



### LETTER FROM THE PRESIDENT



Michael Schulder

Dear Colleagues,

Our (now) biannual meeting is mere months away, and I hope to see you all in New York at the end of June. The theme of the conference will be "Opportunities and Controversies in Stereotactic and Functional Neurosurgery," and our scientific program committee has worked diligently to highlight papers that will stimulate new investigations and also healthy debate. Now that the abstracts have been reviewed, certain items stand out:

1. 482 abstracts were submitted, the most ever for a meeting of the WSSFN. Not that the number itself matters, but it is a welcome sign of the interest in and enthusiasm for our field, and for our society.
2. Networks were a frequent theme this year. This reflects the ongoing efforts to explore this concept of brain function, and the extent to which functional neurosurgeons work to advance neuroscience.
3. The quality of the submissions was remarkably high. The level of sophistication from around the world is

unprecedented. Our Scientific Program Chair, Joseph Neimat, has done a superb job organizing the presentations in a way that you will find original and fascinating.

Our meeting will feature some novel presentations and symposia, including discussions of medical ethics in clinical neuroscience, and a session led by Itzhak Fried on cognition and memory that will feature a lecture by John O'Keefe, recipient of the Nobel Prize in Medicine in 2014. We will also have a special movie night that will focus on a very interesting topic in the history (and present) of functional neurosurgery.

Please register soon. The Hilton (our headquarters hotel) is filling up fast for the best time of year to be in NYC. Please register and plan on enjoying an unforgettable (and fun) neurosurgical event!

All the best,  
Michael Schulder  
WSSFN President  
United States

### FROM THE EDITOR



Erich Richter

Welcome to the Spring 2019 WSSFN Newsletter. The New York Biennial Meeting is just around the corner, and we certainly hope to see you all there! In addition to highlighting speakers and awards (Pages 7 and 10), in this issue you will find articles on the ESSFN meeting in Scotland (Page 3), the MSSFN Meeting (Page 11), and the Canadian Neuromodulation Meeting (Page

14). As our society expands its online offerings, please read the Webinar Report (Pages 12 and 13) on our first two Webinars - these are recorded and available on

the website. Also note the Stereotactic Academy - over 100 lectures on DBS and online testing to evaluate your own knowledge base and professional growth. As always, we remember our past as we push into the future. In this issue we review the history of the development of Stereotactic and Functional Neurosurgery in Algeria (Page 5), and also the contributions and life of Irving Cooper (Page 8) and Roy Bakay (Page 9). I hope you enjoy, and look forward to seeing you soon in New York City!

Erich Richter  
WSSFN Editor  
United States

### TABLE OF CONTENTS

ESSFN Edinburgh 2018 .....	3	Dr. Roy A.E. Bakay Award .....	9
Stereotactic Development in Algeria .....	5	Lone Frank Presents .....	10
The Stereotactic Academy .....	7	MSSFN Cairo 2019 .....	11
Distinguished Faculty: John O'Keefe .....	7	WSSFN Webinar Report .....	12
Dr. Irvin Cooper Award .....	8	11th Canadian Neuromodulation Meeting .....	14

Editor in Chief  
Erich O. Richter

Have feedback or news to share?  
Contact us! Melody Dian [melody@wssfn.org](mailto:melody@wssfn.org)

patient care

teaching

research

WSSFN Spring 2019



# WSSFN

**18<sup>TH</sup>**  
MEETING OF THE  
WORLD SOCIETY  
FOR STEREOTACTIC  
AND FUNCTIONAL  
NEUROSURGERY  
**OPPORTUNITIES AND  
CONTROVERSIES**



**HILTON MIDTOWN  
NEW YORK CITY**

**JUNE 24-27  
2019**

[www.wssfn-congress.org](http://www.wssfn-congress.org)

**SEE YOU  
IN NYC!**





Marwan Hariz

## PERSONAL REMINISCENCES FROM THE XXIII ESSFN CONGRESS, EDINBURGH

On 26-29 September 2018, the XXIII Congress of the ESSFN was held in Edinburgh, Scotland and the “local organisers” were three people who were anything but “local” (first picture). There are several other features and peculiarities that made the 2018 Congress of the ESSFN truly unique:

a) While previous Congresses were organised by members of the Executive Committee (ExCom) of the ESSFN, none of the three local organisers of the 2018 meeting was or is a member of the ExCom.

b) None of the “local” organisers of this year’s ESSFN Congress are from, or work, or have any professional connection to, Edinburgh. One is a Lebanese-Swede immigrant who had just left the National Hospital for Neurology and Neurosurgery (NHNN) at Queen Square in London to re-settle in Sweden (Marwan Hariz), one a Maltese-British citizen (Ludvic Zrinzo) also working at the NHNN in London, and one lives and works in Dundee (Keith Matthews).

c) Furthermore, one of the three gentlemen listed above is not a neurosurgeon but a psychiatrist. This is unique in the annals of ESSFN Congresses. The famous late pioneer Jean Talairach, one of the founding members of the ESSFN in 1970, would have been proud of this achievement, having been himself a psychiatrist before becoming neurosurgeon. Hence, nobody should be surprised if and when Keith Matthews applied to a neurosurgical residency program somewhere, to follow in the glorious path of Jean Talairach...

d) Never before has the main topic of an ESSFN Congress been about “Surgery for Psychiatric Illness.” This main theme of the 2018 Congress, most prominent on the day before the Congress per se, when a satellite symposium on this issue was organised, has enabled a record number of psychiatrists to attend the 2018 congress and debate and deliver talks. However, almost all --if not all-- present psychiatrists are known to be in favour of surgery for refractory psychiatric illness, especially OCD and depression. This is a good beginning that may pave the way for more more psychiatrists attending future meetings of the ESSFN, and more activity in this field, although I personally do not hold my breath on that issue. American psychiatrist Ben Greenberg, a veteran of clinical-academic psychiatric surgery was one of the main speakers and debaters at the congress, and his clear and down-to-earth position on psychiatric surgery, both lesional and DBS, was highly candid and welcome.

