

Behavioral, cellular and neurochemical approach in studying neurodegenerative disorders

24th - 30th of July 2023, Petnica, Valjevo, Serbia

Faculty of Biology, University of Belgrade
Serbia



ISN
International Society
for Neurochemistry



Petnica Science Center



School Report for International Society for Neurochemistry (ISN)

The ISN supported school *Behavioral, cellular and neurochemical approach in studying neurodegenerative disorders* was held from 24th of July to 30th of July 2023 at Petnica Science centre, Petnica, Valjevo, Serbia.

Local organizing committee:

- 1) Milorad Dragic, Ph.D., Faculty of Biology, University of Belgrade, Serbia
- 2) Prof. Predrag Vujovic, Ph.D., Faculty of Biology, University of Belgrade, Serbia
- 3) Ivana Grkovic, Ph.D., Vinča Institute of Nuclear Sciences, University of Belgrade, Serbia
- 4) Irena Lavrnja, Ph.D., Institute for biological research “Siniša Stanković”, University of Belgrade, Serbia

Venue

Petnica Science Center, 14104, Valjevo, Serbia Petnica Science Center (PSC) is an internationally recognized science complex with 7500 square meters of working and living space, *state-of-the-art* equipment, and extensive experience in organizing various forms of science education for students. PSC ranks among the top world institutions for extracurricular scientific education. In addition to ten classrooms of different capacities and types, equipped with modern technology, computers, and AV systems, the PSC also has an amphitheater with 150 seats, as well as an outdoor amphitheater for 300 listeners. PSC has equipped cabinets and laboratories for biology and biochemistry which are multifunctional and flexible and enable participants to experience scientific research on real problems with the usage of professional scientific equipment. PSC is located 7 km southeast of Valjevo, in central Serbia. Valjevo is 99 km away from the center of the Serbian capital, Belgrade, and is connected by good railway and bus connections. Also, only 200 meters from the station is the Petnička cave, known for its spacious underground canals, halls, underground river and lake, rare flora and fauna, and rich paleontological and archaeological finds. Staying in the PSC allows participants to engage in top science while in their free time they can enjoy the natural beauty and landscape of the western part of Serbia.

School description

The ***Behavioral, cellular, and neurochemical approach to studying neurodegenerative disorders*** school is an intensive one-week lecture, demonstrative and hands-on laboratory practice providing a broad knowledge in the field of neurobiology and selected methods that are applied in neurobiological and neurochemical research. The workshop is intended for undergraduate and master's students from molecular biology, medicine, pharmacology, biochemistry, chemistry, and related fields. The main concept of the workshop is to demonstrate or train participants on how to perform the most used methods in neurobiology with the accent on neurochemistry, from behavioral down to cellular level. Through a combination of lectures from experts in the field and laboratory practice, participants will acquire knowledge and skills which could then be applied in their future research. All participants will be divided into small groups to which an instructor will be assigned, who will guide them through experimental procedures. Our target student population is students from the Balkan region - specifically from Croatia, Bosnia and Herzegovina, Serbia, Montenegro, North Macedonia, Bulgaria, and Romania.

Participants (see Attachment 1)

Briefly, we had participants from five regional countries including Serbia, Bosnia and Herzegovina, Romania, Slovenia and Montenegro. For all participants (including speakers and instructors) housing and three meals were provided. For each participant who was more than 100 km away from Petnica Science center, a travel stipend was secured. We had in total 16 participants.



Speakers (see Attachment 2)

Briefly, we had four esteemed professors from four countries including United States of America, Canada, Romania and Slovenia. For three professors the travel and staying for the duration of the school was completely covered. One professor had to change the type of his lecture and it was in online mode, and one had to cancel however, professor Sakic filled in and gave a lecture instead.



School program

24th of July

12:00 - 16:00 Arrival and Registration

17:00 - 16:00 Opening ceremony

17:30 - 19:30 Lecture I - What's wrong with my mouse? The behavioral approach to studying neuroscience - prof. dr Boris Sakic, McMaster University, Canada

19:30 - 20:30 Dinner

25th of July

07:30 - 09:00 Breakfast

09:15 - 10:00 Organizational meeting with participants regarding planned daily activities

10:30 - 12:00 Battery of Behavioral tests I

12:00 - 12:15 Coffee break

12:15 - 14:15 Battery of Behavioral tests II

14:30 - 15:30 Lunch

16:00 - 17:00 Social activity - Gathering & Meeting - Staff and participants

17:00 - 19:00 Lecture II – Statistics for Beginners – How to see your own data and interpret them -prof. dr Boris Sakic, McMaster University, Canada (instead of prof. Nedeljkovic lecture)

19:30 - 20:30 Dinner

26th of July

07:30 - 09:00 Breakfast

09:15 - 10:00 Organizational meeting with participants regarding planned daily activities

10:00 - 12:00 Principles of sterile work, cell culture preparation and maintenance#

12:00 - 12:15 Coffee break

12:15 - 14:30 Functional imaging I - Confocal microscopy & Ca²⁺ - imaging

14:30 - 15:30 Lunch

15:30 - 17:15 Functional imaging II - Confocal microscopy & Ca²⁺ - imaging and CSF isolation

17:30 - 19:00 Lecture III - Prof. Boris Rogelj, Ph.D. "Józef Stefan" Institute, Slovenia (online)

19:30 - 20:30 Dinner

20:30 - 23:00 Movie night (The Father 2021)

27th of July

7:30 - 09:00 Breakfast

09:00 - 11:00 Sightseeing of Petnička cave

11:30 - 14:00 Immunohistochemistry

14:00 - 15:30 Lunch

16:00 - 17:30 Immunohistochemistry

17:30 - 18:00 Coffee break

18:00 - 19:30 Lecture IV - Harvesting the analgesic potential of macrophages - Prof.

