

FOURTH ANNUAL EUROPEAN 3D ADVANCED FIBER DISSECTION COURSE: ACQUIRING THE MENTAL IMAGERY NECESSARY TO OPERATE THE BRAIN

Santander. 21, 22 and 23 October 2021



European 3D advanced
fiber dissection course



The white matter of the cerebrum underlies the outer cortex of gray matter, and is composed of densely packed axons that are organized in fascicles or fiber tracts. These tracts have a complex three-dimensional (3D) configuration within the hemispheres, the brainstem and the spinal cord. A detailed knowledge of the architectural anatomy of the white matter tracts is paramount, for strategically planning for surgical management of parenchymal brain lesions, such as gliomas. Neuroanatomical laboratory training is very valuable to study and understand the anatomy of white matter fibers. In particular, cortex-sparing fiber dissection facilitates knowledge of this complex anatomy. None of the recently developed surgical guides such as neuronavigation, intraoperative magnetic resonance imaging or ultrasonography can provide a similar comprehensive understanding of the 3D fiber pathways organization.

In the present course, the participants will learn the technique of cortex-sparing fiber dissection in order to acquire the mental imagery of the main white matter tracts. We wanted to give a practical perspective to the course; therefore, in the second and third days, the participants will directly apply the knowledge acquired to practice surgical approaches in the laboratory. We choose two challenging approaches to eloquent areas: an insular approach to a fronto-temporo-insular glioma, and a posterior basal temporal approach to the parahippocampus and cingulum.

The congress will be held in the prestigious School of Medicine at the University of Cantabria.

We look forward to welcoming you in Santander.

Juan Martino
Course director



COURSE DIRECTOR

Professor Juan Martino
Neurosurgery Department.
Hospital Universitario Marqués de
Valdecilla. Santander. Spain
Mail: juan.martino@hotmail.com



HONORED GUEST

Professor Hugues Duffau
Neurosurgery Department.
Centre Hospitalier Universitaire de
Montpellier. Montpellier. France



CO-DIRECTORS

Professor Juan A. Montero Simon
Department of Anatomy and
Cellular Biology. Cantabria University.
Santander. Spain.



Professor Rubén Martín-Láez
Neurosurgery Department.
Hospital Universitario Marqués de
Valdecilla. Santander. Spain



SCIENTIFIC COMMITTEE

Dr. Emmanuel Mandonnet
Neurosurgery Department.
Hospital Lariboisiere. Paris. France



Dr. Alejandro Fernández-Coello
Neurosurgery Department.
Hospital Universitari de Bellvitge.
Barcelona. Spain



Dr. Pablo González-López
Neurosurgery Department.
Hospital General de Alicante. Alicante.
Spain



Dr. David Mato
Neurosurgery Department.
Hospital Universitario Marqués de
Valdecilla. Santander. Spain



Dr. Carlos Santos
Neurosurgery Department.
Hospital Universitario Marqués de
Valdecilla. Santander. Spain



Dr. Juan Ángel Aibar Durán
Neurosurgery Department. Hospital
de la Santa Creu i Sant Pau. Barcelona.
Spain



Dr. Cristian de Quintana Schmidt
Neurosurgery Department.
Hospital de la Santa Creu i Sant Pau.
Barcelona. Spain



Dra. Patricia López
Neurosurgery Department.
Hospital Universitario Marqués de
Valdecilla. Santander. Spain



Dr. Victor García
Neurosurgery Department. Hospital
Universitario Marqués de Valdecilla.
Santander. Spain



Dr. Carlos Velasquez
Neurosurgery Department.
Hospital Universitario Marqués de
Valdecilla. Santander. Spain



Dra. Carla Mora
Neurosurgery Department.
Hospital Universitario Marqués de
Valdecilla. Santander. Spain.



