Info: servizioformazione@apss.tn.it

Trento June 20-22, 2019
Sala Stringa – FBK
Via Sommarive , 18 – Povo Trento

connect BRAIN Vol. II

Theoretical and practical course on clinical and surgical applications of structural and functional connectivity

TOPICS

Theoretical Session

Brain processing and functional organization - Principles of tractography, fMRI and resting-state fMRI - Awake surgery - Intra-operative neurophysiological monitoring - Neuropsychology and clinical applications - Epilepsy surgery

Practical Session

Structural and functional anatomy of the human white matter - Virtual human white matter dissection with tractography - Non-invasive brain mapping with resting-state fMRI

COURSE DIRECTORS

Franco Chioffi
Silvio Sarubbo

Division of Neurosurgery
Emergency Area - "Santa Chiara" Hospital
Azienda Provinciale per i Servizi Sanitari (APSS)
Trento (Italy)

SCIENTIFIC COMMITTEE

Luciano Annicchiarico ("S. Chiara" Hospital, APSS Trento)
Enzo Colarusso ("S. Chiara" Hospital, APSS Trento)
Francesco Corsini ("S. Chiara" Hospital, APSS Trento)
Giovanna Faraca ("S. Chiara" Hospital, APSS Trento)
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Luca Zigiotto ("S. Chiara" Hospital, APSS Trento)
Paolo Avesani (Bruno Kessler, Foundation)
Jorge Jovicich (CiMeC, University of Trento)

REQUESTED SUPPORT

SINCh (Italian Society of Neurosurgery)
SIN (Italian Society of Neurology)
SINC (Italian Society of Clinical Neurophysiology)
Istituto Superiore di Sanità
Provincia Autonoma di Trento
Ordine dei Medici di Trento

In collaboration with:

FONDAZIONE BRUNO KESSLER | NILab NEUROINFORMATICS LABORATORY

Under the patronage of:

SINC

Azienda Provinciale per i Servizi Sanitari
Provincia Autonoma di Trento

Course Introduction

Over the last 15 years the knowledge about the brain functional organization experienced new energy and remarkable advancements, as effect of technical and conceptual improvements that lead us in the connectome era. The comprehension of this intricate anatomo-functional maze and the application of the new concepts about the connectome organization to the clinico-surgical practice, are two crucial steps to tailor and improve surgical and non-surgical treatments of brain diseases. In this light, invasive and non-invasive brain mapping techniques are complementary, and not alternative, tools to explore functional organization and neural plasticity.

As never before, the integration between techniques and concepts coming from basic and clinical neurosciences should be strictly integrated to improve, reciprocally, competences and knowledges.
Based on the experience of the previous edition on 2015 we designed the Connect-Brain Volume II, a theorico-practical course providing an updated overview about tools and concepts coming from neuroscientific research, and the most reliable mapping and monitoring techniques used in brain surgery.

Aims of the theoretical session are to provide:
- a detailed and complete overview about the recent models of organization of brain functions and the structural and functional connectivity of the main networks;
- theoretical and practical principles for the clinical application of neuroimaging (fMRI, resting-state fMRI, tractography), neuropsychological (pre-operative assessment, intraoperative tasks, follow-up) and neurophysiological (cortical and subcortical mapping and monitoring) techniques;
- open discussions with different experts about use, experiences and reliability of the main tools for brain anatomo-functional mapping and monitoring during brain surgery.

Aims of the practical session are to provide the general principles of:
- human white matter anatomy;
- tractography elaboration and tracking;
- non-invasive brain mapping with RS-fMRI.

We imagined an international opportunity for facing off clinical practice and basic neurosciences, in order to improve our skills in the exploration of the brain functional processing for medical purposes.

We hope you will share this belief and to meet you in Trento in June 2019.

