10.55 – 12.00 Panel Debate: Glioblastoma
(15 minutes per speaker before panel discussion)

Pathophysiology of Gliomas
Martin van den Bent Erasmus MC Kanker Instituut (Rotterdam, the Netherlands)

Leading Edge Radiosurgery
Christopher Duma Hoag Hospital (Newport Beach, USA)

Emerging Approaches
Roger Stupp UniversitätsSpital Zürich (Zurich, Switzerland)

Panelists
Bente Skeie Haukeland Hospital (Bergen, Norway)
Jung-il Lee Samsung Medical Center (Seoul, Korea)
Sieger Leenstra St Elisabeth Hospital (Tilburg, the Netherlands)
Minesh Mehta Miami Cancer Institute (Miami, USA)

Moderators
Paul Sperduto University of Minnesota Medical Center (Minneapolis, USA)
Marc Levivier Centre Hospitalier Universitaire Vaudois (Lausanne, Switzerland)

12.00 – 13.00 Lunch

13.00 – 13.40 Impact of Leksell Gamma Knife ICON on Clinical Practice

Technical Attributes
Ian Paddick Bupa Cromwell Hospital (London, UK)

Oncologist’s Early Experience
Alison Cameron Bristol Gamma Knife Centre (Bristol, UK)

Neurosurgeon’s Early Experience
Jean Régis Hôpital de la Timone (Marseille, France)

Moderators
Ian Paddick Bupa Cromwell Hospital (London, UK)
Dheerendra Prasad Roswell Park Cancer Institute (Buffalo, USA)

13.40 – 14.10 Information Guided Radiosurgery

Big Data and Leksell Gamma Knife Registry
Douglas Kondziolka NYU Langone Medical Center (New York City, USA)

ASTRO/AANS National Brain SRS Registry
Inga Grills William Beaumont Hospital (Royal Oak, USA)

Moderators
Patrick Hanssens St Elisabeth Hospital (Tilburg, the Netherlands)
**14.10 – 14.30**

**Post Treatment Radiation Effects vs. Tumor Regrowth**

Stephen M. Holmes (Gamma Knife Center of the Pacific, Honolulu, USA)

Moderators: Giuseppe Kenneth Ricciardi (Verona University Hospital, Verona, Italy) and Ruth A. Smith (Bristol Gamma Knife Centre, Bristol, UK)

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**14.30 – 15.10**

**General Scientific Session, Imaging**

Moderators: Giuseppe Kenneth Ricciardi (Verona University Hospital, Verona, Italy) and Ruth A. Smith (Bristol Gamma Knife Centre, Bristol, UK)

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<tr>
<th>Presentation Title</th>
<th>Author(s)</th>
<th>Institution</th>
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<tbody>
<tr>
<td>The evaluation of auditory pathways using DTI in patients treated with Gamma Knife radiosurgery for acoustic neuroma: a preliminary report</td>
<td>Mustafa Aziz Hatiboglu</td>
<td>Bezmialem Vakif University (Istanbul, Turkey)</td>
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<tr>
<td>16-year clinical experience of use of PET metabolic imaging for targeting in Gamma Knife surgery</td>
<td>Cecile Renier</td>
<td>ULB Institut Bordet (Brussels, Belgium)</td>
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<tr>
<td>Stereotactic diffusion tensor tractography for Gamma Knife stereotactic radiosurgery</td>
<td>Cormac Gavin</td>
<td>St. Bartholomew’s Hospital (London, UK)</td>
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<td>3T MRI in stereotactic localisation: advantages, pitfalls and solutions</td>
<td>Ian Paddick</td>
<td>Bupa Cromwell Hospital (London, UK)</td>
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**15.10 – 15.30**

**Coffee Break**

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**15.30 – 17.10**

**General Scientific Session, Malignant Disorders**

Moderators: Bengt Karlsson (Singapore National University Hospital, Singapore) and Christina Tsien (Washington University in St. Louis, St. Louis, USA)

