

Presentation of the *Bridging* San Servolo Course

San Servolo Advanced Epilepsy Summer School *Bridging Basic with Clinical Epileptology*

Introduction to the San Servolo Advanced Epilepsy Summer Courses

The idea of an Advanced Epilepsy Summer Course was conceived in 2001 by a founding Committee composed by Giuliano Avanzini, Marco de Curtis, Francesco Paladin, Yehezkel Ben Ari, Pete Engel, Uwe Heinemann, Istvan Mody, Nico Moshe, Tim Pedley, and Peter Wolf. The founding group devised and elaborated on the idea of **bringing together young neuroscientists and clinicians** from the five Continents with an established interest in epilepsy research, and of training them to design a research project on clinically relevant epilepsy issues using state-of-the-art methodologies and techniques. The first Course, aptly entitled **Bridging basic with clinical epileptology**, was organized in the summer of 2002 under the patronage of the International School of Neurological Sciences in Venice (ISNV). It was decided to set the Course at the ISNV didactic facilities of Venice International University (VIU) on the **San Servolo island**, a location ideally suited for residential Courses. During the 2002 Course, 40 students from 24 Countries with different clinical and neurobiological background were selected and worked together for 2 weeks under the supervision of an International faculty of tutors.



Figure 1. San Servolo island, the location of VIU and the Epilepsy Course.

The commitment of the faculty and the motivation of the trainees contributed to the great success of the Course, thus prompting ISNV to

recognize the **Advanced International Epilepsy Summer Course** as a vital yearly educational event. The enthusiasm of both students and tutors during the process of research project elaboration that represented the main original teaching element of the Course was a success, and encouraged us to make this the core of the Course programs that followed since 2002. The Course has become an unparalleled opportunity to **foster translational research** and meets a great unmet need in the epilepsy community, educating scientists in clinical epileptology and clinicians in scientific method and advances.

The **Epilepsy Summer School** has been given a permanent organization under the supervision of a Scientific Committee composed by G. Avanzini (ISNV President and Summer School Director), F. Paladin (ISNV Director), M. de Curtis (Summer School co-founder) and by Course Directors. The Course Secretariat is managed by Metella Paterlini (epilepsysummercourse@univiu.org) with the on-site assistance of Valentina Guarino. Yearly Courses were arranged on different topics and the concept of “*bridging*” was maintained as a leitmotiv to foster interactions between scientists with different expertise in epilepsy care/research. A rotation of three main epilepsy themes – therapies, pediatric epilepsy, epilepsy surgery - interposed every 3 years by a *Bridging basic and clinical epileptology* Course was planned. The Scientific Committee designed for each Course two Directors with a high profile in the International Epilepsy scene. In order to create a durable link with ILAE activities, it was decided that one of the Directors of each Course would be the Chair of the ILAE Commission pertinent to the main focus of the Course. Every year, circa 50 students are selected by the Course Directors to ensure a balance between clinical/scientific background (basic scientists and clinicians with different expertise - neurologists, pediatricians, neurophysiologists, neuroradiologists, neurosurgeons), gender and geographical origin.

Since 2002 the following Courses were organized:

1. Bridging basic with clinical epileptology (1). 21/7- 4/8 2002; Directors: G. Avanzini & A. Mrabet
2. From basic knowledge to rational prescribing. 10-21/7 2003; Directors: E. Perucca & T. Tomson