Violeta Ristoiu, Ph.D., Faculty of Biology, Romania

19:30 - 20:30 Dinner

28th of July

7:30 - 09:00 Breakfast

09:15 - 14:00 Light & Confocal microscopy

14:00 - 15:30 Lunch

15:30 - 17:00 Practical workshop - Signal registration in Neuroplex

17:00 - 17:30 Coffee break

17:30 - 19:00 Lecture V - Cellular approach in studying neurodegenerative disorders - Prof. Srđan Antić. M.D., School of Medicine, University of Connecticut, USA

19:30 - 20:30 Dinner

29th of July

07:30 - 09:00 Breakfast

10:00 - 14:30 HPLC analysis of selected neurotransmitters

14:30 - 15:30 Lunch

15:30 - 17:00 Excursion to the Petnica nature

17:00 - 17:15 Coffee break

17:30 - 18:30 ISN presentation & activities

19:30 - 20:30 Dinner

30th of July

7:30 - 09:00 Breakfast

09:30 - 10:30 Closing remarks

10:30 - 12:00 Departure

Budget

Activities/Items	Income	Expenditure
<u>Funds from ISN</u>	21 000 USD (16800 received pre-school)	
Faculty travel expenditures		600 USD
Speakers travel expenditures		3300 USD
Accommodation and meals for 16 participants		11200 USD
Accommodation and meals for 6 course instructors		3900 USD
Accommodation and meals for 3 speakers		700 USD
Travel stipends for participants		1000 USD
Local transportation		350 USD
Total	(4200 USD received upon school competition and report submission)	21500 USD
<u>Funds from donators – local companies</u>	3200 USD	
Aflamed – plastic consumables		300 USD
Aflagenetics – salts and buffers		300 USD
RTC – kit for protein		800 USD

concentration		
LABENA – antibodies		300 USD
ProMedia – antibodies		700 USD
Uni-Chem plastic consumables for cell culture		400 USD
Total		2800 USD

*Faculty of Biology – University of Belgrade donated animals, home cages, pellets, bought pipets, chemicals, tissues, slides and all other as stated in the project proposal.

Selection criteria for participants

Each participant will submit via website application form consisting of a professional CV and a Motivational letter.

The following criteria will be used for the selection process:

- Applicants must be active students of the biomedical group of sciences
- Applicants must be under the age of 28
- At the time of application applicants must be undergraduate or master's student
- The applicant must study at any University from the biomedical group which is located in Croatia, Serbia, Montenegro, North Macedonia, Romania, Bulgaria, and Bosnia and Herzegovina
- At least one student should be selected from each country applied, with the aim of having approximately the same number of students from all countries
- Another aim will be to have approximately the same number of students across genders
- Applicants should have any prior laboratory experience
- Organizational board will assess all CVs and motivational letters and each member will select the candidates according to these selection criteria.

Day 1 (24th July 2023)

The day before and on the first day of the workshop, the members of the Organizing Committee arrived early in the morning and made all the necessary preparations for the arrival of the participants. The participants arrived at the Petnica Research Station between 12:00 and 16:00, where they were received and registered by members of the Organizing Committee.

Around 17:00, the President of the Organizing Committee, Dr. Milorad Dragic, welcomed the participants and presented a brief plan and program of the school during the opening ceremony. After that, Professor Dr. Boris Šakić, McMaster University, Canada, gave a lecture titled “*What's wrong with my mouse? The Behavioral Approach to studying neuroscience*”. Before the lecture, Professor Šakić introduced himself to the participants and asked each participant to introduce himself and state what is his main motivation to apply to this school and what he is aiming for in his future career – does he/she see himself in academia or in

industry, has anyone already had experience in the laboratory or with live animals in behavioral experiments.

Then the lecture began, covering theoretical aspects of rodent behavior research and elements important for processing and interpreting the results of behavior analysis, providing an excellent foundation for the second day of school i.e., the "behavior module." After the break, students enthusiastically participated in the post-lecture discussion and talked with both the professor and members of the organizing committee about their future careers and opportunities in Serbia and abroad. After dinner, the hosts of the Petnica Research Center took the entire staff and students on a tour of the Center and all relevant facilities.



Professor Šakić giving a lecture with students

Day 2 (25th July 2023) – Behavioral module

The second day of the school was designed as a behavioral module that included the gold standard tests for measuring anxiety-like behavior in rodents - the **Open Field Test** and the **Elevated Plus Maze Test**.