e) 2018 marked the second time in the history of the ESSFN that its Congress was held in Edinburgh. The first time was at the occasion of the very first Congress of the Society, in 1972, and that congress was organised by one of the Society’s founders, John Gillingham who was a neurosurgeon working in Edinburgh. The venue of the 1972 First congress was the famous Royal College of Surgeons of Edinburgh, same venue as for the 2018 XXIII Congress. The welcome address at the 1972 Congress was given by Lars Leksell, and the welcome address at the 2018 Congress was given by his son Dr. Dan Leksell. I am sure that the oldest among the attendees in 2018 had a definite sense of déjà vu, déjà vécu, déjà entendu...

f) The year 2018 was the occasion for many jubilee celebrations at the ESSFN Congress: we celebrated the 110th anniversary of the seminal publication of Horsley and Clarke that heralded the very introduction of stereotaxy as a surgical method (Brain, 1908); the 25th anniversary of the first publication on STN DBS (Pollak and Benabid, Neurologie, 1993); the 50th birth anniversary of neurosurgeon Professor Rick Schuurman (Amsterdam); the 200th birth anniversary of the philosopher and economist Karl Marx (1818, Trier, Germany); the 80th anniversary of the founding in 1938 of the Journal *Confinia Neurologica* by Ernst Spiegel (that became eventually “Applied Neurophysiology” then “Stereotactic and Functional Neurosurgery”); the 60th anniversary of the first publication on focused ultrasound pallidotomy for Parkinson’s by Russel Meyers (J Neurosurg, 1958); the 50th anniversary of introduction of the Gammaknife (1968); The 88th birth anniversary of the famous Scottish citizen and former milkman Sean Connery; the 100th anniversary of the end of World War One; the 70th anniversary of the introduction of the National Health Service in Britain; and the 30th anniversary of the visit and stay of Prof Takaomi Taira in Edinburgh. We also celebrated the addition of two new “ben” or hill in Scotland, adding to the existing ones such as the Ben Nevis, the Ben Lomond and others: the Ben Abid and the Ben Gun. We also commemorated with sadness the 10th anniversary of the passing away of Dr Harald Fodstad who was a most prominent member of the ESSFN and the WSSFN. Hence, the 2018 ESSFN meeting was filled with celebrations and remembrances of mostly happy memories of jubilars, and of their lasting legacies.

Two retired grand old men of British Neurosurgery gave historical lectures about Scottish and Welsh neurosurgical heritage at the beginning of the congress: Indian-Scottish Dr Varma, who trained and worked in Edinburgh and Welsh Dr Brian Simpson (second picture) who worked in Cardiff.

In 2016, when the ESSFN leadership (third picture) started to prepare for the 2018 Congress, suggested Edinburgh as a venue and appointed the three “local” organisers named above, there was a sense of panic among the three local organisers. How will it go? None of us live or work in Edinburgh. How about the logistics? Will people come to Edinburgh? If they come how many will actually attend the meeting? Will the wide availability of the famous National Scottish Beverage be detrimental to the attendance, elocution, balance, memory and behaviour of the speakers and the delegates, or on the tone of the debate? Will the fact that sessions will be held on two adjacent premises separated by a very heavily trafficked road lead to some of the delegates being hit by cars and buses while looking the “wrong” direction when traversing the road in a hurry to attend various sessions?

Fortunately, none of these nightmares happened, and the XXIII congress of the ESSFN was a very sober, serious, dignified and well-attended meeting.



## XXIII ESSFN CONGRESS CONTINUED

patient care

The only small issues were that some delegates ended up in the wrong session in the wrong premises, or on the wrong side of the road, and one keynote speaker could not find the proper lecture hall on time and missed his speaking time (although he was fit in later in the same session).

The fact remains that the XXIII ESSFN Congress was the biggest congress of the ESSFN ever with 832 delegates from 52 countries, including neurosurgeons, neurologists, psychiatrists, neurophysiologists, neuropsychologist, neuroscientists, occupational therapist, neuro-ophthalmologist, nurses, students, ethicists, representatives from patients associations, representatives from industry and delegates with undisclosed / unknown affiliations. There were 330 abstracts submitted and 45 invited lecturers. For more information, including topics, abstracts, photos from the Congress, etc, please refer to the web site: <http://essfncongress.org/en/>

On the last day of the Congress an ad hoc satellite meeting was organised south of Edinburgh by the Unit of Functional Neurosurgery of Queen Square, to allow selected speakers to present their latest breaking abstracts that missed the abstract submission deadline

teaching

research



"Local" organisers of the XXIII ESSFN Congress in Edinburgh

to the main ESSFN congress.

NOTE: The recollections and impressions expressed in this vignette are the sole responsibility of the author and do not necessarily reflect the opinions and perceptions of the two other "local" organisers or the Board of the ESSFN.

DISCLOSURES: The author has nothing to disclose in relation to the Beverage mentioned in this vignette.

ACKNOWLEDGEMENTS: The author thanks Professor Patric Blomstedt for improving the readability of the text.

Marwan Hariz,  
Sweden



Members of the Board of the ESSFN in traditional attire:  
From left to right:  
Antonio Gonçalves Ferreira (lisbon, Portugal)  
Jocelyne Bloch Pache (Lausanne, Switzerland)  
Jean Régis (Marseille, France)  
Rick Schuurman (Amsterdam, The Netherlands)  
missing: Damianos Sakas from Athens, Greece



Dr Brian Simpson (right) shaking hands with Dr Christer Lindqvist (with Dr Mike Schulder sitting in between)

4 WSSFN Spring 2019



Benaisa Abdennebi

## ALGERIA: FROM NEUROSURGERY TO FUNCTIONAL NEUROSURGERY

With a population of about 42,000,000 people, Algeria, located in the North part of the continent, is the largest country of Africa with a total land area of 2.382.000 km<sup>2</sup>. Considering that the number of neurosurgeons is currently around 400 including 72 female neurosurgeons, the ratio is approximately today 1 for 100.000 inhabitants.

I would like to use this forum to outline the history of neurosurgery in my country and its transition to functional neurosurgery. My review of the literature found two articles which can be considered respectively as the starting points of neurosurgery and functional neurosurgery in Algeria. The first, related to a spinal hydatid cyst was reported in 1899 by Sherb in "Algerie Médicale" (1). This journal, created in 1896, not only was the official organ of the Society of Medicine of Hospitals of Algiers but also of the North African Fédération of Medical Sciences. Until the 1940s, some of the general surgeons and orthopedists familiar with neurosurgical procedures operated primarily on neurotrauma, spine injuries and Pott's disease.