3. Epilepsy in children: neurobiology, clinic, therapeutics. 11-22/7 2004; Directors R. Guerrini & S. Moshé
 4. Bridging basic with clinical epileptology (2). 18-27/7 2005; Directors: M. de Curtis & E. A. Cavalheiro
 5. Surgically remediable epilepsies. 27/7-8/8 2006; Directors: G. Wieser & G. Lo Russo
 6. Clinical-therapeutic approaches to childhood epilepsy. 23/7-3/8 2007; Directors H. Cross & B. Dalla Bernardina
 7. Bridging basic with clinical epileptology (3). 27/7-8/8 2008; Directors: U. Heinemann & M. de Curtis
 8. From Basic Knowledge to rational prescribing (2). 19-30/7 2010; Directors M. Baulac & M. Schachter
 9. Bridging Basic with Clinical Epileptology (4). 17-29/7 2011; Directors: M. de Curtis, A. Nehlig & J. Noebels
 10. Management of seizures and epilepsies in neonate and infants. 14-26/7 2012; Directors F. Vigeveno & P. Plouin
 11. Brain exploration and epilepsy surgery. 14-26/7 2013; Directors: R. Spreafico & T. Tanaka
 12. Bridging Basic with Clinical Epileptology (5). 20/7 -1/8, 2014; Directors M. de Curtis & J. Engel
 13. Seizures and Epilepsies in Childhood: co-morbidities, advocacy, guidelines. 19-31/7 2015; Directors J. Wilmhurst & S. Vecchi
 14. Brain exploration and epilepsy surgery (2). 10-23/7 2016; Directors: L. Tassi & I. Bluemcke
- On June 21-24 2009, a **San Servolo Course Alumni Conference** was held in Pécs (Hungary) in conjunction with the centennial anniversary of the ILAE foundation (Epil. Res. 2010 89:1-161. PMID: 20560186).

year	Topic	n. applicants	n. selected students	Total n. faculties	n. tutors	Budget (€)	CEA support	ILAE support
2002	Bridging		40	21	20		0	0
2003	Therapy	83	52	33	20	110,790	0	0
2004	Pediatric epilepsy	84	47	31	18	105,930	0	8,200
2005	Bridging	82	51	30	19	128,544	0	7,280
2006	Epilepsy surgery	132	64	35	15	181,023	15,000	7,287
2007	Pediatric epilepsy	138	65	36	16	164,160	30,000	7,287
2008	Bridging	170	61	33	18	159,780	30,000	10,000
2010	Therapy	104	40	37	16	100,183	30,000	10,000
2011	Bridging	108	52	31	19	110,934	30,000	13,971
2012	Pediatric epilepsy	178	62	31	14	140,421	30,000	20,000
2013	Epilepsy surgery	90	56	39	12	129,676	30,000	20,000
2014	Bridging	99	37	29	16	104,000	0	27,405
2015	Pediatric epilepsy	121	41	22	11	112,738	6,800	39,200
2016	Epilepsy surgery	117	50	32	16	125.000	0	30,000

The Course *Bridging Basic with Clinical Epileptology* was replicated for 5 editions (the 6th is planned for 2017) and has been the most successful in terms of attendance and participation. This Course covers the unmet opportunity for both students and faculties with a neuroscience and clinical background to expose and be exposed to new ideas and methodologies in epilepsy research.

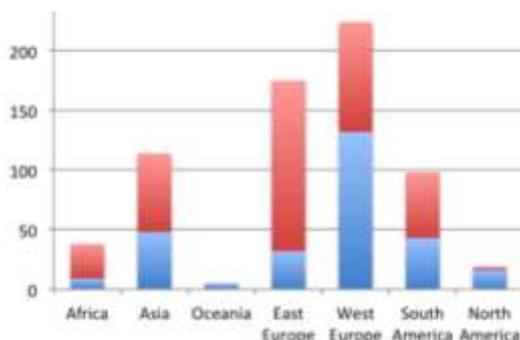


Figure 2. Geographical origin of San Servolo students from 2002 to 2015. Red columns: supported by bursary.

The uniqueness of the training offered during the San Servolo Courses relies on three main features: i) San Servolo School organization selects students with **diverse backgrounds**, from neurosurgery to basic science; ii) the School has granted over 15 years of activity fellowship to support the **participation of scientists and clinicians from**

less privileged Countries in Europe, Africa, Asia, Latin America; iii) the Course is based on the **development of a research project** under the tutorship of Internationally renowned senior scientists/clinicians.

