8 August 1966, French, Married

Diploma

1995: Medical Doctor, University Paris VI

2000: PhD Neurosciences, University Paris VI

2002: Habilitation, University Paris VI

Functions and Administrative Responsabilities

2006: Professor of Neurosurgery

2007: Head of the Department of Neurosurgery, Montpellier

2010: Head of the Team “Brain plasticity, stem cells and glial tumors”, INSERM U1051, Institute for Neurosciences of Montpellier

2012: Member of the National Committee of University (CNU 49-02)

2012: Member of the National Academy of Neurosurgery

Awards

2001: Young Neurosurgeon Award, by the World Federation of Neurological Societies

2009: Victory of Medicine (French National Award in Medicine 2009)

2010: Victory of Medicine (French National Award in Medicine 2010)

2010: Herbert Olivecrona Award (Karolinska Institute, Stockholm)

2012: Grand Prix of Surgical Oncology, by the French National Academy of Medicine

2013: Doctorate Honoris Causa (KU Leuven)

2013: Doctorate Honoris Causa (University of Messina)

Member of Editorial Board

Brain and Language

Neurosurgery

Central European Neurosurgery

Acta Neurochirurgica

World Neurosurgery

Ad-hoc reviewer for 72 journals (510 reviews)

Societies

President of the Neurooncological Club of the French Neurosurgical Society

American Congress of Neurological Surgeons (CNS)

European Association for Neurooncology (EANO)

European Organization for Treatment of Cancer (EORTC)

French Association for Neurooncology (ANOCEF)

Expert

Member French Association Research for Cancer (ARC)

Expert, Netherlands Organisation for Health Research and Development (ZonMw) (2009 and 2013)

Expert, ANR Committee (2013)

Expert, European Research Council (2013)

Bibliography

h index = 57

g index = 95

227 publications (10762 citations, Average per item 22.37)

4 textbooks and 23 book chapters

293 invited lectures (214 international and 79 national)

219 oral communications or posters

1 patent

Scientific summary

For a long time, brain functioning was conceived in a localizationist view, i.e. with one region corresponding to one given cerebral function, and with an irrevocable deterioration of this function if its specific region was damaged. The use of intraoperative brain stimulation mapping in patients who undergo awake surgery for a cerebral tumor involving the so-called “eloquent structures” gives an unique opportunity to study the anatomo-functional correlations in vivo in humans, and thus enables a better understanding of the neural foundations underlying brain processing both at cortical and subcortical levels. Using this technique, I proposed a new plastic model of cerebral organization, that is, a central nervous system organized in dynamic large-scale networks, able to interact and to reorganize themselves. In this “hodotopical” account, brain function is conceived as resulting from parallel processing performed by distributed groups of connected neurons rather that individual centers. Conversely to the restrictive modular theory, in which brain information is processed in localized cortical regions with the serial passage of information between regions through white matter tracts, and in which one processing must be finished before than the information accedes to another level of processing, this new model of “independent networks” states that different processing can be performed simultaneously with interactive feedbacks. These original data, which break with the classical dogma of a fixed organization of the central nervous system, brought new insights into the

neural basis of language and cognition. In addition to these fundamental advances in the field of neurosciences, such dynamic model had also clinical implications, especially in neurooncology. Indeed, I demonstrated that surgical resection of huge amount of “critical” brain structures classically considered as “inoperable” (such as the so-called Broca's area, Wernicke's area or Rolandic region) could actually be removed without inducing any permanent neurological deficit - thus allowing the resection of brain tumors with optimization of both overall survival and quality of life. Other fields, like epilepsy surgery, begin to benefit from this better knowledge of functional anatomy subserving sensory-motor, visuo-spatial, memory, calculation, language, attentional, emotional and executive functions. The next step is to guide such mechanisms of brain plasticity, notably using cerebral surgery itself as well as original programs of individualized functional rehabilitation, with the aim to build a “restorative neurosurgery” on the basis of an integrated and translational research between cognitive neurosciences and neurological pathology. To this end, I begun to make the link between anatomic dissection on cadavers, longitudinal functional neuroimaging before and after brain surgery, intraoperative stimulation mapping of cortex, white matter pathways and deep gray nuclei, neuropsychological assessments before and after cognitive rehabilitation, and biomathematical modeling in order to anticipate the patterns of reorganization at the individual scale. Such holistic view of brain understanding has started to open the door to new models of neurocognition as well as to new personalized therapeutic strategies for patients with neurological diseases.