Franco Chioffi
Silvio Sarubbo

Division of Neurosurgery
Emergency Area
“Santa Chiara” Hospital
Azienda Provinciale per i Servizi Sanitari (APSS), Trento

Theoretical Session

Thursday June 20th, 2019

Congress Venue for Theoretical Session

Sala Stringa - FBK
Via Sommarive, 18
Povo Trento

13:00 Registration and welcome drink

13:30 Authorities welcome

14:15 Course Introduction: Silvio Sarubbo and Franco Chioffi (Division of Neurosurgery, "Santa Chiara" Hospital, Trento APSS)

SESSION I
Exploration of brain structures and functions – Principles
Chairmen: Bruno Giometto, Laurent Petit

14:30 *Principles of RS-fMRI for human brain mapping*
Bernard Mazoyer (GIN, University of Bordeaux)

14:50 *Techniques and limitations in tractography*
Maxime Descoteaux (University of Sherbrooke)

15:10 *How to track the brain: tools*
Paolo Avesani (NiLab, FBK)

15:30 Discussion and Questions

16:00 Coffee break

SESSION II
Exploration of brain structures and functions – Tools
Chairmen: Alessandro Olivi, Alessandro De Benedictis

16:30 *The human brain pathways by tractography*
Laurent Petit (GIN, University of Bordeaux)

16:50 *Extracting brain networks by rs-fMRI*
Jorge Jovicich (CiMeC, University of Trento)

17:10 *Neurophysiology tools for neurosurgery*
Francesco Sala (University of Verona)

17:30 Discussion and Questions

18:00 **Lecture** (introduced by Ernesto Gastaldo, Ospedale dell'Angelo Mestre-Venice)
Variability in hemispheric specialization for cognitive processing
Bernard Mazoyer (GIN, University of Bordeaux)

18:30 Remarks and Closure

Theoretical Session

Friday June 21st, 2019

SESSION III
Brain mapping for surgery
Chairmen: Alessandro Ducati, Silvio Sarubbo

09:00 **Lecture**
Awake surgery for brain gliomas: cognition trough the anatomy
Hugues Duffau (University of Montpellier)

09:40 *Pre-surgical mapping with fMRI and rs-fMRI*
Natalie Voets (Oxford University)

10:00 *Language and motor mapping: intra-operative techniques*
Rocco Quatrale (Ospedale dell'Angelo, Mestre-Venice)

10:20 Discussion

10:30 Coffee break

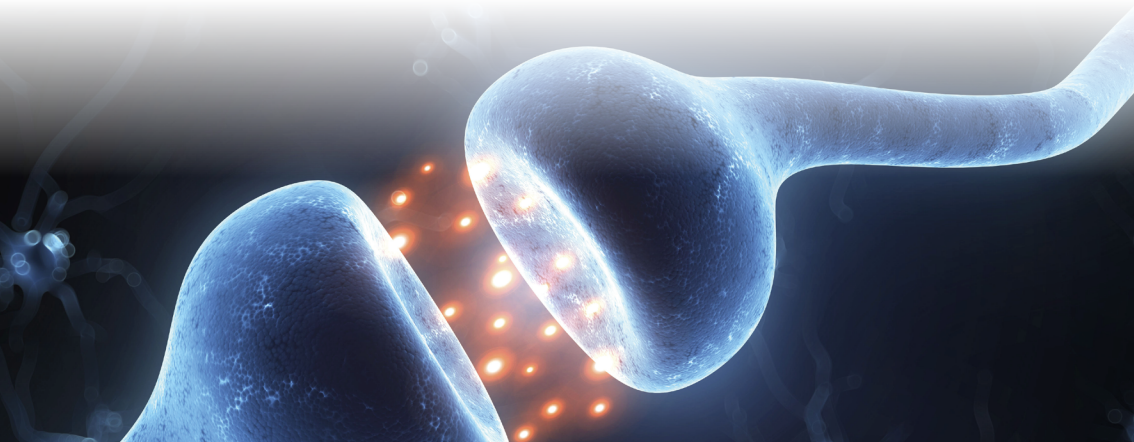
SESSION IV
Principles of functional anatomy of the human brain
Chairmen: Domenico D'Avella, Franco Guida

11:00 *Language networks: anatomy and functions*
Alessandro De Benedictis (Bambino Gesù Pediatric Hospital, Rome)

11:20 *Motor networks: physiology and surgical mapping*
Lorenzo Bello (University of Milan)

11.40 *Insula and temporal stem anatomy*
Emmanuel Mandonnet (Lariboisière University-Hospital, Paris)