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<tr>
<td>Thymoquinone enhances the effectiveness of Gamma Knife in melanoma cell line in vitro through inducing apoptosis</td>
<td>Mustafa Aziz Hatiboglu</td>
<td>Bezmialem Vakif University (Istanbul, Turkey)</td>
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<tr>
<td>Follow-up results of brain metastasis patients undergoing repeat Gamma Knife radiosurgery</td>
<td>Takao Koiso</td>
<td>Katsuta Hospital Mito GammaHouse (Hitachi-naka, Japan)</td>
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<tr>
<td>Internal dose escalation increases local control in NSCLC brain metastases</td>
<td>Christopher Abraham</td>
<td>Washington University in St. Louis (St. Louis, USA)</td>
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<tr>
<td>Increasing avoidance of whole brain radiation therapy for brain metastases in favor of stereotactic radiosurgery in patients referred to an experienced Gamma Knife center</td>
<td>Edward Monaco</td>
<td>Center for Image Guided Neurosurgery, University of Pittsburgh (Pittsburgh, USA)</td>
</tr>
<tr>
<td>Cost effectiveness of stereotactic radiosurgery versus whole brain radiation therapy for up to 10 brain metastases</td>
<td>Nataniel H. Lester-Coll</td>
<td>Yale University School of Medicine (New Haven, USA)</td>
</tr>
<tr>
<td>Combining on-demand Gamma Knife with new therapies in melanoma: a 168 patients retrospective study</td>
<td>Jean Régis</td>
<td>Hôpital de la Timone (Marseille, France)</td>
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<tr>
<td>Survival but not brain metastasis response relates to lung cancer mutation status after radiosurgery</td>
<td>Joshua Silverman</td>
<td>NYU Langone Medical Centre (New York City, USA)</td>
</tr>
<tr>
<td>Stereotactic cyst aspiration followed by Gamma Knife radiosurgery on the same day for large cystic brain metastases</td>
<td>Zjijwar Sadik</td>
<td>St. Elisabeth Hospital Tilburg (Tilburg, the Netherlands)</td>
</tr>
<tr>
<td>Impact of deferring radiotherapy in patients with EGFR-mutant lung adenocarcinoma who develop brain metastases</td>
<td>Veronica Chiang</td>
<td>Yale School of Medicine (New Haven, USA)</td>
</tr>
<tr>
<td>Combined intracranial and extracranial stereotactic radiotherapy for oligometastatic non-small cell lung carcinoma (NSCLC)</td>
<td>Michael C. Roach</td>
<td>Washington University in St. Louis (St. Louis, USA)</td>
</tr>
</tbody>
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**15.30 – 17.10**

**Parallel General Scientific Session, Benign Tumors**

Moderators: Koo van Overbeeke (Maastricht University Hospital Medical Center, Maastricht, the Netherlands) and Michael McDermott (University of California San Francisco, San Francisco, USA)
Comparison of hearing outcomes between multisession and single-session Gamma Knife radiosurgery for vestibular schwannomas in patients who retain serviceable hearing: a single-center, case-matched study
Xuqun Tang Shanghai Gamma Hospital (Shanghai, China)

Visual function after Gamma Knife treatment of meningiomas examined in relation to dose/volume analysis of dose to optic pathways
Michael Torrens Hygeia Hospital (Athens, Greece)

Long-term outcome of Gamma Knife radiosurgery for vestibular schwannomas
Hidefumi Jokura Furukawa Seiryo Hospital (Osaki, Japan)

1p36 loss is associated with regrowth of WHO grade I meningiomas after Gamma Knife radiosurgery
Vincent Bulthuis Maastricht University Hospital (Maastricht, the Netherlands)

Differences in fractional anisotropy predict responsiveness of meningiomas to Gamma Knife radiosurgery
Herwin Speckter Dominican Gamma Knife Center (Santo Domingo, Dominican Republic)

Acute effect after Gamma Knife surgery for vestibular schwannomas - a prospective series of 35 consecutive cases
Constantin Tuleasca Centre Hospitalier Universitaire Vaudois (Lausanne, Switzerland)

