Montenegro
Ministry of Science

>BULLETIN_

OF THE MINISTRY OF SCIENCE FOR 2018

ACTIVITIES ON SEEIIST REGIONAL PROJECT CONTINUE

As a result of a period of strong technological stagnation, a need has arisen in the South East Europe region to establish a unique research infrastructure that would grow into a regional core of excellence. Such a facility would bring together researchers and experts from the region, which would, first and foremost, have a positive impact on one of the biggest challenges in the region – brain drain, while the use of state-of-the-art technology would ensure competitiveness in relation to the rest of Europe, attracting a number of prominent international researchers.

The development of technology underpinning the South East European International Institute for Sustainable Technologies (SEEIIST) would simultaneously encourage the advance of complementary technologies and the use of alternative energy sources, while strengthening the digitalisation initiative in the region. The ultimate goal of the project is to strengthen social cohesion and boost the region's economic development.

With the act of signing of the Declaration of Intent in October 2017 at CERN, Geneva, performed by eight signatories from the South East Europe region, the original initiative to establish SEEIIST has been transformed into a regional project. In addition, the Declaration has established the Steering Committee of the project, led by Minister of Science of Montenegro Dr. Sanja Damjanović.

The beginning of 2018 was marked by the Forum on New International Research Facilities for South East Europe, organised in late January 2018 at the Abdus Salam International Centre for Theoretical Physics (ICTP) in Trieste (Italy) by the Ministry of Science of Montenegro and ICTP.

Minister Damjanović at the event in Trieste

On the occasion, the concept studies for both options of the project were presented to the scientific and political public for the first time. These were Synchrotron Radiation Light Source and Facility for Hadron Cancer Therapy and Biomedical Research, which had previously been produced by two international groups of renowned experts, engaged as volunteers.

The event brought together more than 100 participants, including representatives of relevant EU institutions (Directorate-General for Research and Innovation of the European Commission – DG RTD and European Strategy Forum on Research Infrastructures – ESFRI) and international organisations (RCC, IAEA, EPS, CERN, GSI, CNAO, etc.), as well as government representatives, scientific and research community, business community and end users.

Following the analysis of common regional social and economic challenges and the needs for high technology, the option of Hadron Cancer Therapy and Biomedical Research with Protons and Heavy Ions was selected as the option for the SEEIIST project in March 2018.

Virtual Centre, Heidelberg

Trieste forum has brought together more than 100 participants

The technology underpinning the Institute is the new generation of medical accelerators, offering tumour treatment with heavy ions, which is the most modern and the most powerful method of treating many types of cancer, given that the radiation dose is deposited solely in the tumour region, thus protecting the unaffected cells.

Clinical network will facilitate consultations with physicians and the work of oncology case conferences

The therapy is unique because of the possibility to treat radio-resistant tumours. The method is still in the pioneering phase and requires further, broad-spectrum extensive research. Therefore, the plan is to dedicate 50% of the operating time to research, which would make the SEEIIST project unique in the world and important for Europe.

The Concept Study found that, in order to achieve the clinical and scientific goals, a clinical and a scientific network should be established at the very beginning of the project implementation. In this context, a meeting of the South East European Regional Network for Radiotherapy and Oncology was organised by the Clinical Centre of Montenegro in cooperation with the Ministry of Science in early September 2019. A clinical network will enable radiologists and oncologists throughout the region to mutually connect, establish contacts with colleagues at the Institute, as well as at other renowned European centres and hospitals.

A number of activities have been implemented on capacity-building within the project, which is the key segment of the project in the first stage of implementation. In this regard, Minister Damjanović met with European Commissioner for Research, Science and Innovation Carlos Moedas in Brussels, who expressed strong support of the European Commission for the project on that occasion, announcing that the Commission would find a stage-funding formula for the project.

In this context, Montenegro received EUR 1 million in 2018 and thanks to the financial support of the European Commission, which recognised the importance of this large research infrastructure, both for Montenegro and for the entire region, the SEEIIST project commenced the next, Preparatory Phase, which involves the development of a technical specification.

In addition to a technical design study, this phase encompasses the activities of developing a business plan and site conditions for the Institute.

Minister Damjanović and the European Commissioner for Research, Science and Innovation Carlos Moedas

Two renowned international research centres, CERN (Geneva) and GSI-FAIR (Darmstadt), are providing generous support as hosts of the SEEIIST Design Study Phase. With the support of these institutions, the SEEIIST Project is now in the best hands, with great potential for success.

In addition to a number of meetings held within the SEEIIST promotional activities, in June, Minister Damjanović stayed in Brussels where she met with Director-General of DG Research and Innovation Jean-Eric Paquet, who expressed readiness to assist

in finding a way to fund the South East European International Institute for Sustainable Technologies.

In September, Minister Damjanović visited the International Atomic Energy Agency, meeting with its leaders, Mr. Dazhu Yang, Deputy Director General and Head of the Department of Technical Cooperation, and Mr. Aldo Malavasi, Deputy Director General of the Department of Nuclear Sciences and Applications, who confirmed the continued full support of the Agency to the regional project of establishing the South East European International Institute for Sustainable Technologies. On the occasion, Mr. Malavasi reiterated the readiness of the Agency to financially and professionally support the planned training of staff, future project proponents, as well as to provide consultancy services at all stages of the project.

Minister Damjanović at the meeting with Director-General of DG Research and Innovation Jean-Eric Paquet

SEEIIST STEERING COMMITTEE

THE RIGHT TIME FOR A MAJOR SCIENTIFIC AND TECHNOLOGICAL PROJECT IN SOUTH EAST EUROPE

SEEIIST project Steering Committee

1. The first meeting of the SEEIIST Steering Committee took place on 30 January 2018 in Sofia, Bulgaria. Before the meeting, a reception for the members of the Steering Committee was organised by the President of Bulgaria, Mr. Rumen Radev, who expressed his full support to the initiative, highlighting the importance of the project for the whole region and commending the efforts made towards its implementation.

2. Following the analysis of common regional social and economic challenges and needs for high technology, the option of Hadron Cancer Therapy and Biomedical Research with Protons and Heavy Ions was selected as the option for the SEEIIST project in March 2018. The decision was made at the second meeting of the project Steering Committee, held at the Ministry of Education, Sports and Youth of the Republic of Albania. At the meeting, chaired by Minister of Science of Montenegro Dr. Sanja Damjanović, the draft Memorandum of Cooperation was also agreed upon.

3. The third meeting of the SEEIIST Steering Committee was held in Skopje. On this occasion, the Steering Committee discussed the future steps and joint activities regarding the Preparatory Phase of the project, as well as the funding opportunities. The Committee agreed that continuous capacity building was needed, presenting finalised project proposals in this regard.

4. The Fourth meeting of the SEEIIST Steering Committee was held at the premises of the International Atomic Energy Agency (IAEA) in Vienna, Austria. Thanks to the financial support of the European Commission in the amount of EUR 1 million, the SEEIIST project entered the next phase, which involves the development of the project's technical specification, the so-called Preparatory Phase. The main topics of the meeting were the activities for the establishment of working groups, which will be tasked with the development of the Design Study, working from CERN (Geneva) and GSI-FAIR (Darmstadt).

INTERNATIONAL PROMOTION AND EXCHANGE OF IDEAS

Minister Damjanović at the International Conference for Research Infrastructures 2018 in Vienna

At the invitation of the Federal Minister of Education, Science and Research of the Republic of Austria, Minister of Science of Montenegro Dr. Sanja Damjanović took part in the International Conference for Research Infrastructures 2018, which took place in September in Vienna.

"The project of the South East European International Institute for Sustainable Technologies (SEEIIST), which envisages the implementation of hadron cancer therapy with research in bio-medicine, will enable the region to regain the scientific excellence that it once had and will accelerate the technological development of the countries involved. The South East Europe region needs a large scientific research infrastructure that would trigger scientific excellence, prevent talent outflow, stimulate innovation, mobility, internationalisation and knowledge transfer, as well as other complementary technologies.
All of these are ways in which science can improve socio-economic conditions and provide young people with an attractive environment in which they would want to work and create in their own homeland", Minister Damjanović indicated at the event in Vienna.

Montenegro – a leader of the region in terms of preparing Smart Specialisation Strategy

Minister of Science of Montenegro Dr. Sanja Damjanović visited Brussels, where she met with Vladimír Šucha, Director-General of the Joint Research Centre, discussing the Smart Specialisation Strategy, which is being intensively developed by Montenegro with support of the JRC team.
On this occasion, Šucha pointed out that Montenegro had progressed the most in the process and that he believed that the document would be finalised by the end of the year. He also promised an additional expert team to Montenegro in mid-September, which would help further accelerate the activities.

Becoming a part of ESFRI Roadmap

Minister Damjanović participated in the 11th meeting of the TIARA consortium, held at the European Organization for Nuclear Research (CERN), Geneva. At that meeting, she presented the activities related to the SEEIIST project, noting that a very important step to be made was the inclusion in the Roadmap of the European Strategic Forum for Research Infrastructure (ESFRI), which would create numerous opportunities to use EU funds. The process implied a very complex application procedure, where TIARA consortium could provide significant support.

"Economic and European Perspectives of the Balkans"

At the Economic Conference Montenegro 2018, within the panel titled Economic and European Perspectives of the Balkans, Minister Damjanović presented the project of the South East European International Institute for Sustainable Technologies (SEEIIST). Prime Minister Duško Marković took part in the event as well, reminding that the idea had already been supported by the largest scientific institution in Europe – CERN, and indicating that it was a project that could contribute to further scientific progress of the region and in particular retaining young, highly-educated people.
The Economic Conference Montenegro 2018, organised by the Chamber of Commerce of Montenegro, is among the most important economic conferences in the region, which gathered more than 700 participants this year, including representatives of the Western Balkan business and academic community and international institutions.

Economic Conference Montenegro 2018

Donor support for the Western Balkans

At the invitation of the Regional Cooperation Council (RCC), Minister of Science Dr. Sanja Damjanović visited Brussels on 13 March, where she participated in the 4th Donor Coordination Meeting for the Western Balkans.

Minister Damjanović was one of the participants of the first panel, which aimed to present the key reforms of the regional economic development policies and gather perspectives from the region, as well as possible donors for projects that have the potential to boost the development of this part of Europe in the future.

Participants of the panel agreed that the regional approach to problem-solving was crucial for the further progress of South East Europe, recalling that the recently adopted EU Strategy for the Western Balkans was a signal that Europe wanted us to be united in dealing with the challenges.

Institute presented at a diplomatic briefing

Within the "Montenegro's EU Integration" diplomatic briefing, held in early March at Vila Gorica, Minister of Science Dr. Sanja Damjanović presented the status of the regional project for the establishment of the South East European International Institute for Sustainable Technologies, as well as the activities planned for the future period. In addition to the ambassadors, Aivo Orav, Head of the Delegation of the European Union to Montenegro, also took part in the briefing.

On this occasion, the Minister of Science announced the preparation of a draft Memorandum on Cooperation at the level of prime ministers, which should be signed at the EU-WB Summit in Sofia in May 2018.

SCIENCE-BASED STATE DEVELOPMENT

SMART SPECIALISATION STRATEGY – A NEW STEP INTO THE FUTURE

In 2018, the Ministry of Science implemented a number of activities with a view to creating a very important national policy of Smart Specialisation Strategy (S3). Once adopted, this umbrella policy document will have an impact on all the citizens, companies, researchers and innovators in our country. The Strategy is extremely important for Montenegro because it defines a common development vision based on knowledge and innovations at the national level for the period of 2019-2024.

S3 is the first strategy determining development priorities in which investments should be made, based on research, innovation and economic potentials of a society, as well as on the continuous public-private dialogue. The very process of developing the document implies a strict methodology provided through the support of the European Commission (Joint Research Centre – JRC), whose platform Montenegro joined in August 2017.

