RIGA
EUCYS
2025

36TH EUROPEAN UNION CONTEST
FOR YOUNG SCIENTISTS RIGA 2025

CONTEST CATALOGUE

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EKATERINA ZAHARIEVA

Commissioner for Startups,
Research and Innovation

I congratulate all the young participants in the 36th edition of the European Union Contest for Young Scientists (EUCYS). Winning your national science competitions and representing your country at the largest European science fair is a remarkable achievement.

The first EUCYS took place in 1989, just before the fall of the Berlin Wall. Since then, young scientists have continued to break barriers with bold ideas and groundbreaking research. At that time, there was no internet, no smartphones, no Artificial Intelligence. Can you imagine doing science without them? Many former participants are now researchers, professors, and even members of the EUCYS jury, mentoring the next generation of talent.

In 2025, EUCYS comes to Riga, Latvia, for the first time. You will not only compete with fellow young scientists from nearly 50 countries but also discover the country's rich scientific heritage, home to Nobel laureate Wilhelm Ostwald, and its vibrant cultural scene, such as Riga's Song and Dance Festival with over 40,000 performers.

Supporting young people is a core priority of the European Union, especially in science and innovation. Through initiatives like the new 'Choose Europe for Science', we want to create a welcoming, attractive and dynamic research and innovation ecosystem for researchers from Europe and beyond, at every stage of their career. An environment where researchers, with their ideas and innovations, can circulate freely across the so called "European Research Area", the EU's single market for research.

Your creativity, discoveries, and curiosity are essential to solving global challenges and shaping a fairer, more sustainable future. EUCYS is not just a contest. It is a celebration of bold thinking, collaboration, and self-belief. You are ambassadors of science, and your projects are proof of your passion and talent.

Enjoy your time in Riga. I wish you every success on your scientific journey,

DACE MELBĀRDE

Minister for Education and Science
of the Republic of Latvia

DEAR YOUNG SCIENTISTS,
It is a privilege to welcome you to the European Union Contest for Young Scientists 2025 here in Riga, Latvia.

As the world faces increasingly complex challenges - from climate change to the brutal war in Ukraine waged by authoritarian Russia - innovation and the drive to make the world a better place are not just admirable qualities; they are essential. It is your ideas, your bold questions, and your determination that will lead us toward sustainable development and global prosperity. Science and innovation remain our most powerful tools for understanding the world and shaping a better future for all.

Latvia is proud to host this extraordinary gathering of bright young minds. We are a country where innovation is fueled by curiosity and collaboration—where scientists, engineers, and creators work across disciplines to solve real-world problems. From biomedical breakthroughs to quantum computing, Latvian researchers are actively contributing to a global dialogue that never stops moving forward. Now, you are part of that conversation.

EUCYS is more than a competition. It is a celebration of the values we cherish—excellence, creativity, and a spirit of cooperation that transcends cultures and borders. Here, you will not only present your research to an international jury, but also learn from each other, share your visions, and form connections that may last a lifetime.

As Minister for Education and Science of the Republic of Latvia, I am proud to see this contest empower the next generation of innovators. I encourage you to keep asking questions, keep building new ideas, and never stop believing in the power of science to change the world.

Welcome to Latvia! May your time here be inspiring, joyful, and filled with discovery.

RIGA
EUCYS
2025

WELCOME TO EUCYS RIGA 2025

THE EUROPEAN UNION CONTEST FOR YOUNG SCIENTISTS

The European Union Contest for Young Scientists (EUCYS) rewards and celebrates Europe's best young scientific talent. Every year, the event gathers promising young scientists from all over Europe and beyond, to present their projects to an esteemed international jury. Over the years, some astonishing inventions and creative ways of using science in everyday life have been presented. Be prepared to be amazed!

EUCYS not only encourages interest in science among younger generations, but also promotes the exchange of knowledge and ideas. And this has always been one of the most positive aspects of the contest, also according to past participants. EUCYS has supported many of them in pursuing a scientific career in a wide variety of fields, and in moving across the 27 Member States of the European Union to perform excellent research. The contest is also a useful tool in the development of a pan-European scientific community, contributing significantly to popularising science among young people.