After breakfast, the organizational meeting with the participants about the planned activities of the day took place

around 10:00. After that, Dr. Marina Zaric Kontic and Dr. Milorad Dragic gave a lecture on the Open Field Test and the Elevated Plus Maze Test, explaining the handling of the animals during the tests, theoretical aspects, the steps of the experimental protocol and the functions of the ANY - Labyrinth video tracking system 7.11. used for live recordings and behavioral analysis. Male adult Wistar rats were used as subjects for both tests. The animals were divided into two groups: vehicle-treated rats and alprazolam (anxiolytic) treated rats. Special care was taken to minimize stress to the animals according to EU63/2010. The first part of the module included the open field test. All animals were brought into the experimental room at least 30 minutes before the start of the experiment to acclimate. The participants were practically introduced to



the proper handling of the animals and were able to see the intraperitoneal injection of the treatment, which was explained in detail by the instructors. Professor Šakić showed the participants how to handle rats and how to properly acclimate them to the researchers, minimizing handling stress that could affect the results of behavioral analysis. Several participants attempted to handle the animals as Professor Šakić instructed, and the results were evident. The animals had become accustomed to human touch and handling and exhibited much calmer behavior.



Professor Šakić with participants handling the animals

The Open Field Test took place in a room where only one of the instructors was present, while the participants and the rest of the staff were in another room to avoid the influence of noise, odor stimuli (perfume, food, etc.), and other confounding factors. During the test, each rat was placed in the center of the arena, after which behavior was recorded for the next 10 minutes. During this time, participants observed the animals' behavior live in the other room and discussed it with the instructors. At the end of the experiment (around 14:00), the staff and the participants discussed the obtained results, their biological relevance and experimental details. After lunch, the second part of the module, i.e., the Elevated Plus Maze Test, was conducted. As in the first part, new animals were brought into the experimental room at least 30 min before the start of the experiment to acclimate and treated with vehicle or alprazolam. Because the recording time (test) was five minutes, this behavioral submodule took less time than the previous one, and the experiment was terminated along with the discussion around 18:00. When both tests were completed, participants and instructors met.



Dr Dragic discusses the results with the participants

At the end of the module, the participants were truly excited about the gained theoretical and practical knowledge and showed great interest in behavioural neuroscience.

At the end of the second day, Professor Dr. Boris Šakić gave another presentation on the basic statistical tools that participants need to understand how to interpret the results. Professor Šakić introduced the unpaired and paired Student's t-test, explained the importance of the normal distribution, and parametric and nonparametric tests. The professor also presented one-way and two-way ANOVA as well as simple regression analysis. The entire lecture was interactive and the participants solved tasks on the spot where the professor asked them which test they would use if this was their experiment.



Professor Šakić explains the basics of statistical tools to participants

Day 3 (26th July 2023)

The third day of the school began with an introductory lecture by Dr. Marija Adzic Bukvic. The lecture covered the basic principles of using cell culture, both primary cell cultures and cell lines in neuroscience research. Dr. Adzic Bukvic introduced the students to the basics of working with cell cultures, familiarized them with the necessary equipment, and explained important guidelines for maintaining sterile conditions.

Following the lecture, students were divided into groups of four to allow individual work with cell lines under sterile conditions. Dr. Adzic Bukvic and Katarina Milicevic supervised the groups. The C6 glioma cell line was used for the exercises. In groups of two, the students gained hands-on experience with procedures such as dividing the cells, counting them, and seeding them at the desired density for the upcoming experiments. The students showed considerable enthusiasm for cell culture techniques and some expressed curiosity about a possible laboratory internship in the laboratories of the Faculty of Biology – University of Belgrade.

After the cell culture work, each group attended a session dedicated to confocal microscopy and imaging of immunofluorescent labeled cells in culture. Ana Jakovljevic provided an introductory overview of confocal microscopy, explaining its functioning, and elaborated on the significance of cell-specific markers and their application.



Dr Marija Adzic Bukvic gives an introductory lecture in cell culture and sterile work



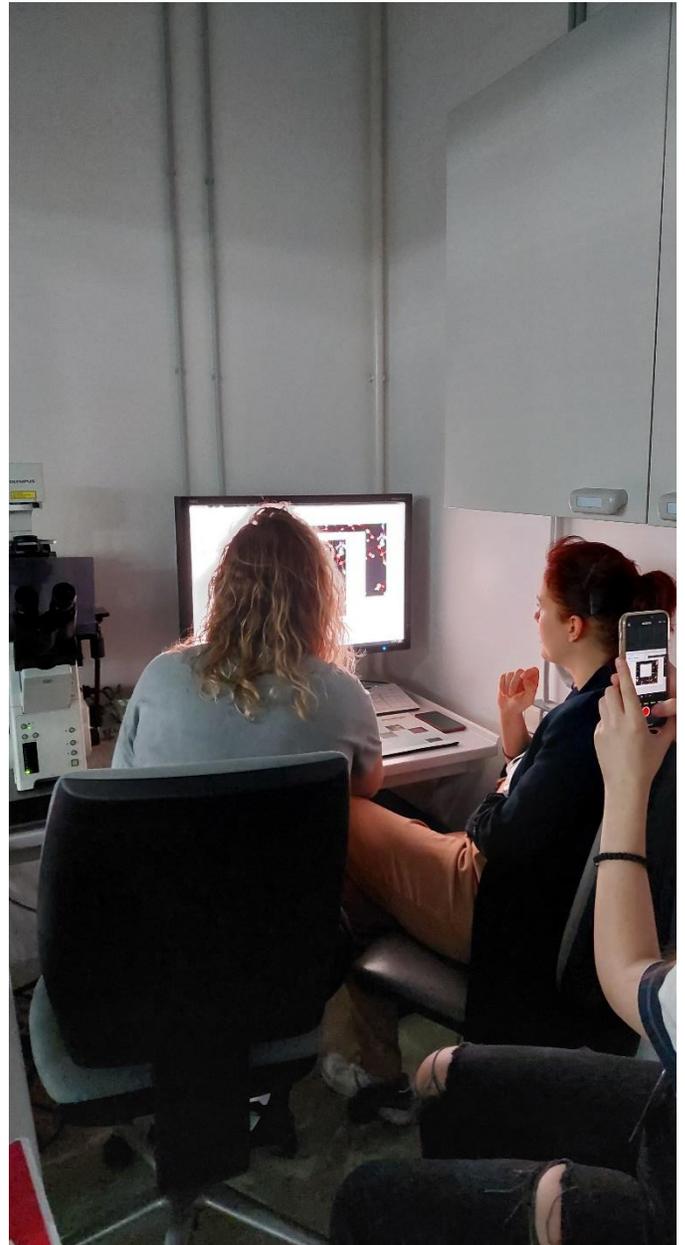
Participants working with C6 glioma cell line