QUANTITATIVE AND QUALITATIVE ANALYSIS

Quantitative analysis

A quantitative analysis of economic, innovation and scientific potential of Montenegro for needs of the Smart Specialisation Strategy (2019-2024) was conducted in the period from December 2017 to March 2018. The results of quantitative analysis of the country's potential were presented in the report titled "Mapping economic, innovation and scientific potential in Montenegro". Along with the three dimensions of economic, research and innovation potential, the report analyses sectoral and intersectoral domains with proven advantages and potential for launching economic transformation. The process of mapping the identified areas of economic, research and innovation specialisation results in specialised sectors that need to be given a development priority: agriculture and food, energy, ICT, manufacturing industry, medicine and quality of life, construction industry and tourism.

The Entrepreneurial Discovery Process is "an inclusive and interactive bottom-up process in which participants from different environments (policy, business, academia and civil society) are discovering and producing information about potential new activities, identifying potential opportunities that emerge through this interaction, while policymakers assess outcomes and ways to facilitate the realisation of this potential". EDP primarily implies direct involvement of a broad pool of business sector representatives.

Qualitative analysis

A qualitative analysis of economic, innovation and scientific potential of Montenegro for needs of the Smart Specialisation Strategy (2019-2024) was conducted in the period from June 2017 to May 2018. The qualitative analysis assesses the potential for increasing productivity and export capacity of the sectors and sub-sectors, as well as the likelihood of utilising this potential. The starting premises for the qualitative analysis were the national strategic and programming documents that point to the development directions of the state. Along with the results of the quantitative analysis, these development directions were subjected to critical review and opinion of the surveyed representatives from the business, academic, civil and public sectors. The qualitative analysis has confirmed the preliminary priority sectors of the quantitative analysis, defining their synergistic relationship more closely by diversifying vertical from the horizontal priority sectors. Tourism has been segregated as a horizontal priority sector.

After the quantitative and qualitative analyses that defined seven preliminary S3 priority areas (agriculture and food, energy, ICT, manufacturing industry, medicine and quality of life, construction and tourism), the Entrepreneurial Discovery Process (EDP) was initiated with a view to define the final priorities. The EDP has also identified final strengths, weaknesses, opportunities and threats (SWOT) for each priority sector, as well as the general SWOT analysis elements.

COOPERATION OF SCIENCE AND THE ECONOMY – THE FOUNDATION FOR ECONOMIC DEVELOPMENT BASED ON KNOWLEDGE AND INNOVATIONS

In the process of adopting the Strategy, with a view to providing for a high-quality document, Minister Damjanović took part in the high-level conference titled "Smart Specialisation and Technology Transfer as Innovation Drivers for Regional Growth", organised by JRC on 3-4 May 2018 in Sofia, Bulgaria, under the auspices of the Bulgarian Presidency of the Council of the EU. In this context, inter alia, Minister Damjanović met with Vladimír Šucha, Director-General of the Joint Research Centre on 13 June 2018 in Brussels.

The Entrepreneurial Discovery Process commenced with the organisation of the S3.me Conference "Smart Specialisation, Innovation, Entrepreneurship and Competitiveness", held on 11 May 2018, which brought together about 200 participants from the economic, public, academic and civil sectors. After that, more than 60 workshops ensued in priority areas identified through quantitative and qualitative analysis. The workshops resulted in more detailed definitions of the areas of development within the preliminary sectors and the potential for further development. Furthermore, a vision was determined that explicitly reflected each priority sector and goals were defined with concrete indicators and measures for the implementation of the Strategy. All the actors interested in the S3 development process had the opportunity to take part in the EDP by filling out a web questionnaire, which was available by the end of August 2018.

The final S3.me conference with about 150 representatives of all sectors of the society was held on 18 September 2018, providing the grounds for presentation of the EDP results. More than 300 different actors participated in this part of the Entrepreneurial Discovery Process, of which more than half came from the business sector.

Given that the Entrepreneurial Discovery Process is continuous, after the final S3.me conference, the Ministry of Science continued the activities supporting the process. In early October 2018, the "Stock Market of Promising Ideas for Montenegro" was organised, where the presented development ideas coincided with the proposed priority sectors.

The Guidelines for the Smart Specialisation Strategy, adopted by the Government of Montenegro in December 2018 have defined the strategic priorities. These are:

- **Renewable energy sources and energy efficiency;**
- **Sustainable agriculture and food value chain;**
- **New materials and sustainable technologies;**
- **Sustainable and health tourism and Information and communication technologies (ICT) – as a horizontal priority.**

ENERGY AND SUSTAINABLE ENVIRONMENT

SMART SPECIALISATION STRATEGY (ENERGY)

Prof. Saša Mujović

The Smart Specialisation Strategy is a capital project of the Ministry of Science, important for Montenegro in several aspects. It is a true example of how strategic thinking and engagement of the state apparatus can unite the academic and business community, creating a working environment that results in a common development vision.

Preparation of a representative Smart Specialisation Strategy is a lengthy and meticulous process. We started by determining the state-of-play, defining the starting grounds and measuring own economic, scientific and innovation potential, only to complete the Strategy with clearly identified areas from which Montenegrin society can expect the greatest benefits.

Following good European practice examples and considering the country's own natural and energy resources, the Strategy identifies renewable energy sources and energy efficiency as a fundamental priority. Increasingly demanding European directives aimed at reducing CO2 and GHG levels and improving energy efficiency, along with the developing environmental awareness of the population, water resources and favourable geographical position of Montenegro in terms of the availability of wind and solar energy, point to this strategic direction as a great development opportunity of Montenegro.

Countries with energy surpluses are, as a rule, wealthy countries. Observing the conclusions of the S3 Strategy and intensifying the energy production from its natural potentials, Montenegro will very soon cross the path from a significant electricity importer (around 30% of total energy was imported at the beginning of the century) to a respectable exporter of clean and green energy. If we add to this the creation of new jobs and the improvement of the overall state infrastructure (primarily transport and energy), as well as the creation of opportunities for competing for access to European project funds, it becomes clear why energy is a priority area, especially if the matter is viewed from an economic point of view.

Utilisation of renewable energy sources in a modern, deregulated electric power sector is a great scientific and innovation challenge. The academic community of Montenegro is intensively involved in research activities and has the support of the business partners, as was the case in drafting the Strategy, and is ready to make breakthroughs and offer new solutions and a new optimisation algorithm, in order for the process of S3 implementation to be as successful as possible.

INNOVATION ECOSYSTEM

The Programme of Measures Promoting Innovative Start-ups in Montenegro (2019-2021), adopted on 27 December 2018 at the session of the Government, resulted from six-month cooperation within the framework of the National Partnership for Creating an Innovation Ecosystem and expert support obtained through a project from the H2020 Policy Support Facility Programme – "Towards Entrepreneurial Innovation Ecosystems in Montenegro". The process of drafting the programme and preparing the draft document was led by the Ministry of Science.

The Programme of Measures Promoting Innovative Start-ups in Montenegro with the accompanying Action Plan for the period of 2019-2021 will contribute to the establishment of attractive conditions for the Montenegrin innovation ecosystem, with a focus on innovative start-ups.

The measures envisaged in the document aim to eliminate statutory barriers, develop advanced financial schemes, and encourage and attract talents in order to intensify the creation of knowledge and new values, as well as to boost entrepreneurial culture and access to markets for innovative and entrepreneurial projects.

In order to promote innovative start-ups over the course of three years, about EUR 4.5 million will be allocated. Of this amount, the state will allocate about EUR 1.3 million for start-ups and stakeholders supporting the ecosystem, while the municipal budgets will account for an allocation of EUR 1 million.

The impact of the programme will be visible through an increase in the number of innovative start-ups with growth ambition and their quality achieved through more efficient use of the latest knowledge available in the country or abroad. The programme also activates some of the current reform processes that run simultaneously in multiple areas, suggesting ways in which innovative start-ups can contribute to their implementation (S3 strategy, digitalisation, creation of an encouraging business environment, strategic attraction of foreign investments, practical lectures at universities, cooperation with diaspora, public procurement of innovations, economic citizenship, etc.).

The programme will enable precise identification of enterprises in the initial phase of establishment that have the potential for fast growth, testing of their business ideas with the support of budgetary programmes, as well as easier transfer of knowledge useful for innovations from the academic sector, both in Montenegro and abroad, to business entities in our country.

Based on the planned fiscal measures, an increase is expected in the number of business entities engaged in research, development and innovation, as well as in the number of those companies that promote digital business. Furthermore, the number of both domestic and foreign private sector investors willing to invest in start-up enterprises in Montenegro would increase. Enterprises from Montenegro will have the opportunity to access foreign markets more easily through the promotion of e-commerce and access to international innovation networks. University activities would direct talents to entrepreneurship – especially those who have not been completing entrepreneurship and innovation educational programmes so far.

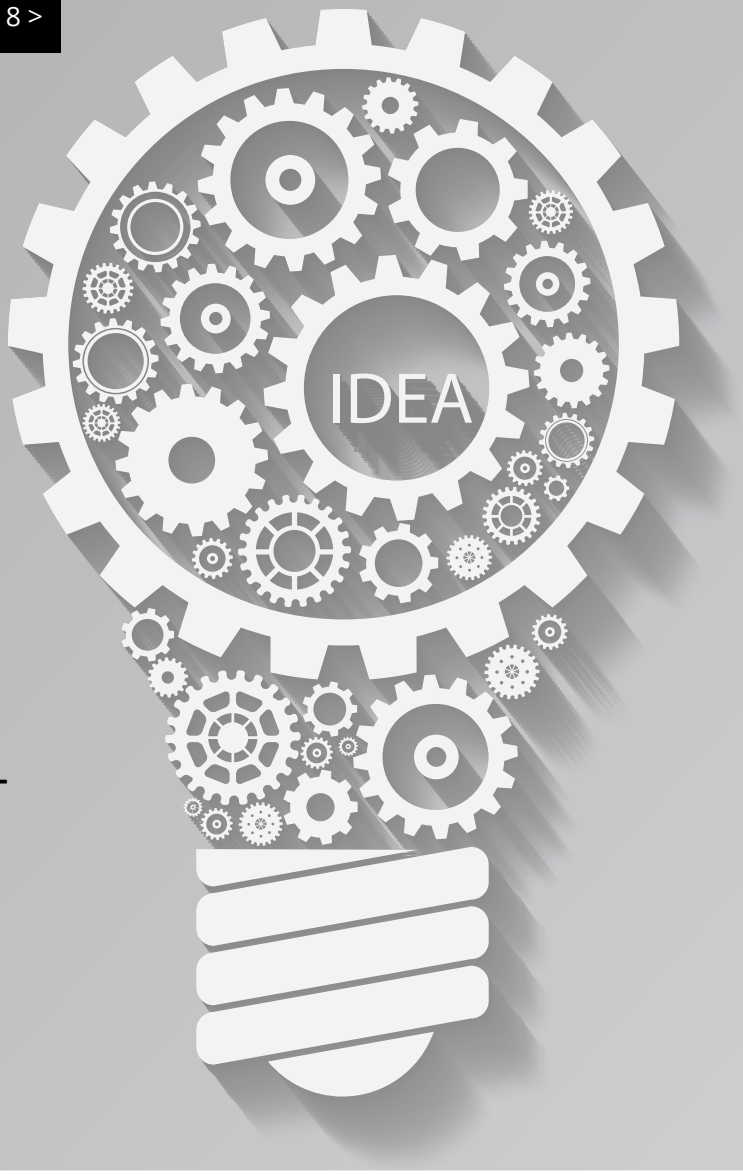
One of the main objectives of the programme is to encourage private sector investments.

Duško Marković, Prime Minister of Montenegro

Prime Minister Marković took part in the Summit in Sofia, where he appeared at the invitation of the European Commissioner for Digital Economy and Society, Mariya Gabriel.

"The Government is working hard to improve the business environment and to create good opportunities for entrepreneurship and of course for the start-up community."

Addressing those present at the Summit, PM Marković said that start-up environment in Montenegro was in the initial stages of development but that a two-year programme was being prepared, for the period until 2020, that would encourage start-up entrepreneurship, adding that the Government worked on several important documents that should provide new impetus, new content and better environment for launching new businesses.



>> A NEW SUPPORT INSTRUMENT FOR INNOVATIONS **GRANTS FOR INNOVATIVE PROJECTS 2018**

The legal and strategic framework for innovative activities was adopted in 2016. Two years later, the Government of Montenegro adopted the Programme of Grants for Innovative Projects (2018-2020), aimed at: strengthening the competitiveness of Montenegrin companies by co-financing the development of innovative market-oriented products, services and technologies; supporting the transfer of innovative ideas from scientific research institutions to the market; and creating new jobs.

The programme was implemented through a call for project applications, which was announced on 17 July 2018. The overall budget under the call amounted to EUR 1,000,000, with individual grants up to EUR 100,000 accepted by the Ministry of Science.

Under the call, technological innovations and their development were co-financed, in accordance with the technological readiness levels, i.e. from the development of technology in laboratory conditions to the completion of the first final product.

The call was open to innovative organisations registered in the Register of Innovative Organisations of the Ministry of Science. The registration procedure was initiated in parallel with the publication of the call, with 33 innovative organisations registered to date. The partnerships needed to include at least one business entity.

By the application deadline, 24 September 2018, applications for 29 innovative projects were received. As regards the profiles of 29 applicants, 83% of them were business entities, while 17% accounted for scientific research institutions. The applications envisaged the creation of 46 new jobs.

In order to ensure high quality of the applications approved, a two-stage evaluation by international experts was introduced, who were selected on the basis of a separate call for evaluators.

Ten teams successfully completed the two-stage international evaluation process, after which ten grant agreements were concluded. The total value of innovative projects amounted to EUR 1,172,529, with grants of the Ministry of Science accounting for EUR 730,834, while co-financing of the grant holders amounted to EUR 441,695. Twenty new jobs for highly qualified staff were planned, with five science-to-business and four business-to-business partnerships created. The result of one project, implemented by a research institution, will be a spin-off.

Minister Damjanović with awardees of grants for innovative projects

NETWORKING SCIENCE AND BUSINESS **WORK ON SMART HOMES AND E-TRADE**

- Amplitudo LLC has received a grant for the "Software Upgrading with Enterprise Resource Planning Elements for the New INDIGO Platform with New Competencies" project. This innovative and market-oriented enterprise labour optimisation application has received the highest evaluator ratings.

- Fleka LLC has received a grant for the innovative "TALKINI" project. The authors plan to develop a new video conferencing application, which will have several significant features within a single product, thus surpassing the existing solutions. The same company has also received a grant for an innovative "Virtual POS" project, an effective and elegant solution for increasingly demanding e-commerce applications, especially for small businesses that do not have a developed IT network.

- Business Universal Media LLC has received a grant for the "Proventum" project. This innovative solution is an electronic application that will enable companies to increase the efficiency of administrative procedures.

- Faculty of Information Systems and Technologies of the University of Donja Gorica has received a grant for the "Real Time Environmental Parameters Monitoring System" project, envisaging a significant improvement of the existing technology in monitoring the environment and the quality of drinking water.

- M-tel company has received support for the "Energy Efficient Smart Home" project, taking advanced technology to the next level. This innovative solution is based on the control of home appliances via smartphones, as a means to achieve cost rationalisation and energy saving. The creative-research team of M-tel has received another grant as well, for "Using Electronic Protocols" project. It is an innovative, standardised electronic protocol intended for the healthcare system, which should enable Montenegro to catch up with the modern medicine.

- Faculty for Food Technology, Food Safety and Ecology of the University of Donja Gorica has received a grant for the "Products and Process Innovations in the Montenegrin Food Industry" project. This project relates to innovations in traditional dairy products, achieved through development and integration of special probiotic cultures.

- Faculty of Information Systems and Technologies of the University of Donja Gorica has received a grant for the "MontePN" project. The innovation with sustainable and technological quality presents a new approach in the field of study of tectonic plates.

- "Production of lithium perchlorate (PLP)" project, implemented by POLIEX JSC Berane, will focus the research to the application of lithium perchlorate in the production of lithium batteries. The Development Research Centre (RIC) of POLIEX has developed a production technology as an innovative aspect of this project. In the next twelve months, this product will become available in the global market.

SUPPORT TO YOUNG RESEARCHERS

A public call for applications for annual awards for scientific achievements in 2018:

On 9 November, the Ministry of Science announced a public call for applications for annual awards for scientific achievements in 2018, open until 22 November 2018.

The awards were presented in the following categories:

1. Most successful scientist;
1.a. Most successful scientist up to the age of 30: two awards;
1.b. Most successful scientist over the age of 30;
2. Inventor-innovator for the most successful patent or innovative solution.

AWARDS TO MOST SUCCESSFUL SCIENTISTS

A large number of our scientists worked with high level of dedication and commitment in 2018. At the ceremony in Vila Gorica, awards were presented to scientists who achieved the best results in 2018.

Milena Simović, **MSc,** a student of the second year of doctoral studies at the German Cancer Research Centre in Heidelberg, Germany, in the category for the most successful scientist up to the age of 30. The research topics of Milena Simović are very important for the whole society, and are characterised by originality and applicability in practice.

The 2018 most successful scientist award, which makes me particularly proud and grateful, indicates to me that I am not alone in my research work and that the commitment and daily hard work have a social purpose and value. In addition, I also perceive this award as an additional responsibility to persist in my work, finding a combination of therapies to help children suffering from a serious brain condition - a malignant tumour of Medulloblastoma.

Miloš Brajović, MSc, a teaching assistant at the Faculty of Electrical Engineering in Podgorica, as second-ranked in the competition for the most successful scientist up to the age of 30. Miloš Brajović is well known for his research in the field of digital signal processing with application in biomedicine, multimedia systems, communications and radar technology. He published several papers in leading scientific journals and appeared in international conferences to present his work.

My research is related to the field of digital signal processing. In this regard, we are trying to develop techniques and methods by which all information could be accurately and precisely reconstructed based on a reduced amount of data. I think it is important to note that the Ministry of Science has hereby recognised and acknowledged the fact that it is possible to engage in science and achieve excellent and internationally recognised results while working in Montenegro, at our universities and in our laboratories.

Minister Damjanović with awardees

Prof. Željko Jaćimović, professor at the University of Montenegro – Faculty of Metallurgy and Technology in Podgorica, in the category of the most successful scientist over the age of 30. Prof. Jaćimović deals with research that is especially important for the business sector and has gathered vast experience in terms of international conferences and publications in renowned international journals.

The award presented by the Ministry of Science is of vast importance, first and foremost as a confirmation of the research work I have done so far, but it also comes as an encouragement to young people, future chemistry students, and as an incentive to me and my colleagues to further develop this basic scientific discipline. In this regard, I wish to commend the Ministry of Science and Minister Damjanović for using new activities such as grants for innovative and research projects and for doctoral students to build the overall capacity to engage in science in human resource and infrastructural terms in a high-quality way, new in our research community.

Milan Bojović, the best inventor-innovator for the most successful patent or innovative solution in 2018. With his team on inventors, Bojović registered a patent titled "Battery charging device for electric vehicles", whose prototype received numerous awards at international conferences.

The award for the most successful patent is the crown of our decades-long work in the field of invention and innovation. The award came thanks to the staff of the Ministry of Science, led by Minister Sanja Damjanović, who recognised the quality and importance of our inventions, as well as the great potential they have for economic application and development of society. Our inventions are of major impact on the environmental protection because they are aimed at reducing the consumption of fossil fuels and harmful emissions. The team holds 17 patents protected by the Intellectual Property Office of Montenegro.

A PUBLIC CALL FOR APPLICATIONS FOR DOCTORAL RESEARCH SCHOLARSHIPS

Minister Damjanović with scholarship awardees

On 18 May 2018, the Ministry announced a Public Call for Applications for Doctoral Research Scholarships at the universities in Montenegro in 2018/2019, with an application deadline of 15 October 2018. The aim of this call for applications is to strengthen human resources for research, innovation and competitiveness, as well as to increase the number of young researchers at universities in Montenegro, facilitate knowledge-exchange between the academic and business sectors and internationalise research work.

The public call is addressed primarily to young people, up to the age of 40, who wish to steer their careers towards scientific research or to improve the knowledge needed in the business sector through applied doctoral research and mobility to developed institutions abroad. Mobility during the scholarship can also be exercised in companies, abroad or in Montenegro.
In accordance with the budget available for funding of doctoral scholarships, the Ministry of Science has accepted 19 applications for doctoral scholarships. In this way, it will finance all the

applications rated by the evaluators with a score of 80% and above, in the total amount of EUR 746,700.

Scholarships include monthly remuneration for researchers in the amount of EUR 700.00, as well as significant research funding, with a focus on international or inter-sectoral mobility, in the amount of up to EUR 10,000 a year. Under agreements between the Ministry of Science and the universities, the scholarship holders will be exempted from paying doctoral tuition fees.

The Ministry of Science plans to continuously announce the call for applications for doctoral scholarships, striving to support as many as 50 young researchers in three years, enabling them to professionally develop at universities through this programme. The role of supported young researchers would be to strengthen the university's research mission, prepare applications for EU research and innovation funds, enhance cooperation with the business sector – thus creating additional opportunities for employment at universities, as well as opportunities for new research positions.

CALL FOR APPLICATIONS FOR GRANTS FOR SCIENTIFIC RESEARCH PROJECTS

The Ministry of Science announced the Call for Applications for Grants for Scientific Research Projects on 26 October 2018, with an application deadline of 19 November 2018. Under the call, 72 project applications were submitted.

Following the international evaluation process, the Ministry decided to fund those projects that were awarded 90 points or more (out of 100).

In late February 2019, the Ministry of Science accepted to co-finance 15 projects. An individual grant from the Ministry amounted up to EUR 100,000, or EUR 130,000 if the project also envisaged the employment of young researchers, doctoral or postdoctoral students. The implementation of these projects started on 1 April 2019, with total value of the projects amounting to EUR 1,541,768, of which the co-financing by the Ministry of Science (grants) accounted for EUR 1,218,786. In line with the available budget, by the end of 2019, the Ministry will consider the possibility of additional co-financing of the projects on the "reserve list" (projects that were awarded 80 points or more).

CALL FOR APPLICATIONS FOR CO-FINANCING SCIENTIFIC RESEARCH AND INNOVATION ACTIVITIES

On 1 March 2018, the Ministry of Science announced a Call for Applications for Co-financing Scientific Research and Innovation Activities in 2018, which is open by the end of the year. Under the call, the scientific research community of Montenegro can gain access to EUR 400,000.

The call is one of the key mechanisms for providing support to the scientific research community, first and foremost in segments where it was estimated, based on the past experience, that the scientists and researchers from Montenegro need support the most and where they face difficulties in obtaining funds from other sources.

The call focused on opening science further – by providing support for publication in international open-access journals and for preparation of domestic publications of this type. We are also more open to young researchers in terms of their mobility towards prestigious international scientific institutions.

For the first time, the applications to the call are submitted electronically, through the e-Government portal.

ESTABLISHMENT OF SCIENCE AND TECHNOLOGY PARK OF MONTENEGRO

The establishment of the Science and Technology Park (STP) of Montenegro is a capital project of the Government and is included in the list of priority development projects implemented jointly by the Government of Montenegro and the University of Montenegro. In June 2017, the Government of Montenegro approved the establishment of a central STP unit in Podgorica, in the campus of the University of Montenegro (UCG), through the conversion of the existing UCG facility which had originally been envisaged for the needs of three faculties, entrusting the Ministry of Science and UCG with the implementation of activities on this project.

The Science and Technology Park of Montenegro will be a new infrastructure that will provide, at the national and in particular the capital city level, a state-of-the-art working environment for high-tech development companies, enabling its use under preferential conditions. The facility will be able to accommodate up to 60 companies, depending on their size, with a primary focus on small and medium-sized enterprises with growth tendency based on the development of original own technologies. Furthermore, through a range of support services (such as business and legal consultancy, training, etc.), the infrastructure will be able to support innovative entrepreneurship at the national level in general, and in particular with regard to start-ups.

The main goal of the project of establishing the Science and Technology Park of Montenegro is to develop the services aimed at facilitation of technology transfer from academic to the business community, visibly contributing to the development of knowledge-based economy, especially in the context of smart specialisation.

For needs of the design, the Ministry of Science prepared the Terms of Reference and allocated the amount of EUR 130,000.00 from the HERIC project, financed from a World Bank loan, for the purpose of preparation of project documentation, which will provide for adaptation of the facility of about 14,000 m2 so that it functionally responds to its new purpose.

With regard to the mutual relations between the Government and UCG, in July 2018, the Ministry prepared and submitted to the University of Montenegro a proposal for a Decision on establishing a limited liability company – Science and Technology Park of Montenegro. Under this proposal, the Government of Montenegro and UCG jointly establish the Science and Technology Park of Montenegro LLC, with an ownership share of 57% : 43%, based on the assessment of the value of the property and the level of investment required for completion of the works.

After reviewing and agreeing on the text of this document, a draft agreement on the establishment of the aforementioned business entity was prepared and submitted to the Government for adoption in January 2019. The next priority task for implementation of the project, foreseen for 2019, is the development of a high-quality architectural solution that will create a recognisable and functional architectural space, improving the urban status of the university campus and the city of Podgorica.

>> TEHNOPOLIS
HOME TO GREAT ENTREPRENEURIAL IDEAS

Minister Damjanović, President of Nikšić municipality Veselin Grbović, and Tehnopolis CEO on the occasion of coworking space opening

COWORKING SPACE OPENING

The first coworking space in Nikšić – CODE HUB – was opened in Tehnopolis Innovation and Entrepreneurship Centre on 10 May 2018. The project was funded by the Interreg IPA CBC Programme under cross-border cooperation Croatia-Bosnia and Herzegovina-Montenegro (2014-2020). In the CODE HUB, users will develop their ideas, and in addition to the basic working conditions, they will have the opportunity to use meeting rooms, kitchen and relaxation area. CODE Hub Nikšić is intended for teams with business ideas, start-ups, IT companies and professionals, as well as individuals, students, freelancers, digital nomads and tourists.

Ratko Bataković, CEO of IPC Tehnopolis: "CODE Hub Nikšić was conceived as a place where people would generate and develop innovative ideas, while establishing mutual cooperation between different sectors. In the coming period, the hub will offer trainings in the fields of programming, 3D modelling and 3D printing, digital marketing, project management, business plan drafting and a range of soft skills necessary for business development. Most of these trainings will be free of charge and this is just the beginning in a series of events that will provide significant support to start-up community and all interested individuals."

>> IMPORTANT EVENTS

1. WESTERN BALKANS START-UP FORUM

In December 2018, Tehnopolis organised an international conference titled Western Balkans Start-up Forum. In the event, Tehnopolis hosted the most important EU and regional actors in the field of start-up entrepreneurship: international policy makers and implementers, as well as leading representatives of science and technology parks, start-ups and SMEs from eight countries. The conference aimed to bring together all key start-up ecosystem players with a view to analyse the state of play and define recommendations, with a particular focus on alternative financing of their ideas using crowdfunding examples, but also to create additional synergy between representatives of the start-up community and state institutions, business and private sector, first and foremost to provide the start-ups with the best possible conditions for developing their ideas.

2. SMART TRIO BUSINESS FORUM

Forum participants

Tehnopolis organised several different events within the Smart Trio Business Forum. In the first forum, the participants talked about the importance of strategic planning, small market advantages and limitations, going beyond the national framework, rendering business decisions in the conditions of lack of access to valid research, as well as about the pricing policy. The forum commenced with an interactive lecture titled "Brand building and positioning in the Balkans market context", held by marketing experts – Andrea Stamenić Radonjić, Sonja Zarubica Paunović and Saša Radunović. In the second forum, Nikica Marinković from the "Box System" start-up from Belgrade, Goran Pavlov from IRI cluster for research, development and innovation from Split and Mirsad Hadžalić from the "Daktilograf" start-up from Pljevlja reflected on the start-up ecosystems, the challenges encountered in implementing their start-ups, as well as the importance of start-ups in Montenegro, Serbia and Croatia. Tehnopolis also hosted the delegations and organised a B2B event.

3. CAMP FOR YOUNG ENTREPRENEURS – VUČJE

U organizaciji Inovaciono-preduThe first Camp for Young Entrepreneurs was organised by IPC Tehnopolis at Vučje in Nikšić. On this occasion, twenty young people from all over Montenegro mastered the key skills needed for successful business communication, implementation of entrepreneurial ideas and running a business in accordance with the latest market trends and conditions. The aim of the event was to familiarise young people from all over Montenegro with the importance of entrepreneurship in order to encourage them to develop basic entrepreneurial skills, i.e. to learn to think and act as entrepreneurs.

Participants of the camp in Vučje

>> ON START-UP ENTREPRENEURSHIP IN MONTENEGRO FROM A PERSONAL POINT OF VIEW

Dražen Žujović

In 2013, with three friends of mine, I launched the first technological start-up in Montenegro. Start-ups tend to aim high. The idea is to use a technological innovation to access the world market in a relatively short period of time. If not the world, then at least the European or a regional market. Our start-up, Tour Via Me, has targeted the global group travel market, a market with an annual turnover of USD 40 billion.

The only people in Montenegro who could help us back then in such a big venture were the founders of NGO Digitalizuj.me. Thanks to them, and the Spark.me conference organised by Domen company, we have contacted start-up communities in several European countries and even an investment fund that invested one hundred thousand euros in our project.

After receiving the investments, going through start-up accelerator programmes and staying for several months in European start-up communities (mostly in Sofia, Krakow and Lisbon), we returned to Montenegro, joined the team from Digitalizuj.me and together with them committed ourselves to the development of the Montenegrin start-up community. We have organised more than one hundred start-up events, mentored everyone who contacted us and expressed desire to launch a start-up, and helped those who were serious enough about it and worked hard to implement their ideas to reach their first investments.

FAVOURABLE BUSINESS ENVIRONMENT

A SUCCESSFUL INNOVATIVE COMPANY EXAMPLE – AMPLITUDO

When was Amplitudo LLC established, what are its activities, how many employees are there?

Amplitudo was founded in 2012 in Podgorica, functioning as a company primarily focused on the development of software solutions, ICT innovations and digital marketing. Our team is composed of experienced managers who coordinate the work of young professionals engaged in marketing, social networking, graphic design and software programming.

In terms of the broader social context, Amplitudo aims to provide an additional impetus to the digital transformation of business in Montenegro, through the development and use of ICT solutions and social media, all with a view to establish more effective cooperation of citizens, institutions and the private sector.

What is the subject of the project for which you received a grant from the Ministry of Science and how will the grant be used?

In 2018, Amplitudo developed INDIGO financial-user software, whose primary purpose is to provide users with comprehensive, clear, up-to-date and visually adequate information on the organisation's key financial parameters (spending, invoices, debts, suppliers, etc.) through integration with the accounting system used by the organisation. Following the integration, INDIGO structures the information according to the selected categories, making them accessible via the mobile application through visualisation and real time updating. Through the SERPICO project, we will develop the existing software in terms of integration with Enterprise Resource Planning (ERP) systems, which in addition to finance include numerous other information on procurement, internal business processes, stored goods, etc.

The software is predominantly oriented towards the managerial staff of organisations, striving to provide them with easy insight into and basic information about the current financial state. The innovation in developing this software lies in:

- the combination of the financial profession and the identification of key data in the domain of finance,
- the programming capability to automate the processing of these data, their structuring and attractive visual display.

What needs to be changed in Montenegro to improve the business environment for the start-up community?

Innovation and the ICT industry are among the few fields where Montenegrin economy can compete with companies from around the world. Start-ups are certainly an important part of that process and constitute a great development opportunity, especially for young people. In late 2018, we had the opportunity to present our start-up, My Tree, to the general public at the largest IT gathering in Europe – the Web Summit in Lisbon. The contacts we have made there, along with the experience we have gained, help us in many ways to further develop this project and, of course, to help all interested colleagues from Montenegro who are joining the start-up community. In this regard, the initiative of the Ministry of Science to improve the business environment and create an ecosystem in which young companies can develop faster and better should be commended. What is missing the most is easy access to founding capital, as well as tax incentives that would motivate start-ups to stay in Montenegro for as long as possible, contributing to the community.

How is Amplitudo oriented towards the foreign market?

In addition to its core activities, Amplitudo has focused its development programme on innovation, as one of the key prerequisites for strengthening the company and its long-term orientation towards the international market.

In order to maintain efficiency and quality control, Amplitudo also started the process of introducing Agile project methodology in 2018, and we are currently in the phase of aligning current production processes with the very demanding standards of this methodology, so that we can synchronise our business flows with international partners. In addition, we are soon completing the first cycle of our extensive project of free training for young developers.

By creating the necessary organisational infrastructure, we fulfil one of the key prerequisites for entering foreign markets and establishing long-term partnerships with high-quality foreign companies.

THE WORLD IN MONTENEGRO – MONTENEGRO IN THE WORLD

H2020: The second meeting of the EU-Montenegro Joint Commission on Research and Innovation was held in Podgorica on 19 September 2018, analysing the state of play regarding Montenegro's participation in the H2020 programme and concluding that the future focus should be on motivating researchers in companies and universities to compete within this highly competitive programme, through services that facilitate project application and management. In 2018, Montenegrin research teams took a significant part in H2020 projects with "third party" status. Here, we present two such projects:

Project leaders in Montenegro: Prof. Tomo Popović, UDG and Prof. Dragana Radević, IPER

H2020 project TagItSmart!, which includes 15 consortium partners, is coordinated by DunavNET company from Novi Sad. The project implies the original use of smart tag / labelling technologies that combine functional printing, QR codes, NFC and the like to attach a unique tag to each product, making it traceable throughout the life cycle, as well as to respond to environmental parameters.

Improved consumer information thanks to "HoneyTag" on the benefits of honey

Under the first call (Open Call # 1), the University of Donja Gorica applied, in partnership with "13. jul Plantaže" company, for brand protection and anti-counterfeiting in wine industry. The UDG team designed a smart wine label that made each bottle of wine individually identifiable and traceable through the supply chain to the end user, while enabling users and wine producers to use the mobile application and server heuristics to get notified if there is an attempt to counterfeit wine. It was a pilot project called "TagItWine". The second application came for the HoneyTag project by IPER. The focus of HoneyTag was to demonstrate the use of technologies to prevent honey counterfeiting. As a result of these activities, HoneyTag has created an important impact for society – consumers, including children, are better informed about the benefits of honey. The project was implemented by IPER, i.e. Prof. Dragana Radević. TagItSmart (TIS) technology offers a very strong tool for the protection of Montenegrin honey and provides protection to end consumers given the quality of the products and food safety standards.

Project leader in Montenegro: Prof. Mira Samardžić, Clinical Centre of Montenegro

The implementation of H2020 EUthyroid project started in 2015. It is the first pan-European initiative in which scientists have decided to examine iodine intake of the European population. The project involved 30 partners from 27 countries, including 22 EU and 5 non-EU countries. The project aims to collect iodine intake data on the population of the 27 countries. This topic is important because lack of iodine in the critical period of the child's development (until the second year of life) causes permanent brain damage.

Researchers led by Prof. Dr. Mira Samardžić are implementing the pilot project "Iodine Status Assessment, Development and Standardisation of Prevention Programme in Montenegro", which was accepted by the Ministry of Science. The research was conducted in 10 schools in the Podgorica area within a very short timeframe. Urinary iodine concentration in schoolchildren was determined for the first time in Montenegro. In line with the Euthyroid project rules, samples were sent for external verification to a central laboratory and a remarkable coincidence was obtained between the results of urinary iodine concentration determination in two laboratories: Clinical Centre of Montenegro and EUthyroid Central Laboratory in Helsinki (R2-0.953).

Smart tags enable identification and traceability of wine to the end user

Project leader: Danka Marković, PRONA

As part of the activities implemented on the occasion of UNESCO's World Science Day for Peace and Development, a Youth Science Forum (OMNAF) was organised by Montenegrin Science Promotion Foundation (PRONA) at the University of Montenegro.

At the forum, sixty secondary school students from Montenegro simulated the work of parliament with a view to learn democratic procedures and highlight the importance of involving young people in decision-making based on scientifically proven facts.

The Youth Science Forum project enables young people to engage in a debate on science and its solutions to the greatest challenges encountered by the European society. The project promotes and encourages democratic decision-making based on scientifically proven facts.

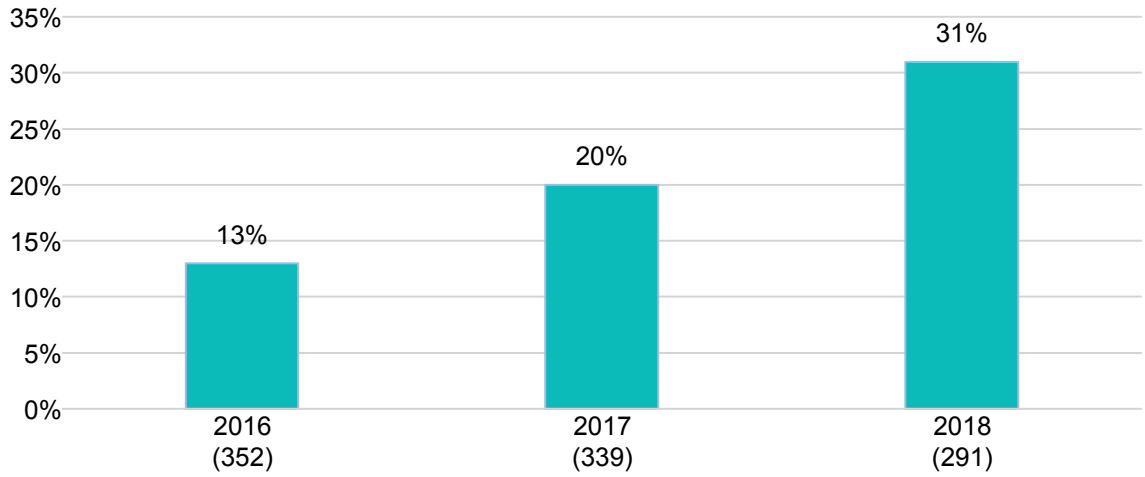
The Youth Science Forum is organised under the auspices of the Ministry of Science and the European Commission – Horizon2020.

Youth Science Forum is a unique opportunity for young Europeans to engage in debate on science and technological development with the expert assistance of scientists and professionals, as well as for public policy makers to gain insight into young people's views on topics relevant to the future of European science and society in general.

Secondary school students as parliamentarians

cost
EUROPEAN COOPERATION
IN SCIENCE AND TECHNOLOGY

In 2018, Montenegrin research teams participated in 31 percent of the total of 291 running COST Actions, which is a significant increase in relation to 2017 (20 percent of the total number of current Actions). COST specifically encourages the participation of Early Career Investigators (ECI). In 2018, participants from Montenegro received financial support in the amount of EUR 124,000 from the budget of COST Association.



Montenegro has a growing trend of participation in COST Actions

>> PROJECT: NON-NATIVE TREE SPECIES FOR EUROPEAN FORESTS – EXPERIENCES, RISKS AND OPPORTUNITIES (NNEXT)

Project leader: Aleksandar Stijović, MSc
Institute of Forestry, Podgorica.

Montenegro joined the Action on 19 April 2016, with representatives of the Biotechnical Faculty from Podgorica and the Institute of Forestry AD Podgorica.
As a result of the Action in which Montenegro participated with its research and data, numerous joint reports, publications and brochures, policy reviews and numerous scientific publications were published. The Green Room International Conference, organised on 1-3 November 2018 in Podgorica, provided an opportunity to exchange experiences and build a database on agriculture, forestry, human interactions and the built environment, as well as to reach consensus on priorities for achieving sustainable food systems. A direct benefit is the application of the positive methodological approaches and good practices established in other countries presented in this action, which allow for more detailed and systematically defined data collection, long-term monitoring and analysis of the results obtained, which the Institute of Forestry used in current business activities in Montenegro.

One of the results of the COST Action is the establishment of cooperation with the University of Istanbul, Faculty of Forestry, as well as the visit to Montenegro of 52 professors of the Faculty of Forestry, led by its Dean, Prof. Ahmet Yesil, and defining the modalities of scientific cooperation. Given that there is no faculty of forestry in Montenegro, through the TIKA Agency (Turkish Cooperation and Coordination Agency), the Faculty of Forestry of the University of Istanbul is ready to provide the funding for three bachelor and two master forestry students in Turkey.

>> IPA – INSTRUMENT FOR PRE-ACCESSION ASSISTANCE

Under the IPA 2014-2020, the Ministry of Science is involved in two sectors. In the Education, Employment and Social Policy sector, activities for the implementation of the Sectoral Operational Programme for the period of 2015-2017 are realised. The Ministry of Science implements Activity 2.4 – "Supporting the employment of PhD degree holders in academic institutions and the economic sector", worth a total of more than EUR 1 million. The Competitiveness and Innovation sector is also important because the implementation of support activities for the Innovation and Entrepreneurship Centre "Tehnopolis" in Nikšić is ongoing, aimed at staff training, equipment specification, as well as the activities on finalisation of the Smart Specialisation Strategy. The next activities will focus on equipping the IPC Tehnopolis laboratories.

esa

European Space Agency

With a view to involving Montenegrin scientists in their projects, a high-level delegation of the European Space Agency (ESA) made a first official visit to Montenegro, where they held a workshop at the Rectorate of the University of Montenegro and presented their programme and activities. On this occasion, Minister Damjanović emphasised that cooperation with the European Space Agency brought many benefits not only for the scientific community, but also for industry and economy in the long term. The delegation of the European Space Agency will assist Montenegro in finding ways to integrate the relevant ideas of Montenegrin scientists into this large scientific and technological organisation.

Minister Damjanović with ESA delegation

>> EUREKA PROGRAMME
ENCOURAGEMENT FOR SMALL AND MEDIUM-SIZED ENTERPRISES

EUREKA Σ!
innovation across borders

The Ministry of Science of Montenegro has provided significant financial support for participation in EUREKA projects ever since 2012. As of 2016, when a legislative strategic framework for innovation has been established, the Ministry has further strengthened its activities in this segment. The Ministry of Science annually announces a Call for Applications for Co-financing Scientific Research and Innovation Activities, co-financing cooperation projects of research institutions and companies from Montenegro, which relate to the participation of these institutions / companies as coordinators or partners in EUREKA projects. The budget for EUREKA projects has been increased by EUR 30,000 this year. Four projects are currently being implemented within the EUREKA programme, and the Ministry of Science has allocated EUR 90,000 for participation in this programme within the Call for Applications for Co-financing Scientific Research and Innovation Activities for 2019.
Currently, four projects are being implemented over the course of three or two years, worth a total of EUR 165,000.

NATO SPS PROGRAMME
#WE ARE NATO

NATO Science for Peace and Security Programme was established in 1958 with the aim of improving international security and stability by applying the best scientific and technological expertise, strengthening human resources (support for young scientists), and promoting regional cooperation between NATO members and partner countries. Throughout its long history, the SPS programme has been constantly adapting to the demands of specific periods. The programme facilitates the exchange of knowledge, innovation and research with a view to identifying and addressing security challenges. Activities funded through this programme must be in line with the key priorities of the programme, i.e. they should address NATO's security and strategic goals. The programme supports three cooperation mechanisms: multi-year applied projects, trainings and workshops.
NATO Science for Peace and Security Programme (NATO SPS) – Under the auspices of NATO, the following NATO SPS projects are being implemented: "Next-Generation Incident Command Systems – NICS" (2015-2020), with EUR 850,000 approved, "Advanced Regional Civil Emergency Coordination Pilot" (2016-2020) with EUR 831,600 approved, and a project in the field of security and stocks management (2016-2018), with EUR 700,000 approved. All these projects are of great importance for Montenegro.

>> IAEA – ATOMS FOR PEACE

International Atomic Energy Agency headquarters in Vienna

Within the programme cycle of 2018-2019, the International Atomic Energy Agency (IAEA) approved two national projects to Montenegro. These are: MNE5004 – "Strengthening Technical and Institutional Capacities of the National Reference Laboratory for Food and Feed Control", with approved funding of EUR 263,940, and MNE6005 – "Improving Paediatric Diagnostic in Computed Tomography Examinations", with approved funding of EUR 545,150. On the basis of national, regional and interregional projects, professional training abroad was implemented for the personnel from Montenegro, in the form of scientific visits, scholarships, courses, trainings, seminars, workshops and meetings.

In 2018, the project applications were submitted for the new IAEA 2020–2021 Technical Cooperation Programme. From Montenegro, two projects were submitted under the "national projects" category: Strengthening Technical, Scientific and Research Capacities of Food Safety Laboratories of the Public Health Institute of Montenegro and Establishment of the National Training Centre for Radiation Protection of the University of Montenegro. In the "regional projects" category, Montenegro has applied with the project "Human Resources Development for the Establishment of Hadron Cancer Therapy within the South East European International Institute for Sustainable Technologies (SEEIIST)", worth EUR 500,000, while in the field of IAEA research projects, Clinic for Oncology of the Clinical Centre of Montenegro joined the project in the field of contouring in radiotherapy.

>> PROJECT: CETI

Project leader: Danijela Šuković
Centre for Ecotoxicological Research LLC

The only proof of food safety is obtained by analyses of food samples in reference laboratories, which have a key role in the development of new analytical procedures for food analysis. The Centre for Ecotoxicological Research (CETI) has used the IAEA project of "Upgrading Capabilities to Establish Effective Monitoring Systems for Residues in Food and Air Quality" (MNE5002) to strengthen its professional and technical capacities, as well as to gain trust of the partners. The project of "Strengthening Technical and Institutional Capacities of the National Reference Laboratory for Food and Feed Control" is in fact a continuation of successful cooperation through which CETI will receive the LC-MS-MS instrument that will enable unobstructed (quality and timely) conduct of all analyses in the field of food safety. In addition, the training of young researchers in reference laboratories in the EU is one of the important activities planned by the project.

>> BILATERAL COOPERATION
REACHING COMMON GOALS THROUGH FRUITFUL COOPERATION

Based on the concluded agreements on bilateral scientific and technological cooperation and the calls for applications for co-financing announced in 2018, a total of 96 projects were implemented with: Republic of Serbia (second year of implementation), Republic of Hungary (second year of implementation), Republic of Slovenia (new project cycle), and Republic of Italy (two calls), including one with the Research Council (second year of implementation) and one with the Ministry of Foreign Affairs and International Cooperation of Italy (new project cycle). In 2018, calls for applications were announced for co-financing scientific and technological cooperation with the Republic of Serbia, Republic of Austria, People's Republic of China, Republic of Italy...

Red sludge utilisation

Project leader: Prof. Mira Vukčević
Faculty of Metallurgy and Technology, University of Montenegro

Large quantities of deposited red sludge, a by-product of Bayer alumina production process, present a burden to the ecological image of Montenegro. With this in mind, this project has been designed to define the capabilities and adequate methodology whose use could enable the red sludge to be used as a base material for the synthesis of functional materials and products. The task is to obtain the so-called hybrid geopolymers, i.e. organic-inorganic materials with a quasi-polymeric structure that are beginning to attract significant attention of the construction and structural materials industry, as well as specific functional components with construction industry applications.

The innovative procedures, developed by both partners on the project, will be applied to red-sludge-based geopolymers to produce innovative hybrid materials. The materials obtained will also be tested for the production of high-value components. The main objective of the project is to define a cost-effective, sustainable and environmentally friendly technology for the potential reuse of red sludge. The proposed technology creates the possibility of several realistic and sustainable solutions to this extremely challenging environmental problem.
The Montenegrin partner is the Faculty of Metallurgy and Technology of the University of Montenegro, and the project manager is Prof. Mira Vukčević. The Italian partner institution is the Parthenope University of Naples (Department of Materials), and the project is led by Prof. Claudio Ferone. The joint work should result in mastery of the process of production of red-sludge-based hybrid geopolymers characterised by exceptional mechanical properties and resistance to fire, extreme temperature conditions and aggressive environments.

The aforementioned research will be carried out with red sludge deposited in Montenegro for the first time, which attaches additional importance to the project from the technological and ecological point of view, as recognised by the competent institutions in both countries. The resulting hybrid materials will be used in the final phase of the project for the preparation of porous high-value components that can be used as fire-resistant, thermal and acoustic barriers, but also as filters and membranes for the treatment of liquids and gases.

RESEARCH COMMUNITY INTERNATIONALISATION

Significant results have also been achieved in the fields of internationalisation of scientific research. Namely, Montenegro has found its place on the map of CERN (by joining one of CERN's largest projects – the CMS experiment), as well as on the map of the European Molecular Biology Laboratory (EMBL-EMBO) and in the European Social Survey (ESS).

In this way, we have taken care of different fields of research, opening up opportunities for an increasing number of scientists to engage in international scientific cooperation, which is one of the foundations of the functioning of the European Union, included in its founding treaties.

>> MONTENEGRO BECOMES A FULL MEMBER OF EMBL AND EMBO

NEW OPPORTUNITIES FOR RESEARCHERS AND STUDENTS

The Parliament of Montenegro has ratified the Agreement by which Montenegro has become a full member of the prestigious European scientific organisations for molecular biology – EMBL (European Molecular Biology Laboratory) and EMBO (European Molecular Biology Organization). In this way, Montenegro has joined the largest European institutions in the field of "life sciences" and closely related research areas.

In addition to scientific, technological, and economic significance, Montenegro's accession to full membership in EMBL and EMBO also bears political importance, especially in the context of European integration, better positioning of the country in the European Research Area (ERA), and strengthening its image.

By accessing these prestigious international institutions, Montenegrin researchers will be provided with access to international scientific infrastructure, state-of-the-art technology, and quality research at the European level, as well as integration within the European scientific community.

The general programme of these institutions is mainly focused on providing a wide range of programmes for young people, such as various types of doctoral and postdoctoral fellowships, trainings, courses, workshops, and grants for start-ups. The mobility of researchers and work in international scientific collaborations will boost the competitiveness of our scientists and reduce brain drain, because the possibility of accessing data will enable Montenegrin researchers to conduct research from their home institutions, applying the knowledge they acquire in other areas as well and contributing to the development of the country.

>> WORKSHOPS FOR STUDENTS HELD AT THE UNIVERSITY OF MONTENEGRO

The Ministry of Science organised workshops that were attended by high-level officials of the European Molecular Biology Laboratory (EMBL) and the European Molecular Biology Organization (EMBO). The workshops were held on 4 April 2018 at the Rectorate of the University of Montenegro and on 5 April 2018 at the Institute for Children's Diseases of the Clinical Centre of Montenegro.

The workshops were organised with a view to explore the possibilities for establishing cooperation with our country through the involvement of Montenegrin research teams, first and foremost young researchers, in the collaborative activities of the aforementioned organisations. The workshops presented the opportunities offered through membership in EMBL and EMBO, as well as the possibilities of establishing cooperation in this field with renowned European institutions.

Opportunities for cooperation with EMBL and EMBO presented at the workshops

Over a hundred scientists have the opportunity every year to become beneficiaries of short-term EMBO fellowships, after which they can use the newly acquired skills and knowledge in laboratories of their home institutions and be the contact persons for cooperation with EMBO. In addition, EMBO offers the EMBO Young Investigators Programme, which started in 2000. EMBO Young Investigators are selected annually, and 73 current members, along with 384 former members of the programme and recipients of EMBO grants, form a network of leading scientists in Europe.

EUROPEAN SOCIAL SURVEY STARTS IN MONTENEGRO
AVAILABILITY OF HIGH-QUALITY RESEARCH DATA

At the initiative of the Ministry of Science, Montenegro joined Round 9 of European Social Survey in October 2018. ESS is theoretically and methodologically the most comprehensive international research in the field of social sciences in Europe. It implies data-collection on the attitudes, values and beliefs of European citizens on a number of important topics, including democracy and citizen participation, attitudes to family, marriage, work, migration and social inequality, as well as important and topical issues such as climate change or economic crisis. The questionnaire contains questions on the manner in which citizens use the media and the internet, the extent to which they believe in political processes, as well as on their views about migration, the right time in life to do certain things (for example, to get married, to retire), the manner in which a fair society could be organised, the manner in which social resources need to be distributed, etc.

Based on the answers to these questions, it will be possible to see what the citizens of Montenegro think about these issues, as well as to compare these data with the views and opinions expressed in the 30 European countries participating in this round of survey, in addition to Montenegro.

European Social Survey has emerged in response to a number of societal challenges encountered by Europe, such as the migrant crisis, change in the family as the basic cell of society, climate change, declining institutional confidence, populism and inequality. The survey is designed to gather academic, scientifically-rigorous and comparable data underpinned by high-level methodological standards on these topics, based on which decision makers will measure and monitor these changes, making data-based plans and decisions.

The data provided by the ESS are open and accessible to entire academic community, policy makers, journalists, civil society and the general community. By joining the European Social Survey, Montenegrin researchers have gained access to a number of benefits. First and foremost, they will be able to use high-quality data to study social change and phenomena across Europe and Montenegro. Work on data collection and work with data will be a great training for young researchers and will serve as a good foundation for master's and doctoral theses.

Researchers in Montenegro will connect with the most active social science research teams in Europe. Finally, Montenegro will find itself on a research map of the world and European scientific community which will learn more about the country and be able to use standardised Montenegrin data. All of the above should further encourage the development of a social science research culture in Montenegro.

The research is conducted by a team from the Faculty of Political Science of the University of Montenegro. More details about the survey can be found on the following website and Facebook page: https://www.europeansocialsurvey.org and https://www.facebook.com/ESSMNE/

OPEN SCIENCE DAYS
“SCIENCE AND INNOVATION FOR SOCIETY”

The Ministry of Science has organised the eighth Open Science Days festival, which aims to popularise science in society in an educational and engaging manner.

This year’s Open Science Days festival was dedicated to the topic of science and innovation for society. Science and innovation today are expected to contribute much more quickly and significantly to social progress, and this can be achieved if scientists establish a fruitful dialogue with business community, politicians and citizens. Science is expected to lead social change.

When presented through art and multimedia exhibitions – lectures by prominent scientists, panel discussions, interactive workshops, innovative projects, and attractive topics in the fields of IT technologies, arts, natural and social sciences and humanities – all raise curiosity, develop imagination and creativity among visitors.

This year, Open Science Days festival was visited by more than 20,000 visitors, and programmes were implemented in ten cities across Montenegro.

APPLICATION PRESENTED IN TEHNOPOLIS

Within Open Science Days festival, Tehnopolis hosted more than 40 high-school teachers and students from Nikšić, as well as participants in the Erasmus+ project. Nenad Novović, Director of Amplitudo company and Aleksandar Perović, Director of Ozon NGO presented the "My Tree" application to those present.

"My Tree" is an online ICT platform, with a website and mobile app (iOS and Android), which allows direct purchase or financial donation to purchase seedlings to be planted in cooperation with Zelenilo public company, as well as donating volunteer time to support regular activities to improve the environment. Also, the platform will enable each user to track the extent to which he or she has contributed to the cleaner air in their city by donating seedlings.

According to Amplitudo representatives, the idea is to use information technology to improve the city and, hopefully, set the standard for other cities in Montenegro and the region.

WHAT IS HIDING IN OUR ADRIATIC?

During the Open Science Days, pupils and students from Tivat and Kotor in Kotor had a chance to learn about the biodiversity of the Adriatic Sea at the Institute of Marine Biology. The scientists from the Institute spoke about sharks in the Adriatic, as well as about the most common commercial fish species that are caught in our country.

The visitors learned about the methods used to determine the fish age and participated in extracting otoliths together with employees of the Institute. They were familiarised with a large number of benthic organisms, sea urchins, shells, including their developmental stages, and starfish, but also zooplankton and phytoplankton organisms. Finally, one of the topics was sea jellyfish. The Institute was visited by the students from High Mixed School "Mladost" from Tivat, "Knightsbridge Schools International", Kotor Gymnasium and primary schools "Savo Ilić" and "Njegoš " from Kotor.

MINISTRY OF SCIENCE AND "BEST" ORGANISATION ORGANISE THE FIRST STOCK MARKET OF PROMISING IDEAS

As part of the Open Science Days festival, the stock market of promising ideas was organised by the Ministry of Science and BEST organisation in the Sports and Cultural Centre of the University of Montenegro.

The event was organised in the context of development of the Smart Specialisation Strategy, which should utilise the participation of a large number of experts and other representatives of the business, scientific and general community to offer directions for the development of knowledge, technology and innovation-based development.

During the event, the authors of the selected ideas had the opportunity to meet and talk with other participants, as well as to network and to refine their ideas. All citizens who have relatively mature project ideas or reasoned views on the development projects that could be implemented in our country were invited, with a view to start the momentum of new economic sectors or to bring ideas, people and capital to the existing ones.

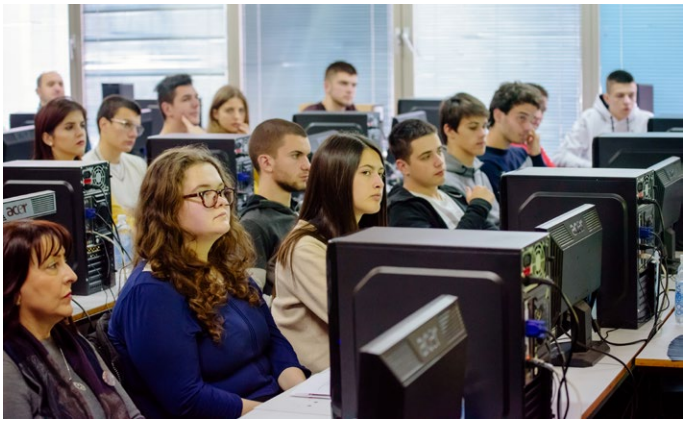
>> PHYSICS CLASS
FOR FUTURE YOUNG SCIENTISTS

In cooperation with the Faculty of Science and Mathematics of the University of Montenegro and the European Organization for Nuclear Research, the Ministry of Science organised the Second International Masterclass in Particle Physics, under the auspices of CERN and IPPOG (International Particle Physics Outreach Group). This year is special for Montenegro, as it became a full member of the CERN's CMS experiment. The international class in particle physics was attended by secondary school students from Kotor, Nikšić, Pljevlja, Podgorica, Berane, Bijelo Polje and Bar, and the event was officially opened by Minister of Science Dr. Sanja Damjanović. The Minister told the students that the Ministry of Science had opened the way to CERN, which had three missions: shifting the boundaries of knowledge, developing technologies, and education – as the third and most significant one. There are 13,000 people working in CERN, the

biggest percentage of whom are young people, which means that their peers are also part of these important projects, the Minister pointed out addressing the students.

