

# COMMISSION ON DIAGNOSTIC METHODS

## Commission Members

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| Past Chair             | William Davis Gaillard (USA)   |
| Secretary              | Matthias Koepp (UK)            |
| Translational Research | Ingmar Blümcke (Germany)       |
| Educational Officer    | Prassana Jayakar (USA)         |
| Information Officer    | Bruce Hermann (USA)            |
| Treasurer              | Friedrich G Woermann (Germany) |
| Member                 | Catherine Chiron (France)      |

## Task Forces

### 1. Neurophysiology:

|            |                               |
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| Past Chair | Demetrios Velis (Holland)     |
| Secretary  | Herman Stefan (Germany)       |
| Members    | Francois Dubeau (Canada)      |
|            | Eli Mizrahi (USA)             |
|            | Aristea Galanopoulou (USA)    |
|            | Akio Ikeda (Japan)            |
|            | Roberto Caraballo (Argentina) |
|            | Paolo Tinuper (Italy)         |

### 2. Neuroimaging:

|            |                                |
|------------|--------------------------------|
| Chair      | Matthias Koepp (UK)            |
| Past Chair | William Davis Gaillard (USA)   |
| Secretary  | Friedrich G Woermann (Germany) |
| Members    | Catherine Chiron (France)      |
|            | William Theodore (USA)         |
|            | Donald W Gross (Canada)        |
|            | Seung Bong Hong (Korea)        |
|            | Dennis Spencer (USA)           |
|            | Masako Watanabe (Japan)        |

### 3. Neuropathology:

|           |                            |
|-----------|----------------------------|
| Chair     | Ingmar Blümcke (Germany)   |
| Secretary | Roberto Spreafico (Italy)  |
| Members   | Eleonora Aronica (Holland) |
|           | Hajime Miyata (Japan)      |
|           | Andre Palmi (Brazil)       |
|           | Maria Thom (UK)            |
|           | Harry Vinters (USA)        |
|           | Guenther Sperk (Austria)   |

### 4. Neuropsychology:

|           |                                  |
|-----------|----------------------------------|
| Chair     | Bruce Hermann (USA)              |
| Secretary | Michael Saling (Australia)       |
|           | Maryse Lassonde (Canada)         |
|           | Isabelle Jambaqué (France)       |
|           | Christoph Helmstaedter (Germany) |
|           | Urvashi Shah (India)             |

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|---------------------|
| Ronit Pressler (UK) |
| David Loring (USA)  |

### 5. Focal Cortical Dysplasias:

|       |                                   |
|-------|-----------------------------------|
| Chair | Ingmar Blümcke (Germany)          |
|       | Eleonora Aronica (Holland)        |
|       | Guiliano Avanzini (Italy)         |
|       | Scott Baraban (USA)               |
|       | Jim Barkovich (USA)               |
|       | Albert Becker (Germany)           |
|       | Carlos Cepeda (USA)               |
|       | Peter Crino (USA)                 |
|       | Helen Cross (UK)                  |
|       | Nadia Colombo (Italy)             |
|       | Olivier Delalande (France)        |
|       | Francois Dubeau (Canada)          |
|       | John Duncan (UK)                  |
|       | Renzo Guerrini (Italy)            |
|       | Ajay Gupta (USA)                  |
|       | William Harkness (UK)             |
|       | Philippe Kahane (France)          |
|       | Giorgio LoRusso (Italy)           |
|       | Joseph Loturco (USA)              |
|       | Gary Mathern (USA)                |
|       | Imad Najm (USA)                   |
|       | Cigdem Ozkara (Turkey)            |
|       | Andre Palmi (Brazil)              |
|       | Charles Raybaud (Canada)          |
|       | Alfonso Represa (France)          |
|       | Steven Roper (USA)                |
|       | Noriko Salamon (USA)              |
|       | Andreas Schulze-Bonhage (Germany) |
|       | Roberto Spreafico (Italy)         |
|       | Laura Tassi (Italy)               |
|       | Maria Thom (UK)                   |
|       | Annamaria Vezanni (Italy)         |
|       | Harry Vinters (USA)               |

## Review of Past Activities (2009 – 2013)

Commission meetings were held during AES meetings each year, to report progress and organize future work in Task Forces.

Specific aims and achievements of our Task Forces were as follows:

### Neuropathology Task Force

The goals of the Neuropathology Task Force were as follows:

1. To provide standardized classification systems and terminology use for the diagnostic evaluation of epilepsy-associated brain lesions (mTLE-HS, Tumors, MCDs/FCDs, vascular malformations, encephalitis).
2. To validate existing and upcoming consensus classification systems by a larger cohort of practicing general neuro-/pathologists.
3. To disseminate new and upcoming consensus classification systems proposed by the ILAE Task

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Force of Neuropathology among epilepsy and pathology communities.