12.00 Discussion and Questions



Friday June 21st, 2019

SESSION V
Surgical Techniques
Chairmen: Marco Cenzato, Rocco Quatrale

12:20 *Insular tumors: techniques and pitfalls*
Miran Skrap ("S. Maria della Misericordia" Hospital, Udine)

12:40 *Awake surgery for unruptured cerebral aneurysms*
Franco Chioffi, ("S. Chiara" Hospital, APSS Trento)

13:00 Discussion and Questions

13:30 Lunch

SESSION VI
Neuropsychology
Chairmen: Flavio Angileri, Andreas Schwarz

15:00 Extensive neuropsychological monitoring for resection of brain gliomas
Tamara Ius ("S. Maria della Misericordia" Hospital, Udine)

15:20 Cognitive rehabilitation: techniques and tools
Lorella Battelli (Italian Institute of Technology, Trento)

15:40 Discussion and Questions

16:00 Coffee break

SESSION VII
Epilepsy Surgery
Chairman: Marco Farneti, Alberto Morini

16:30 *Disconnection approaches in epilepsy surgery*
Carlo Marras (Bambino Gesù Children Hospital, Rome)

16:50 *Imaging post-processing in epilepsy surgery*
Michele Rizzi, Francesco Cardinale ("C. Munari" Epilepsy Surgery Center, Milan)

17:10 Discussion and Questions

17:30 **Lecture** (introduced by Franco Chioffi, APSS Trento)
Brain Mapping, extent of resection and new trends in neuro-oncological surgery
Mitchell Berger (University of California, San Francisco)

18:40 Closure and Certificates

Pratical Session
Tractography dissection and resting-state fMRI Mapping

Saturday June 22nd, 2019

Congress Venue for Practical Session

Sala Stringa - FBK
Via Sommarive, 18
Povo Trento

Tutors for virtual dissection:
Silvio Sarubbo, Laurent Petit, Alessandro De Benedictis, Paolo Avesani, Emanuele Olivetti

Tutors for rs-fMRI networks extraction:
Jorge Jovicich, Natalie Voets, Luciano Annicchiarico, Luca Zigiotto, Francesco Corsini

Introduction

09:00 *General principles of white matter tracking*
Laurent Petit (GIN, University of Bordeaux) and Silvio Sarubbo ("S. Chiara" Hospital, APSS Trento)

09:15 *RS-fMRI: practical notions*
Natalie Voets (Oxford University) and Jorge Jovicich (CiMeC, University of Trento)

SESSION I

09:30 Pyramidal tract and motor network

11:00 Coffee break

11:20 Visual and spatial-perception: pathways and networks

13:00 Lunch

SESSION II

14:00 Language pathways and language network (part 1)

16:00 Coffee break

16:20 Language pathways and language network (part 2)

18:00 Closure and Certificates

Faculty

- Flavio Angileri
  Department of Neurosurgery
  University of Messina
- Paolo Avesani
  Neuroinformatics Lab (NiLab)
  Fondazione Bruno Kessler (FBK), Trento
- Lorella Battelli
  Italian Institute of Technology (IIT), Trento
- Lorenzo Bello
  University of Milan
  Division of Oncological Surgery
  Istituto Clinico Humanitas, Milan
- Mitchell Berger
  University of California, San Francisco (USA)
- Francesco Cardinale
  "C. Munari" Epilepsy Surgery Center
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- Marco Cenzato
  Division of Neurosurgery
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  University of Padova
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  Division of Neurosurgery
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  Department of Computer Science (Canada)
- Alessandro Ducati
  University of Turin
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  Ospedale Le Molinette, Turin
- Hugues Duffau
  University of Montpellier (France)
  INSERM and Department of Neurosurgery
  Hopital Gui de Chauliac, Montpellier
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- Alessandro Olivi
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  Cattolica University, Rome
- Laurent Petit
  Groupe d'Imagerie Neurofuncionelle (GIN)
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- Benedetto Petralia
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- Natalie Voets
  Oxford University
  Nuffield Department of Clinical Neurosciences
  Medical Sciences Division, Oxford (UK)

Accomodation

TRENTO
MONTE BONDONE
VALLE DEI LAGHI
atmosfere da vivere

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