Gamma-Knife Radiosurgery for grade II Meningioma
Charles A. Valery Hopital Pitié Salpêtrière (Paris, France)

Pretreatment growth rate as a predictor of tumor control following Gamma Knife radiosurgery for sporadic vestibular schwannoma
Michael J. Link Mayo Clinic (Rochester, USA)

Long-term follow-up results of Gamma Knife radiosurgery for pituitary tumors touching/compressing the optic apparatus
Masaaki Yamamoto Katsuta Hospital Mito GammaHouse (Hitachi-naka, Japan)

Tumor control rate in a large series of 543 patients treated by Gamma Knife radiosurgery for a pituitary adenoma
Pietro Mortini Ospedale San Raffaele (Milan, Italy)
07.30 – 08.30 Early Morning Seminar #1 LINAC Radiosurgery Capabilities: Myth versus Reality

*Normal Tissue Dose and its Dependence on Radiosurgery Platform*

**Penny Sneed** University of California San Francisco (San Francisco, USA)

*Workflow Considerations*

**David Schlesinger** University of Virginia (Charlottesville, USA)

*Clinical Considerations*

**Michelle Alonso-Basanta** University of Pennsylvania (Philadelphia, USA)

**Moderators**

- **Lilyana Angelov** Cleveland Clinic (Cleveland, USA)
- **Thierry Gevaert** UZ Brussel (Brussels, Belgium)

07.30 – 08.30 Early Morning Seminar #2 Targeted Drugs and Radiation - Are There Interactions?

*Systemic Therapies & Stereotactic Radiosurgery*

**Manmeet Ahluwalia** Cleveland Clinic (Cleveland, USA)

**Title TBD**

**Roger Stupp** UniversitätsSpital Zürich (Zurich, Switzerland)

*The Abscopal Effect: Radiation-Induced Immune Enhancement*

**Paul Sperduto** University of Minnesota Medical Center (Minneapolis, USA)

**Moderators:**

- **Martin van den Bent** Erasmus MC Kanker Instituut (Rotterdam, the Netherlands)
- **Arjun Sahgal** Odette Cancer Center (Toronto, Canada)

08.40 – 09.40 Panel Debate: Fractionation

(15 minutes per speaker before panel discussion)

**AVM’s**

**Pennsylvania Sneed** University of California San Francisco (San Francisco, USA)

**Benign Tumors**

**Stephanie Combs** Technische Universität München (Munich, Germany)

**Brain Metastases**

**Arjun Sahgal** Odette Cancer Center (Toronto, Canada)

**Panelists:**

- **Patrick Hanssens** St Elisabeth Hospital (Tilburg, the Netherlands)
- **Piero Picozzi** Humanitas Research Hospital (Milano, Italy)

**Moderators:**

- **Jonathan Knisely** Hofstra North Shore-LIJ School of Medicine (Manhasset, USA)
- **David Andrews** Jefferson Hospital of Neuroscience (Philadelphia, USA)

09.40 – 10.00 Coffee Break

10.00 – 11.10 General Scientific Session, Physics & QA

**MAIN ROOM**

**Moderators**

- **Josef Novotny** Na Homolce Hospital (Prague, Czech Republic)
- **Hyun-Tai Chung** Seoul National University Hospital (Seoul, Korea)

189 *Use of an innovative patient-specific plan verification methodology towards highlighting treatment effectiveness in gamma knife SRS treatments*

**Pantelis Karaikos** Hygeia Hospital (Athens, Greece)

210 *Commissioning and end-to-end testing of the Leksell Gamma Knife® Icon™*

**Lucy Winch** Bristol Gamma Knife Centre (Bristol, UK)

127 *γTools: a modular multifunction phantom for quality assurance in Gamma Knife treatments*

**Silvia Calusi** University of Florence (Florence, Italy)

335 *AAPM TG178: towards the recommendation of a standard dosimetry protocol for Gamma Knife stereotactic radiosurgery*