The other subject covered in Goinard's report was myelotomy for patients with cancer pain and was published in 1947 (2). In the summer of 1942, Pierre GOINARD (1903- 1991), trained in neurosurgery at Clovis Vincent's service in Paris, introduced neurosurgery in Algeria as an independent discipline creating the Barbier-Hugo Centre in Algiers. It was the first neurosurgery department taking care of the brain-injured in all theatres of operation during the second world war in North Africa. General Eisenhower assisted him with an American neurosurgeon from New York, Professor J. Lawrence Pool (1906-2004), who served as a major in the U.S. Army from 1942 to 1946. Later, his senior staff was composed by Pierre Descuns and H Garre. In 1954, he organized the 5th Congress of the French Speaking Neurosurgical Society in Algiers (1). In 1962, the year of independence, most french doctors left the country. Mohamed Abada (fig.1), recognized as the pioneer of neurosurgery in Algeria after independence, started his training in 1957 in Colmar with Prof. E Woringer (France) (3). In 1961, he obtained a scholarship from the National Liberation Front which enabled him to visit the United States and observe the daily practice of american neurosurgeons. Upon his return to Algeria in 1962, he started the neurosurgery service in the previous hospital of the Red Cross (which became the Ali Ait Idir Hospital) with two french neurosurgeons - Michel Barge and Jacques De Rougemont, two Italian neurosurgeons - Ignazio Galli and Giovine. Two Algerian doctors - Drs Mohamed Abdelmoumene and Boutmene, were appointed to the second service dedicated Mustapha Pacha Hospital for neurotrauma (4). A few years later, Dr Abdelmoumen left neurosurgery for neurophysiology (fig.2). He completed his post graduation studies in Paris and Canada before coming to work on the service of Professor Giovanni Piva in Algiers. With Jean Marie Besson in Paris, he conducted a series of successful studies on spinal cord mechanisms of presynaptic inhibition (5) and went on to become an influential member of the board of the International Association on the Study of Pain. In 1969, Doctor Mohamed Abada was appointed as professor. In 1972, Ignazio Galli was promoted to head of the department

of neurosurgery in Ali Ait Idir hospital. After his return from Rennes (France) in 1977, Dr Ahmed Bousalah (1932-2000) replaced Prof. I. Galli as chief of this department.

In every aspect, the turning point from the old to the new neurosurgical era was 1973, the year in which the first residency training programme started in two teaching hospitals in the capital: Mustapha Pacha Hospital and Ali Ait Idir Hospital. At that time, neurosurgeons were members of the Algerian Society of Neurological Sciences, which hosted the fourth meeting of the Pan African Neurological Sciences Society in Algiers the 15th to 18th April 1979. The main topics were pathology of the basal ganglia and spinal vascular malformations. Among the distinguished guest speakers, one could enumerate Bernard Peruiset (France) and Fedor Andreveetch Serbinenko (Russia). In 1985, Mohamed Abada was elected vice president of the World Federation of Neurosurgical Societies. Since then twelve other academic medical centers have been created: 4 in the West of the country (2 in Oran, one in Sidi Bel Abbes, one in Tlemcen), 6 in the Centre (3 in Algiers, one in Blida, one in Tizi Ouzou and one in Bejaia) and the remaining five in the East (2 in Constantine, one in Annaba, one in Setif and one in Batna). They offer the same Algerian certified neurosurgery residency program consisting of 5 years of neurosurgical training, with annual output of 35 to 45 neurosurgeons. In 1983 the Algerian Neurosurgical Society was created. This Society organizes two national meetings per year and other regional or continental congresses such as the European Arab course in 1986, the Pan Arab in 2010, the African in 2014, and the Mediteranean in 2016. Since 2006, its official journal, Journal de Neurochirurgie, is published twice a year in French.

During medical school and specialty study, I have had the great privilege to be one of the first students of Profs. Mohamed Abdelmoumene and Mohamed Abada. This interest in basic and clinical neurosciences obviously led me to consider functional neurosurgery in my country as necessity and not as luxury. In doing so, I have benefited for internships with Profs Marc Sindou in Lyon and Jean Siegfried in Zurich. What were the different stages of functional neurosurgery in Algeria? First, in 1983, The surgical procedure of antero lateral cordotomy was, de novo, realized to alleviate refractory chronic pain in patients suffered from cancerous pain. Secondly, in 1985, partial and selective neurotomy and dorsal root entry zone lesioning for spasticity and pain (6), and retrogasserian balloon compression for trigeminal neuralgia (7, 8, 9) were realized for the first time. A multidisciplinary team for spasticity was first installed in 1985. Five years later, stereotactic and functional neurosurgery as a subspeciality was organized in the department of neurosurgery in Salim Zemirli Hospital in Algiers. Except epilepsy surgery was developed in Bab El Oued Hospital. Then, in 2004 and 2006, thalamotomy of VIM and deep brain stimulation of the STN were respectively practiced for essential tremor and Parkinson's disease. In 2009, epilepsy surgery was started by the team of Prof. Benbouzid in Bab El Oued Hospital.

*continued, pg. 6*



## ALGERIA: FROM NEUROSURGERY TO FUNCTIONAL NEUROSURGERY CONTINUED

Finally, spinal cord stimulation and Gpi stimulation were started in 2011 and cortical stimulation in 2015. Today, ablative procedures and or neuromodulation are practiced in 5 departments. Despite these positives, neurosurgery in general and functional neurosurgery in particular face some challenges in the imbalanced distribution of neurosurgeons which is detrimental to residents of rural areas, and often leads to long waiting lists. Even though there is still a long way to go, we are moving in the right direction.