Later in the afternoon, Prof. Dr. Boris Rogelj from the 'Jožef Stefan Institute', Ljubljana, Slovenia, gave a lecture on the '**Pathomechanisms of C9orf72 mutation in ALS and FTD**'. Due to unexpected consequences, Prof. Rogelj gave an online lecture. He provided new insights into understanding the pathology of amyotrophic lateral sclerosis (ALS) and frontotemporal dementia (FTD), focusing on the deleterious effects of C9orf72 mutations on cellular systems. This lecture provided students with valuable real-world examples of how cells are used in unraveling the principles underlying neurodegeneration. The students showed a high level of enthusiasm and actively participated in the lecture even though it was in online mode.



Professor Rogelj giving his lecture (online mode)

Participants were divided into several groups for cell culture. While one group was in cell culture, the other group was in the confocal microscopy room where Ana Jakovljevic showed the participants the basics of how the confocal microscope works. The other group was with Dr. Dragic, where they learned the basics of neuroanatomy using the wide-angle zoom microscope and the brains isolated from our previous experiments for dissection. Some students were already familiar with the basics of neuroanatomy, but most of them were introduced to this field for the first time. They found it very interesting and emphasized the need to know the basics of neuroanatomy for different types of research.



Dr Dragic and Ana Jakovljevic with groups of students

After Professor Rogelj finished his lecture, the participants were at lunch and after lunch and a short coffee break, Professor Šakić showed the participants how to isolate blood and cerebrospinal fluid from rats. Professor Šakić showed them how to make their own instruments from ultra-thin glass pipettes for CSF collection. The participants attempted to make several glass pipettes for CSF collection, and then Professor Šakić showed them how to find a site in the dorsal part of the animal's neck and how to expose a specific site for collection. The CSF was collected from a previously perfused animal to avoid contamination of the CSF with blood. Participants also had the opportunity to see how to perfuse an animal and how to isolate the whole brain and specific structures, e.g., hippocampus, cerebellum, prefrontal cortex, caudoputamen, brainstem, hypothalamus, and pituitary gland.



Professor Šakić and students perfusing the animal



Professor Šakić and students isolating CSF

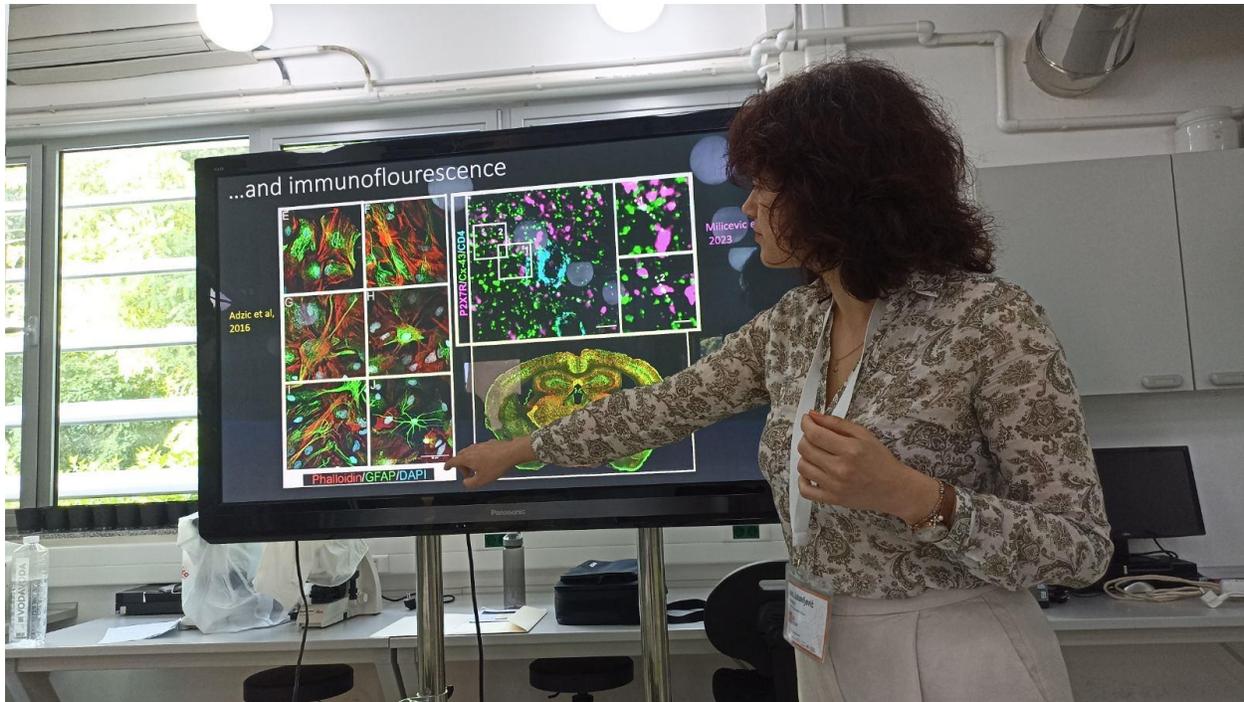
To conclude the day, we arranged a movie night in featuring a movie ‘**The father**’. This movie portrayed the reality through the eyes of a person with the Alzheimer’s disease starring phenomenal ser Anthony Hopkins who received an Oscar award for this role.