Dra. Cristina Peláez
Neurosurgery Department. Hospital
Universitario Marqués de Valdecilla.
Santander. Spain



Dr. Enrique Marco de Lucas
Neuroradiology Department. Hospital
Universitario Marqués de Valdecilla.
Santander. Spain



Professor Nader Sanai
Neurosurgery Department.
Barrow Neurological Institute.
Phoenix. Arizona. USA



Monserrat Fernández-Calderón
Department of Anatomy and
Cellular Biology. Cantabria University.
Santander. Spain



**Professor Juan Carlos
Fernández-Miranda**
Neurosurgery Department.
Stanford University Medical
Center. Stanford. California. USA

Maximal number of participants per course: 12

Course dates: 21, 22 and 23 October 2021

Course equipment and facilities:

- Course equipment and facilities:
- Anatomy laboratory at the University of Cantabria.
- Two cerebral hemispheres for each participant. The specimens were previously selected to ensure the quality for dissection. The specimen's vessels were injected with red and blue colorants for greater similarity with a real brain.
- 3D Microscope Kinevo 900 Carl Zeiss: one for the course.
- Microscopes (techno-scopes) Carl Zeiss: one for each participant.
- Ultrasonic aspirators CUSA Clarity (Integra): one for each participant.
- 3D television (75 inches, Full HD): one for the course.
- Medtronic StealthViz Neuronavigation system: one for the course.
- Medtronic Echography system: one for the course.
- Video camera: one for the course.
- 3D Glasses: one for each participant.
- Instruments for dissection for each participant.

Accreditation:

- This teaching activity is accredited by the Commission for Continuing Education of the Health Professions of the Community of Cantabria. 6,5 credits in 2019.
- The scientific and educational content of this event has been endorsed by the Sociedad Española de Neurocirugía (SENEC).

Target Audience and Objectives:

This activity was designed for Neurosurgeons, Neurologists, Neuroradiologists, Residents/Fellows in these specialties, and Neuro-nurses.

After the conclusion of this activity, participants will be able to:

- Identify the anatomy of the white matter fiber tracts.
- Comprehensive understanding of the 3D anatomical relationships between the white matter connections.
- Evaluate surgical approaches to challenging areas: the dominant insular lobe and the posterior parahippocampus.
- Discuss surgical cases and analyze different treatment options of tumors located within eloquent areas.

Course venue:

Anatomy Laboratory.
Department of Anatomy and Cellular Biology.
School of Medicine. Cantabria University.
Av. Herrera Oria, s/n. 39011. Santander (Cantabria). Spain.

Registration fees:

- Full hands-on registration: 2.100 euros + VAT. Includes lectures attendance, dissection of cerebral hemispheres and simulation of surgical approaches, lunch and refreshments breaks, and course dinner on Friday.

Technical Secretariat:

AFORO CONGRESOS
Pasaje de Peña 2, 3º C. Edificio Simeón
39008 Santander. Spain
Phone: + 34 942 23 06 27
Email: zulema@aforocongresos.com
www.aforocongresos.com

PROGRAM. Thursday, 21st of October 2021

09:00 Registration.

09:10 Opening.

Dr. Juan A. Montero Simon, Dr. Juan Martino

09:15 3D LECTURE: Introduction to brain Diffusion tensor imaging (DTI) tractography.

Dr. Juan Angel Aibar Duran and Dr. Christian de Quintana Schmidt

09:45 Hands-on. Introduction to StealthViz software.

Dr. Juan Angel Aibar Duran and Dr. Christian de Quintana Schmidt

10:15 3D LECTURE: DTI tractography. How I do it.

Dr. Juan Angel Aibar Duran and Dr. Christian de Quintana Schmidt

11:15 Hands-on. DTI tractography reconstruction of the main white matter connections.

Dr. Juan Angel Aibar Duran and Dr. Christian de Quintana Schmidt

12:15 DTI tractography as an important tool to study the subcortical anatomy and presurgical planning of glioma surgery.

Dr. Enrique Marco de Lucas

13:00 Lunch

14:00 3D LECTURE: How to prepare the brains for fiber dissection.