This format has a distinctive didactic power that is still unmet in the context of International educational events in the field of epilepsy. One of the criteria for the selection of students at San Servolo Courses is

geographical heterogeneity (Figure 2). Candidates from Countries with limited resources represent circa 50% of the total applicants; the participation of these students to San Servolo Courses is guaranteed by a variable number of fellowships (15-25) per year.



Figure 3. Geographical distribution of fellowships. The size of the circle is proportional to the number of bursaries per Country

Overall, **701 students from 98 Countries** attended the 15 editions of the Course since 2002. The success of the San Servolo Epilepsy Summer School is demonstrated by the growing number of applications, that are currently three times greater than the number of accepted students. Since 2002, **408 trainees from diverse parts of the world were supported by fellowships** (33 from Africa, 70 from Asia & Oceania, 151 from Eastern Europe, 92 from Western Europe, 59 from Latin America, 3 from North America; Figure 3). A large number of fellowships were supported by funds of ILAE though funding of Topic-oriented Commissions (130), the European Affairs Commission (68), the African Affairs Commission (4) and the Commission on Asia and Oceania Affairs (2).

These data demonstrate that the San Servolo Advanced Courses maintain a distinctive training role that responds to the educational needs of the world epilepsy community. This is confirmed by the high number

of Course students that maintained an interest in epilepsy research and developed an independent carrier in epilepsy, as emerged from a preliminary survey promoted by the San Servolo School in 2015 (Figure 4).

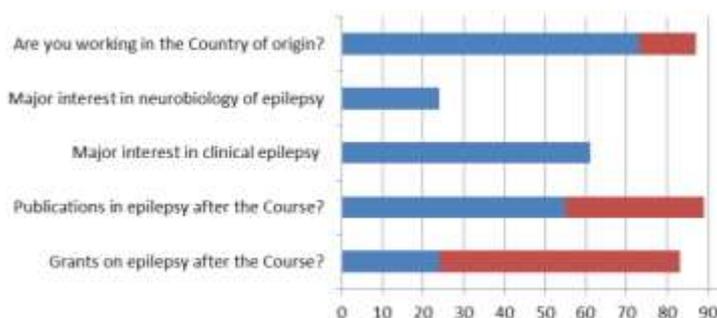


Figure 4. Results of a questionnaire sent to San Servolo student. Blue=yes; red=no.

The results clearly indicate that excellent scientists committed to epilepsy research apply to the San Servolo Course and recognize it as a primary educational event. The responses to the questionnaire also suggest that the Course contributed to reinforce the motivation of attendants to pursue a career in clinical and experimental epilepsy. Based on the feedbacks of previous courses we expect that the participation in the San Servolo Courses will significantly improve the professional and scientific profile of the students and

that this will result in a promotion of the epilepsy-related activities in the scientific environment of their Country of origin.

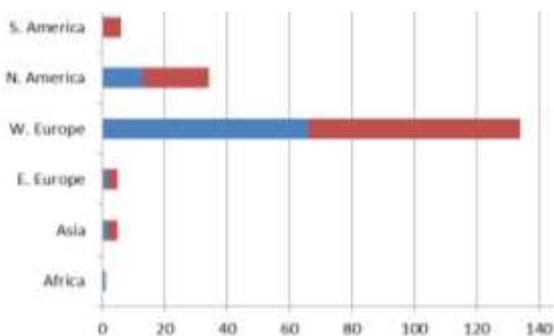


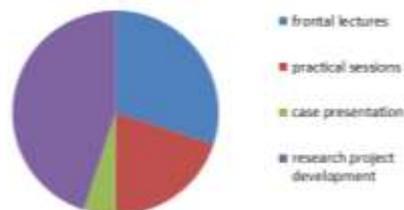
Figure 5. Continent distribution of San Servolo faculty members from 2002 to 2015. Red columns highlight the number of faculty members involved with ILAE Commissions/TFS

San Servolo Epilepsy Courses **Faculty members** (180 in 15 years) are among leading scientists/clinicians in

epilepsy arena. Most of the Faculty members are currently involved in the activities in diverse Topic-oriented and Regional Commissions of ILAE or were members of ILAE Commissions in the last 10 years. The last five ILAE Presidents were tutors at San Servolo Courses.