The first contest finals took place in Brussels in 1989. Since then, the event has been hosted in cities all over Europe, from North to South and West to East, including Salamanca in 2020-2021, Leiden in 2022, Brussels in 2023 and Katowice in 2024. In 2026, the contest will take place in Kiel in Germany as part of the larger EU-funded initiative 'Science Comes to Town'. This year, for its 36th edition EUCYS is taking place in Riga and we are pleased to be in Latvia for the first time. The European Commission is very grateful to the organisers for their professionalism and support.

EUCYS is funded under Horizon Europe, the EU Framework Programme for Research and Innovation, and is part of a broader initiative to reinforce the links between science and society, responsible research and innovation, and to further the development of the European Research Area (ERA) and its objective to create a European single market for research, innovation and technology.

THE CONTESTANTS

All contestants at the EUCYS have previously won a first prize at the national young scientist competition in their own country. Thus, the Contest represents an additional scientific challenge for many young scientists who compete annually in their national contests. The EUCYS National Organiser (NO), who is the contact person for their respective national contest, is responsible for completing the registration process for the participants of his/ her country. The contestants compete either as individuals or as part of a team of two or three, and they must be 14 to 20 years old at the time of the event. The contest accepts projects in all fields of scientific endeavour. Competing in the contest for 2025 are 133 contestants with 90 projects.

THE JURY

This year, the jury is composed of 21 highly qualified scientists and engineers with worldwide reputations in their chosen field. The jury members carries out their duties at the contest as independent scientific experts and not as representatives of any institution, organisation or country. The Commission appoints the jury annually basing its selection on the scientific needs of the contest and draws the most relevant names from both academia and industry. The jury evaluates participating projects both before and during the event: during the summer preceding the contest, jury members review the written descriptions of the projects and assign a preliminary evaluation, while during EUCYS they assess projects presented at the exhibition through oral interviews with participants.

THE EVALUATION

The contestants display their projects at exhibition stands and are interviewed by members of the jury. The jury uses the following criteria to make their final assessment:

- originality and creativity in the identification of and approach to the basic problem;
- skill, care and thoroughness in designing and carrying out the study;
- follow-through of the study from conception to conclusion;
- reasoning and clarity in the interpretation of the results;
- quality of the written presentation;
- ability to discuss the project with the jury members.

In applying all these criteria, allowance shall be made for the age and education level of the contestants, the quality of the resources available to them and their linguistic ability to speak a non-mother tongue language if required. The decision of the jury is final.

THE PRIZES

The contestants compete for a number of prizes on the basis of their projects. The core EU monetary prizes are the main prizes awarded for the project.
For 2025 contestants, they include:

Four first prizes worth € 7,000 each
Four second prizes worth € 5,000 each
Four third prizes worth € 3,500 each
A special jury award for Youth worth € 2,500

The jury also select the best and most appropriate contestants for several specially donated prizes of study visits or similar, to leading scientific European organisations. You can find a list and a description of all Specially Donated Prizes, Honorary Prizes, EIROForum Prizes and Local Prize in the dedicated section at page 122.

These prizes are offered to contestants who, according to the jury, would benefit from the specific experience that these prizes offer. At the discretion of the jury, a prize winner can receive both a core prize and a special donated prize.

THE PARTICIPATING COUNTRIES

The following countries can participate at EUCYS on a competitive basis:

- The 27 Member States of the European Union
- Associated Countries to Horizon Europe
- The EU's neighbourhood countries
- Countries that have concluded a Science & Technology Agreement with the EU

The European Schools are also represented as a country. The European Commission is delighted to welcome students from Malta back to the contest after an absence of many years. We are also very pleased to have the opportunity to welcome Ukrainian students again this year.

