



Comprehending epilepsy with SEEG: the interplay of physiology and modeling

Dr. Patrick Chauvel

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11:00am – 12:00pm

EEB 132

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Abstract: Stereoelectroencephalography (SEEG) is the only method allowing direct intracerebral recording of seizure onset and propagation in patients with epilepsy. As such, SEEG data are ground truth for building sound research hypotheses on human focal epilepsies. However, since the origins, interpretation of the SEEG signal for the purpose of surgical treatment as well as for research has been a challenge. This lecture will explain why and how different and evolving types of modeling helped understand the nature and significance of ictal electrical patterns.

Bio: After achieving his medical and scientific studies in Neurology and in Neuroscience, Patrick Chauvel became an INSERM (Paris) researcher (1975). At that time, he began his work in experimental and later clinical research into the mechanisms of the epilepsies. Under the mentorship of Talairach and Bancaud at Hospital Sainte-Anne/University René Descartes, Paris, he developed SEEG (Stereo-Electro-EncephaloGraphy) as a presurgical method using intracerebral electrodes for epilepsy surgery (1975-1990). His research work has been devoted to the pathophysiology of the epileptogenic zone, emergence of seizure clinical semiology, and human cerebral cortex physiology. He has promoted the concept of epileptogenic network over the classical epileptic focus idea and opened new vistas in markers of the epileptogenic zone and semiology of focal epilepsies. Taking over from Jean Bancaud, Patrick Chauvel served as the Director of the SEEG Unit in Hospital Sainte-Anne in Paris (1986-1990), then Professor and Chairman of Neurology in Rennes (1990-1997) where he configured a new type of Epilepsy Unit including research, then Professor and Chairman of Clinical Neurophysiology and Director of the INSERM Institute of Systems Neuroscience in Marseille (1997-2014). In 2014, he relocated to the Epilepsy Center of the Cleveland Clinic in order to promote the development of presurgical investigation using SEEG in North America. He was appointed as Professor of Neurology at the Cleveland Clinic Lerner College of Medicine of Case Western Reserve University. In Brisbane, he guided developing SEEG-based epilepsy surgery and related research program. He is currently Professor of Neurology at the University of Pittsburgh, USA, and Honorary Professor at the University of Queensland, Australia. He is developing new methods for presurgical investigation of drug-resistant epilepsies based on SEEG, and research on biomarkers of the epileptogenic zone and neural networks generating clinical semiology. He is the author of more than 250 original articles in international journals and is a member of several international Scientific and Medical Societies. He is a Member of the Royal Academy of Medicine in Belgium.

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