Instructors Milica Zeljkovic Jovanovic, Marija Adzic Bukvic and Katarina Milicevic went to Valjevo to buy popcorns for the movie.

Day 4 (27th July 2023)

The fourth day of the school began with an introductory lecture by Ana Jakovljevic. The lecture covered the basic principles of immunohistochemistry and immunofluorescence staining, familiarized them with the similarities and differences between tissue staining for light and fluorescence microscopy, and explained the critical steps that must be followed to obtain high quality slides for microscopy. During the lecture, Ana also reviewed some historical aspects of tissue staining and presented students with some examples from our own laboratories, which include DAB -based immunohistochemistry as well as immunofluorescence staining of tissue and primary astrocyte cultures.



Ana Jakovljevic giving an introductory lecture about principles of immunohistochemistry

After the presentation, the students were divided into three groups and each group received previously prepared cryosections of the unstained forebrain. Each group was given four slides, one for staining astrocytes, one for staining the synaptic protein synaptophysin, one slide for the negative control, and one for staining without a step to quench endogenous peroxidase activity so that the specificity of the secondary antibody could be visualized with the chemical DAB. Participants started with the protocol that had been given to them on the first day of school. The first step was to surround the sections with a hydrophobic pen to ensure that the primary and secondary antibodies covered the sections. Participants then rehydrated the sections in PBS and immersed them in 0.3% H₂O₂ in methanol followed by blocking solution. After blocking solution, the slides were incubated with the appropriate dilution of primary antibodies previously calculated by the participants. Due to time constraints, we opted for a 2-3 hour incubation at room temperature, but explained to them the advantages and disadvantages of such an approach.



Dr Zaric Kontic and Ana Jakovljevic with participants during practical part

While the slides were incubated with primary antibodies, we organized a tour to the Petnica cave. The tour was led by an archeologist from the Petnica Science Center, who explained to the participants the archeological background of the site and some important points about the Petnica Cave and its importance for archeological research. The participants were able to visit two cave chambers, which are easily accessible.



Archeologist explains the participants the origin of the cave





Professors, instructors and participants at one of the cave chambers

After the tour and lunch, the students finished the staining and examined the slides under the microscope. The main idea behind staining astrocytes with EAAT1 and synapses with synaptophysin was to demonstrate different staining patterns, i.e., focal staining of the cellular element versus diffuse staining patterns of synapses. Students were also able to see the differences between the negative control and slides that were not treated with 0.3% H₂O₂ and methanol.

After a short coffee break, the second part of the fifth day was opened by Professor Violeta Ristoiu from University of Bucharest, Department of Anatomy, Animal Physiology and Biophysics. Her lecture was entitled ``**Harvesting the analgesic potential of macrophages**``. During her talk, Professor Ristoiu pointed out the importance of immune and neuronal cell interactions, citing the peripheral nervous system as an example meeting point. She explained how macrophages interact with satellite glia in the dorsal ganglia and with pseudounipolar neurons and how this might influence neuropathic pain. The end of the lecture was followed by a lively discussion and numerous questions from both attendees and faculty.



Professor Ristoiu gives lecture to the participant and instructors

After the lecture and discussion, participants were given a free time to spend and in the evening professor Šakić gave a lecture about grantsmanship and how to write a grant proposals.

Day 5 (28th July 2023)

The fifth day of the school started with an introductory lecture on calcium imaging given by Katarina Milicevic. She introduced students to the rationale of using calcium imaging in neuroscience, a standard imaging setup, types of fluorescent probes that are used and their pros and cons.



Following the lecture, students were divided into groups of four to facilitate individual work under the guidance of Katarina Milicevic. Students were shown how to prepare cells for imaging. C6 glioma cells and Fluo-4 AM indicator were used for this purpose. Next, they were introduced to an imaging setup and its configuration. Then, the students were shown an experiment involving the study of an astrocytic calcium signaling pathway. They understood the use of specific receptor and ion channel blockers to describe a signaling cascade. The students showed great enthusiasm for scientific data and actively participated in the discussion, indicating an unexpectedly high level of interest.