CONTACT

For more information
on the EUCYS, please contact:

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For more information on the EU Contest
please visit the following web sites:
ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/eucys_en

EUCYS 2025 ORGANISERS THE STATE DEVELOPMENT AGENCY OF LATVIA

The State Development Agency of Latvia (VIAA) is honored to host EUCYS 2025 in Riga. As the primary organizer, the agency is committed to providing a conducive environment for young scientists to present their research and engage with peers and experts from around the world. Hosting EUCYS 2025 aligns with Latvia's dedication to promoting scientific excellence and fostering international collaboration in research and innovation.

VIAA is a national institution operating under the Ministry of Education and Science of Latvia. Its primary purpose is to contribute to the development and implementation of national education policies and to ensure the quality, accessibility, and modernisation of education across Latvia. VIAA serves as a key institution in shaping educational standards, assessments, curricula, and pedagogical methodologies within the framework of Latvia's broader educational strategy. It implements national and international education and research programmes and projects, particularly those co-financed by the European Union and other foreign partners.

VIAA main functions and activities:
Education policy and curricula
Develops and implements curricula, educational standards, assessment systems, and pedagogical methodologies for general, vocational, and extracurricular education.

Examinations and assessment
Coordinates state examinations and national assessments, ensuring transparency and comparability of results.

EU and international programmes: Administers Erasmus+, European Solidarity Corps, Nordplus and other EU and EEA/Norway co-financed programmes.

Scholarships and mobility
Manages Latvian state scholarships for international students and scholarships for Latvian students and researchers abroad.

Skills and workforce development
Acts as the Latvian National Agency for WorldSkills and EuroSkills, organising SkillsLatvia and preparing competitors for international contests.

Professional development
Provides training and resources for teachers and education staff, supporting lifelong learning and digital skills.

Research and innovation
Implements projects promoting innovation, digitalisation, inclusive education, and sustainable human capital development.

International cooperation
Coordinates Latvia's participation in networks such as Eurydice, Euroguidance, and the European Qualifications Framework, while collaborating with OECD, UNESCO and other organisations.

Infrastructure and EU funds
Manages EU structural funds to improve education infrastructure, strengthen vocational and higher education, and support innovative learning.

Information and guidance
Offers career guidance, educational opportunities in Latvia and abroad, and public awareness of science, innovation, and education.

Through its combined expertise, the Agency strengthens Latvia's education and science system, fostering international competitiveness, supporting learners, teachers, and researchers, and promoting a knowledgeable, skilled, and future-ready society.

Photo: University of Latvia

QUOTES FROM PREVIOUS WINNERS

Aleksandra Petkova

WINNER OF THE FIRST PRIZE AT THE EUCYS 2024 IN KATOWICE AND THE H. ROBERT HORVITZ PRIZE FOR FUNDAMENTAL RESEARCH AT THE 2025 ANNUAL REGENERON INTERNATIONAL SCIENCE AND ENGINEERING FAIR (ISEF) IN THE US.
EUCYS 2024

Participating in EUCYS 2024 was truly inspiring. It reinforced my passion for physics and connected me with like minded peers. My advice to this year's contestants: Explore as many projects as possible, even if they are not in your category, and most importantly, try to ask insightful questions. Understanding others' research can enhance your own and prepare you for the discussions with jurors. During interviews, focus on clear communication over complex terminology. Help the jury understand your project deeply rather than just reciting your elevator pitch or trying to impress them. And of course, have fun, transform any anxiety into excitement to share your work confidently, because you going to EUCYS is enough of a prize itself!

Aditya Joshi

EUCYS 2022

EUCYS was an eye-opening experience for me, having only presented virtually to the judges in my national competition as a result of COVID, I would've never imagined the plethora of different areas of expertise and ambitions that each and every contestant carried with them.

EUCYS led me to realise that there are many other teenagers interested in the pursuit of science all around the world, and, for me, it was really about the opportunity to make new friends whose ambitions would inspire me (even many years after my time at EUCYS!).