### References:

- 1) La société de neurochirurgie de langue française. Histoire de la neurochirurgie francophone. Houtteville J.P., Brunon J. : Régimédia Paris. 2008-2012.
- 2) Beaucoup de cancéreux qui souffrent sont justiciables d'une myélotomie commissurale. Goinard P, Descuns P, Garre H: *Algerie Medicale*: 1947 Apr; 50(4): 341-6
- 3) Variations on the films of the profile of deep cerebral phlebograms following topography of an expansive process. Woringer E, Baumgartner J, Braun JP, Abada M: *J Radiol Electrol Med Nucl*. 1960 May; 41:316-20
- 4) Histoire de la neurochirurgie algerienne. Galli I: [facmed.univ-alger.dz/index.php/features](http://facmed.univ-alger.dz/index.php/features)
- 5) Cortical areas exerting presynaptic inhibitory action on the spinal cord in cat and monkey. Abdelmoumène M., Besson J.M., Aléonard P: *Brain Res* 1970, 20, 327-9.
- 6) Selective neurotomies for relief of spasticity focalized to the foot and to knee flexors (series of 58 patients). Abdennebi B, Bougatene B. *Acta Neurochirurgica (Wien)*, 1996, 138, 917 – 920
- 7) Nucleotomie du noyau spinal du trijumeau. A propos de deux nevralgies post traumatiques opérées. Abdennebi B, Bouatta F, Bougatene B. *Neurochirurgie*, 1993, 39,4, 231 - 234
- 8) Percutaneous balloon compression of the gasserian ganglion in trigeminal neuralgia (series of 150 patients). Abdennebi B, Bouatta F, Chitti , Bougatene B. *Acta Neurochirurgica (Wien)*, 1995, 136, 72 – 74
- 9) Long term results of percutaneous compression of Gasserian ganglion in trigeminal neuralgia. Series of 200 patients. Abdennebi B, Mahfouf L, Nedjahi T. *Stereotactic Funct Neurosurg (Karger AG, Basel)*, 1997, 68, 190 – 195

Benaissa Abdennebi  
Algeria



Benaissa Abdennebi, Mohamed Abada (1979)



Sitting from left: Daniel Menetrey, Mohamed Abdelmoumene and Jean Marie Besson (1978).



Patric Blomstedt

## THE STEREOTACTIC ACADEMY - AN INTERNET BASED E-LEARNING RESOURCE

I started my training in stereotactic functional neurosurgery and Deep Brain Stimulation in 1997 in Umeå in Northern Sweden. I was fortunate to have an excellent teacher in Marwan Hariz. Nevertheless, I found it challenging to learn DBS, especially the targeting. Now, more than two decades later, I still consider this to be challenging at times.

DBS was more simple in those early days. The targets were few and were identified on plastic films using a ruler, a pen and a mini-calculator. Today the targets and indications are numerous and growing all the time. New techniques with visual anatomical targeting, tractography, navigation systems and other advances make the procedures better, but also more complicated. Hence, DBS is becoming more difficult to master and is today evolving into a world of its own.

At the same time, there is a growing awareness that misplaced electrodes are a significant problem in a recent study of more than 28,000 DBS procedures up to 34% of the procedures were electrode revisions, most often due to improper targeting and lack of effect.

Considering this, I do not think that it is an exaggeration to say that there are some educational challenges to be met within the field of stereotactic and functional neurosurgery. Unfortunately, there is a lack of educational resources and the traditional resources are not focusing on clinical skills. Access to good teachers is limited, the literature is more scientific than clinical, and courses are mostly quite limited.

We have for that reason created the Stereotactic Academy – an Internet based E-learning resource, now under the auspices of the WSSFN. This resource provides clinical and practical knowledge – How to do DBS. The focus is on image-guided and image-verified surgery, improving accuracy and reducing complications.

Our aim is to cover everything of importance from a clinical perspective and to present this in a concentrated

and pedagogic manner. For this reason we have worked as much as possible in images and videos. This E-learning resource is continuously updated and more than 100 lectures on stereotactic and functional neurosurgery are already available online. More than 50 distinguished colleagues have participated to share their knowledge.

The lectures are organized into an Encyclopaedia intended as a work of reference for everyone working within the field. Selected lectures are further combined with other material into individual self-study courses for junior colleagues. To give one example: The course on targeting the GPI consist of video lectures and pdf-lectures in combination with case guides and downloadable operation plans. The student will first learn how to identify the target, then download the operation plans into his own navigation system and practice this with the help of the case guides. On completion of the course the student can make a quiz and will then receive a certificate.

Finding the time to search the PubMed and stay updated regarding all new publications can be a challenge. For that reason we are publishing a quarterly digest providing a summary and analysis of the latest literature, stimulating online discussion and peer learning.

We have currently over 500 registered users and even though we have not evaluated this in any scientific manner, the resource seems to meet an unmet need and the response has been very favourable. I have also tested this resource in young colleagues whom I am personally training, and the internet resource has really improved their rate of learning and their understanding of the subject.

So, please visit the Stereotactic Academy at [www.stereotactic.org](http://www.stereotactic.org) and see if this might be of interest to you or to your junior colleagues. Access is free and by registering, you are supporting our effort of creating a living internet-based forum for stereotactic functional neurosurgery.

Patric Blomstedt  
Sweden



John O'Keefe

## WSSFN IS HONORED TO HOST NOBEL LAUREATE JOHN O'KEEFE

Professor John O'Keefe, FRS FMedSci is an American-British neuroscientist and a professor at the Sainsbury Wellcome Centre for Neural Circuits and Behaviour and the Research Department of Cell and Developmental Biology at University College London, where he works in the Department of Cell and Developmental Biology and is currently Director of the Sainsbury Wellcome Centre for Neural Circuits and Behaviour.

developed extensively by O'Keefe and Nadel in a book published in 1978 ( [www.cognitivemap.net](http://www.cognitivemap.net)). Strong support for this idea has come from the discovery of other spatial cells in the hippocampal formation, notably head direction, grid and boundary cells, and from deficits in spatial memory and navigation following hippocampal damage. The theory has been applied to the human hippocampus which acts as a more global episodic memory system in addition to its role in spatial memory. Professor O'Keefe has recently turned his attention to the amygdala and its role in active memory for ethologically significant stimuli.

Professor O'Keefe is a Fellow of the Royal Society and the Academy of Medical Sciences. He has won numerous awards, including most recently the Gruber Neuroscience prize (2008), Royal Society Ferrier Prize Lecture (2013), Horowitz Prize (2013), Kavli Prize in Neuroscience (2014) and the Nobel Prize in Physiology or Medicine (2014).