Katarina Milicevic and the participants in the microscopy room preparing for Ca^{2+} imaging

In the afternoon, Prof. Srdjan Antic from the University of Connecticut (USA) gave a lecture on ‘Cellular approach in studying Alzheimer’s disease’. This lecture served as an introduction for the practical workshop that followed. In the practical workshop, students were instructed in the use of Neuroplex software for live cell imaging ‘and how to export the acquired data for analysis. During the hands-on workshop, each student was given a data set and the task of analyzing the provided data and creating a visual representation. Each step of this process was carefully guided by Dr. Srdjan Antic, who led the workshop, with the help of Katarina Milicevic, Dr. Marija Adzic Bukvic, and Dr. Milorad Dragic. This workshop provided students with

essential insights into the analysis of imaging data and, most importantly, gave them the skills to present their data effectively. The techniques learned are broadly applicable to the interpretation and presentation of scientific data.



Katarina Milicevic and participants in computational workshop with Neuroplex



Professor Antic giving his lecture

Day 6 (29th July 2023)

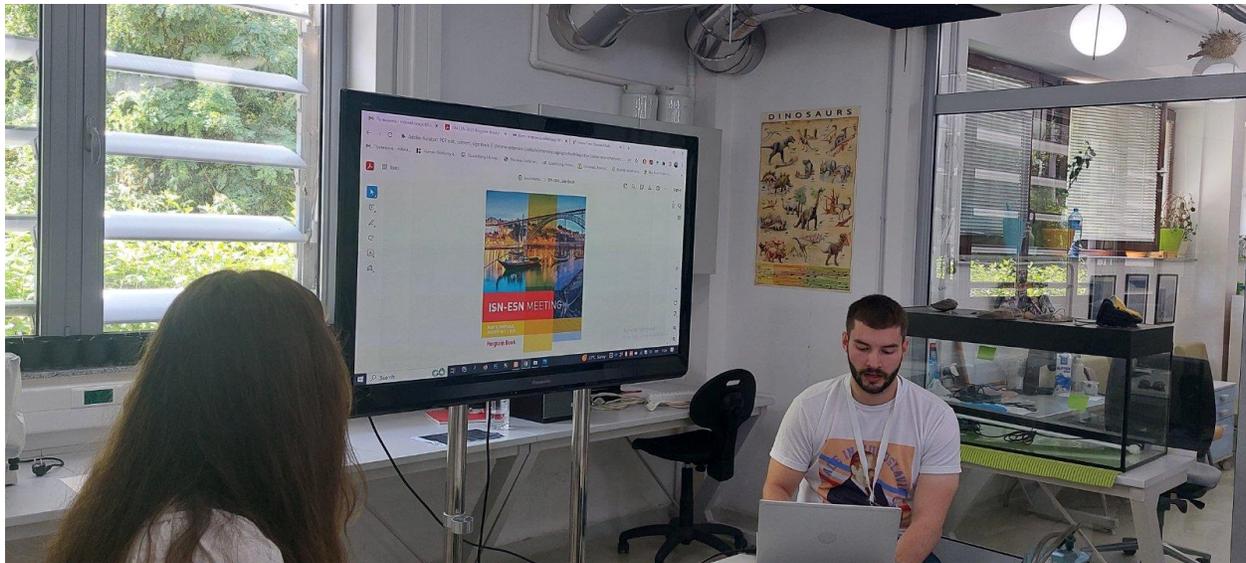
The following day was reserved for the neurochemical module. During the first morning meeting, Dr. Milorad Dragic presented the plan for the neurochemical module to the participants. After the meeting, the participants prepared the fractions for HPLC analysis by deproteinizing the solutions and centrifuging the samples at 14,000 x g. The samples were then analyzed by the HPLC. After centrifugation, the samples were filtered to remove any small debris or particles that might clog the column in the HPLC. We isolated and prepared homogenates from three brain regions—cerebellum, caudoputamen, and hippocampus—and the fourth fraction was CSF collected two days earlier. The participants were then accompanied by Marko Slijepcevic, a biochemist from the Petnica Science Center, who gave them a short lecture on the HPLC method and the equipment in the laboratory. We planned to determine the levels of dopamine and serotonin and compare the levels in each structure and in the CSF.

When the samples were loaded and all participants were waiting for the results, Dr. Milorad Dragic gave them a short lecture about scientific work and data presentation.