Teaching methods

The 12-day Courses utilize didactic methods that integrate in a comprehensive educational program: frontal lectures (30%), practical sessions (20%), case presentations (5%) and research project development (45%). Frontal didactic lectures are planned in the mornings. Practical sessions with dedicated and interactive material are organized during the afternoons. One afternoon is usually reserved to the students presentation of clinical cases. From the first day, a research/clinical theme selected in advance by the Course Faculty is assigned to teams of 6-8 students with different background, competence, geographical origin and gender. Each team is instructed by 2 faculty tutors to prepare a research project on the assigned topic. The project is presented to the Faculty and is discussed the last day of the Course. A non-monetary award is given to the research project evaluated as most innovative and original by the Course Faculty.



Course Venue

The San Servolo Venice International University (VIU) venue is an ideal place for a residential Course. The International School of Neurological Sciences in Venice (ISNV) is the VIU member that organizes the San Servolo Summer School on Epilepsy. The San Servolo VIU-ISNV premises have complete facilities for 100-

person conference and meeting rooms for practical session and student group meetings. Students are allowed to freely access the didactic material in the computer rooms and in other dedicated spaces.



Figure 6. 2008 San Servolo Course Bridging Basic with Clinical Epileptology

Both students and faculties are hosted on the island. Students are free to contact all faculty members and discuss issues with them during

the whole residential course. Lodging facilities for up to 200 attendants, a cafeteria and a tennis court are available. Wireless internet service is available throughout the Conference Center and in the condominiums. Two secretarial staffs are on-site to assist with the logistics of meals, rooms, transportation and AV services. The informal setting of the San Servolo Course makes this venue unique. The site is chosen to promote interaction between participants in a relaxed atmosphere. Attendees usually spend time together not only during the formal session of the conference but also socialize during the informal portions of the conference or during off times. The conference site is accessible for people with disabilities.

Course budget

The Course revenues are based on the fee contributed by students and strongly rely on additional external sources to fund bursaries. In past editions we obtained support from different Topic-oriented and Regional Commissions of ILAE, from NATO, from the European Community (EPILEARN grant 2003-2008), from the American Epilepsy Society, from Citizens United for Research in Epilepsy (CURE) and from private

companies. All contributions are acknowledged in the program announcement and reports. Student registration fee is 2.650 or 2.450 € for lodging in single or shared double room, respectively.

The expenses of the Course include: travel support for tutors and speakers; full costs (lodging and meals) for tutors (and accompanying person) and for invited lecturers; full on-site expenses for students; secretarial expenses for all-year organization and on site assistance; welcome buffet and tutors dinner; transfer to and from Venice for faculties.

Daily rate for single and double room lodging are 80-100 €. Meals cost per person for breakfast, lunch and dinner is 30 €. Conference room facility costs (one 100-people conference room and 6 meeting rooms) are 6.000 €.

The history of San Servolo and the International School of Neurological Sciences

San Servolo is an island in the Venetian Lagoon. Historical documents show that there was a Benedictine monastery on the island as early as the 8th century. The religious complex remained open until the 17th century. In the early 1700's, San Servolo was designated as the site of the military hospital of the Venetian Republic to cure soldiers harmed during continuous conflicts with the Ottoman Empire. Soldiers and sailors



who were the source of the Republic's strength in the battles for commercial and political sovereignty, were looked after by the Friars of the order of St. John of God. In 1725, a mentally deranged nobleman was admitted to this military hospital and thus began the function of San Servolo as an asylum for noblemen with mental disorders. While some of these patients suffered from serious psychiatric problems, others were confined there only because they were deemed socially undesirable. By 1800, mental patients of every social class were admitted to San Servolo, which then became the psychiatric hospital for the Veneto Region. Women were accepted from 1804-1834, after which they were treated in the hospital of S. Clemente on a nearby island.