He is interested in the role of the hippocampal formation in spatial memory and navigation. Using extracellular recording in behaving rats, Professor O'Keefe discovered that hippocampal pyramidal cells respond selectively to an animal's spatial location. The discovery of 'place cells' suggested that this part of the brain might function as a cognitive map, a notion



## THE COOPER AWARD

Irving Cooper, (1922-1985), a Master of Stereotactic and Functional Neurosurgery, was born in Atlantic City, New Jersey, to a middle class family. He was one of the pioneers in Stereotactic and Functional neurosurgery. He was a genial scientist, a neurosurgeon very keen and expert in anatomic-physiological correlation, which was mandatory in the time when

imaging was only angiography and air encephalography. Indeed CT scan appeared only around 1970 and MRI some years later.

He received a B.A. at George Washington University in 1942 and his M.D. in 1945. His doctoral thesis for his medical degree was on the physiology of movement disorders, a topic that he continued to pursue during his brilliant neurosurgical and academic career.

After his M.D. he attended the United States Naval Hospital for two years and spent the years from 1948 to 1951 at the Mayo Clinic in Minneapolis, Minnesota, where he gained a degree in Neurophysiology. Because of this, he was appointed as Physiological Neurosurgeon.

He began his independent neurosurgical clinical practice as Assistant Professor of Surgery of New York University, at Bellevue Hospital. He held this position from 1951 until 1954. As his surgical practice matured, he took a philosophy that focused on learning from mistakes. He believed that any error in surgery could lead to further understanding of how to avoid complications and could also drive novel surgical methods and indications.

Since Victor Horsley, the surgical treatment of parkinsonian tremor had focused on various techniques used to interrupt the pyramidal tract. During a subtemporal approach for a cerebral pedunculotomy, Cooper inadvertently injured, and subsequently had to occlude, the anterior choroidal artery. When the patient emerged from anesthesia, Cooper expected a severe motor deficit, but the patient's tremor and rigidity were abolished without any residual hemiparesis. He, at this serendipitous observation, was in accord with Meyer's studies on the role of the basal ganglia in motor control.

Following this observation he proposed to focus research and surgical efforts on targets within the basal ganglia and subsequently within the thalamus, to alleviate the movement disorders typical with Parkinson's disease.

Exposure to the stereotactic methodology proposed by Spiegel and Wycis brought him, while working at New York University, to develop an instrument that allowed access and lesioning of the Globus Pallidus. This specially designed needle could be used to perform a pallidectomy using hot wax or other chemical material (chemopallidectomy). Later, at St. Barnabas Hospital in the Bronx where he worked as Chairman of the Department of Neurosurgery from 1954 to 1977, he proposed and used "ice", i.e. liquid nitrogen, to perform similar volumetrically controlled (reversible and definitive) lesions of different neuronal structures, a technique that he named cryothalamectomy. This technique, when I was a student of the Medical School in Milan, was still used by master neurosurgeons Giulio Morello and Franco Migliavacca at the Istituto Neurologico Besta in Milan. The limits of this technique brought my mentors Mauro Mancia and Giulio Morello to send me to N.Y and later Zurich and Paris with the mission to improve the stereotactic neurosurgery at Besta.

For many years, until the introduction of Radiofrequency (RF thermal) stereotactic lesions, with the instrument built by E. Cosman Sr., this was the only world wide surgical technique for control of tremor in patients affected by Parkinson's disease, Familial Essential Tremor and Multiple Sclerosis intentional tremor of cerebellar origin.

With this approach his interests moved to cerebellar anatomy and physiology, and following the major research contribution of John Eccles, brought him to perform dentate nucleus lesions and to introduce the concept of neuromodulation. He proposed stimulation of the superior surface of the cerebellum to improve Cerebral Palsy spasticity in children, via activation of dentato-rubro-thalamic fibers. The same technique was used for refractory epilepsy in children, following Jaspers hypothesis of centro-encephalic control of seizure onset.

I had the privilege during my fellowship in N.Y at Albert Einstein College of Medicine, of working with Dom Purpura, a great scientist. At that time he was chief-editor of Brain Research. We worked with a wise young neurologist, Oliver Sachs on thalamic-basal ganglia relationships in Parkinsonian patients. My mentor Dom Purpura, aware of my planning to become a neurosurgeon, advised me to pay a visit to the neurosurgical department of Irving Cooper at St. Barnabas Hospital, in the South Bronx.

I had the opportunity to join Dr. Cooper in the OR when he was planning a lesion of the dentate nucleus via an open approach. In the preceding case he had attempted to place electrodes for Cerebellar Stimulation for treatment of a child affected by Cerebral Palsy. He was using experimental equipment, with wire electrodes and an external stimulator. He continued to improve the hardware, (Avery Company) and performed many surgeries with this technique. He finally published his preliminary results in 1973.

It was the first time I became aware of the possibility of neuromodulation in comparison with lesioning, which at that time was the gold standard.

He worked at St Barnabas Hospital until 1977, when he was appointed Director of the Westchester County Medical Center for Physiologic Neurosurgery and Research Professor of Neuroanatomy at New York Medical College in Valhalla.

The scientific production of Irving Cooper is noteworthy. He published many peer review journal articles, book chapters and also in the lay press. Moreover, his clinical and surgical insights were controversial and deeply discussed in the neurosurgical world. An example is the double blind trial for cerebellar stimulation, which did not confirm his clinical results.

In spite of his controversial approaches and clinical results, Irving Cooper remains a milestone pioneer of Stereotactic and Functional Neurosurgery. His contribution to the understanding how brain neuronal networks will remain forever.



## THE COOPER AWARD CONTINUED

He left an ample video library of his techniques and results, having recorded many procedures and interviews with patients. A selection of these videoclips has been reported in *Neurosurgical Focus*, in 2001, by Mark Hornyak, Richard Rovit, Arlene Stolper Simon, and William T. Couldwell.

He received numerous awards, including the American Medical Association's Hektoen Bronze Medal and the Lewis Harvey Taylor award from the American Therapeutic Society, both in 1957.

He passed away on November 4, 1985 in Naples, Florida.