Dr. David Mato

14:15 3D LECTURE: sulco-gyral anatomy. The cerebral lobes.

Dr. Juan Martino and Pablo González-Lopez

15:00 3D LECTURE: anatomy of the dorsal associative tracts of the brain: superior longitudinal fasciculus, arcuate fasciculus, middle longitudinal fasciculus.

Dr. Juan Martino

15:30 Functional roles of the dorsal associative tracts of the brain.

Dr. Alejandro Fernandez-Coello

15:45 Hands-on: Fiber dissection of the dorsal associative tracts. Each participant will have one hemisphere to dissect. The participants will learn how to remove the arachnoid membranes and the cortex without damaging the underlying white matter. The participants will dissect the dorsal associative tracts: the subcomponents of the superior longitudinal fasciculus, arcuate fasciculus and middle longitudinal fasciculus.

Professor Hugues Duffau, Dr. Juan Martino, Dr. Alejandro Fernandez-Coello, Dr. Emmanuel Mandonnet, Dr. Pablo González-Lopez, Dr. David Mato, Dr. Carlos Velasquez, Dr. Carlos Santos, Dra. Carla Mora, Dra. Patricia Lopez and Monserrat Fernández-Calderón.

19:00 Understanding subcortical anatomy for glioma surgery (On-line lecture from Stanford, California, USA).

Professor Juan Carlos Fernandez-Miranda

PROGRAM. Friday, 22nd of October 2021

- 09:00** 3D LECTURE: anatomy of the ventral associative tracts and the fascicles related to the insula: inferior longitudinal fasciculus, inferior fronto-occipital fasciculus and uncinata fasciculus.
Dr. Juan Martino
- 09:30** Functional roles of the ventral associative tracts and the fascicles related to the insula.
Dr. Alejandro Fernandez-Coello
- 09:45** 3D LECTURE: anatomy of the brain isthmus and the temporal stem: a crucial anatomical concept that is often forgotten.
Dr. Carlos Velasquez and Dr. Pablo Gonzalez
- 10:15** Hands-on: Fiber dissection of the ventral associative tracts and the fascicles related to the insula. Each participant will have one hemisphere to dissect. The participants will dissect the ventral associative tracts and the tracts related to the insula region: inferior longitudinal fasciculus, inferior fronto-occipital fasciculus and uncinata fasciculus.
Professor Hugues Duffau, Dr. Juan Martino, Dr. Alejandro Fernandez-Coello, Dr. Emmanuel Mandonnet, Dr. Pablo González-Lopez, Dr. David Mato, Dr. Carlos Velasquez, Dr. Carlos Santos, Dra. Carla Mora, Dra. Patricia Lopez and Monserrat Fernández-Calderón.
- 13:00** Lunch.
- 14:00** Intraoperative electrical stimulation mapping of associative fiber pathways.
Professor Hugues Duffau
- 14:30** 3D LECTURE: presentation of the parahippocampal surgical case.
Dr. Juan Martino
- 14:45** Hands-on: Approach to the posterior parahippocampus and cingulum. Professor Hugues Duffau will perform a step by step posterior basal and temporal approach to the posterior parahippocampus and cingulum. Simultaneously, each participant will perform the approach in the specimens. The participant will use a real MRI of a glioma infiltrating the basal temporal lobe to guide the resection. In this approach, the deep functional connections are the arcuate fasciculus, inferior longitudinal fasciculus, inferior fronto-occipital fasciculus and optic radiations.
Professor Hugues Duffau, Dr. Emmanuel Mandonnet, Dr. Juan Martino, Dr. Alejandro Fernandez-Coello, Dr. Pablo González-Lopez, Dr. David Mato, Dr. Carlos Velasquez, Dr. Carlos Santos, Dra. Carla Mora, Dra. Patricia Lopez and Monserrat Fernández-Calderón.
- 19:00** Insula glioma surgery; from brain mapping to surgical strategies (On-line lecture from Phoenix, Arizona, USA).
Professor Nader Sanai
- 21:00** Course dinner.