**Paula L. Petti** Washington Hospital Healthcare System (Fremont, USA)

76 *Dosimetric comparison of stereotactic radiosurgery for multiple brain metastasis between with GammaPlan and with Automatic Brain Metastasis Planning Element*

**Yoshimasa Mori** Aichi Medical University (Nagakute, Japan)
Perfexion sector alignment tests using panoramic films
Monique van Prooijen UHN Princess Margaret Cancer Centre (Toronto, Canada)

Dosimetric effects of Onyx embolization on Gamma Knife AVM dose distributions
David Schlesinger University of Virginia (Charlottesville, USA)

Parallel General Session Benign Tumors
Moderators
Roman Liscak Na Homolce Hospital (Prague, Czech Republic)
Daniel Devriendt Hôpital Erasme (Brussels, Belgium)

Functional outcomes of surgical resection of vestibular schwannomas after failed gamma knife radiosurgery
Yoshiyasu Iwai Osaka City General Hospital (Osaka, Japan)

Measures of optic nerve dose associated with visual field abnormalities after Gamma Knife surgery for pituitary adenomas
Theodor S. Vesagas Philippine Gamma Knife Center (San Juan City, Philippines)

Gamma Knife surgery for patients with jugular foramen schwannomas: a multi-institutional retrospective study in Japan (JLGK1302)
Toshinori Hasegawa Komaki City Hospital (Komaki, Japan)

Repeat Gamma Knife surgery for vestibular schwannomas
Nicolas Massager Hôpital Erasme (Brussels, Belgium)

Stereotactic radiosurgery for vestibular schwannomas: the average of 10 year post-treatment follow-up results of 183 patients
Shinya Watanabe Katsuta Hospital Mito Gamma House (Hitachi-naka, Japan)

The significance of dosimetry in the treatment of meningiomas by radiosurgery
Michael Torrens Hypeia Hospital (Athens, Greece)

Fractionated Gamma Knife® Icon™ treatment for pituitary adenoma abutting the optic apparatus results in a significantly lower dose to organs at risk compared to Conformal Radiotherapy/VMAT
Alison Cameron Bristol Gamma Knife Centre (Bristol, UK)

Clinical Trials Updates
Moderators
Li Pan Shanghai Gamma Hospital (Shanghai, China)
Nicolas Massager Hôpital Erasme (Brussels, Belgium)

IGKRF
Ajay Niranjan University of Pittsburgh (Pittsburgh, USA)
ROSE
Nicholas Barbaro Indiana University Health (Indianapolis, USA)
JLGS
Toru Serizawa Tokyo Gamma Knife Center (Tokyo, Japan)
STN Lesioning for Tremor
Jean Régis Hôpital de la Timone (Marseille, France)
Aneurysms
James R. Connor Pennsylvania State University College of Medicine (Hershey, USA)
Essential Tremor
Sandra Vermeulen Swedish Cancer Institute (Seattle, WA)

Lunch

Future Studies: What Questions Need to be Addressed?
Moderators
Alison Cameron Bristol Gamma Knife Centre (Bristol, UK)
Michael Schulder Hofstra North Shore-LIJ School of Medicine (Manhasset, USA)

Brain Metastases
Bodo Lippitz iCera (Hamburg, Germany)
Vestibular Schwannomas
Jeroen Verheul St Elisabeth Hospital (Tilburg, the Netherlands)
Trigeminal Neuralgia
Joanna Zakrzewska University College London Hospitals (London, UK)
Pituitary Tumors
Alessandra Gorgulho Hospital do Coração (Sao Paulo, Brazil)
AVM's
Bruce E. Pollock Mayo Clinic (Rochester, USA)

Key Meeting Takeaways and Concluding Remarks
Guus Beute St Elisabeth Hospital (Tilburg, the Netherlands)
Patrick Hanssens St Elisabeth Hospital (Tilburg, the Netherlands)

Buses leave for Farewell Party at Arendshoeve