Giovanni Broggi  
Italy



## THE BAKAY AWARD

Dr. Roy A.E. Bakay, (1949-2013), an award-winning surgeon, was a towering figure in stereotactic and functional neurosurgery. Initially at Emory University and later at Rush University, his research focused on neural tissue transplantation and gene therapy. During a 40-year career, he was at the forefront of the field. Dr. Bakay was lost prematurely when he died in 2013 of stomach

cancer at the age of 64. He was beloved and respected by everyone in our field.

"(He) was a well-respected researcher who pioneered surgical procedures for Parkinson's disease and other movement disorders," said Dr. Richard Byrne, chairman of Rush's Department of Neurosurgery. "What was less well known about Roy was that he had a good-natured sense of humor and he was the first on the dance floor at every party."

While undergoing cancer treatments, Dr. Bakay continued caring for his patients and performing surgical procedures until about a month before his death. "He was a dedicated doctor who never missed a day of work even when he became the patient," said Cheryl Morris, his companion for the last several years of his life. "He was a positive thinker, and that helped immensely in his getting through the tough times."

During his long career researching and treating movement and neurological disorders, Dr. Bakay wrote four books, 56 chapters for other books and more than 153 journal articles. He was Vice Chairman of Emory's Department of Neurosurgery before moving to Chicago, where he became Vice Chairman at Rush's Department of Neurosurgery and was the recipient of its A. Watson Armour III and Sarah Armour Presidential Chair.

He also received the Philip Goldenberg Award from the American Society for Stereotactic and Functional Neurosurgery, of which he was a past president, and the Molly and Bernard Sanberg Memorial Award from

the American Society for Neural Therapy and Repair. There is now a named lectureship at that society's annual meeting, which Roy was involved with from the outset and never missed.

A world traveler and lover of international food and culture, Dr. Bakay also was an avid deep sea fisherman and great teller of "big fish" stories. He was born and raised in Evanston, IL. He earned a bachelor's degree in biology from Beloit College in Wisconsin, where he was valedictorian of his graduating class and captain of the varsity football team. He went on to medical school at Northwestern University and completed his neurosurgery residency training at the University of Washington School of Medicine. It was during that time he married his former wife, Joann, with whom he had four children. After his residency, Dr. Bakay pursued a fellowship through the National Institutes of Health in neuroplasticity, and then joined the faculty at Emory. Shortly thereafter he teamed up with neurologist Mahlon DeLong, MD to help pioneer the reinvention of pallidotomy for Parkinson's disease and dystonia, and later deep brain stimulation, for which they were widely recognized. Dr. Bakay continued to be passionate about cell transplantation, both in the lab and clinically. He continued his SFN career and his research from 2000 until his untimely loss at the Department of Neurosurgery at the Department of Neurosurgery at Rush. He has and will continue to be remembered and missed by many.



Robert Gross  
United States



Lone Frank

## SPECIAL EVENT AT 2019 WSSFN MEETING FEATURING: LONE FRANK, PhD

An exciting and thought provoking session at the WSSFN 2019 meeting will be the presentation of the new documentary *Hunting for Hedonia*. This film, written by Dr. Frank, looks at the groundbreaking and often controversial work of Dr. Robert Heath. His work in the 1950's and 1960's was largely ignored by scientists at that time as reckless and as nothing more than a placebo effect. This documentary is a comprehensive review of his career and the man who passionately believed that this medical breakthrough could relieve many psychiatric conditions. After more than fifty years his experimental intervention is now mainstream.

A panel discussion will follow the showing of this most intriguing documentary. This is certain to be a session that our meeting attendees will not want to miss.

Lone Frank is a journalist and author with a PhD in neurobiology and a background in research. As a

staff writer at Weekendavisen, Denmark's leading newspaper. She is one of Denmark's most distinguished science writer and a well-known voice in debates about science, technology and society.

She has published three critically acclaimed books, among them *The Pleasure Shock*. This fascinating book focuses on the overlooked history of Robert Heath's brain pacemaker investigates the origins and ethics of his prior early work. In *The Pleasure Shock* Dr. Frank weaves together biography, neuroscience, psychology, science history, and medical ethics to explore how our views of the mind and the self have changed over time. She reflects on how these changes impact scientific developments and asks, "how do we decide whether man-made changes to the brain are acceptable therapy?"

Dr. Frank resides in Copenhagen.



### **5 Reasons to Attend:**

- Workshops and courses to sharpen your skills
- Plenary and parallel sessions to refresh your knowledge
- Debates and breakfast seminars to voice your experience
- Social programs and session breaks to meet your colleagues
- Oral and poster sessions to present your latest research



Ahmed Alkhani

## MSSFN - CAIRO 2019

The second conference for the Middle-eastern Society for Stereotactic and Functional Neurosurgery (MSSFN) was held in Cairo, Egypt, 6 – 8 February 2019. The meeting was under the auspices of the WSSFN. The Neurosurgery Department at Ain Shams University, Cairo hosted the successful three day meeting, including a day of pre-conference workshops. A total of five half

day workshops ran in parallel morning and afternoon sessions. Topics like planning and programming DBS, drug delivery systems, intraoperative neuromonitoring, Botulinum in movement disorders, and neuronavigation were among the topics discussed in these hands-on workshops. Seats (35 participants/workshop) were sold out for almost all workshops. Attendees were junior staff, residents and some medical students interested in the field of stereotactic and functional neurosurgery.

The two day scientific program included breakfast seminars, plenary sessions, poster presentations, and sponsor exhibition. The plenary sessions were distributed on different topics, including movement disorders, pain, radiosurgery, epilepsy, surgery for psychiatric disorders and radiosurgery, and an MDS (International Parkinson and Movement Disorders

Society) endorsed ambassador program course.

Over 100 attendees participated in the meeting. The society provided educational grants in the form of free registration to 50 in-training residents. Several members from the WSSFN leadership attended the meeting, delivered many outstanding presentations, and contributed to the educational discussions. Michael Schulner, Joachim Krauss, Mojgan Hodaie, Francois Alesch and many others were there.

International faculty and guests had the opportunity to visit many famous tourist attractions in Cairo. These included the Giza pyramids, the Egyptian Museum, the old city, and many others. The MSSFN society was established in 2016 under the auspices of the WSSFN. The 1st MSSFN conference was held in Dubai, January 2016. The next meeting will be in 2022, the hosting university is still to be selected.