In 1978, Government-instituted reforms of psychiatric treatment resulted in the closure of the hospital. The next year, the Venice Government established on the island the "Istituto per le Ricerche e gli Studi sull'Emarginazione Sociale

e Culturale" (Institute for the Study of Social and Cultural Marginalization) to preserve the documents associated with the history of the psychiatric hospital. Recently, San Servolo has started hosting an annual international artist residency and has become the site for exhibitions, festivals and performances.

The **Venice International University** (VIU) currently operates at San Servolo premises. VIU is a center for research and education and a collaboration among ten universities from around the world, was formed on San Servolo in 1995. Venice International University is something unique in the academic world: a group of Universities from all over the world share a common campus on this island in the Venice lagoon. These Universities collegially devise study programs to prepare their students to face the global challenges of today: sustainable development; climate change; ageing; urban growth; global ethics; cultural heritage... These global issues require a new kind of academic preparation. Students who choose to spend a term studying at VIU are taught to move across disciplines and through cultures with a flexibility of approach, an open mind and creative thinking.

The **International School of Neurological Sciences in Venice** (ISNV) was founded in 1990, at the beginning of the "Brain Decade", and is one of the founding members of VIU. It is ISNV's aim to provide health professionals with the opportunity to improve their skills in the Neurological Sciences by organizing

courses conducted by leading international experts in specific fields. In addition, ISNV is always ready to host meetings, workshops and round-tables. Since 2002, the ISNV has been organizing and hosting Advanced International Summer Courses on various aspects of epilepsy, with the support of ILAE.

Why an Advanced Summer Course on Bridging Basic and Clinical Epileptology? There is an increasing need to train young clinicians and research/clinical scientists to understand what epilepsy is and what are the most relevant neurobiological and clinical questions in epilepsy research. The main objective of the Advanced Course *Bridging Basic with Clinical Epileptology* is to provide the critical competence necessary to design, write and conduct an effective research project/activity in the field of epileptology. The Course instructs attendees to acquire basic knowledge in the pathophysiology of epilepsies, to understand the clinical aspects of epilepsies, to gain from the mutual exchange of information between basic scientists and clinicians and to critically evaluate the literature. The Course is addressed to neuroscientists and neurologists with a documented background in epilepsy research. Lectures on general and specific topics are interspersed with interactive seminars, workshops, and breakout sessions where small groups of attendees and faculty are involved in tutorials. Didactic material and dedicated equipment for consultation will be available for students under the supervision of the tutors. Final goal of the Course is the preparation of a research project on a subject decided and assigned by the Course Directors. Groups of 6-8 students are formed at the beginning of the Course. Each group develops a research project under the supervision of 2 tutors. The progress of the project is monitored daily during group discussions with tutors. Research projects are collectively discussed and evaluated the last day of the Course.

Several training activities have been developed during the last 10 years, some of which have been supported in recent years by ILAE Commissions. The uniqueness of the type of training traditionally offered during the San Servolo Courses has not been duplicated by such training events, for three main reasons: first, San Servolo School organization selects students professionals with diverse backgrounds, extending from surgeons to basic scientist; second, the School has granted over 15 years of activity more than 408 fellowship to allow scientists and clinicians from Countries in East Europe, Africa, Middle-Fat East, Latin America; third, the Course is based on the development of a research project under the tutorship of top-scientists/clinicians. This format has a unique didactic power that is still unmet in the context of international epilepsy training. For these reasons the San Servolo School Advanced Course on *Bridging Basic with Clinical Epileptology* maintain a large niche in the educational needs of the epilepsy community in all 5 Continents. This is supported by the high percentage of Course students that progressed and developed an independent carrier in Epilepsy, that emerges from a preliminary survey promoted by the San Servolo School in 2014 (see above). This is a clear indication that top-epilepsy scientists select the San Servolo Course as a primary educational event, and also suggest that the Course contributed and reinforced the motivation of attendants to pursue a successful career in clinical and experimental epilepsy.