4. To allow access for members of low or middle income countries to advanced diagnostic standards and teaching.

During the past presidency period, our focus was on the classification of Focal Cortical Dysplasias (FCDs) (see below) and Hippocampal Sclerosis (HS). We organized a first meeting in November 2010 in Amsterdam (with financial ILAE support) in order to discuss the roadmap for a first international consensus classification for Hippocampal Sclerosis. During this meeting, we reviewed previous classification systems (which are many), terminology issues (which were a major challenge) and the potential benefit to achieve international consensus (either for clinical use on outcome prediction and cognitive impairment as well as better patient stratification for research). We then decided to evaluate our proposal (classification of HS into three clinico-pathological subtypes) using the digital slide microscopy platform again. Meanwhile, we achieved four consecutive evaluation periods reviewing a total of 55 human surgical samples (en bloc specimens as well as anatomically less-well preserved tissues). Meetings for progress reports were held in San Antonio (AES 2010), Verona (Hippocampal Spring Meeting 2011), Rome (ILAE 2011), Baltimore (AES 2011) and London (ECE 2012). Data analysis showed a reliable classification of HS subtypes (Type 1 = classic/severe form; Type 2 = atypical CA1 sclerosis; Type 3 = atypical CA4 sclerosis), with very good kappa values for agreement of hippocampal subfield specific pathology patterns. A first draft of the HS classification proposal has been prepared after fruitful discussion at the London 2012 ECE meeting and currently circulates among our TF members. At the 2012 AES meeting in San Diego, we may achieve further agreement to finalize the written document. We aim to publish the first ILAE consensus classification of HS during the term of this presidency.

## **FCD Task Force**

The FCD Task Force has completed its mission by publishing a first international consensus classification of FCD in 2011 (*Epilepsia* 2011; 52(1):158-74). Subsequent activities included the inter- and intra-observer agreement survey with engagement of 34 colleagues, either well or less experienced in diagnosing epilepsy surgery specimens. We successfully introduced a digital (virtual) slide microscopy platform. The study provided evidence for a better and more reliable application of the ILAE classification using histopathological tools, as compared to the previous Palmini classification (*Epilepsia* 2012; 53:1341-8).

## **Imaging Task Force**

The goals for the Neuroimaging Task Force were to

1. formulate "evidence-based" guidelines on "role of imaging in Pediatric Surgery"
2. evaluate the "role of advanced imaging methods in Epilepsy Surgery"
3. promote global education/training in neuroimaging for neurologists and radiologists.

Specifically, "evidence-based" guidelines for imaging infants and children with recent-onset epilepsy were published in *Epilepsia* 2009; 50(9):2147-53, and a commentary on diagnostic testing study guidelines and practice parameters in *Epilepsia* 2011; 52(9):1750-6.

During meetings in Boston (AES 2009) and Rome (ILAE 2011), we prepared for a three-day workshop in London from 27-29 September, which comprehensively assessed the clinical role and use of EEG-fMRI, cognitive fMRI for language and memory, as well as the added value of PET and SPECT, and post-processing of MRI, which were non-diagnostic or inconclusive on visual routine exploration. This workshop forms the basis of a "position paper" of expert opinions on the clinical use of these advanced imaging methods, soon to be submitted to the executive committee of the ILAE for publication in *Epilepsia*.

A long-distance neuroimaging teaching program was formally accepted by the ILAE. Members of the Imaging Task Force participated in the annual web Neuroimaging courses offered by Eureka, which included students from different parts of the world, including many with scholarships offered by ILAE.

## **Neurophysiology Task Force**

The Neurophysiology Task Force members met at AES the past three years and in Rome [2011] to strategize and follow up various initiatives. One of the primary goals was to integrate efforts with other Task Forces and Commissions to achieve a broader impact. Several of the initiatives have made significant progress and have plans to continue strategic efforts in the next four years.

A document with recommendations developed jointly with the Pediatric Epilepsy Surgery Task Force of the ILAE ("Diagnostic Test Utilization in Evaluation for Resective Epilepsy Surgery in Children") is being submitted to the ILAE Executive Committee for review and a symposium has been organized at the ILAE meeting in Montreal 2013.

## **Neuropsychology Task Force**

We had the unique opportunity to combine our interests and mandate with a special international workshop entitled Neuropsychology in the Care of People with Epilepsy. The meeting was held in Toronto, Canada, on 3-6 November 2010, organized under the

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auspices of the journal *Epileptic Disorders*. Members from our ILAE Neuropsychology Task Force were represented on the Organizing and Planning Committees, served as speakers and discussants, and additionally served as co-editors of the text that emanated from the meeting. The session was attended by 52 specialists from 13 countries representing expertise in adult and pediatric neuropsychology, psychiatry, neurology, neuroimaging, cognitive neurosciences, electrophysiology, and pharmacology. The six main topic areas were:

1. Neuropsychological assessment: state of the field at present.
2. Use of neuropsychology to understand the impact of epilepsy and seizures.
3. Use of neuropsychology to understand pharmacological treatments.
4. The use of neuropsychology to understand surgical treatments.
5. Mood and cognitive impairment in epilepsy.
6. Assessing cognition in epilepsy via electrophysiological and functional imaging techniques.

The overarching goal of the meeting was to summarize and advance evidence-based neuropsychological practice in the care of children and adults with epilepsy. Each speaker was asked to address two primary questions including, "what are the important evidenced-based outcomes and their implications for improving diagnosis and clinical care in epilepsy?" and "what remains to be determined through future research to advance treatment." On the basis of the presentations and subsequent discussions, the written summaries were to conclude with specific recommendations for advancing clinical care and research. The formal text was published in 2011 after which the specific recommendations, approximately 120 in all, were then edited, collated, and distributed to all the members of our Task Force who then rank-ordered the recommendations in order of importance.

The results have been received and analyzed and a written summary document containing the primary recommendations along with proposed action plans for addressing the primary recommendations is in the hands of the Task Force members for their final comments and suggestions. The final document will be completed and submitted by 1 January 2013.

Fernando Cendes  
*Chair*