Ahmed M. Alkhani  
Saudi Arabia



The attendees at the Cairo 2019 MSSFN conference





Nico Enslin

## WSSFN WEBINAR REPORT AUGUST 2018

### Directional DBS Leads: An exciting new development in the world of functional neurosurgery

• **Dr. Jens Volkmann** - Würzburg, Germany

• **Dr. Till Dembek** - Cologne, Germany

The first quarterly webinar took place in August 2018.

The WSSFN webinar committee proudly launched our webinar series last fall and achieved our goal of engaging a diverse audience that consisted of neurologists, psychiatrists, neurosurgeons and neuroscientists from across the globe. The topic chosen was "Directional DBS leads" which is an exciting new development in the world of functional neurosurgery. We were privileged to feature Dr. Jens Volkmann, Director and Chairman of the Department of Neurology at the University Clinic Würzburg, Germany, and Dr. Till Dembek, Clinical Researcher, Department of Neurology and Research Group for Movement Disorders and Deep Brain Stimulation at the University of Cologne, Germany, as our inaugural speakers. We had an interactive audience that had several engaging questions for the speakers after their talks which generated an intellectually stimulating discussion. On behalf of the WSSFN webinar committee and president, Dr. Michael Schulder, we would like to thank all the participants, Mrs. Melody Dian for her incredible support as well as the team at MCO for hosting the webinars.

### Transcranial Magnetic Stimulation: Applications in Neuromodulation, Perioperative monitoring and Neurorestoration

• **Prof. J. Rothwell** - London, UK  
*TMS: Basics and management of movement disorders*

• **Prof. D. De Ridder** - New Zealand  
*TMS: Managing tinnitus*

• **Dr. F. Vergani** - London, UK  
*TMS: Experience and use of peri-operative functional mapping in cerebral lesions*

• **Prof. S. Taylor** - Michigan, USA  
*Transcranial Magnetic Stimulation: Applications in psychiatry*

• **Prof. L. Oberman** - Washington DC, USA  
*Transcranial Magnetic Stimulation: Applications in Autism spectrum disease*

The second quarterly webinar took place on Monday 18 February 2019.

It was a marathon session of 2hrs and 20 minutes with five presenters in total. My initial concern was that it will be too long and too many speakers, but as Prof Michael Schulder reminded me, it is a good problem to have, it means people are keen to participate with our society.

The speakers were experts from all over the globe in various fields: neurosurgery, psychiatry, psychology as well as human neurophysiology. It is a true reflection on the breadth of interest in the human brain and a reminder that we are at the coalface of an amazing speciality where we literally get to make and experience the physiological and functional changes and see the effects right in our operating theatres daily. It is truly a great opportunity to be doing what we, as functional neurosurgeons, do.

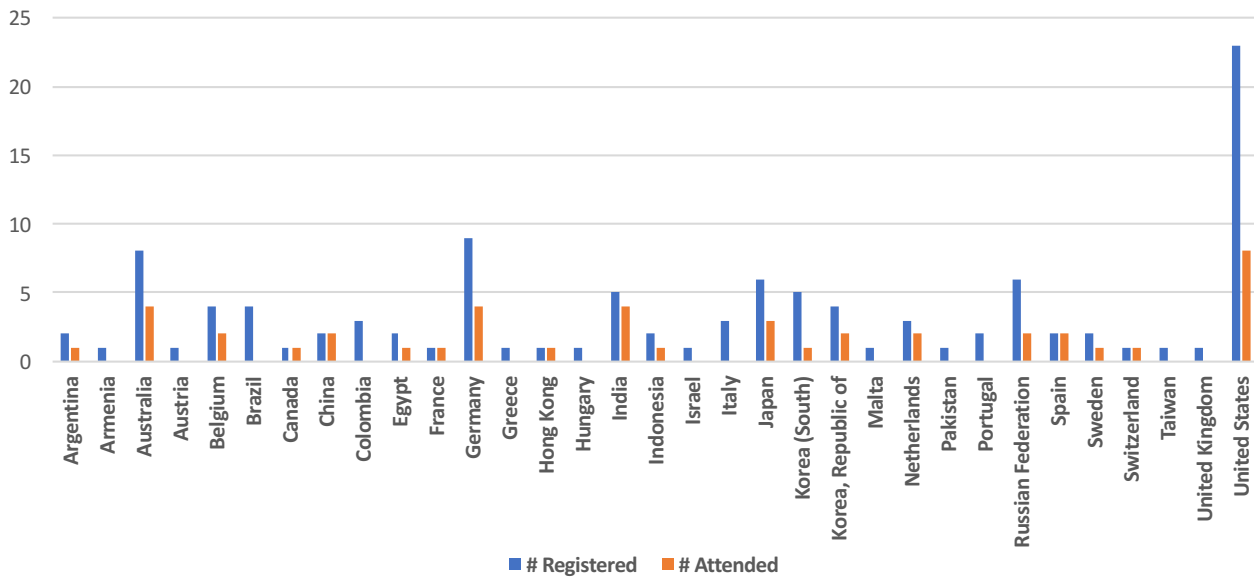
We plan to continue the webinars on a quarterly on widely interesting topics such as epilepsy surgery.

The complete webinar is edited and available free to all members of WSSFN on the WSSFN website.