PROGRAM. Saturday, 23rd of October 2021

09:00 Surgical anatomy of the insula.

Dr. Emmanuel Mandonnet

09:30 Insula glioma surgery: the transopercular approach.

Professor Hugues Duffau

10:00 3D LECTURE: presentation of the insular surgical case.

Dr. Juan Martino

10:15 Hands-on: Transopercular approach to the insula. Professor Hugues Duffau will perform a step by step transopercular approach to the insula in the specimen. Simultaneously, each participant will perform the approach in the specimens. The participants will use a real magnetic resonance image (MRI) of a fronto-temporo-insular glioma to guide the resection. We will have a unique opportunity to ask Professor Duffau many questions about the challenges of this approach: how to preserve the deep functional connections (inferior fronto-occipital fasciculus, uncinata fasciculus, pyramidal pathway, etc.), and vascular structures (lenticulostriate arteries).

Professor Hugues Duffau, Dr. Emmanuel Mandonnet, Dr. Juan Martino, Dr. Alejandro Fernandez-Coello, Dr. Pablo González-Lopez, Dr. David Mato, Dr. Carlos Velasquez, Dr. Carlos Santos, Dra. Carla Mora, Dra. Patricia Lopez and Monserrat Fernández-Calderón.

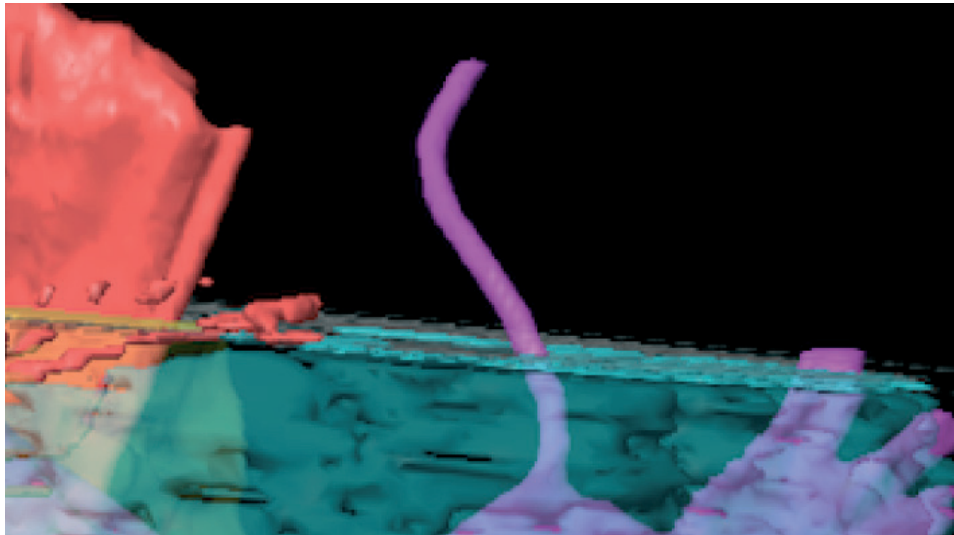
13:00 Lunch.

14:00 Hands-on: Transopercular approach to the insula. Professor Hugues Duffau and participants will complete the transopercular approach to the insula.

19:00 Closing remarks.

FOURTH ANNUAL EUROPEAN 3D ADVANCED FIBER DISSECTION COURSE: ACQUIRING THE MENTAL IMAGERY NECESSARY TO OPERATE THE BRAIN

Santander. 21, 22 and 23 October 2021



Technical Secretariat:

AFORO CONGRESOS
Pasaje de Peña 2, 3º C. Edificio Simeón
39008 Santander. Spain
Phone: + 34 942 23 06 27
Email: zulema@aforocongresos.com
www.aforocongresos.com



Sponsoring companies:

