

Good Practice Examples of H2020 Projects in Visegrad countries

CZELO



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Foreword

Since 1984, European Community research, technological development and innovation activities have been defined and implemented by a series of multi-annual Framework Programmes (FP) in order to support and foster research in the European Research Area (ERA). Horizon 2020, the eight framework programme, is the biggest EU Research and Innovation programme ever with nearly EUR 80 billion of funding available over 7 years (2014 to 2020). It aims at securing Europe's global competitiveness, strengthening its position in science and its industrial leadership in innovation by supporting first-class science, innovation and technological development and by bringing the private and public sectors together.

Horizon 2020 provides grants to research and innovation projects through open and competitive calls for proposals based on their merit. The involved institutions and companies from participating countries have a unique chance to develop and create outstanding knowledge, invent products and contribute their know-how to the common goals of the EU. From the perspective of participating beneficiaries, their presence in the projects funded by Horizon 2020 programme calls also shows their excellence and ability to join the top international teams, and demonstrates prominence in addressing issues that Europe and the world are facing.

Despite the increased funding of research in individual EU member states, divergences between EU15 and EU13 are still present. As various surveys show, the most important barrier to EU13 participation in FP7 and Horizon 2020 is the low success rate of

project proposals, limited in-house internal skills in drafting proposals or managing projects, lack of interest in European projects and attractive funding from domestic funding schemes, including the European Structural and Investment Funds. However, this does not mean that these countries lack excellent research.

This brochure aims to showcase successful examples of Visegrad Four's (Czech Republic, Hungary, Poland, Slovakia, also known as V4) participation in framework programmes. The limited scale of this brochure makes it impossible to present all excellent institutions and projects in the V4 region; therefore, the main part of this brochure is focused on common projects where at least three of the Visegrad Group partners are represented. Moreover, you can also find some examples of projects conducted by the individual countries, in particular projects funded by the European Research Council (ERC), Marie Skłodowska-Curie Actions (MSCA), SME Instrument and Widening Participation part. Each project is also accompanied by the project coordinator statement describing their experience with their participation in the framework programme as well as the main challenges they were facing during the implementation, and their shared opinion on the added value of being a part of Horizon 2020 projects.

We hope that this brochure will motivate researchers from the V4 countries to apply for European funding and that it will help to increase the participation of our region in the upcoming framework programme Horizon Europe.

We wish you a pleasant reading!

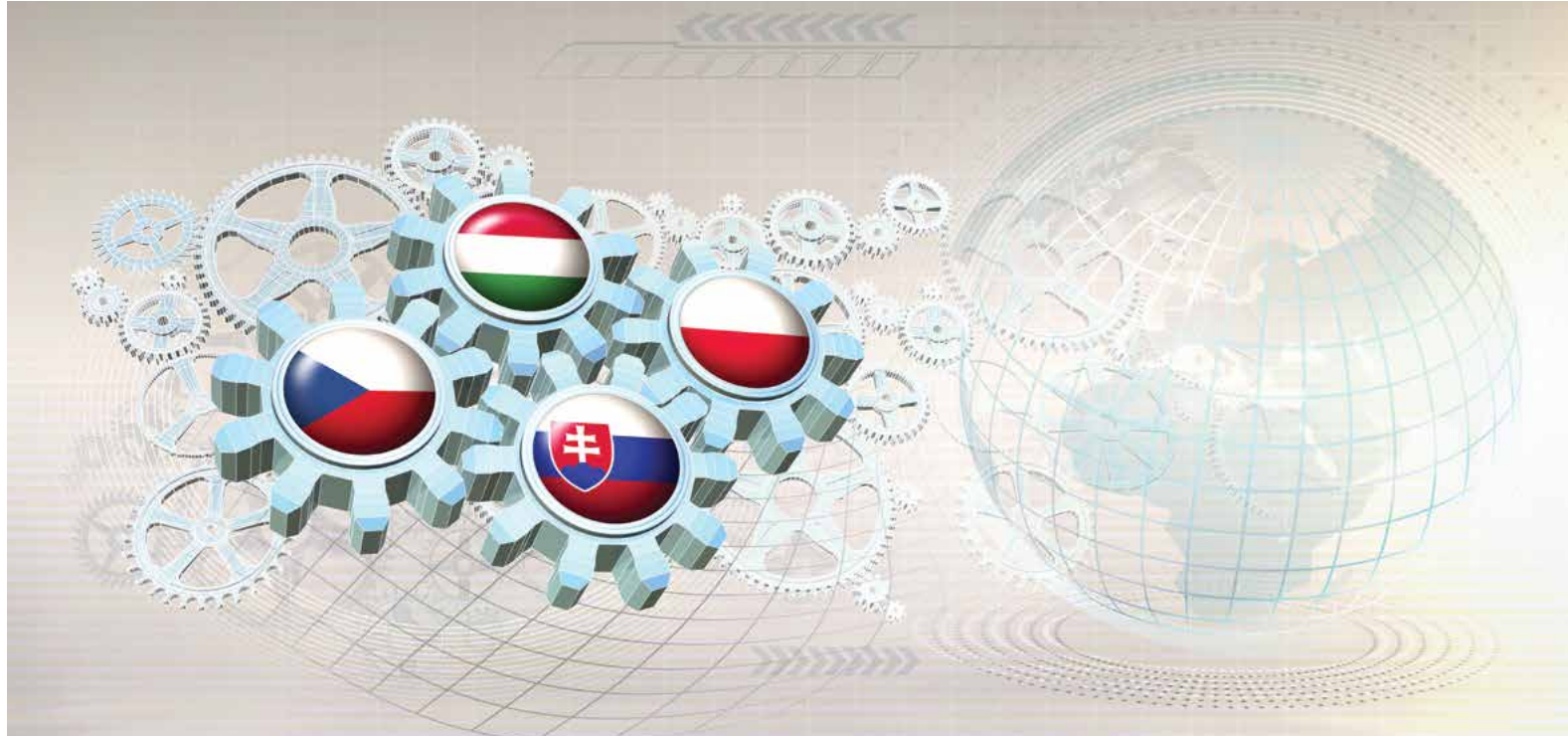
This brochure was prepared by the Czech Liaison Office for Research, Development and Innovation (CZELO) in cooperation with the Brussels Office of the National Research, Development and Innovation Office of Hungary (NRDIO), the Polish Science Contact Agency of the Polish Academy of Sciences (PolSCA) and the Slovak Liaison Office for Research and Development (SLORD).

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NATIONAL RESEARCH, DEVELOPMENT
AND INNOVATION OFFICE
HUNGARY

SLORD
Slovak Liaison Office
for Research and Development

 **PolSCA**
Polish Science Contact Agency



The Visegrad Group was formed on 15 February 1991 at a meeting of the President of the Czechoslovak Republic Václav Havel, the President of the Republic of Poland Lech Wałęsa, and the Prime Minister of Hungary József Antall. The main purpose of establishing such cooperation was to advance military, cultural, economic and energy collaboration with one another along with furthering the EU integration process. After the dissolution of Czechoslovakia in 1993, the Czech Republic and Slovakia became independent members of the group, thus increasing the number of members from three to four. All four members of the Visegrad Group joined the European Union on 1 May 2004. An important basic principle is that within the EU the V4 carry more weight as an alliance than they would as individual countries. Each year a different member of the group takes over the V4 presidency. All the V4 members are EU member states, but only Slovakia is part of the Eurozone.

The only institutionalised form of this regional cooperation is the International Visegrad Fund (www.visegradfund.org) which aims to strengthen the ties among people and institutions in Central and Eastern Europe through providing support to regional non-governmental initiatives.

National Contact Points and IGLO

In order to provide guidance, practical information and assistance with all aspects of participation in Horizon 2020, the network of National Contact Points (NCPs) has been established. NCPs are national structures established and financed by the governments of the 28 EU member states and the states associated with the framework programme. They provide personalised support on the spot and in applicants’ own languages.

The NCP systems can vary from one country to another from highly centralised to decentralised networks, and a number of very different actors, ranging from ministries to universities, research centres and special agencies to private consulting companies.

National contact points are also members of various international networks of NCPs for respective research areas.

Main NCP Contacts in the V4 Countries		
Czech Republic	Technology Centre of the Czech Academy of Sciences Ve Struhách 27, 160 00 Prague 6 Czech Republic Tel: +420 234 006 109 – Fax: +420 234 006 251 Website: http://www.h2020.cz/cs	
Hungary	National Research, Development and Innovation Office Kéthly Anna tér 1.- 1077 Budapest Hungary Tel: (36)1-896-3758 Website: https://nkfi.gov.hu/english-2017/horizon-2020-180603/national-contact-points	
Poland	NCP organisation for Horizon 2020: Institute of Fundamental Technological Research, Polish Academy of Sciences Pawińskiego 5B, 02-106 Warsaw Poland Tel: (00)48228287483 – Fax: (00)48228285370	NCP organisation for Horizon Europe: The National Centre for Research and Development Nowogrodzka 47a, 00-695 Warsaw Poland Tel: (00)48228287483 – Fax: (00)48228285370 Website: http://www.kpk.gov.pl
Slovakia	CVTI SR, Slovak Centre of Scientific and Technical Information Lamacska cesta 8/A- 81104 Bratislava Slovakia Tel: +421 269 253 169 – Fax: +421 907 608 918 Website: http://www.h2020.cvtisr.sk	

On top of NCP networks, some member states also established R&D liaison offices in Brussels in order to facilitate the integration of their researchers into the European Research Area. These are associated in IGLO, an informal association of Brussels-based non-profit R&D Liaison Offices. The aim of IGLO is to facilitate and

enhance interaction, information exchange and co-operation between Members of IGLO, their national research systems and European institutions on issues related to EU RTD, in particular, the Framework Programme.

Czech Republic	Czech Liaison Office for Research, Development and Innovation (CZELO)	https://www.czelo.cz/en
Hungary	National Research, Development and Innovation Office (NRDI Office)	https://nkfi.gov.hu/about-the-office
Poland	Polish Science Contact Agency (PolSCA)	http://polsca.pan.pl/en/
Slovakia	Slovak Liaison Office for Research and Development (SLORD)	https://www.slord.sk/?lang=en



The V4 countries have been participating in the EU framework programmes (FPs) for research, technological development, and innovation (RDI) in the full range of their topics and types of projects since the beginning of FP5, and H2020 is therefore the fourth FP in which all V4 organisations participate.

FPs meant a completely unprecedented increase in international cooperation of V4-based institutions in the field of research, development and innovation. The opportunity to cooperate with teams from the most important European scientific institutions opened up not only to the researchers, but also to industry that could participate in international consortia.

Between January 2014 and July 2020, a total of 252,389 full eligible project proposals were submitted to the H2020 programme, in the preparation of which 857,642 research teams (applicants) participated. The total EU financial contribution required for their implementation has reached EUR 411.9 billion. Among those, V4 proposals encompass 26,456 proposals, requesting in total EUR 14.22 billion.

The overall success rate of full eligible proposals was 12%, with more than half of full eligible project proposals (50.7%) evaluated by appointed experts as being of high quality. However, only one in four of these high-quality project proposals can be funded. More specifically, regarding the success of EU Member

State Coordinators in Research and Innovation Actions (RIA) and Innovation Actions (IA) project proposals for H2020, the coordinators from EU15 are generally much more successful in RIA and IA project proposals than the EU13 ones. The overall success rate of EU15 coordinators (14.4%) is more than twice as high as the overall success rate of EU13 coordinators (6.3%). It should be added that EU15 coordinators submitted over 16 times more project proposals than the coordinators from EU13.

A total of 30,459 grant agreements were signed with the EU contribution of EUR 56.4 billion, of which a total of 3,202 grants were signed in the V4 countries, which is 10.51% of all existing grant agreements in H2020. Via the grants the V4 countries have so far received EUR 1.44 billion, i.e. 2.55% of the H2020 budget.

Masaryk University



Country Specific Information – H2020 Projects

Czech Republic

The Czech Republic has a rich scientific tradition as well as extremely high-quality human resources and well developed infrastructure. The sectors in which the Czech Republic truly excels include informatics and cybernetics, medicine and biotechnology, materials and nanotechnology, nuclear energy and physics-based sciences such as optics, laser technology and optoelectronics. The Czech Republic is a global power in areas such as cybersecurity software. Czech science has tremendous potential for the future, as the number of newly built research centres in the full range of sectors is a promise of many possibilities. Research, development and innovation activities conducted in the Czech Republic via the H2020 programme are mostly linked to higher or secondary education organisations or research organisations. Czech universities as well as the institutes of the Czech Academy of Sciences thus play a crucial role in the Czech success rate in the framework programme, followed by private for-profit organisations. However, the main source of financing Czech R&D of public research organisations comes from the state budget in the form of statutory funding and grants.

In the course of the H2020 programme from 2014 to May 2019, a total of 7,005 research teams (applicants) from the Czech Republic participated in the preparation of 5,689 complete eligible project proposals. Czech research institutions are direct recipients of funding in 817 funded projects with a claimed financial contribution of EUR 286.2 million, in which they cooperate with more than 12,000 foreign partners in the role of direct recipients of funds from the H2020 programme budget. However, the number of eligible project proposals submitted with at least one applicant from the Czech Republic still does not reach the number of submitted proposals from population-comparable EU15 countries.

Name of the institution	Sector	IA	RIA	CSA	MSCA	ERC	ERA-NET-Cofund	CO-FUND-EJP	Total Number of Participations	EU's Financial Contribution (mil EUR)
Masaryk University	HES	3	29	16	14	5	1	1	69	26,605
Charles University in Prague	HES	4	28	5	18	9			64	27,404
Czech Technical University in Prague	HES	14	23	10	3	2			52	15,986
Brno University of Technology	HES	9	22	5	7	2			45	14,114
Technology Centre CAS	REC		2	22					24	1,662
Centrum výzkumu Řež s.r.o.	REC	1	13	7				1	22	3,414
Institute of Physics CAS, v. v. i.	REC-CAS	2	6	4	7	1			20	11,655
Air Navigation Services of the Czech Republic, s.p.	OTH	1	15	3					19	2,793
VSB – Technical University of Ostrava	HES	4	11	1	2				18	5,931
CESNET, z.s.p.o.	REC	2	12	3					17	3,901

R&D in the Czech Republic

Total R&D spending as percentage of GDP (2019):	1,93%
Universities/Technical universities:	70/18
Persons employed in R&D – FTE (2019):	74,969
University graduates (2019):	64,186
Entities conducting R&D (2018):	2,877

Source: Czech Statistical Office, Ministry of Education, Youth and Sports

The success rate of coordinators from the Czech Republic (7.9%) is the third highest among the EU13 countries.

The preparation of project proposals for the H2020 programme takes place in the Czech Republic mostly in institutions based in Prague (49.9% of applicants) and Brno (20.7% of applicants).

Universities comprise an essential part of the R&D infrastructure in the Czech Republic. Research and development activities are mainly conducted at universities dedicated entirely to technical branches of education and at universities which have faculties with a technical focus. The top ten most successful institutions in H2020 are listed below.



University of Warsaw

Poland

The potential of the Polish research and development (R&D) sector is substantial, mainly due to the highly specialised personnel. Poland has been traditionally strong in basic sciences such as mathematics, astronomy, chemistry and physics but also increasingly recognising research and innovation as the engines for long-term growth.

The public science system comprises a multitude of Higher Education Institutions (HEIs) and Public Research Organisations (PROs). The major actors in the science and research system in Poland are universities, the Polish Academy of Sciences (PAN) and the Łukasiewicz Research Network.

The Polish Academy of Sciences (PAN) encompasses 70 research institutes, most of them being nation’s leading institutions, including over 50 with an A+ or A research-quality status, focusing mainly on basic research.

In 2019, 35 technology research institutes were transformed into the Łukasiewicz

Top 10 beneficiaries of Horizon 2020:

Name of the institution	Sector	RIA	CSA	IA	MSCA	ERC	Total Number of Participations	EU’s Financial Contribution (mil EUR)
FundingBox Accelerator sp. z o.o.	OTH	8	4	19			32	58,533
University of Warsaw	HES	34	18	3	26	9	105	31,927
The Institute of Bioorganic Chemistry of the Polish Academy of Sciences	REC/OTH	36	12	16	5		75	31,156
National Science Centre Poland	PUB		4		2		27	19,337
National Centre for Nuclear Research	REC	11	6	3	5		28	17,440
The Institute of Electronic Materials Technology – Łukasiewicz Research Network	REC	2	2	2	1		10	14,625
Jagiellonian University in Cracow	HES	19	10	2	23	4	57	14,195
AGH University of Science and Technology	HES	29	8	2	14		52	12,474
Warsaw University of Technology	HES	17	5	7	13		50	11,869
Sano – Center for Individualized Medicine	REC		1				1	8,945

R&D in Poland

Total R&D spending as percentage of GDP (2018):	1,21%
Universities/Research institutes:	379/242
Persons employed in R&D – FTE (2018):	66,283
University graduates (2018):	approx. 327,7 thousand
Entities conducting R&D (if possible – as of 2019):	4,742

Source: Statistics Poland

Research Network to strengthen the Polish commercial potential. The network has become Europe’s 3rd largest research network which aims at promoting business and supporting the development of Polish companies. The main research fields are automation, chemicals, biomedicine, ICT, materials, and advanced manufacturing.

Budapest University of Technolgy and Economics



Hungary

Hungary has a longstanding tradition in scientific research. Hungary’s new National RDI Strategy will foster, in a well-balanced manner, basic research, applied research aimed at solving socio-economic challenges and innovation activities alike. In line with the next European framework programme for research funding, Horizon Europe, the three pillars of the new strategy will be:

- Support for individual research excellence in basic research;
- Support for applied research and industry-academia collaborations addressing global challenges;
- Support for the innovation ecosystem, businesses and start-ups.

The key actors of research and development in Hungary are business enterprises, higher education institutions and the Eötvös Loránd Research Network (the former network of research institutes of the Hungarian Academy of Sciences).

In the course of the H2020 programme from 2014 to May 2019, 434 Hungarian research institutions were the direct recipients of funding in 916 funded projects with a claimed financial contribution of EUR 299.8 million, in which they coo-

Top 10 beneficiaries of Horizon 2020:

Name of the Institution	Sector	IA	RIA	CSA	MSCA	ERC	EJP	Total Number of Participations	EU’s Financial Contribution (mil EUR)
Central European University	HES		17	11	10	12		50	26,440
Budapest University of Technolgy and Economics	HES	16	23	10	10	1	1	61	16,855
Institute of Experimental Medicine	REC		5		5	7		17	16,840
HCEMM Ltd.	Other			2				2	12,534
Eotvos Lorand University	HES		10	4	12	5		31	12,245
Alfréd Rényi Institute of Mathematics	REC				6	5		11	11,083
Institute for Computer Science and Control	REC	5	9	3		1		18	10,329
Wigner Research Centre for Physics	REC		13	1	3		1	18	8,396
Semmelweis University	HES	1	11	7	5	2		26	6,895
Centre for Energy Research	REC	3	17	6		1	3	30	6,744

R&D in Hungary

Total R&D spending as percentage of GDP (2019):	1,48 %
Public/Private universities:	15/14
Public/Private universities of applied sciences:	4/6
Public/Private colleges:	1/24
Persons employed in R&D – FTE (2018):	54,654
University graduates (2019):	49,000
Entities conducting R&D (2019):	3,445

Source: Hungarian Central Statistical Office, Education Office

perated with scientists from 96 foreign countries. In comparison to the other Central and Eastern European countries, Hungary has a number of strong assets in its science system. For example, with 41 ERC grants, it is highly successful in Horizon 2020’s European Research Council, which demonstrates that there are important pockets of scientific excellence in the country.



Comenius University in Bratislava

Source: Comenius University in Bratislava

Slovakia

The strengths in Slovakia’s R&I system are found in human resources for research and innovation and in attracting business R&D investments from abroad. According to the SkillsValue Rank from 2019, Slovakia is number one in IT ranking of countries by tech skills. Slovakia is also quite strong in outputs (30% of all outputs in international scientific journal on material research originates from Slovakia) with a strong increase of the new graduates in science and engineering and at PhD level.

Throughout the lifetime of the Horizon 2020 programme, the total amount of EUR 119 million has been allocated to 580 organisations through 429 signed grants. Slovak participants can be found across all thematic areas of H2020. In the case of the smaller countries, it is clear that large projects tend to have a significant impact on the results of the whole country. In the case of the Slovak Republic, such projects are BIOSKOH, which brings to the Košice region the construction of the largest second-generation biorefinery in Europe and the Trenčín Center for Functional and Surface-Functionalized Glass – FunGlass. Thanks to these big projects, the major part of the financial contribution was assigned within the Societal Challenge 2 – Food and SEWP. However, based on the number of the signed grants, the top thematic priorities are transport, energy, MSCA and ICT.

The great part of all the participations in H2020 is created by the small and medium-sized enterprises that are either active in collaborative projects or have obtained prestigious funding form the former SME Instrument or the European Innovation Council pilot. Private organisations cover 41.8% of all the participations in H2020

R&D in the Slovak Republic

Total R&D spending as percentage of GDP (2019):	0,84%
Universities/Technical universities:	34/3
Persons employed in R&D – FTE (2019):	33,500
University graduates (2019):	43,331
Entities conducting R&D (2018):	465

Source: Statistical Office of the Slovak Republic

followed by the HES with 33.9% and the Slovak Academy of Sciences (SAS) with 15%. The most successful institutions in preparation of project proposals are those based in the Bratislava region (36 % of the signed grants) and in Zilina (9.6% of the signed grants).

In comparison to FP7, Slovakia was able to raise the financial contribution from the EU by more than one third and the contribution is likely to increase thanks to the Green Deal call. Nevertheless, Slovak subjects rely mostly on the funds from ESIF. Thanks to the funding from the ESIF Slovakia has succeeded in building and nurturing a number of science parks and research centres at Slovak universities and the Slovak Academy of Sciences that provides a good foundation and essential infrastructure for further progress.

Name of the Institution	Sector	IA	RIA	CSA	MSCA	ERC	ERA-NET Cofund	CO-FUND-EJP	Total Number of Participations	EU’s Financial Contribution (mil EUR)
Slovak Academy of Sciences	REC-SAC	4	26	13	7	1	17	1	77	16,070
Slovak University of Technology	HES	12	13	5	7			2	37	5,665
Air Navigation Services of the Slovak Republic	OTH	2	23	5					30	1,403
Slovak Centre of Scientific And Technical Information	REC	1	2	23					29	1,469
Comenius University in Bratislava	HES		10	5	6			1	22	7,477
University of Zilina	HES	2	7	4	1			6	14	1,355
Technical University of Košice	HES	2	6	2	3				13	2,762
Pedal Consulting sro	PRC			9					9	1,403
National Agricultural and Food Centre	REC	1	3	2	1			1	8	2,446
VUJE AS	PRC		5	1	1			2	8	1,386

2. H2020 Projects with V4 Participation



The following section presents 10 selected consortium projects in which all 4 or at least 3 Visegrad Group countries participate and are at the same time coordinated by one of the V4 country.

In order to fulfil the goal of intensifying international cooperation, projects in most areas of the H2020 programme are submitted by several entities, which will form a consortium for the purposes of the project. According to the so-called minimum participation condition (mandatory minimum number of members in a project consortium), at least three independent entities from three different EU-28 countries or countries associated with H2020 must participate in one project. Once this condition is met, entities from other countries may participate in the project.



Life Science Alliance: Closing Research and Innovation Divide in the EU

Coordinator: Masaryk University 

Link: <http://cordis.europa.eu/project/id/779303>

Participating countries



Abstract

The aim of the project is to establish a European Alliance of ten progressive research institutions from nine less performing countries that are committed to work jointly towards closing the divide in European health R&I. The Alliance represents a remedial action, which builds on outcomes of the previously performed initiatives analysing health R&I barriers and enabling factors as proposed by e.g. DanuBalt and RegHealth-RI projects. The Alliance4Life consortium will concentrate efforts on both (1) mutual learning and sharing practical experience, and (2) receiving motivating feedback from high performing research institutions. We will establish Focus Groups, open platforms for idea generation and exchange of knowledge, working within eight domains of expertise: science evaluation, HR and recruitment, research funding, core facilities and big data, technology transfer, bio-ethics, science communication, and mobility. In all the domains of expertise, the forma-

tion of Alliance4Life enables experience-driven approach focused on best practice cases realised by its members, avoiding actions that failed in the past and promoting those that demonstrated high impact at reasonable cost. The learning process will contribute to institutional reforms in research management and support increased participation in international consortia. The Alliance will develop progressive strategies including suggestions for exploitation of the potential provided by synergies between ESIF and H2020, which will be coordinated with the health R&I managing authorities of the particular less performing countries. The local stakeholders will be motivated to take up proposed strategies through series of national roundtables on institutional and research policy reforms. Spill-over effects will be further fuelled by the development of training modules and large-scale dissemination of project results.

Personal experience

"Thanks to the H2020 project, Alliance4Life was established as a permanent structure already during the third year of the project duration. A Memorandum of Understanding was signed by the legal representatives of partner institutions, which provided a formal basis for future collaboration."

The H2020 project was truly essential for establishing trust and motivation of partners and helped to co-finance our activities. Thanks to the project the consortium could meet twice a year and succeeded to form a community on personal basis as well as to involve research management and key decision makers. I see this achievement as the key for the strategic partnership continuation also after the project completion. Another key quality, which must come true so that the activities do not stop after the project financing stops, is the meaningfulness of activities and clear non-financial benefits of the project, i.e. the impact must be perceived as an asset for each partner.

After having established a strong partnership, Alliance4Life plans to concentrate on forming consortia for Research and Innovation Actions of Horizon Europe. This goal will be supported with concrete actions, e.g. activities to foster collaboration with industry, identification and closer involvement of excellent scientists, training in strategic research management skills, advanced outreach activities, influencing European research policy, and collaboration with other established networks."



Social and innovative Platform On cultural Tourism and its potential towards deepening Europeanisation

Coordinator: Mendel University in Brno 

Link: <http://cordis.europa.eu/project/id/870644>



Abstract

A new innovate take on cultural tourism

Europe is a key cultural tourism destination thanks to a remarkable cultural heritage that includes museums, theatres, archaeological sites, historical cities and industrial sites as well as music and gastronomy. The EU-funded SPOT project aims to develop a new approach to understanding and addressing cultural tourism and to promote development of disadvantaged areas. Specifically, it will identify layers of data and capitalise on existing practices. It will explore emerging forms of cultural tourism, identifying opportunities and developing strategies allowing local people to gain benefit from their precious cultural assets. SPOT will engage academics and stakeholders for development of policy proposals and generalise lessons learnt through an Innovation Tool to assist policymakers and practitioners.

Objective

Cultural tourism is changing. The traditional forms still exist – museums, art galleries, landscapes, historical sites, festivals – but both cultural destinations and tourists are under transformation. Many 'cultural tourists' see themselves neither as seeking culture nor as tourists; there is increasing evidence of people seeking to experience culture rather than merely observing it. That is: agritourism where visitors want to experience rural life; people wanting to visit the actual venues of TV crime thrillers; culture being explored by those using themed routes in winery regions or via pilgrimage. These trends provide opportunities to revitalise poorer and rural areas through economic and social development while protecting local cultures and landscapes. The project brings an extension of existing policies and the promotion of new approaches. The project's aim is to develop a new approach to understanding and addressing cultural tourism and to promote development of disadvantaged areas. Based on an Innovation Tool and digital technology the project identifies layers of data and capitalises on existing practices, explores emerging forms of cultural tourism, identifies opportunities and develops strategies allowing local people to gain local benefit from their precious cultural assets. The project uses case studies across 15 European regions, consolidates definitions of 'cultural tourism', engages academics and stakeholders in developing policy proposals in practice and posits means of generalising the lessons via an Innovation Tool to assist policy-makers at all levels as well as practitioners. Positive and negative aspects of cultural tourism exist; a balanced development path needs to be sought. The project will help to

Personal experience

"Regarding the H2020 participation, despite the project is not over yet, I already see a new dimension by conducting research at the EU level, gaining new understanding of the research topic, meeting new experts in the field and being familiar with the EU research strategy. On the other hand, there is a disadvantage that it is more time consuming during the preparation phase of the proposal (but also during the project execution), including familiarisation with all relevant documentation, finding reliable partners who will be open-minded when problems come. Although, once the SPOT project is over the consortium is already willing to extend/continue working on a similar topic in Horizon Europe."

It is certainly worth to try applying for the EU project from many points of view:

- to gain new experience, knowledge and new contacts,
- to gain a larger amount of money for your research than from national grants, if you are successful,
- to gain higher prestige at your university and within your research field."

identify themes and areas where interventions at local, regional, national and 13 European levels may assist in achieving successful developments, it will help to manage that balance and offer solutions.



Transnational Network of cooperation for WIDESPREAD NCPs

Coordinator: Institute of Fundamental Technological Research Polish Academy of Sciences

Link: <http://cordis.europa.eu/project/id/639034>

Participating countries



Abstract

The objective of the NCP_WIDE.NET is to create a transnational network of National Contact Points (NCPs) for Spreading Excellence and Widening Participation under Horizon 2020 in order to facilitate trans-national co-operation between NCPs, with a view to identify and share good practices and raise the general standards of support to applicants, taking into account the diversity of actors, including newcomers, that make up the constituency of the WIDESPREAD part. The project is targeted towards the Widespread NCP Forum – officially nominated WIDESPREAD NCPs in EU Member States and Associated Countries – including experienced and less experienced NCPs. Expected impacts of the proposal aiming at ensuring quality standards of services,

lowering entry barriers and increased applications to Horizon 2020 will be reached through a portfolio of dedicated measures. The overall logic of the proposal is based on the improving and levelling of the NCPs capacities to deliver services of high quality standards, enhancing transnational collaboration between applicants, delivering complex information on WIDESPREAD activities and promoting the Network itself. The implementation of the proposal includes following tailored actions: internal trainings and mentoring based on benchmarking, support to WIDESPREAD expertise through the development of guides and reports, transnational collaborative events for stakeholders such as brokerage events and joint workshops, actions dedicated to newcomers, networking activities, dissemination actions, complex source of information (Project Portal one-stop-shop) and promotional activities. The proposal addresses the work programme in terms of supporting and levelling NCPs capacity in delivering services of high quality standards. The project will contribute to more balanced development of ERA, spreading of 14 excellence in research in all European regions and widening participation of research centres and stakeholders from weaker regions in H2020.

Personal experience

“The aim of the NCP project was to facilitate transnational co-operation between NCPs, with a view to identifying and sharing good practices and raising the general standards of support to program applicants. Special attention has been given to help less experienced NCPs which are requiring the know-how accumulated in other countries and access to wiring resources in the network, through mentoring visits, a learning platform for transnational activities of the SEWP NCPs, and synergies of distributed knowledge, collective development, and training. The network developed high-quality services provided to Widespread beneficiaries i.e. regional stakeholders participating in Teaming, Twinning, ERA Chairs, and COST activities such as expert workshops on the schemes and synergies, as well as high-quality publications related to the SEWP Programme, its calls, and application rules, including as well real case studies. Communication via a web portal and social media has been an important part of enhancing the impact related to the NCP_WIDE.NET and SEWP Programme.

One of the NCP_WIDE.NET main output is the accumulated knowledge and best practices related to the process of the pre-proposals check delivered by NCPs to clients. The activity created a critical mass for planned future actions under Horizon Europe on the service and shall be developed further by NCPs.”



QuantERA ERA-NET Cofund in Quantum Technologies

Coordinator: National Science Centre Poland

Link: <http://cordis.europa.eu/project/id/731473>

Participating countries



Abstract

Quantum Technologies (QT) has become a new and fast developing area of research, initiated by a realisation that quantum physics opens up radically new modes of the quantum information processing and communication. European researchers have been at the forefront of these developments delivering many ground-breaking scientific results and advancing technological exploitation. The need to reinforce European excellence in QT and the highly interdisciplinary nature of QT call out for an integrated Europe-wide approach to support research efforts in this area. The central objective of the QuantERA Programme involving 32 agencies was to launch a transnational Co-funded Call that would cover 26 countries. The planned budget of this funding opportunity amounted to EUR 25,590,000 of national

contributions. The EC has allocated additional EUR 11.5 million to the Co-funded Call budget and other project tasks. Launching a Co-funded Call was complemented by a range of additional activities aimed at stimulating cooperation within the research community, creating and maintaining links between academia and industry, building a toolkit on responsible research and innovation in QT, exchanging best practices, and engaging in a dialogue with policy makers about the design of future 15 funding instruments. The QuantERA proposal conformed to the specific challenges and scope of the Work Programme Horizon 2020 – Future and Emerging Technologies for 2016–2017 by providing a structured framework to coordinate national and regional research programmes in QT. In accordance with the Work Programme, the scientific scope of the QuantERA Call focused on new technologies facilitated by specific quantum phenomena such as superposition states, the no cloning rule, or entanglement to achieve new or radically enhanced functionalities. Since the launch of the programme in 2016, the Consortium has continuously been evolving, reaching even further across Europe and beyond, and attracting new agencies to support this promising field of research.

Personal experience

“Preparations for QuantERA began around two years before the opportunity to apply for H2020 funding arose. Clever planning, international cooperation and intensive collaboration resulted in a successful application. The key to a rewarding project lies in the balanced composition and strong internal communication within the project consortium – therefore we focused on being inclusive, transparent and proactive.

Coordination of such an ambitious task has proven to be difficult at times – such is the nature of a high risk, high gain project. As the largest trans-European initiative focused on mobilisation, coordination and pooling of resources between regional, national and European research in the field of Quantum Technologies, sustaining the dialogue between the stakeholders and managing the expectations is an ongoing endeavour. The consortium, having extensive joint funding experience, is highly devoted to working towards the success of the overall programme, and there is a strong will to reach consensus at all times.

Including a high number of Widening Countries, QuantERA not only fosters the development of the particular Research Funding Organisations, but also facilitates the prospects of fully exploiting the QT research potential within those countries. Together, the QuantERA consortium presents a wellbalanced, wide-reaching composition of the most significant Research Funding Organisations in Europe. Participation in H2020 enabled the QuantERA consortium to place Europe not only at the forefront of global research and development in QT, but also to undertake a leading, agenda-setting role.

We are planning on continuing our joint efforts to coordinate a long-term strategic vision in the area of Quantum Technologies at the national and European levels, and take our actions further throughout the next Framework Programme, Horizon Europe.”



Advancing Sustainable Circular Bioeconomy in Central and Eastern European countries: BIOEASTsUP

Coordinator: Institute of Soil Science and Plant Cultivation, State Research Institute Poland

Link: <http://cordis.europa.eu/project/id/862699>

Participating countries



Abstract

The project received funding from the European Union's programme HORIZON 2020, call: H2020-RUR- 2019-1, topic: RUR-18-2019 – Support to the BIOEAST initiative: boosting knowledge and innovationbased bioeconomies, under grant agreement No 862699. BIOEASTsUP will support the deployment of bioeconomy on national, macro-regional and EU levels. Deployed in 11 Central and Eastern European countries, it is supported by 26 government ministries together with a wide range of stakeholders from industry and research. The overall objective of the BIOEASTsUP project is to support the BIOEAST initiative in the implementation of its Vision for 2030 and Action Plan for transition of 11 Central and Eastern European (CEE) Countries to bioeconomy. This will be done by engaging the relevant stakeholders, accenting sustainable circular bioeconomy on the CEE governments' agenda, improving macro-regional cooperation formats with downstream and upstream linkages of agri-food sector, and supporting national bioeconomy strategies development. The project will advance the BIOEAST initiative to become a catalyst for research and innovation, rural development and other policies towards bioeconomy development in the CEE by creation.

Personal experience

"Preparations for the project began after establishing cooperation with the BIOEAST Initiative, which started as an open initiative of the Visegrad Group Countries: Czech Republic, Hungary, Slovakia, and Poland, joined by Bulgaria, Croatia, Latvia, Lithuania, Republic of Estonia, Romania, and Slovenia. Project partners include the Ministries of Agriculture, Scientific Institutions as well consultancy companies. Managing such a Team is quite a challenge, but so far everything in the project is going according to the plan. We are able to achieve this thanks to the great commitment of all partners. Frequent contact among the Team members is very important. COVID-19 turned out to be a challenge but, despite the unfavourable circumstances, the Team managed the threat very effectively, quickly adapting to the new working conditions – we swiftly transferred project management to the virtual world by conducting a series of online meetings and workshops.

Participation in Horizon 2020 gave us the opportunity to develop the existing and establish new cooperation – it is especially important for the countries from the Visegrad Group that have so far used this financing option less frequently. Some project partners participate in this form of work for the first time. The partnership established in the BIOEASTsUP project already resulted in the preparation of new projects. Easier access to representatives of given countries makes it easier to find field-specific and proven project partners. Acquiring projects is a very difficult task, but we know from our own experience that it gives satisfaction and contentment. For under-financed research units it is also a great opportunity to obtain funds for the reorganisation and development of both infrastructure and individual employees. We expect that knowledge and experience gained in the BIOEASTsUP project will result in further projects in Horizon Europe as well as in other programmes."



Cultural Opposition: Understanding the Cultural Heritage of Dissent in the Former Socialist Countries

Coordinator: Research Centre for the Humanities, Hungary

Link: <http://cordis.europa.eu/project/id/692919>

Participating countries



Abstract

The project proposes both to create an electronic registry of representative online and offline, private and public collections of cultural opposition in all former socialist countries in Europe and to study the origins, uses and changing roles of these collections in their social, political and cultural contexts. We seek to further understand how these (private and public, alternative and mainstream) collections work, what functions they serve in their respective societies, and how they present their holdings to the public. The project will examine the legal and political circumstances that determined the collections before 1989 and the conditions that shape them in the post-socialist period. The analyses of the collections will identify various types of cultural opposition.

Objectives include:

1. An online registry and a transnational database of collections in the original languages and English that will be accessible to European archival platforms and networks;
2. Descriptions of and guides to the collections to enhance the quality of research and provide guidance on the role of the EU in this respect;
3. Country reports on the collections and proposals concerning methods of preserving cultural heritage, and a handbook on various types of cultural opposition represented by the collections;
4. Online curriculum development and digital content for educational purposes;
5. A documentary film festival, travelling and online exhibitions and local media events based on selected collections;
6. A set of recommendations concerning how to exhibit the cultural opposition movements of former socialist countries for the House of European History. This project will highlight the positive aspects of the former cultural opposition movements, such as democratic participation, autonomy and cultural plurality, and will remind us of an important pan-European truth: that civic courage can produce genuine cultural values even under authoritarian rule.



Future Oriented Collaborative Policy Development for Rural Areas and People

Coordinator:

Czech University of Life Sciences Prague 

Link: <http://cordis.europa.eu/project/id/818496>

Participating countries



Abstract

The ongoing generational renewal of rural areas is a current social challenge in Europe. The depopulation of rural areas is evident and goes hand in hand with declining economic developments and other negative factors that current regional policies cannot effectively address. These and other factors (e.g. new technologies, climate change) urge policy makers to adopt new approaches to rural development.

The aim of the PoliRural project is to promote the attractiveness of life in rural areas across Europe. Thanks to the broad international composition of the consortium of 37 partners and 5 linked third parties from 17 countries and a combination of modern technologies and action-based research, we will assess the current state of life and the effectiveness of rural development policies in 12 selected regions in Europe and Israel.

PoliRural blends quantitative and qualitative foresight approaches with advanced online technologies to create a powerful learning tool for rural stakeholders, one that enables them to have a meaningful conversation about rural systems, including how and why the latter will change over time, what drivers will be most influential, and how to ensure that new policies fully address the needs and challenges of tomorrow. The knowledge base and models developed will then be applied in pilot projects and become a valuable source of information for local community representatives and local governments.

Personal experience

"Regarding the preparation of the project, we have been applying for the H2020 funding both as coordinators and consortium partners since 2015. The call for proposals in the Rural Renaissance topic opens every October with submission deadlines in January, which is also a time frame when we usually form the consortium and start writing the proposal. The structure and size of the consortium vary according to the specific objectives of the topic.

Prior to winning the H2020 funding for the PoliRural project in 2018 we had two unsuccessful attempts in 2015 and in 2017 as a coordinator. In 2017, our proposal was put on a waiting list but not financed.

We have been steadily developing a network of potential partners through brokerage events, past projects and ongoing collaborations. We have learnt to form a consortium by carefully following the topic call description, needed competences and geographies. A few key persons with high qualifications relevant for the topic need to be represented in the consortium. Having a few partners with strong previous experience in H2020 projects also likely brings extra score during the evaluation. A key to form a well-balanced consortium that may successfully win a Horizon 2020 project is to invest a long-term effort and maintain relationships with experienced partners who would be able to invite further relevant organisations as needed. Then forming such a consortium is a matter of one or two months.

Being the coordinator of the PoliRural project, the main challenge has become the size of the consortium. The volume of day to day communication, administration and reporting scales up significantly with the large number of partners. However, a larger size of the consortium was necessary in order to efficiently support the project objectives."



Investigation and development of a new generation of machines for the processing of composite and nanocomposites materials

Coordinator:

Lublin University of Technology, Poland 

Link: <http://cordis.europa.eu/project/id/734205>

Participating countries



Abstract

The main research goal of the NEWEX Project is the construction and testing of the new innovative extruder. By the application of a new, patented concept of vital parts – innovative active grooved feed section (IAGFS), original rotational barrel segment (ORBS) and special screw (SS) –, a completely new breakthrough technology of extrusion and plasticising systems will be achieved. It will ensure manufacturing the products of improved properties and will enable processing materials that could not be processed so far, as well as food, cosmetic and pharmaceutical materials. In parallel to the main RTD activities, the NEWEX project is aiming at industry-academia cooperation and transfer of knowledge between organisations from East-Central and Western Europe. All the project's activities will be performed by thoroughly planned secondments and appropriate hosting institutions between industrial and academic partners.

The workplan consists of 7 Workpackages:

WP 1-4 focuses on the investigation of extruder, extrusion process and extrudate properties as well as tasks aiming at the selection of the best solution of new extruder vital parts, then the construction and testing of new generation extruder.

WP 5 concentrates on networking activities (workshops, training, knowledge exchange, etc.).

WP 6 aims at knowledge dissemination (participation in conferences, fairs, publications, etc.).

WP 7 is dedicated to management and administration of the whole project.

The consortium consists of 6 organisations: 3 representing academic partners and 3 representing industry partners. The project is coordinated by Lublin University of Technology (Poland).

The partners are: Technical University of Kosice (Slovakia), University of Minho (Portugal), Zamak-Mercator LLC (Poland), SEZ-Krompachy a.s. (Slovakia) and Borra s.r.o. (Czech Republic).

The implementation of the NEWEX project will foster the real industry-academia cooperation which is of the key importance in terms of the European Research Area development strategy.



International Doctoral Programme in Biological Bases of Human Diseases

Coordinator:
Nencki Institute of Experimental Biology 

Link: <http://cordis.europa.eu/project/id/665735>

Participating countries



Abstract

The major aim of the Bio4Med (Biology for Medicine) programme is to provide unique, international, inter-disciplinary and inter-sectorial doctoral training for Early Stage Researchers (ESRs) in the domain of biological bases of human diseases. To achieve this goal, it combines 22 leading research groups at the Nencki Institute and their scientific partners from world-class laboratories located in EU Member States, Switzerland, Ukraine, Japan, Canada, and the USA. The research programme includes basic science PhD-projects focused on the molecular basis of neurodegeneration, neurological disorders, cancer and metabolic diseases. All supervising researchers engaged in Bio4Med are at the international forefront of biomedical research and have experience in PhD student supervision. Our programme will foster young researchers' career development and employability by addressing the following objectives: (i) to offer excellent training in modern biology and en-

dow ESRs with unique scientific knowledge, and experience in cutting-edge experimental techniques; (ii) to enhance research-oriented and transferable skills of ESRs; (iii) to promote scientific mobility via international, inter-disciplinary and inter-sectorial collaboration. The objectives of Bio4Med will be delivered through activities encompassing practical laboratory training, hands-on workshops, lectures corresponding to the theoretical aspects of doctoral projects, research-oriented generic skills courses, transferrable skills courses, progress talks and meetings. The training programme itself, focused on medically important issues, will make ESRs highly attractive to commercial enterprises, particularly in biotechnology and pharmaceutical sectors. The Bio4Med programme will increase the regional, national as well as EU competitiveness by providing a new generation of visionary and innovative researchers able to transform basic science into healthcare solutions.

Personal experience

"The Nencki Institute had a significant experience in applying for EU funding before Bio4Med. By 2015 we hosted over 20 EU FP Projects. The Bio4Med proposal was qualified for funding on the first try. We proposed an action implemented by the Institute in collaboration with 22 scientific partners from world-class laboratories located in EU Member States, Switzerland, Ukraine, Japan, Canada and the USA. All our partners had successfully collaborated with the Institute in the past.

The implementation of the project was a challenge for the Nencki Institute mainly in terms of the resources. As the EU provides only 50% of funding for the COFUND action, we faced the need to secure the other half of the budget from the national resources, which turned out to be complicated. Bio4Med was the first ever COFUND project to be implemented in Poland and our stakeholders needed to urgently develop specific solutions and formulate relevant regulations to support the project. This took time, which put our running project at severe risk. However, the Polish Ministry of Science and Higher Education provided dedicated support to Bio4Med in that transition period, helping us overcome the difficulties.

The other problematic issue was that the constantly changing scientific reality made it difficult or even impossible for some Partner Organisations to stay involved in Bio4Med. Some of our foreign supervisors moved from Bio4Med Partner Organisations to another institutions, others changed their research profile and were no longer interested in Bio4Med research. Fortunately, in each case we were able to find new Partner Organisations to join our Project and provide the ESR with the required training and support.

By implementing Bio4Med the Nencki Institute refined its doctoral programme to the highest training standards. The project drove the Institute forward in research quality and made it more recognisable as an excellent training centre in Europe. We believe Bio4Med has also deepened a long-lasting international research network consisting of leading scientific institutions both in ERA and beyond."



Induced pluripotent stem cell seeded active osteochondral nanofibrous scaffolds

Coordinator: Institute of Experimental Medicine, CAS 

Link: <http://cordis.europa.eu/project/id/824007>

Participating countries



Abstract

The iP-OSTEO project focuses on the development of novel cell-based scaffolds for bone and cartilage repair in patients with poor regenerative capacity. We propose technology that combines iPSCs with improved regeneration capacity combined with nanostructured scaffolds based on electrospun scaffolds and drug delivery system stimulating cell regeneration based on electrosprayed and spray-dried particles. The system will deliver a novel treatment method for older patients, for which the current cellular and cell-free methods are ineffective.

iP-OSTEO will reach its goals by creating an international and interdisciplinary training programme where 7 companies (SMEs) and 7 academic institutions across European Union will join their forces though dedicated secondments. The activities will involve networking, research/training, workshop and dissemination secondments. The project has in total 239 secondments involving exchange of Early-stage and Experienced researchers.

The consortium is bonded by Dr Eva Filova – a young scientist with experience in bone and cartilage tissue engineering.

The iP-OSTEO project will facilitate better integration of academic and industrial stakeholders across Europe and help diseased people by providing novel therapeutic methods. Nevertheless, the project has 169 ESR secondment months leading to training of a new generation of scientists with an international connection and knowledge of the intra-sectorial environment.

Personal experience

"The Institute of Experimental Medicine of the Czech Academy of Sciences (IEM) is involved in the project H2020 Marie Skłodowska-Curie RISE 2018 iP-OSTEO. Eva Filová, Ph.D. from IEM is the coordinator of the project. The project involves 7 academic institutes and 7 companies from Denmark, Hungary, Germany, Poland, Austria, Portugal, Norway, the Netherlands, the United Kingdom and the Czech Republic. The main goal of the project is regeneration of osteochondral defects using novel composite bioactive biomaterials for cartilage and bone regeneration, including nanomaterials, three-dimensional scaffolds, mesenchymal stem cells and induced pluripotent stem cells. Composite scaffolds serve as drug delivery systems delivering small bioactive molecules, peptides, growth factors or drugs that positively guide cell growth and differentiation, and subsequently osteochondral regeneration. Furthermore, an important task of the project is to develop dynamic systems for cell culture. The partners cooperate well. We organised meetings where we discussed the development of materials and bioreactors. Recently, we have organised regular webinars which are intended not only for the members of the consortium, but also for other students and scientists interested in the topic. However, the situation after COVID-19 spreading in Europe negatively affected the completion of secondments as many countries introduced restrictions for foreign workers; therefore, many secondments had to be postponed. The project enables effective cooperation among universities and SMEs."

3. Selected Examples of Projects Carried Out by V4 Countries



For further illustration of successful V4 participation in the Horizon 2020 programme, this chapter provides selected examples of individual excellence projects, widening projects and projects focused on innovation and SMEs in the Visegrad Group countries.

3.1 ERC

The European Research Council (ERC) was set up by the European Commission in February 2007 as the first European organisation to support cutting-edge research (frontier research). The ERC aims to support the best and most creative scientists to identify and explore new opportunities and directions in any field of research (Physical Sciences and Engineering, Life Sciences and Social Sciences and Humanities) without thematic priorities. It funds original ideas, innovative research projects that aim to exceed the existing boundaries of knowledge in individual fields. The projects should have the ambition to significantly influence the field, push the existing boundaries of field-specific knowledge, and thus open new research perspectives. This kind of project supports one beneficiary.

Czech Republic



Amitochondriates

Life without mitochondrion

Coordinator: Charles University in Prague, Vladimír Hampl

Link: <https://cordis.europa.eu/project/id/771592>

Abstract

Mitochondria are often referred to as the ‘power houses’ of eukaryotic cells. All eukaryotes were thought to have mitochondria of some form until 2016 when the first eukaryote thriving without mitochondria was discovered by our laboratory – a flagellate *Monocercomonoides*. Understanding cellular functions of these cells, which represent a new functional type of eukaryotes, and understanding the circumstances of the unique event of mitochondrial loss are motivations for this proposal. The first objective focuses on the cell physiology. We will perform a metabolomics study revealing major metabolic pathways and further concentrate on elucidating its unique system of the iron-sulphur cluster assembly. In the second objective, we will investigate in detail the unique case of mitochondrial loss. We will examine two additional potentially amitochondriate lineages by means of genomics and transcriptomics, conduct experiments simulating the moments of mitochondrial loss and try to induce the mitochondrial loss in vitro by knocking out or down genes for mitochondrial biogenesis. We have chosen *Giardia intestinalis* and *Entamoeba histolytica* as models for the latter experiments, because their mitochondria are already reduced to

minimalistic ‘mitosomes’ and because some genetic tools are already available for them. Successful mitochondrial knock-outs would enable us to study mitochondrial loss in ‘real time’ and in vivo. In the third objective, we will focus on transforming *Monocercomonoides* into a tractable laboratory model by developing methods of axenic cultivation and genetic manipulation. This will open new possibilities in the studies of this organism and create a cell culture representing an amitochondriate model for cell biological studies enabling the dissection of mitochondrial effects from those of other compartments. The team is composed of the laboratory of PI and eight invited experts and we hope it has the ability to address these challenging questions.

Personal experience

“It was my second time applying to the ERC and my first application for a Consolidator Grant. My idea was to play a trump card of the discovery of a unique organism, which I had done shortly before. This, however, had also had its downside. The major discovery had been done and I needed to convince others that I could follow up and use it for opening interesting ways of research. About six months before the submission I started to seriously think about questions that this organism may help to bring a solution and my goal was to come up with a list containing simpler and safer points, probing other candidates for amitochondriality, to high-risk, high-gain challenges, knocking out mitochondria from other species. These grants are individual, so I did not look for partners, but I did systematically discuss my matter with my colleagues and in the proposal I provided a list of collaborators and advisers that may help me solve some of the work packages. I forced myself to start writing on 1 November, three months before submission, with the strong goal to have the part B1 completed before Christmas. I found this important as it allowed me to breathe freely in January and gave me time for consultations with my colleagues. Also, I find the moment when you sit and write the first sentences very liberating from stress although these first sentences of course did not make it to the final proposal. On the way I was open to advices from the ERC support team, one of which was not to underestimate the CV and track record. My list of publications was not super strong, but you need to think what your strengths are, everyone has some, and revolve this part around it. Do not underestimate yourselves.”

Slovakia



ELENA

Electrochemical LECTin and glycan biochips integrated with Nanostructures

Coordinator: Institute of Chemistry, Slovak Academy of Sciences, Jan Tkáč

Link: <https://cordis.europa.eu/project/id/311532>

Abstract

Glycomics is currently one of the most progressively evolving scientific fields due to ever-growing evidence that glycans (sugars) are involved in many aspects of cell physiology and pathology. Glycans are information-rich molecules responsible for sophisticated storage and coding ‘commands’ the cell has to perform to stay ‘fit’ and to deal with uninvited pathogens. Thus, it is very important that the ‘glycocode’ is correctly deciphered by the cell to stay healthy, but pathogens developed nasty tricks how to crack the ‘glycocode’ to their benefit by stealing the glycan identity of the host to stay unrecognised until it is too late. A better understanding of these processes can help to develop new, potent and nature-based vaccines and drugs.

Glycomics stayed behind advances in genomics and proteomics, but due to the advent of high-throughput biochips glycomics is catching up very quickly. Two biochip formats available to study challenging and complex field of glycomics are either based on immobilised glycans (glycan biochips) or glycan recognising molecules – lectins (lectin biochips). Both technologies proved to be a success story to reveal

amazing, precisely tuned ‘glycocode’ reading, but so far biochips do not work under conditions resembling the natural process of glycan deciphering.

The aim of the project is to develop biochips for the fundamental study of the effect of precisely tuned ligand (glycan and lectin) density, presence of mixed glycans and the length of glycans on the glycan biorecognition. This task will be executed with the aid of nanotechnology to control these aspects at the nanoscale. Moreover, novel label-free electrochemical detection strategies will be used to mimic natural glycan recognition performing without any label. Finally, advanced patterning protocols and novel detection platforms will be integrated to develop fully robust biochips for a functional assay of samples from people having some disease with a search for a particular biomarker of the disease.

Personal experience

“I submitted my project proposal twice before I finally succeeded. I applied for the ERC Proof of Concept (PoC) grant in order to capitalise on our knowledge acquired during our work on the ERC Consolidator Grant. Since the PoC grant is mainly about commercialisation, the first time I applied for this grant, the proposal was from my point of view well balanced – 50% of science and 50% of the commercialisation strategy. I was wrong since the second time I applied for this grant, the scientific part was condensed on a single A4 sheet of paper and such a document was only part of the Annex.

The main challenge while writing the PoC proposal was to convince the entrepreneurs about the commercial potential of a novel early stage prostate cancer diagnostic kit. This was possible with the help from Pavol Čekan, who already ran the start-up Multiplex DX as its CEO. The PoC grant was also essential for the subsequent funding of our start-up Glycanostics via the SME Instrument 1 grant.

I am definitely planning to participate in the Horizon Europe programme as well. Although the PoC and SME Instrument 1 grants helped the start-up to cover initial expenses, we would like to support further development of the Glycanostics by applying for the EIC Accelerator grant.”

Poland



KnowStudents

From East to West, and Back Again: Student Travel and Transcultural Knowledge Production in Renaissance Europe (c. 1470 – c. 1620)

Coordinator: Institute of Philosophy and Sociology PAS, Valentina Lepri

Link: <https://cordis.europa.eu/project/id/864542>

Abstract

Learning about other types of knowledge production

Learning about other types of knowledge production Knowledge transcends borders. Students moving from Central and Eastern Europe to attend universities have been active agents in the production of transcultural knowledge between the East and the West. The EU-funded KnowStudents project will investigate the relationship between academic and non-academic knowledge gathered in the students' notebooks. It will study the emergence of new forms of self-learning, examining the criteria of text selection; and the contact between humanist culture and the cultures of the countries the students come from. Up to now, academic teaching has been the focus of studies of knowledge production. The impact of different cultures has been neglected, due to a lack of evidence. Student experiences make it possible to observe links between knowledge and plurality of languages and traditions, which best reflects the European scenario at the time.

Personal experience

"The theme of your ERC project is undoubtedly the most important and tricky thing in the whole application process, and so it takes time. With the calendar in hand, I can say that I started thinking about transcultural knowledge and travelling students in early modernity about four years before applying for the ERC Consolidator Grant.

The reason for such a long gestation is that a winning argument must reconcile aspects that may seem in opposition to each other in research, such as concreteness and challenge. That is, on the one hand, the subject has to fall within a field of study in which you are well prepared and, if you are not good enough, invest some time to build a solid background on the subject. On the other hand, the proposed research project must contain an intriguing challenge, be genuine blue-sky research. Starting from what is known, you are going to explore the unknown with lucid ambition and clearly identified goals.

As an intellectual historian working for years and with satisfaction at the Polish Academy of Sciences, I was looking forward to trying the ERC grant. However, I have been waiting for the last chance to do so, twelve years since my doctorate. Just one shot can be pretty scary, I know, but if you start off on the right foot, i.e. with the right idea, then everything comes naturally, each element finds its place like the pieces of a puzzle and the final result is a highly coherent and convincing proposal."

Hungary



Resistance evolution

Bacterial evolution of hypersensitivity and resistance against antimicrobial peptides

Coordinator: Biological Research Centre, Szeged, Csaba Pál

Link: <https://cordis.europa.eu/project/id/648364>

Abstract

The evolution of resistance towards a single drug simultaneously increases (cross-resistance) or decreases (collateral sensitivity) fitness to multiple other antimicrobial agents. The molecular mechanisms driving cross-resistance are relatively well described, but it remains largely unclear how frequently genetic adaptation to a single drug increases the sensitivity to others and what the underlying molecular mechanisms of collateral sensitivity are. This proposal focuses on studying the bacterial evolution of resistance and collateral sensitivity against antimicrobial peptides (AMPs). Beyond their modulatory roles in the immune system, these naturally occurring peptides provide protection against pathogenic microbes, and are considered as promising novel alternatives to traditional antibiotics. However, there are concerns that evolution against therapeutic AMPs can readily develop and as a by-product this might compromise natural immunity. Our knowledge of these issues is limited due to the shortage of systematic evolutionary studies. Therefore, the three central questions we address are: Do bacteria resistant to multiple antibiotics become hypersensitive to certain antimicrobial peptides? What are the evolutionary

mechanisms leading to AMP resistance and to what extent does this process induce cross-resistance/collateral sensitivity against other drugs? Last, are these evolutionary trade-offs predictable based on chemical and functional peptide properties? To investigate these issues rigorously, we integrate tools of laboratory evolution, high-throughput phenotypic assays, functional genomics, and computational systems biology. Our project will provide an insight into the evolutionary mechanisms that drive cross-resistance and collateral sensitivities with the aim to explore the vulnerable points of resistant bacteria. Another goal is to provide guidelines for the future design of antimicrobial peptides with desirable properties against bacterial pathogens.

3.2 ERA Chairs Projects



ERA Chairs is an initiative under Spreading Excellence and Widening Participation aiming to attract outstanding academics to institutions with a clear potential for research excellence in order to help them make full use of this potential, thus creating a level playing field for research and innovation in the European Research Area. Institutional support for the creation of a competitive research environment and the framework conditions necessary to attract, retain and develop top research talent in these institutions is included. This is also a mono-beneficiary kind of project.

Czech Republic



J. Heyrovsky Chair

ERA Chair at J. Heyrovsky Institute of Physical Chemistry CAS – The institutional approach towards ERA

Coordinator: J. Heyrovsky Institute of Physical Chemistry, Czech Republic

Link: <https://cordis.europa.eu/project/id/810310>

Abstract

The ERA Chair position will help to better integrate the J. Heyrovsky Institute of the Czech Academy of Sciences into the European research landscape. Though in general the research results of the institute are already of high quality and the institute belongs to the forefront of European research in physical chemistry, the international peer review performed in 2015 concludes that the institute has not yet enfolded its full capacities and that, in particular, the two departments of catalysis would benefit from better harmonisation and alignment. In addition, the recent SWOT indicated some weaknesses in some ERA priority areas. In order to increase its international visibility and performance, the management decided to introduce several structural changes in the institute. In particular, the institute shall better utilise its capacities in both the research infrastructure and human resources. It shall increase its international activities and attract the most prestigious EU funding including ERC grants. The role of the institute as the research leader in the Czech Republic shall be enhanced by entering European networks like ITN and by coordination of international projects.

The capacities of the institute shall be enhanced by a proactive HR policy and internationalisation of its staff. This ERA Chair project aims to induce changes in the institutional culture by hiring an internationally recognised personality, and by establishing an international research team in nanocatalysis. These changes, with massive political and financial support of the management, shall help, together with other synergetic actions and projects, to develop towards more openness and internationalisation, and finally, to increase the scientific performance and attractiveness of the J. Heyrovsky Institute.

Personal experience

“The project J. Heyrovsky Chair was a great opportunity to increase scientific excellence at our research institution. The preparatory phase and writing the proposal can be considered relatively more straightforward in comparison with other Horizon 2020 project schemes. It is a typical single beneficiary project where a complicated search of suitable partners does not apply and, more importantly, a precise SWOT analysis can help reveal specific needs of the research organisation. If these needs match up the requirements settled within the ERA Chair project call, the preparation of the project proposal and its action plan become intuitive and smooth.

Encouraging may also be the fact that this type of project enjoys prestige, which helps fill the position of the principal scientist, the ERA Chair holder, relatively easily, as was also our case. Although it is true that setting up a scientific team was a hard nut to crack and repeated selection processes were necessary. Thanks to high work commitment and perfect managerial skills of our ERA Chair holder, it was still possible to start high-quality research and the implementation of structural changes which has already brought great benefits to our research organisation.

Excellent scientific performance of the new research group triggered an increase of the international visibility of the J. Heyrovsky Institute. Several international collaborations have been established since the ERA Chair joined our organisation. Some of them have already led or are steadily leading to new scientific project proposals, including applications for funding from the framework programme Horizon 2020. Submission of an ERC project proposal is planned within the project's lifetime. A very positive aspect is the change of the internal climate in the Institute, resulting in closer, sustainable collaboration of research groups dedicated to catalysis. Further collaborations and synergies with other scientific departments of the J. Heyrovsky Institute have been broadened.

To summarise, the ERA Chair project induced and facilitated a positive development which would be impossible to achieve without such strong impetus.”

Slovakia



LAMatCU

Laboratory of Advanced Materials at the Comenius University

Coordinator: Comenius University, Slovakia

Link: <https://cordis.europa.eu/project/id/810701>

Abstract

The key objective of this proposal is to establish a new Laboratory for Advanced Materials (LAM) at Comenius University (CU) under the direction of the appointed ERA Chair holder. LAM is meant to be a world-class research interdisciplinary laboratory focused on advanced materials research, particularly for applications in the areas such as energy conversion and storage, electronics, and optoelectronics.

Existence of LAM will:

- Strengthen the potential and the contribution of CU to this area of research in the wider ERA in tight connection to the central idea of the Work Programme – Spreading Excellence and Widening Participation;
- Help to counteract the eminent brain drain Slovakia is experiencing by attracting brilliant young researchers from both Slovakia and abroad;
- Consequently strengthen the position of CU as a leading research and educational institution in
- Slovakia as well as raise its significance in Europe.

The structure and management of LAM is designed to ensure its future self-sustainability and continuity of its research. Project funds will be utilised in estab-

lishing LAM and maintaining LAM's initial operation period, during which following actions will be taken to secure future financial sustainability:

- Top-quality research personnel will be recruited bringing in international scientific collaborations;
- External collaborations with the industry will be actively sought;
- Opportunities to utilise research outputs as intellectual property and patents will be exploited;
- Research grants connected to the area of research interests will be applied for;
- Public outreach activities will be focused on stimulating interest and engagement among students.

Within this scheme, the project funding will serve as the initial kick-start of a new internationally acclaimed prime research facility (LAM), activating the whole field of materials research at CU, thus having a positive long-term effect on the status of research excellence in Slovakia as well.

Personal experience

“For years, I was aware that the traditional organisational structure at the Faculty of Natural Sciences (FNS) was obsolete. The original intention of this structure was to provide education in particular fields of chemistry. There were/are certainly good scientists within the individual departments, but, unfortunately, due to underfinanced research, the competitiveness within the European research area was rather limited for decades. In 2017, I learned about the Widening programme within H2020 and responded to the ERA Chairs call. My idea was to use the best research potential from the key chemistry departments (inorganic chemistry, organic chemistry, physical and theoretical) together with a strong personality in materials research to start top level science in this multi-disciplinary field, covered under a new structural unit of FNS. The proposal was positively evaluated, and the project started from 1 September 2018. The Laboratory for Advanced Materials (LAM) as a new independent unit within the structure of FNS was established on 1 October of the same year. The ERA Chair Milan Sykora, PhD, MBA was inaugurated on 1 February 2019. Prior to taking up his position, Dr Sykora spent almost two decades in Los Alamos National Laboratory.

According to my experience, before starting to write this type of projects, at least two issues are crucial. First, it is a strong support from the authorities and the decisive bodies of the institution. Second, the coordinator must be sure to find the appropriate person to take up the position of the ERA Chair in order to insure the sustainability of the project in the future. Of course, necessary infrastructure and/or secured initial funding of research play an important role. We fulfilled all these attributes. In addition, I guess, the internal evaluating system within the FNS, when the departments' budgets strongly rely to research quality and output, will guarantee the sustainability of LAM. After 18 months of the ERA Chair in the office, and after initial staffing, LAM can now start its full operation and fulfil its mission.”

Poland



CREATE

The CREAtion of the Department of Physical Chemistry of Biological SysTEms

Coordinator: Institute of Physical Chemistry, PAS

Link: <https://cordis.europa.eu/project/id/666295>

Abstract

The CREATE project is targeted at the development of a new chair – Department of Physical Chemistry of Biological Systems within the structure of the Institute of Physical Chemistry of the Polish Academy of Sciences (IPC) led by a reputable world-class scientist (ERA Chair holder). The project predicts a number of measures to be taken by the new leader, aimed at extending research excellence of IPC into the new field (physical chemistry inspired by biology), consistent with the new regional strategy of Mazovian Voivodeship.

The IPC has a solid research record in fundamental and application-oriented research on sensors, new materials for nanotechnology, and chemical functionalisation of nanomaterials. Our efforts and excellence in conducting research were appreciated by a professional investor, who set up two spin-off companies with the IPC. The IPC has brought to perfection analytical methods, used for researching physical and chemical systems. However, the development capacity of these methods in these fields has almost run out, and the IPC lacks purpose and inspiration for further research that would be able to catch up with and provide new ideas for the ERA.

Therefore, based on SWOT results and discussions with major stakeholders, we have decided to re-focus on researching biological systems, which requires finding a reputable expert in biology and establishment within the IPC of the new department focused on applications of developed techniques in biological systems. The preliminary action of the CREATE project is hiring an outstanding scientist to: indicate research directions of modern quantitative biology studies within physical chemistry and consult the possible links of physical chemistry and biology, and to establish cooperation with international scientific units on a partner basis.

The CREATE project will bring essential know-how to the IPC but also will spread excellence through the science-science and science-business cooperation platforms, easing integration with the ERA and transition into Horizon2020.

Personal experience

"In 2014, the Institute submitted a successful proposal to the EC to establish the Department of Physical Chemistry of Biological Systems. We planned to merge our current studies – i.e. physical chemistry – with biology/medicine and elaborate a new research agenda allowing us to use our methods in biological sciences. Having also a good record in commercialisation, we strived to find some practical interconnections between our research and societal challenges. For this, we needed a distinguished researcher, experienced in crossing disciplines and sectors of the economy. The IPC worked on the development strategy for many years, also jumping on the opportunity to discuss it with partners from our Regpot grant (7FP).

The International Selection Committee recognised our needs very well, selecting professor Maciej Wojtkowski – a physicist, designer and developer of Fourier Domain Optical Coherence Tomography for diagnosing ophthalmic and cardiologic disorders. Considered a physicist by chemists and an engineer by physicists, Professor Wojtkowski is a perfect fit for this position.

The main challenge of Professor Wojtkowski was to build from scratch the laboratory of physical optics (at the institution owning only chemical laboratories). The supportive IPC management board helped to overcome problems with the new setting. Simultaneously, an elaboration of the development programme for researchers, based on submission of proposals to the ERA Chair holder, allowed for the smooth introduction of Professor Wojtkowski to the IPC community.

Undertaken actions resulted in a significant increase in the number of biology-oriented publications and research projects at the IPC. However, the greatest success of Professor Wojtkowski came with winning the International Research Agendas Programme competition and receiving EUR 8 million. for the establishment of the International Centre for Translational Eye Research. The IPC, together with the University of California, will work on new therapies and diagnostic tools for visual dysfunctions, including the ageing-related, meeting the EC strategic orientations expressed in the Horizon Europe programme."



3.3 Teaming Projects



Teaming is another example of instrument under the Spreading Excellence and Widening Participation part, which focuses on building research institutions. It represents the cooperation of excellent research institutions and, in terms of research, development and innovation, less efficient regions: the aim is to build new or significantly modernise existing centres of excellence on the basis of partnership with renowned foreign research institutions. Teaming takes place in two phases: in the first one-year phase, a business plan for the development of the centre will be prepared, and in the second 5–7-year phase, the centre will be built or modernised. A necessary condition for the admissibility of projects is a financial commitment from the beneficiary region, a Member State or a private entity.

Czech Republic



RICAIP

Research and Innovation Centre on Advanced Industrial Production

Coordinator: Czech Technical University in Prague

Link: <https://cordis.europa.eu/project/id/857306>

Participating countries



Abstract

RICAIP is currently one of the largest EU projects in the field of artificial intelligence (AI) and Industry 4.0. The RICAIP Centre is focused on AI and industrial robotics for distributed and fully integrated production in Industry 4.0. RICAIP will virtually connect testbeds in Prague (CIIRC CTU), Brno (CEITEC BUT) and Saarbrücken, Germany (DFKI and ZeMA), with the aim of creating a distributed and at the same time fully integrated production.

RICAIP develops new manufacturing concepts for geographically distributed production and production as a service. The centre will enable fast adaptation of production according to the current customers' needs or available resources, constantly optimising to the changing environment. RICAIP was prepared in two phases within the EU Horizon 2020 WIDESPREAD Teaming Calls; in the second one, it was evaluated as the second best project in 2019. RICAIP thus received support in the total amount of EUR 48.25 million for the period 09/2019 – 12/2026. The success in H2020 evaluation secured funding in the amount of almost

EUR 15 million and also additional resources from the EU Structural Funds under the Czech national OP RDE programme in the amount of almost EUR 32 million for both Czech partners. These funds have been mainly used for fitting the testbeds in Prague and Brno with new technological equipment. RICAIP also provides support to SMEs and facilitates the technology and knowledge transfer from academia to industry. The RICAIP Centre has been coordinated and hosted by one of its four founding partners – CIIRC CTU – the Czech Institute of Informatics, Robotics, and Cybernetics at the Czech Tech University in Prague.

Personal experience

"The intensive experience from the coronavirus pandemic in the spring of 2020 fully showed how vulnerable the globalised world is in its economic interconnection if production has to be reduced – even on the other side of the world. Distributed manufacturing, which is the main RICAIP vision, provides reasonable solutions to such situations. It gets production and products closer to the target markets. It is a new trend to compensate outages and to respond efficiently to changing conditions.

The principles of distributed production have been tested in practice by the CIIRC CTU researchers. In response to the shortage of protective equipment in March 2020, they developed and certified a protective half mask with the highest degree of protection at the FFP3 level produced through 3D printing – all of that within one week – a task that typically takes years. The CIIRC CTU researchers provided data for 3D printing as a free license to the whole world. The results of their work were directly applied in more than thirty countries around the world and in such institutions as the US Navy and NATO.

The rapid development of the half mask would not have been possible without the use of state-of-the-art technologies for additive production purchased just a few weeks earlier in our Testbed for Industry 4.0 thanks to the RICAIP Centre. The 3D printing half mask was followed by a model for mass production. Coordinated by TRIX Connections, a university spin-off company founded at CTU for tech transfer, several dozen Czech industrial companies joined forces to prepare the serial production of the half mask in record time and certify it for European markets.

RICAIP represents an international platform for Industry 4.0 scientific challenges and addresses novel methods of Industry 4.0; moreover, it distributed manufacturing systems and value chains in a profoundly changing industrial sector. In the following years, we expect to create and transfer a wide variety of solutions for distributed advanced industrial production. Moreover, we set a target to establish an autonomous European organisation for our activities by the year 2025."

Slovakia



FunGlass

Centre for functional and surface-functionalised glasses

Coordinator: Alexander Dubček University in Trenčín

Link: <https://cordis.europa.eu/project/id/739566>

Participating countries



Abstract

The project aims to upgrade the existing Centre of Excellence for Ceramics, Glass and Silicate Materials (CEKSiM) in Trenčín, Slovakia, to the internationally recognised Centre for Functional and Surface-Functionalised Glasses (FunGlass) focusing on cutting edge research in the area of glasses with special functional properties and on the functionalisation of conventional glasses to modify their properties and add new functionalities. Key activities of the project include training and applied research to tap into a local know-how in the development of the competitive advantage of the region by training skilled research personnel and by pursuing opportunities to establish partnership with regional and EU glass industries as well as international networking to form a creative international environment and close ties with project partners from the leading institutes in the field of research interest in the EU. The role of the Centre is seen in all stages of R&D activities – solving the fundamental questions, developing new concepts and strategies, identifying their business potential, and

developing laboratory-scale verified technologies (TRL 4) to technologies validated and demonstrated in relevant environments (TRL 5 and 6) in close cooperation with industrial partners including SMEs. The multidisciplinary character of research and links for industrial cooperation are also anticipated. A detailed financial analysis and perspective of the Centre are supported by a business and revenue model presented from short to medium-term as well as the long-term perspective explaining the current status, trends/development and medium/long-term funding strategy of the Centre's long-term self-sustainability aiming at financing and functioning of the Centre beyond the Horizon 2020 funding period. It also stresses the strategic significance of the Centre that rests in its market-oriented inventions, facilitating research/innovation activities, and contribution to conversion of research to commercial success.

Personal experience

"Being part of the H2020 project qualitatively changed collaboration with my colleagues from friendship-based to inter-institutional. Furthermore, it gave me an opportunity to make our research really international. And how to encourage my peers in other EU13 countries? I know that the success rate in Horizon projects is low, but the success rate of a project you do not submit is zero. You must try, and eventually success will come.

Regarding the project impact, there are two types of impact I see as the most important in our case: by building a truly international research centre in Slovakia, we help moving our country from being a workshop for assembling products developed elsewhere to the country that makes its own scientific and technological development. Another important fact is that we introduce new culture into our research activities which I always admired during my stays in Germany and England. Open, friendly, international, and yet highly competitive."

Poland



NOMATEN

Centre of Excellence in Multifunctional Materials for Industrial and Medical Applications

Coordinator: National Centre for Nuclear Research, Poland

Link: <https://cordis.europa.eu/project/id/857470>

Participating countries



Abstract

New opportunities for promoting science in Poland

Poland's NOMATEN Centre of Excellence (CoE) was established in 2018 to provide a space for international world-class research teams to design, develop and assess innovative multifunctional materials for industrial and medical applications. Its ambitious strategy will enable the CoE to address specific research and innovation needs of Poland and Europe in the fields of material sciences, harsh-environment industrial processes, and nuclear medicine. This EU-funded project will support the growth of the CoE and its long-term sustainability. Specifically, it will focus on two interdisciplinary topics – novel materials resistant to harsh environments and novel radiopharmaceuticals for medical applications. The project will position the CoE as a 'game changing' research institute in Poland and improve the country's scientific competitiveness.

The overall aim of the project is to support the growth of the NOMATEN Centre of Excellence (CoE) in Multifunctional Materials for Industrial and Medical Applications, which was established in Poland in September 2018 and has already secured EUR 37 million of funding from the national authorities. The NOMATEN CoE is a partnership between the National Centre for Nuclear Research of Poland and two international partners: the CEA French Alternative Energies and Atomic Energy Commission and VTT Technical Research Centre of Finland Ltd.

The NOMATEN team has a long-term experience in materials science research for the front-line nuclear sector and a unique pool of nuclear research infrastructure. They will be used in the CoE to translate cutting-edge knowledge from nuclear sector to the general industry and healthcare.

<https://nomaten.ncbj.gov.pl/>

<https://linkedin.com/company/nomaten>

Personal experience

"The NOMATEN as an international research agenda has received funding from the European Union Horizon 2020 research and innovation programme under grant agreement No 857470 and from European Regional Development Fund via Foundation for Polish Science International Research Agenda PLUS programme grant No MAB PLUS/2018/8.

Therefore, through generation, application and dissemination of breakthrough research and innovation outputs as well as training the next generation of experts, the NOMATEN CoE will improve scientific excellence, capabilities and competitiveness of the material science sector in Poland. It will also advance its research and innovation culture, and provide long-term opportunities for economic development and societal improvements in Poland and the EU.

Thanks to the H2020 'TEAMING' project, NOMATEN's scientists are supported by the team of experts with extensive experience in the fields of marketing, communication, human resources and international cooperation among others. It helps us deploy the best market practices in order to make the research and market-deployment successful."

Hungary



EPIC

Centre of Excellence in Production Informatics and Control

Coordinator: Institute for Computer Science and Control, Hungary

Link: <https://cordis.europa.eu/project/id/739592>

Participating countries



Abstract

The objective of the proposal is to establish the Centre of Excellence in Production Informatics and Control (EPIC CoE) as a leading, internationally acknowledged focus point in the field of cyber-physical production systems representing excellence in RDI. The focus is devised both from worldwide tendencies and regional S3 strategies. EPIC CoE will be constituted and run through the cooperation of the Institute for Computer Science and Control, Hungarian Academy of Sciences (MTA SZTAKI), two faculties of the Budapest University of Technology and Economics (BME) and four institutions of the Fraunhofer Gesellschaft (FhG) under the coordination of the National Research, Development and Innovation Office (NKFIH), as a governmental actor.

The EPIC project will lead to:

1. The upgrade of MTA SZTAKI as existing Centre of Excellence (CoE) of the EU.
2. The establishment of a new legal entity (EPIC Ltd)

of the academic partners relying on the very positive experiences gained by the Fraunhofer-SZTAKI Project Centre for Production Management and Informatics (PMI), a joint initiative of FhG and the Hungarian Academy of Sciences (MTA), started in 2010. (The cooperating FhG institutions have been the FhG IPA and Fraunhofer Austria).

3. The extension of the FhG-SZTAKI cooperation with two faculties of BME, and with FhG IPT and the FhG IPK.
4. The close cooperation of academia, university and industry, with a special emphasis on SMEs.

Due to direct, institutionalised interactions with FhG, not only the scientific capabilities of the Hungarian partners but also their ability to transfer scientific results to industry-relevant applications will be enhanced, in a sustainable way, providing a 'high speed lift' to innovation culture and performance in Hungary and the CEE region.

The large expectations towards EPIC CoE are manifested by 42 Letters of Support received from industrial companies and clusters.

Personal experience

"The consortium is currently formed by the Institute for Computer Science and Control (SZTAKI, Hungary, coordinator), Budapest University of Technology and Economics (BME, Hungary), Fraunhofer Institute for Manufacturing Engineering and Automation (IPA, Germany), Fraunhofer Institute for Production Technology (IPT, Germany), Fraunhofer Institute for Production Systems and Design Technology (IPK, Germany), Fraunhofer Austria Research GmbH (FhA, Austria) and EPIC InnoLabs Nonprofit Ltd. (InnoLabs, Hungary).

At the institutional level, we were familiar with the project partners already at the proposal stage, building on previous collaborations and obtained mutual reputation and trust. We started working on the project proposal one year prior to the submission and we were successful from the first application. SZTAKI was already the coordinator of a Twinning project, also part of Widening actions, which definitely helped to better understand the requirements of the new call and also gave the background of attending several information days where all type of Widening actions were introduced by EC officials.

Being at about mid-time in the project we are proud to already have varied and effective impact at both the internal (project participants level) and the larger ecosystem level (industry, education). We achieved this through actions such as technical (e.g. Industry 4.0 maturity model; factory planning) and complementary skills trainings (e.g. knowledge management; diversity and inclusivity); joint scientific and industrial articles publication; journals guest-editing; writing of new joint regional and H2020 project proposals; industry-driven innovation workshops organisation; development of concepts and materials for industry trainings and e-learning; design and deployment of Cyber-Physical Production Systems demonstrators; initiation of strategic industry-academia cooperation projects and much more. One aspect of our successful collaboration is the fact that all parties have something to learn from each other and believe that cooperation is not restricted to the duration of the project but will continue afterwards."

H-CEMM

Hungarian Centre of Excellence for Molecular Medicine

Coordinator: HCEMM Nonprofit Korlátolt Felelősségű Társaság

Link: <https://cordis.europa.eu/project/id/739593>

Participating countries



Abstract

The Hungarian Centre of Excellence for Molecular Medicine (HCEMM) is a game-changing organisation which catalyses reforming changes in research culture and makes an impact on the regional development of Hungarian knowledge regions. HCEMM has the game-changing mission to become an internationally recognised institute of excellence promoting molecular medicine, providing autonomy, transparent policies, financial stability and modern infrastructure for excellent scientists.

The goal of the HCEMM project is the establishment of the Hungarian Centre of Excellence for Molecular Medicine, i.e. HCEMM Nonprofit Ltd., in alliance with a globally leading scientific institution, the European Molecular Biology Laboratory (EMBL). The founding institutions of the Ltd are the University of Szeged, the Semmelweis University and the Biological Research Centre in Szeged.

The overall goals of the project are:

1. To develop an autonomous research institute that has the ability to contribute to the renewal of the Hungarian research and innovation system: estab-

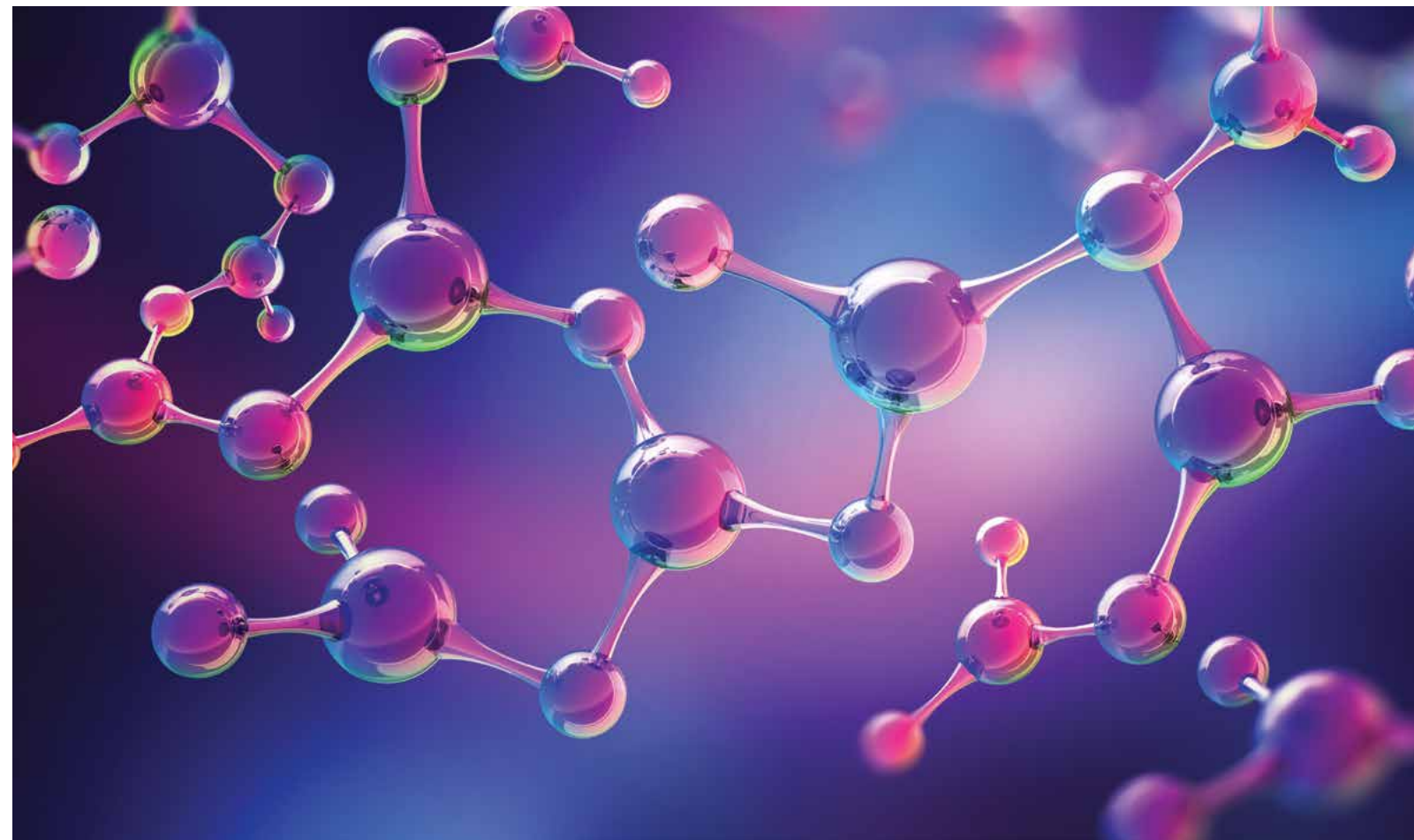
lishment of the Hungarian Centre of Excellence for Molecular Medicine;

2. To improve the international standing of Hungary in the field of molecular medicine in a strong partnership with the European Molecular Biology Laboratory;
3. To provide scientists with cutting edge technologies, opportunities for cross-fertilisation and autonomy as well as freedom to conduct innovative research;
4. To actively contribute to the education and training of researchers in the area of molecular medicine by providing multi- and inter-disciplinary training for the next generation of scientists;
5. To promote cooperation with industry by ensuring the transfer of technology and knowledge to industry based in Hungary and Europe, by promoting research groups to form spin-off companies, by attracting and carrying out industrial research projects, by generating and providing funding opportunities in related translational projects with associations or companies to make contribution to sustainable development and value for society;
6. To take part in the wide-ranging social debate on the scientific and technological aspects of molecular medicine, by actively engaging in objective communication on science, with a focus on educating the public and being receptive to their needs.

Personal experience

"The Consortium expects that, due to the project implementation, the scientific capacities of Hungary will increase and therefore it will improve its chances to seek competitive funding in the international fora. It is also expected that Hungary will engage in a strategic growth path pointing to long-term opportunities for economic development. It will significantly improve its research and innovation culture and benefits will also accrue to the institutions from the more intensive research and innovation performers, in terms of access to new research avenues, creativity and sources for increased mobility (inwards and outwards) of qualified scientists.

The H2020 teaming project has given the chance to the Consortium to implement its comprehensive plan: putting Hungarian research to the map of Europe. Grants under the Coordination and Support 35 Actions make ideas real, also encouraging beneficiaries of similar projects to cooperate and share their best practises. European-level projects open opportunities for cooperation with international partners that possess necessary and unique skills and knowledge, data sources, laboratories and other infrastructure. International mobility helps to attract top experts, and young researchers can benefit from exchange programmes – develop new crucial skills, and broaden their perspectives by working in an international environment. The FP funds help to leverage additional research funding from both private and public sources. Research teams that participate in the European projects become more visible in industry, strengthen their images, and demonstrate their portfolios to a wider, international audience. International reputation, image and better exposure to industry are further positive effects of the FP funds."





The SME Instrument is aimed at supporting the innovative activities of SMEs, both in terms of research and production. Through this grant instrument, SMEs are provided with systematic support in the development of innovative products, technologies and services. The tool aims to enable SMEs to bring their innovative ideas from the initial idea to the stage where they can be marketed. In 2018, the SME Instrument (Phase 2) was replaced by the EIC Accelerator, which is currently in its pilot phase and will be fully-fledged under the upcoming framework programme Horizon Europe. The main focus of the EIC Accelerator is on market-creating innovations that shape new markets and generate jobs, growth and higher standards of living. Similarly, as in the SME Instrument, there are no set topics and in addition to the grant-only support, the new scheme also provides support in the form of blended finance.

Czech Republic



FGFSTAB

Industrial Production of Stable Fibroblast Growth Factors for Regenerative Medicine and Related Research Areas

Coordinator: Enantis s.r.o.

Link: <https://cordis.europa.eu/project/id/756471>

Abstract

The FGFSTAB project closes the gap between Enantis knowledge and expertise on protein engineering and the commercial applications of stable fibroblast growth factors (FGFs). FGFs are essential to the embryonic development, maintain tissue homeostasis, may slow down ageing of the organisms, and primarily promote angiogenesis and wound healing. FGFs see the greatest application in the care and treatment of chronic skin ulcers, but also find use in surgical and trauma wound healing. The global wound care market is rapidly growing due to the increasing aging population and growing incidences of obesity and diabetes. Advanced wound dressings, such as those involving growth factors, play an important role in current regenerative medicine and companies around the world have started investing heavily in research and development of growth factor-based products. However, despite clinical value, applications of FGFs are limited by the fact that natural proteins have poor thermal stability and a short half-life in the circulation; they are often cleared from the body within hours, if not minutes, thus necessitating frequent administrations during the course of treatment, which goes hand in hand with

a higher risk of adverse effects and lower cost-effectiveness of the protein therapy. The key objective of the FGFSTAB project is to use an innovative technological platform, based on the application of Enantis proprietary protein optimisation concept FireProt, to increase FGF stability under various stress conditions. Additional challenges including the high cost of production, current Good Manufacturing Practice, development of delivery systems for safe and effective wound healing, and pre-clinical testing to support future clinical trials and marketing authorisation, will be targeted as well. Financial support provided within SME Instrument Phase 2 will help us close the gap from demanding biotechnological development to the targeted industrial application in regenerative medicine.

Personal experience

“Across much of the developed world, populations are becoming older, more obese and increasingly prone to chronic diseases such as diabetes. As a result, the global wound-care market is rapidly evolving, with innovative fibroblast growth factor (FGF) products driving the field of regenerative medicine. By addressing the poor stability of selected FGFs, the EU-funded FGFSTAB project was implemented to increase their commercial use within the therapeutic arena. As a direct result of the FGFSTAB project, Enantis has significantly expanded and strengthened its capability, efficiency, and competitiveness. In September 2018, Enantis signed an important distribution agreement with a leading life sciences company.

Enantis tried three times before successfully receiving the SME Instrument, Phase 1 (2015) funding worth EUR 50,000 for preparing a robust business plan. Subsequent SME Instrument Phase 2 (2017–2019) funding worth EUR 1 million enabled Enantis to develop a product which is now available globally. Enantis became the first Czech company to receive funding under both phases of the SME Instrument.”

RADARR 2

Rapid and durable asphalt road repairs 2

Coordinator: FUTTEC a.s.

Link: <https://cordis.europa.eu/project/id/873538>

Abstract

A revolution in asphalt road maintenance

Europe’s road system needs continuous and costly repair to be maintained, but usually results in short-term fixes. The EU-funded RADARR 2 project aims to introduce more durable repair results for faster application. Its solution will be more effective and economical in comparison with the currently applied technologies. Specifically, the project supports testing and the commercialisation process of the microwave technology for asphalt pavement maintenance elaborated by FUTTEC Corporation. The RADARR 2 project will use a microwave machine (FT3 device) and a polymerisation agent for the homogenous fixation of pavements cracks. It guarantees a long-life span for technological joints, and what is more, can be used independently of weather conditions and be tailored to consumers’ needs.

Objective

The overall objective of the project RADARR 2 (RAPID AND DURABLE ASPHALT ROAD REPAIRS 2) is to commercialise the unique microwave technology for asphalt road repairs. The novelty of the technology lies in a completely new approach to pavement repair offering great advantages for various kinds of customers like maintenance companies, highway maintenance centres, regions and municipalities, associations of municipalities, private highway operators

and construction companies. Microwave technology represents a revolution in asphalt road maintenance. It brings durable repair results, faster application and it is simple, more effective and economical in comparison with the currently applied technologies. The application of microwave technology enables elimination of a non-homogenous connection of the repaired spot resulting in significant extension of the life span of repairs. The extended life span of repairs means great savings for infrastructure owners and operators and consequently it means a great market opportunity for the FUTTEC Corporation. Another great competitive advantage of the FUTTEC technology is the possibility of performing repairs during winter season, when competitive solutions are highly limited by the weather and unable to offer results of comparable quality. The outcome of the RADARR 2 project will be tested by the microwave machine FT3 that is ready for commercialisation. The FT3 machine represents a functional versatile device, which is using the microwave energy for repairs of cracks in asphalt surfaces (potholes) and is able to connect technological joints of the new and repaired asphalt using a polymerisation agent. The machine will be adapted to customers’ needs and preferences in order to maximize the commercialisation potential. The FT3 machine has the potential to change the approach to asphalt repairs and to offer a technologically advanced solution suitable for the 21st century.

Personal experience

“We started the project preparation about 2 months in advance. As we do not have any partner in the consortium, it was not necessary to coordinate the preparation with the partners, which would certainly significantly extend the project preparation period. We were successful with the 6th attempt under the SME Instrument, which issues an identical call for SMEs 4 times a year. We have repeatedly received a Seal of Excellence for earning more than 13 points out of 15 in the evaluation.

The biggest challenge in writing the project proposal was to well balance the individual chapters within the page limit of the application. Explaining the essence of the business plan in a simple and convincing way and demonstrating the European market potential of the newly developed technology was another challenging task we had to deal with.

Regarding the implementation, we are so far in the first half of the project implementation and the biggest challenge was to solve the problems related to the COVID-19 pandemic. The management of the development work and the coordination of necessary suppliers (e.g. from Italy and Germany) caused a significant delay compared to the planned project schedule in one work package focused on adapting the FT3 microwave device for repairing asphalt surfaces according to target customers. When we had to respond to the situation activities, their sequence, including the initiation of the project change and part of minor activities, we decided to move to a subcontractor, which should help the project team catch up with the delay caused by the COVID-19 pandemic.

The funding for our project provided by H2020 helped us not only start financially demanding activities aimed at commercialising our microwave technology but also to present our technology to potential foreign investors and customers. We got the opportunity to consult our business and our business strategy with experienced professionals as well as the support from H2020 associated with publicity and prestige.”

Slovakia



NanoScreen

Disruptive portable device for pre-screening of Persistent Organic Pollutants – POPs in food products and water

Coordinator: SAFTRA Photonics s.r.o., Pavol Jozef Šafárik University – Prof. Pavol Miskovský

Link: <https://cordis.europa.eu/project/id/766742>

Abstract

Persistent organic pollutants (POPs) are organic compounds produced by human action resistant to environmental degradation and their bioaccumulative capacity and toxicity can cause harmful health effects, e.g. cancer. Hence, they have become global threats for humans and the environment. The most extended analytic methods used nowadays for detecting POPs are gas chromatography and/or mass spectroscopy to separate and identify them. These methods are expensive – EUR 1,000/sample – and time-consuming (24h), they require laborious sample preparation and a well-equipped laboratory. Consequently, there is a great demand to increase the number of water and food quality tests if available for a lower price and shorter time.

SAFTRA PHOTONICS will bring to market NanoScreen – a portable nano-optical sensing chip for pre-screening purpose that detects food or water contamination by POPs. We will offer a rapid method (10 minutes) to detect the most important POPs (ppb) present in food products and water, carrying out an in situ analysis for less than EUR 100 per sample. By putting the NanoScreen solution to the

European, Japanese and USA market, by 2023 we expect to sell 55,000 chips with the revenue of EUR 4,800,000 (27% Y/Y growth) and the ROI of 3.25. This ensures the sustainability of 37 new full-time positions in the company.

The project resubmission (13.61) reflects a couple of great achievements in 2016: the FS has elaborated in detail the NanoScreen business plan, the company signed two investment agreements, and had three business partners and two distribution partners. Moreover, we identified another two major replication opportunities of future joint ventures that can form a new business-industrial ecosystem for online nano-screening. The vision is to reach a unique one-box-system tailored for specific applications, e.g. security, agriculture and sport.

The Phase 2 funding will help us to close the gap from design validation to industrial production and significantly shorten the market entry period.

Multiplex8+

A highly accurate breast cancer diagnostic test for effective personalised treatment and assessment of therapy response

Coordinator: MultiplexDX, Inc.

Link: <https://cordis.europa.eu/project/id/946693>

Abstract

Breast cancer (BCa) is the most common cancer in women worldwide with 2.1 million new cases diagnosed annually, and this number is expected to double in 2030. However, today's diagnostic tests lack precision and, as a result, many BCa patients are misdiagnosed and then treated inaccurately, putting their lives at risk while creating undue problems for families and healthcare systems. MultiplexDX (a leading Slovak biotechnology company) proposes a personalised and precise diagnostic test for early and late stages of BCa called Multiplex8+. The test combines two IP-protected, revolutionary and multiplexed cancer diagnostic technologies, visualisation (RNA FISH) and RNA sequencing. By combining the two technologies to eliminate misdiagnosis, Multiplex8+ defines a specific BCa barcode that suggests a specific personalised treatment, length of therapy and clarifies how likely a BCa patient will or will not benefit from chemotherapy.

There are 2 main objectives of this project: 1. To establish an ISO-15189 accredited laboratory to provide diagnostic services to cancer centres (B2B) and additionally to patients (B2C). A clinical validation on 4,000 tissue samples will be conducted to obtain clinically-based evidence; 2. To build the first successful high-value biotech company in Slovakia.

The company has already raised EUR 2.05 million in seed investments and grants and started sales of subproducts generating EUR 300 million in revenues since 2016. MultiplexDX operates in the Comenius University Science Park in Bratislava and consists of 17 team members, 5 business advisors and 7 scientific advisors. Our planned accumulated revenues in the first 5 years amount to EUR 305.3 million, generating a net profit of EUR 133 million and representing the ROI of 10.3. Importantly, Multiplex8+ is supported by the entire oncology value chain (patient associations, cancer centres, hospitals, KOLs, insurance companies, pharma/medtech, clinical laboratories, biobanks, investors, etc.).

Personal experience

"We applied four times to SME Phase 1 before MultiplexDX received some venture capital that allowed us to bring our concept to a more developed stage, and so we decided to apply directly to Phase 2 (EIC Accelerator). We applied to Phase 2 ten times before our project was funded — it was quite a challenging ride!"

The EIC Accelerator supported our Multiplex8+ project due to its contribution to increasing the accuracy of diagnostics for breast cancer, one of the most widespread types of cancer. The goal of Multiplex8+ is to increase the accuracy of breast cancer diagnostics from today's 50–70% to 98%. If a large-scale retrospective clinical validation of Multiplex8+ proves to be successful, the diagnostic test will enter the clinical practice as early as 2023.

It was quite a challenge to gain support and recognition for our project from the entire oncology value chain before submitting the project. We were convinced about the innovation and need to introduce our novel personalised diagnostic, but it was difficult to convince the European Commission about the support from the Slovak innovation ecosystem, even though our ambition is to change breast cancer diagnostics globally. We believe that after the verification in preclinical tests, Multiplex8+ will help cancer patients not only in Slovakia but also worldwide.

We are incredibly proud of our entire team that helped prepare the proposal. Our success in the competition of nearly 2,000 innovative European projects, assessed by an international committee, confirms that our research meets the requirements for global R&D projects. We recommend finding professionals to help you with the proposal. We were extremely satisfied with the help from a professional H2020 project consulting agency. Persevere and continue to submit over and over again, if you are convinced about your project. Even if you do not get the funding, writing a good project is an invaluable company strategy exercise and helps you refine your business plan and concepts."

Poland



TREG

innovative cell therapy targeting Diabetes Type 1

Coordinator: PolTREG S. A., Medical University of Gdańsk, Professor Piotr Trzonkowski

Link: <https://cordis.europa.eu/project/id/830559>

Abstract

The main challenge of the project is to prepare and start Phase III of the clinical development of TREG – a ground breaking Type 1 Diabetes (T1D) somatic cell therapy with T-regulatory cells obtained from the patient’s blood. T1D preventions strategies have not yet been successful. The TREG project aims to change it and become the first efficient prevention T1D therapy. The uniqueness and innovativeness of the treatment lies in the reduction of the disease causes, and not only its clinical symptoms which improve the quality of life and the clinical parameters of patients.

The TREG therapy, patented technology, is a response to the largest, according to the World Health Organisation, global health emergencies of the 21st century – diabetes. In 2014, 422 million people in the world had diabetes compared to 108 million in 1980. It means the global prevalence (age-standardised) of diabetes has nearly doubled since 1980 rising from 4.7% to 8.5% in the adult population and will continue to grow. According to the IDF Diabetes Atlas 2017, it is estimated that 7% to 12% of them have type 1 diabetes. While DM2 is more common, it is potentially preventable. The causes and risk factors

for T1D remain unknown and prevention strategies have not yet been successful.

The majority of efforts in the area of T1D treatment are put on the production of insulin preparations or the development of medical devices connected with insulin admission and glucose control. Progress in this area has significant influence on the quality of the patient’s life, but in fact they do not eliminate the causes of the illness.

As a result of the proposed project, PolTREG will start the next stage of clinical trials (Phase III) on the safety and efficacy of the therapy in a broader paediatric population. If successful, the project will accelerate availability of a breakthrough therapy to T1D patients and put PolTREG on a path of business development by a full-scale commercialisation of the innovation.

Personal experience

“PolTREG is amongst the global leaders offering advanced therapy addressing the underlying cause of the newly diagnosed type 1 diabetes mellitus. Currently, the treatment with the product developed by the company is only available to those patients who have qualified for clinical trials or are under the so-called hospital exemption. The therapy is carried out only at the University Clinical Centre in Gdańsk.

It is a disease-modifying therapy, so we have a real chance to transform the present approach to the treatment of type 1 diabetes. The company completed the phase II clinical study and expects to finalise the clinical study report (CSR) in the next few weeks. We also entered in a dialogue with EMA under the Scientific Advice process and we are getting ready for a pre-meeting with FDA, scheduled for this autumn. The next steps include the start of the pivotal study and the marketing authorisation application in Europe. We aim to be able to offer the therapy to the global market in 2025.

We applied with a very clear aim to receive marketing authorisation of our therapy. The disease we are working on is the unmet medical need and any progress in the treatment is highly appreciated by the community. The added value of being part of the H2020 project is that it is a very ennobling experience. The recipient receives greater attention from potential investors. It makes a difference to the company.”

BacterOMIC

Intelligence for precision therapies against antimicrobial resistance: The first diagnostic panel that probes all the clinically relevant antibiotics at once

Coordinator: BACTEROMIC sp. z o. o., Institute of Physical Chemistry of Polish Academy of Sciences, led by Piotr Garstecki

Link: <https://cordis.europa.eu/project/id/881101>

Abstract

Automation of pathogen antibiotic resistance tests

Antibiotic resistance of pathogens presents an increasing global threat resulting in millions of deaths each year. One of the main reasons for the increasing number of resistant pathogens is the non-optimal application of the antibiotics. A targeted narrow-spectrum antibiotic application is preferable, but current manual resistance tests are laborious while available automatic tests evaluate a limited number of antibiotics. The EU-funded BacterOMIC project is developing a fully automated antimicrobial susceptibility testing system for rapid (under 4 hours) identification of efficient antibiotics from the set of all those commonly available for the treatment of certain pathogens. Importantly, the new system allows to identify a combination of several antibiotics for the most efficient treatment of infection. The project involves international collaboration within the EU, and the phase 2 current goal is to optimise the instrumental design and validate the system in clinical trials for future commercialisation.

Objective

In recent years, we have seen a drastic increase in the antibiotic resistance among bacterial pathogens. This is

considered as one of the biggest threats to global health in the current era. The reason behind this is inappropriate use of antibiotics – patients are often treated with a non-optimal antibiotic that needs to be changed after few days. The number of resistant microorganisms constantly grows due to inappropriate use of antibiotics – patients are often treated with inappropriate drugs that need to be changed after few days if bacteria turn to be resistant. The reason is that current manual antibiotic resistance tests are time-consuming and laborious, while automatic antimicrobial tests offer the analysis of a short list of antibiotics.

BacterOMIC is a response to the growing global threat of antibiotic resistance. We provide the first fully comprehensive rapid Antimicrobial Susceptibility Testing (AST) system that determines within 4h which of all common antibiotics will be most successful in treating certain bacterial infection. Unlike current methods, our system also allows to investigate the antimicrobial effect of not only single antibiotics but also combinations of multiple antibiotics – the future of infection disease treatment.

The constantly growing antimicrobial susceptibility testing market was valued at EUR 2.4 billion in 2018 and is expected to reach EUR 3.1 billion by 2022 at the CAGR of 5.1%. With our clear business model we target pharmaceutical and biotechnology companies and contract with research organisations, hospitals/private healthcare centres, and diagnostic laboratories. We have a network of partnerships across the EU (PL, FR, ES, CH, DE, and PT) and we are ready for a rapid scale-up, with more than EUR 30 million cumulative profit by 2025. We need SME Instrument Phase 2 to optimise the design, prepare for mass production, validate the system in clinical trials, and certify it for successful commercialisation.

Personal experience

“The BacterOMIC system uses microfluidic technology to offer breakthrough in access to actionable information for precision antibiotic therapies. A single BacterOMIC test offers quantitative information about the efficacy of every clinically relevant antibiotic against the specific bacterial pathogen that infects the patient. BacterOMIC also offers an automated high-content analysis of synergies between pairs of antibiotics as a treatment of multi drug resistant pathogens.

BacterOMIC addresses one of the gravest problems in modern medicine – Antimicrobial Resistance. The CDC estimates that 35,900 deaths per year in the USA are directly attributable to AMR; in the EU, this number is >30,000 deaths yearly, with almost 900,000 DALYs lost due to AMR. AMR is a huge burden to the healthcare system: in the USA, AMR elevates the average cost of treatment by USD 1,383, constituting a national cost of USD 2.2 billion yearly. Empirical treatment, often using broadspectrum antibiotics, ceases to be effective and leads to an increase in drug resistance; note that in the EU, two thirds of all diagnosed infections are currently resistant to at least one antibiotic.

The BacterOMIC system is designed to inform targeted antibiotic therapies eliminating any delays in access to precision therapies that are often caused by insufficient information from current diagnostic systems. The massive information capacity of antibiotic susceptibility screening by BacterOMIC is exactly the component needed for application of precision medicine in the case of difficult bacterial infections.

We believe that the potential for impact of BacterOMIC on global health was one of the main reasons for the selection of the BacterOMIC project for financing within the H2020 programme. The preparation for the interview in Brussels motivated us to supplement our clinical and technological expertise with detailed commercialisation plans and market entry strategies. While demanding and intensive, the process of preparation was inspirational and fruitful.”

Hungary



QualiLine-C-2.0

Quality and Production Control with Integrated Machine Vision

Coordinator: Falcon-Vision ZRt.

Link: <https://cordis.europa.eu/project/id/666774>

Abstract

Our company, Falcon-Vision, was established in 1996 with the aim of developing machine vision tools for the inspection of casted parts. Since then, we have produced a number of custom inspection tools that can achieve 100% inspection without contact in real time. We have developed a successful track record and have become established as a supplier of high speed quality control and in-line metrology systems to leading multinationals (Nemak, Daimler, Sanofi, Epcos, Vis-teon) which produce parts for the leading automotive companies (GE, AUDI, Renault, BMW, VW).

Our custom-made inspection machines have been a huge success and our sales have increased from EUR 1.2 million in 2009 to EUR 2.2 million in 2013 and will be almost doubled by the end of this year. This increase is not surprising based on our high quality products and the list of satisfied customers; however, we are striving to increase the sales and satisfy the rising demands due to our machines being custom made.

Recently, our customers' demands have also been widening. They require faster, simpler and more flexible measuring machines. After discussions with our customers we have come to the conclusion that the best way to increase our productivity and satisfy more cus-

tomers would be to make our system modular which would help the customer pick and choose the different inspection modules in a flexible and efficient way. This would mean we could mass-produce the modules which would speed up the service and reduce the price. In addition, the development of new innovative modules is also foreseen to further improve accuracy and to give the opportunity to inspect geometries that were not possible in the past.

The new modular approach will help halve the production lead-time of the inspection machine and also reduce the cost by 30%.

PearlLight+

Increasing the efficiency of LED street lighting by 15% via optical design

Coordinator: Hungaro Lux Light Kft.

Link: <https://cordis.europa.eu/project/id/683541>

Abstract

Street lighting constitutes about 60% of the electricity costs for a municipality. Recently, the wider deployment of innovative LED lighting solutions has been made a priority by the European Commission. The main area where LED-based street lighting can be improved is the light throughput efficiency of the lens and the transparent cover of the luminaire. Hungaro Lux Light Kft. has developed a novel design method for manufacturing LED lens and covers optimised to the desired illumination pattern and the specific LED chip used. This optimisation improves light throughput by 15% on average compared to the currently available lens. The software and production technology development to be undertaken

Personal experience

"Similar to my successful SME Instrument Phase 1 proposal, my Phase 2 proposal was also successful after the first submission. Thanks to the grant we have an international patent and a widely used technology now, which was also further developed. We also want to apply for funding for this newly developed technology.

The SME instrument is a unique tool for small companies that develop innovative technologies. There was no similar scheme available in Hungary. In addition to the funding, it also helped us to enlarge our network and cooperate with excellent scientists from universities and research institutions. It was also a very flexible programme that allowed our bold ideas to come true.

I would recommend the SME instrument and future EIC calls for SMEs with an excellent idea that could become a patent. It is definitely worth a try!"

in this Phase 2 project are the last major steps before the market introduction of the technology. This innovation will enable our company to provide a new range of highly competitive luminaires, strengthening our position in key international markets and increasing our turnover significantly.

Notes



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