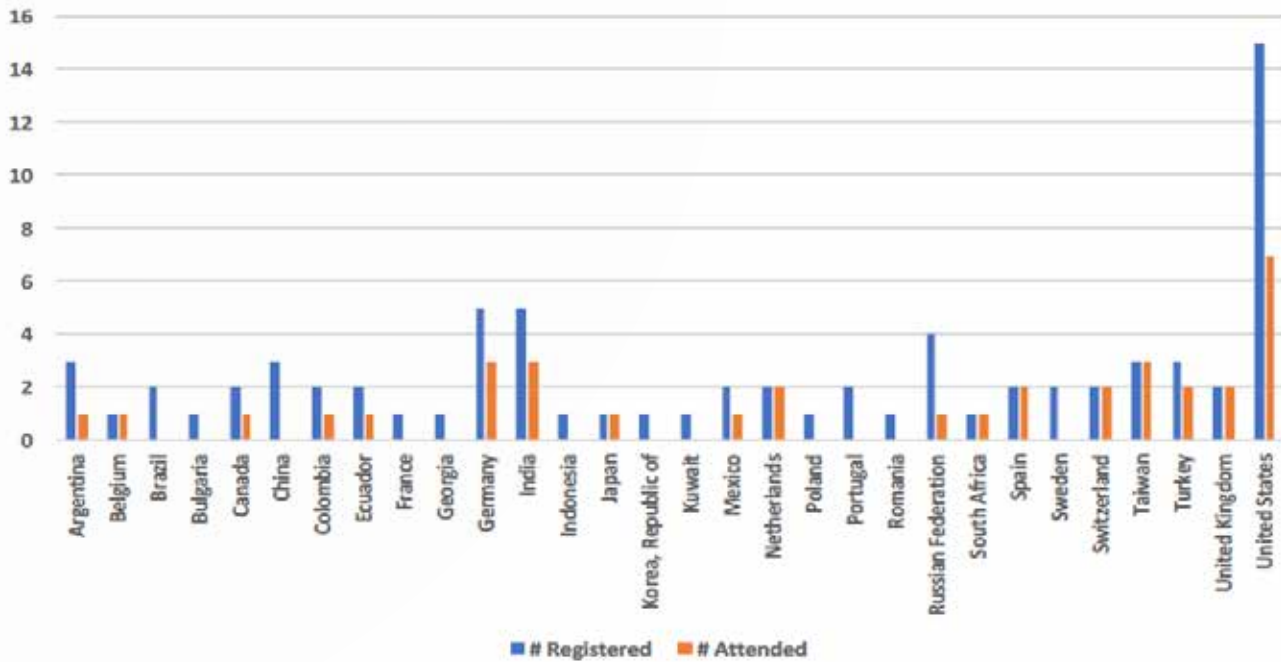
Please tell all your colleagues about this project, we would like to involve a larger audience and see this grow into one of the best resources for Stereotactic and Functional Neurosurgery in the world.

Nico Enslin  
South Africa





Attendance for Webinar #1  
The attendance value indicates the # of connected computers rather than individuals.



Attendance for Webinar #2  
38 view points were engaged.



Christopher Honey

## 11TH ANNUAL CANADIAN NEUROMODULATION MEETING

Dear Colleagues,

On behalf of the Canadian Neuromodulation Society, I would like to invite you to our 11th annual meeting which will take

place June 30-July 2, 2019 in Iqaluit, Nunavut.

Iqaluit is the capital of the recently formed Territory of Nunavut and is very close to the Arctic Circle. Our meeting will take place on the weekend following the WSSFN meeting in New York (shortly after the summer solstice). We have selected Iqaluit to highlight that access to neuromodulation therapy is not yet universal across Canada. In fact, the recent CanADA study: Canadian assessment of DBS access (Can J Neurol Sci 2018 45:553-8) showed that no patient in any of the three Territories received DBS over the two-year study.

Our meeting will combine invited lectures from international experts in the field of neuromodulation with

presentations selected from submitted abstracts covering a range of topics including: DBS, SCS, peripheral stimulation, transcranial stimulation and emerging technologies and indications. We are also planning a series of educational lectures on the culture and medical teachings of the Inuit people. Our meeting is smaller than NANS or INS and will give you an opportunity to meet the experts personally and discuss your ideas with them in an extraordinary setting.

We have reserved a block of rooms at the Frobisher Inn which will host the meeting. Details about the transportation and accommodation are available on our website. There will be a welcome reception Sunday evening and a gala dinner Monday evening.

We look forward to hosting you.

Christopher Honey  
President  
Canadian Neuromodulation Society



## OFFICERS

### President

Michael Schulder, MD  
Lake Success, NY, USA  
[mschulder@northwell.edu](mailto:mschulder@northwell.edu)

### Vice President

Jin Woo Chang, MD, PhD  
Seoul, Korea  
[jchang@yuhs.ac](mailto:jchang@yuhs.ac)

### Secretary

Konstantin Slavin, MD  
Chicago, IL, USA  
[kslavin@uic.edu](mailto:kslavin@uic.edu)

### Vice Secretary

Jean Regis, MD  
Marseille Cedex, France  
[JeanMarie.REGIS@ap-hm.fr](mailto:JeanMarie.REGIS@ap-hm.fr)

### Treasurer

Mojgan Hodaie, MD, MSc, FRCSC  
Toronto, Canada  
[Mojgan.Hodaie@uhn.ca](mailto:Mojgan.Hodaie@uhn.ca)

### Past President

Joachim K. Krauss, MD  
Hannover, Germany  
[krauss.joachim@mh-hannover.de](mailto:krauss.joachim@mh-hannover.de)

### Board of Directors

B. Abdennebi	(Algeria)
A. Abosch	(USA)
F. Al-Otaibi	(S. Arabia)
R. Alterman	(USA)
T. Aziz	(UK)
J. Barcia	(Madrid)
J. Bloch	(Switzerland)
P. Blomstedt	(Sweden)
S. Chabardes	(France)
V. Coenen	(Germany)
Y. Comair	(Lebanon)
P. Doshi	(India)
J. Espinoza	(Colombia)
E. Fonoff	(Brazil)
C. Hamani	(Canada)
C. Honey	(Canada)
S. Horisawa	(Japan)
Z. Kiss	(Canada)
J. Neimat	(USA)
B. Nuttin	(Belgium)
F. Piedimonte	(Argentina)
A. Rezaei	(USA)
E. Richter	(USA)
A. Savas	(Turkey)
R. Schuurman	(Holland)
A. Sitnikov	(Russia)
B. Son	(Korea)
R. Spiegelmann	(Israel)
H. Toda	(Japan)
J. Voges	(Germany)

### Continental Vice Presidents

A. Goncalves-Ferreira	ESSFN
R. Gross	ASSFN
S. Vaushya	ISSFN
R. Huh	KSSFN
A. Alkhani	MSSFN
M. Taniguchi	JSSFN
J. Ruiz	SLANFE
B. Sun	Mainland Asia
T. Coyne	Oceania/Australia
N. Enslin	Sub-Saharan Africa
A. Sitnikov	Russia

Founded in 1961 as International Society  
for Research in Stereoecephalotomy  
[www.wssfn.org](http://www.wssfn.org)