The Masterclass provided the students with an opportunity to be real scientists for a day, having access to real data and addressing the same problems that are tackled by scientists in CERN.

The students had the opportunity to get acquainted with the theoretical and experimental aspects of particle physics, as well as to virtually visit CERN and ask questions to its resident scientists, participate in a quiz and compare the results with peers from other European cities.



>> INTERNATIONAL DAY OF WOMEN AND GIRLS IN SCIENCE

LET'S ENCOURAGE WOMEN AND GIRLS TO ENGAGE IN SCIENCE!

MARIE CURIE ACTIONS

Three years ago, the United Nations adopted a resolution proclaiming February 11 the International Day of Women and Girls in Science with a view to achieving full and equal access and participation of women and girls in science, as well as to further strengthen gender equality. In this context, the Ministry of Science of Montenegro organised an Info Day on Marie Skłodowska-Curie Actions in its premises.

Marie Curie is a special inspiration to many female scientists around the world. She was born 149 years ago and is the first woman to have received the Nobel Prize and the only woman to have received this award for achievements in two areas. The famous scientist, whose work has led to the discovery of polonium and radium, was known for persistence, modesty and dignity. With her help and support, the Radium Institute (Curie Institute at present) was founded in Paris in 1914, with Marie Curie being its first director.

Women employed in the Ministry of Science of Montenegro are working hard to support our female scientists, researchers and innovators in utilising their potential, and make up as much as 95% of the total staff of the Ministry.

NGO SECTOR – SUPPORT AND COOPERATION PROJECTS

In 2018, within the regular public calls for project applications, the Ministry of Science financed a total of 28 projects of NGOs in the field of science and innovation promotion, worth a total of EUR 42,439.11.

Some of the partners from NGO sector have implemented their programmes within Open Science Days festival, which is a significant framework of cooperation between the Ministry and the civil sector.

Under the National Call for Encouraging Participation in COST and HORIZON 2020, three projects were funded in 2018 in the total amount of EUR 30,000.

REGISTRATION OF INNOVATIVE ORGANISATIONS

Pursuant to the Law on Innovative Activity, the Ministry of Science launched the procedure for registration in the Register of Innovative Organisations on 27 July 2018. Innovative organisations include: scientific research institutions, higher education institutions, centres of excellence and business entities (innovative-entrepreneurial centre, business incubator, company, or part of a company).

In the Register of Innovative Organisations, there are 33 organisations registered so far, as follows: 13 scientific research institutions, 18 business entities, an innovation & entrepreneurship centre, and a centre of excellence.

>> MINISTRY OF SCIENCE OPENS THE WAY TO CERN

CERN – EVERY PHYSICIST'S DREAM

Pursuant to the Agreement between the Government of Montenegro and the European Organization for Nuclear Research (CERN) on scientific and technical cooperation in the field of high energy physics, the Ministry of Science has announced a call for applications for participation in the CERN Summer Student Programme 2018. Out of thirteen candidates, three have been selected: Anastasija Popović, Nikola Subotić and Danko Petrić.
The CERN Summer Student Programme is held annually for eight weeks during July and August and includes theoretical training, participation in workshops, seminars, exhibitions, as well as experimental work.

Anastasija Popović

My supervisors were Giovanna Vandoni and Hernan Furci, who followed my work, gave me assignments, and really supported me. They have developed sensors, the so-called "TES", with a view to localising defects on superconducting "RF cavities" that will be used to enhance the luminosity of future particle accelerators. As the project was already approaching its final stage, my task was to analyse the previous data obtained from the measurements and to use the software package, which I had already had the opportunity to work with at my university, to graphically present the characteristics of the sensors.
The project itself was not so strictly related to my profession, i.e. energy and automation, but I really enjoyed the assignments and I am glad I was able to learn something new. The fact that I was given the opportunity to stay two weeks longer than planned gave me particular satisfaction for all the hard work.

Danko Petrić

Attending CERN Summer Student Programme 2018 was one of the best experiences during my studies. Apart from lectures and work on a project, I was equally impressed by the opportunity to visit the largest science centre in Europe and socialise with people with similar affinities.

It is interesting to note the manner in which an average students' day is organised under the CERN Summer Student Programme. Morning classes are intended for lectures by eminent experts in different fields. The major part relates to particle physics but there are also many lectures that are closely related to the field I study – electronics and programming. Most of the time is devoted to a project that is carefully assigned to each student based on an application and a motivation letter for the programme.

My assignment was to test new air humidity sensors and compare the measurement results with the sensors used in the accelerator. Working with PLCs was new to me, but with the help of my supervisor, her team, and my colleague Amar, who attended the previous summer programme at CERN, everything went smoothly.

Nikola Subotić

Being a CERN summer student is a rewarding experience. I had the opportunity to meet people from different cultures, to further professionally develop myself, to gain insight into how large organisations function, and what people can achieve thanks to high-level cooperation. It is a dream of every physicist to visit CERN, at least as a tourist, and I have had the opportunity to do it professionally. The experience gained there will certainly be a foundation for further development, and improves my biography.

In addition to the opportunity to listen to lectures by renowned scientists, I have also had access to CERN's library, which I used to the maximum extent possible.

Amar Kapić
The future of Montenegrin science

"After participating in CERN Summer Student Programme 2017, thanks to the Ministry of Science and the Call for Applications for Co-financing Scientific Research Activities, I extended my stay for a few more months and had the opportunity to present myself in the best possible light. This resulted in a one-year fellowship I received from CERN, which is awarded to technical science students."

In January 2019, Amar Kapić began his doctoral studies at the Swiss Federal Institute of Technology Lausanne (EPFL), which is ranked in the top five universities in Europe in engineering, at the Department for Microsystems and Microelectronics, as a recipient of a CERN doctoral research fellowship. "The task of my doctoral research is to develop a dew point sensor that should function smoothly under conditions of high radiation and strong magnetic fields. Such a sensor will be a necessary element of all future experiments in the field of high energy physics."

In the period from 1 to 21 July 2018, the CERN's Programme for Secondary School Physics Teachers was attended by 46 teachers from 34 different countries. Montenegro was represented by Vladimir Popović.

The programme is intended for teachers who wish to improve their knowledge in the field of particle physics, relevant technologies and other issues in the aforementioned areas and encompasses lectures, tours, workshops, research group work and presentation.

Lectures included topics in the fields of particle physics, cosmology, accelerator and detector operation, Higgs boson discovery, and the applications of radiation in medicine. During the stay, a tour was organised of the synchrocyclotron (the first accelerator built at CERN in 1957), as well as of the ALICE detector, the ISOLDE plant, the control room of the AMS experiment, the antimatter factory.

One of the many workshops was hosted by Dave Fish and Greg Dick of the Perimeter Institute for Theoretical Physics from Canada: The Mysteries of Space (Dark Matter and Dark Energy) and Theory of Relativity.

OUR SCIENTISTS IN THE WORLD

Milutin Pajović

Mitsubishi Electric Research Laboratories

Milutin Pajović was born in Podgorica, where he completed primary and secondary school, graduating from the Faculty of Electrical Engineering. After a short work engagement in Podgorica, he moved to USA, where he obtained a doctoral degree from the Massachusetts Institute of Technology (MIT). Currently, he is a Principal Research Scientist at the Mitsubishi Electric Research Laboratories (MERL) in the city of Cambridge, Massachusetts, where he deals with research in the fields of artificial intelligence, signal processing and telecommunications. He is a father of two children, Petar and Katarina.

What did it take to get to Mitsubishi Electric Research Laboratories?

The path to my current researcher position began with an interest in mathematics and physics during primary and secondary school, accompanied by awards at national physics competitions that ensued.

Eager to compete in a more challenging environment and to experience life in a meritocratic system, I went to the USA where I received my master's degree in acoustic signal processing from Florida Atlantic University, only to be admitted at the doctoral studies at MIT. There, I completed my formal education by earning a PhD from the Department of Electrical Engineering and Computer Science, in the field of random matrix theory and its applications in sonar systems, as well as underwater communications with acoustic waves. Be it the fantastic courses that offer fundamental knowledge in applied mathematics disciplines relevant to engineering, or collaboration with renowned scientists or a very supportive environment, education at MIT has crucially contributed to my research career and helped me get to the present position.

What are the challenges you encounter in your workplace? Does market development pose new challenges or do you set new goals for yourself?

The job at the laboratory where I work is intellectually very stimulating and involves defining and proposing research projects, performing research work, publishing papers in leading journals and at conferences, patenting new ideas, mentoring doctoral students coming for internships, cooperating with famous universities, following trends in science and technology market. When it comes to projects, some of them aim to create technological solutions that can respond to the anticipated market needs over a period of two to five years. These projects most often come from the company's business units and it is my responsibility to deal with different activities from defining a research problem to obtaining and patenting results. The other, I would say more important, projects concern fundamental research and development of technologies that have the potential to be applied over the next five to ten or more years. Like any laboratory researcher, I am responsible for both proposing such projects and obtaining a budget to work on them, as well as for the research part itself. One of the challenges in my work is to monitor the development dynamism of current areas of technology, such as artificial intelligence and robotics, which is essential for proposing quality research projects whose results can be patented.

What would be your message to young researchers who are at early stages of their careers?

Although each science field rests on certain fundamental disciplines, there are no guarantees that the knowledge required in those disciplines would be acquired during the regular education process, at least not at the level required. For a growing number of non-mathematical science fields, a significant portion of these fundamental disciplines are underpinned by various fields of applied mathematics. For example, research in biology or economics has long been unconceivable without a serious reliance on applied mathematics. Therefore, it is very important for researchers to identify the mathematical knowledge necessary for the projects they are working on and to allocate time to enhance and complement this knowledge. That is a safer path that leads to truly valuable achievements, rather than obtaining incremental results through variations and minor additions to the already existing scientific work.

Siniša Đurović

Senior Lecturer at a prestigious university Manchester

Tell us more about yourself? What is your field of research?

I was born in Podgorica, where I graduated from the Faculty of Electrical Engineering. Since 2002, I have been in the UK, where I am currently engaged in research related to the process of converting electrical power with a focus on electrical machines and power conversion at University of Manchester.

What was your path to the prestigious University of Manchester?

I initially went to the UK for a relatively short period of time in early 2000s through the EU Tempus Programme, where UCG was one of the partners, planning to return to Montenegro upon the expiry of the project. However, during my stay and work at the University of Manchester, I was offered a university doctoral scholarship, supported by the then prestigious British ORS Scholarship for foreign students, and as research in this area attracted me and the conditions for further work in the power conversion group in Manchester were attractive, I decided to start my PhD studies in Britain. The rest is history, as they say. After completing my doctoral studies, I continued my stay at the same institution through postdoctoral research on the then largest British national project focused on research into better use of wind power. Since 2010, I have been a member of the academic staff at the University of Manchester.

Tell us about the scientific research environment in the UK, and what is missing from that system in Montenegro?