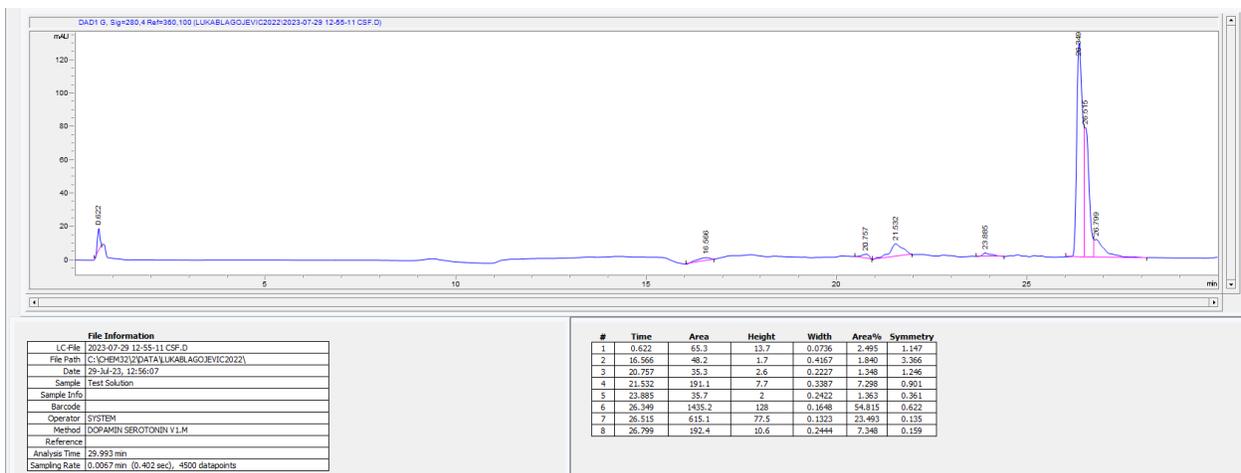
Dr Dragic giving students a lecture on how to present the scientific data for publishing

After a short break, the students were back to learn about the International Society for Neurochemistry (ISN) and hear about the great opportunities the society offers its members and how they can become members and gain experience and benefits from membership at ISN. We also explained to them the role of ISN as our main co-sponsor of this event and also showed them what scholarships and mobility opportunities are available to visit other labs ISN. We also promoted the upcoming ISN-ESN meeting in Porto.



Dr Dragic giving a presentation about International Society for Neuroscience (ISN)

After lunch and a short break, the HPLC was finished and Marko picked up the raw data with the participants and showed them what the peaks look like and explained their meaning and how to interpret them. Since Marko and the participants also ran a solution with known concentrations of dopamine and serotonin, the participants created a standard curve from which they extrapolated the concentrations for dopamine and serotonin for their samples. As expected, the highest concentration of dopamine was detected in the caudoputamen and the lowest in the CSF.



Representative chromatogram peaks from HPLC analysis that participants obtained

After the data analysis and the results interpretations, participants had the discussion about the school and what they learned so far and gave their suggestions what could have been better of how to improve some aspects for the future endeavors.

Day 7 (30th July 2023)

In the morning, after breakfast, Dr Dragic gave a closing remark, thanked all speakers, instructors and students for participating at first neurochemical school organized by Faculty of Biology – University of Belgrade and with tremendous support of ISN. Dr Dragic also thanked to our sponsors who supported the school and to Petnica Science Center for hosting this event which was unique in our region.

After the closing remarks, other instructors also thanked the participants and highlighted their scientific motivation and enthusiasm to peruse carrier in neuroscience. Participants were given anonymous questionnaire to fill in where they could write their remarks, and score various aspects of the school. Upon finishing the questionnaire, Dr Milorad Dragic as president of the organizational committee, gave the participants the certificate of the attendance and the school was formally finished.



Appendix 1 – Participants and Demonstrators and Speakers

Participants

1. Nataša Listeš
2. Stefan Vizitojkić
3. Anđela Knežević
4. Maja Imrić
5. Ivana Jacimovski
6. Anđela Ilić
7. Nikola Leontić
8. Nistor Raluca
9. Mina Milutinović
10. Milica Stefanović (Srbija)
11. Željana Stanković (Srbija)
12. Tea Savić (Srbija)
13. Anđela Obradović (Srbija)
14. Marina Anastasov

Demonstrators

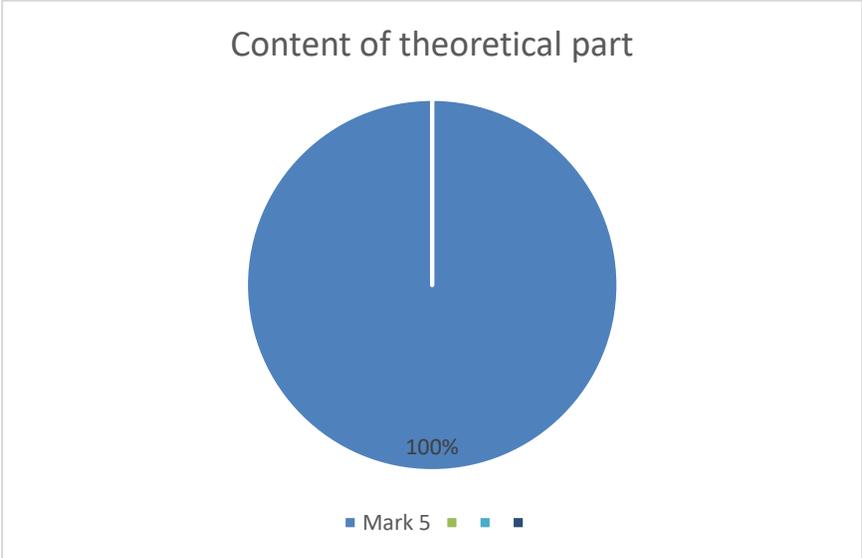
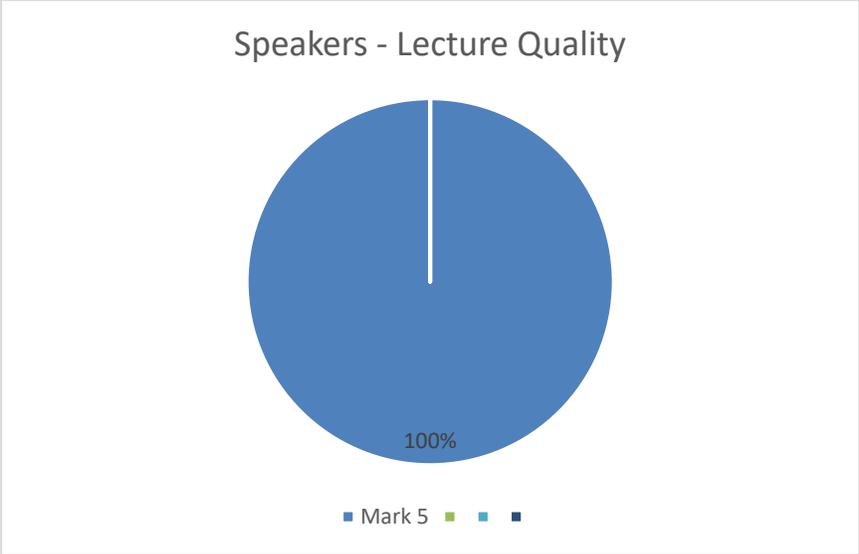
1. Milica Zeljković Jovanović
2. Marija Adžić Bukvić
3. Ana Jakovljević
4. Marina Zarić Kontić
5. Milorad Dragić
6. Katarina Milićević