The scientific research environment in the UK is extremely dynamic and competitive, being underpinned by a well-known and long tradition in innovation. This is especially relevant to the field of engineering where Britain has historically been recognised as a global leader. In academic practice at leading institutions, this comes down to the expectation from research staff to maintain their own research teams composed mainly of doctoral and post-doctoral students and funded by the industry or research projects. Overall, the relatively strong links between leading research institutions and the engineering industry are of great help, and so are good opportunities for further industrial or academic career development for researchers. Drawing a parallel between a rather old and a highly developed scientific research system such as the British and the Montenegrin one, which by comparison is still in very early development stages, is not simple, but it is likely that a lot of room for improvement can be found in better access to finance and research resources for our scientists, along with a stronger integration with the regional industry and the global community, as well as a systemically improved prospect of a successful career for young researchers in the country.

What would be your message to future young researchers?

Not to give up on their ideas and plans. Today, the research community is more global than ever before and there are always development opportunities for young people who are ready to head forward.

Minister of Science
Dr. Sanja Damjanović

The previous, second year of my mandate was marked by an abundance of activities in the field of implementation of various calls for applications and programmes, strategies, encouragement of international collaboration, strengthening of human capacities, networking, internationalisation, conferences, high-level meetings and many other activities that contributed to further recognition of Montenegro at the international level.

A key achievement is the advancement of the project of establishing the South East European International Institute for Sustainable Technologies (SEEIIST), as a large-scale research infrastructure based on state-of-the-art technologies. The region needs such a facility, first and foremost to foster scientific excellence, innovation, mobility, internationalisation and knowledge transfer. In this regard, we received the first financial support from the European Commission (DG RTD) and formed a high-level international team, which stands ready to complete the Design Study phase in 2019. At the political level, we are preparing to sign the Memorandum on the framework of cooperation between the countries of the region.

We have reached the final stages of the HERIC project, implemented since 2012 from a World Bank loan, whose results are maturing and creating new paths for the development of our science and innovation ecosystem. Guided by the example of HERIC scholarships for excellence, we have established a new call for applications for attractive doctoral scholarships that include significant research and international mobility funding. A total of 19 scholarships were awarded in 2018, and this practice will continue in the coming years as we strive to have at least 50 young researchers at our universities as a significant boost to the existing scientific pool.

We have also created a new call for applications for grants for innovative projects, approving 10 grants worth EUR 0.7 million. In the area of scientific research projects, funds amounting to EUR 1.7 million have been allocated to 15 projects. All our instruments of funding science and innovation projects are subject to a rigorous system of international, external expert evaluation, which is crucial for quality assurance.

On the other hand, in order for Montenegro to be able to compete at the international level, it needs to create a strategic framework under which it will be able to transform its economy and provide for the development of new business sectors that contain strategic potential in our country and in which science and innovation are a key foundation for competitiveness. One such umbrella document is the Smart Specialisation Strategy (S3) whose adoption is expected next year, following intensive work on the document undertaken this year. In addition, with the help of the Horizon 2020 Policy Support Facility, we have prepared a document titled “Programme of Measures Promoting Innovative Start-ups 2019-2021”, which outlines the manner in which we plan to build a solid innovation ecosystem.

2018 was a significant year for Montenegro as it has become a full member of prestigious European molecular biology scientific organisations, EMBL and EMBO. Likewise, the country has joined the European Social Survey (ESS), opening up great internationalisation opportunities for its scientists in social disciplines.

In the coming year, we will continue to support participation in the EU Research and Innovation Programme, Horizon2020, where we expect an increase in the number of high-quality projects that will help us improve our international position. We will ensure continuity in our support instruments, thus building a human resources pool and stable pathways for development of a knowledge-based economy. One of the most important steps in the coming year will be the establishment of the Science and Technology Park in Podgorica, which will be the basis for development of the entire system in which science and innovation are constantly interacting in the service of society development. Given that the preparatory activities have been completed and that an agreement with the University of Montenegro has already been reached this year, we will work towards the commissioning of the STP at a fast pace next year.

Finally, I wish to thank all those who trust in our vision and who have invested dedicated efforts, contributing to the significant results we have achieved in 2018, including my team, as well as external partners, universities, companies, individual scientific mentors of young researchers, experienced scientists leading international activities, and colleagues in other ministries and the European Commission, with whom we have had excellent communication and cooperation.

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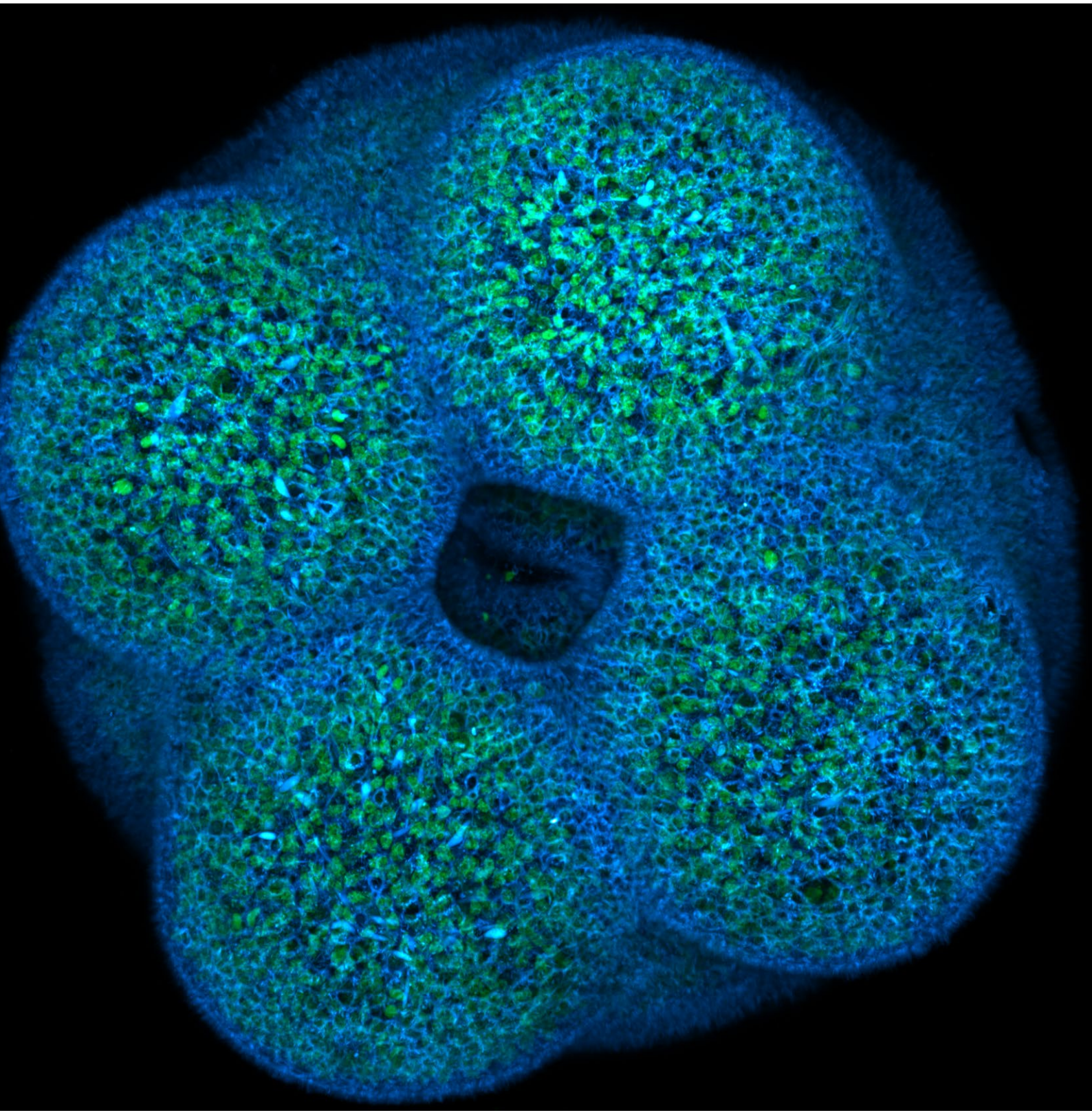

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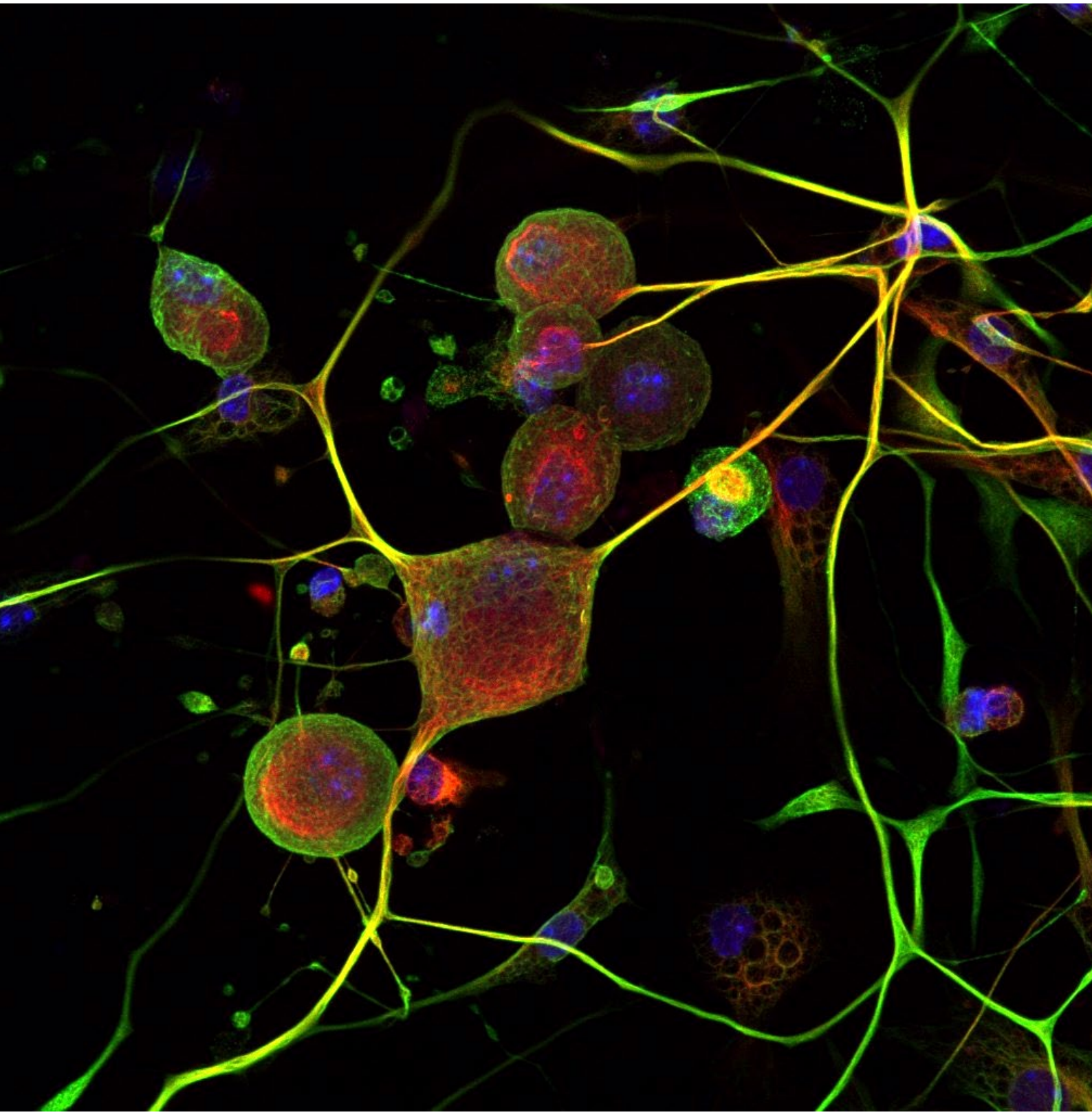

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