Speakers

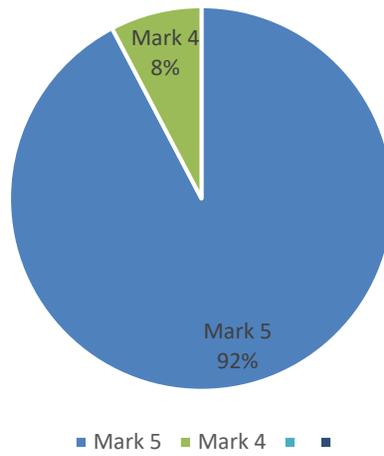
1. Boris Šakić
2. Boris Rogelj
3. Violeta Ristoiu
4. Srđan Antić

Appendix 2 – Anonymous survey

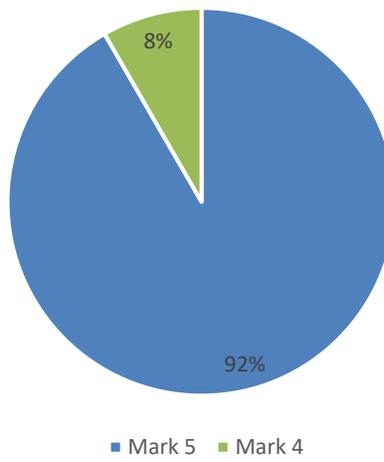
The participants were given an anonymous survey to fill in (lowest mark being 1, highest being 5). The assessment is given below.

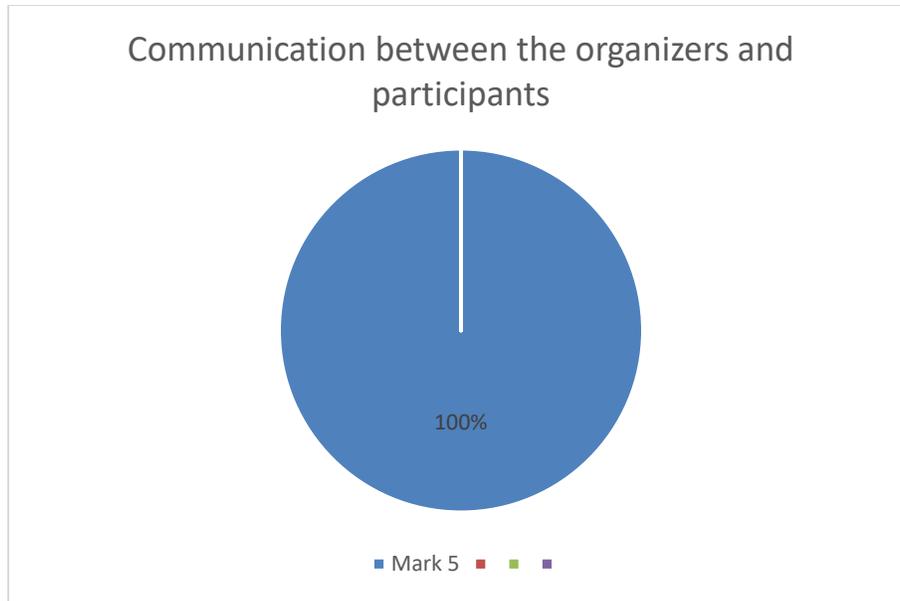


new knowledge/INTEREST



Experimental protocols





General comments from participants at the end of the survey were extremely positive. Participants indicated that the workshop gave them the opportunity to gain experimental skills, new knowledge, and perspectives. They were very satisfied with the communication with the organizers and their personal examples from experimental work, optimization of methods and anecdotes from life. They were also enthusiastic about the discussions, the level of positive energy, the beautiful nature in the institute and the hospitality of the organizers.