I'm currently entering my final year of secondary school in Ireland and I'm looking to apply to MIT along with a few other colleges in the following year. Since going to EUCYS, I've also taken part in a TV Show aimed at kids where we got to experience astronaut training at one of NASA's training centres, this was aired on the Irish National kids channel, „Rté Jr". In general, I've also gotten really interested in the area of cybersecurity, I'm hoping to graduate from the summer programme „Patch" leading my own startup in this area.

Carla Caro

EUCYS 2021

During my participation at EUCYS 2021, I met incredible peers that I keep as friends up to this day. It was a very enriching experience to share our passions during the contest. Besides, it was very helpful to receive feedback from experienced researchers who evaluated our projects, I still remember interesting discussions that I had during the interviews. Afterwards, receiving a first prize was quite impactful in my life, as it opened the door to further opportunities such as speaking in podcasts or on national TV programmes, as well as spreading my research work on quantum machine learning in different written media.

Nowadays, I'm studying a Physics degree, with a minor in Mathematics, at the University of Barcelona, Spain, while also undertaking a Philosophy degree at UNED, the national distance university. Regarding research, I have continued investigating quantum information and quantum computing, similar to the project I presented at EUCYS, but I am also conducting research on complex systems and quantum manybody systems.

Giovanni Benetti

EUCYS 2021

To me, EUCYS has been among the first significant approaches to the scientific method. During the preparation, I faced some of the most fundamental questions that a physicist handles daily, from the most technical such as „Is this approximation valid?" or „Which are the main processes that take part into this phenomenon?" to the most epistemological, such as „What is a demonstration in physics?" or „How does my research contribute to the knowledge in this field?". I think that I posed to myself the most personal question regarding the research right during EUCYS: why do I want to do physics? I still don't have a simple answer, I'm „building" it as time passes (and I strongly suspect that a simple answer doesn't exist at all). After EUCYS I attended the faculty of Physics at Padova University, and this year I graduated with a thesis on the gravitational waves emitted by double-white dwarf systems, as they will be detected by the proposed Lunar Gravitational Wave Antenna. In the future, I want to continue the studies and research on the topic of gravitational waves.

Francisca Dos Santos Martins

MEMBER OF THE „EXPERT GROUP ON ECONOMIC AND SOCIETAL IMPACT OF RESEARCH AND INNOVATION (ESIR)" – DEPARTMENT OF RESEARCH AND INNOVATION OF THE EUROPEAN COMMISSION

INSTITUTO DE CIÊNCIAS BIOMÉDICAS ABEL SALAZAR – MESTRADO INTEGRADO EM MEDICINA 2017/2023
EUCYS 2017

I was a EUCYS contestant in 2017, in Tallinn. Back then, I had just turned 18, and I was heading to university. It was the first time I ever felt valued and acknowledged as an adult, and I felt respected and heard by every single person in the contest. It was the most amazing week, being surrounded by bright young minds, much like mine, all so excited to share their discoveries and projects – it was such a stimulating week! Being a competitor in EUCYS inspired me to keep questioning everything, and to always accept the opportunities that came my way, regardless of how scared I was, and I am so, so glad I did because I got to participate in round tables and debates with some of the most inspiring, hardworking people I've ever met.

Three years after EUCYS, I became the youngest ever independent advisor for the European Commission, exactly because I refused to settle. I was hired both because they wanted to hear the opinion of a young woman in STEM, and because I kept questioning them at every turn. COVID-19 gave us the opportunity to advise the European Commission on the current state of education in the European Union, as well as the state of the labour market. I am so proud to say I worked alongside some brilliant people who I hope to run into again and work with once more.

Last year, I finished my degree, and this year I finally got my dream job, working as a doctor. Still, no matter where life takes me, I will hold all of these experiences close to my heart, as they helped me grow and helped me fall in love with science even more.

Emilia Kvasnicka

EUCYS 2013
JURY MEMBER OF EUCYS 2025

EUCYS broadened my perspective on what is possible and opened up career paths I had never considered, giving me the confidence to pursue new opportunities. The friendships and professional connections I made remain meaningful and supportive to this day, and many of the chances I've had since can be traced back to this experience. My advice to this year's contestants: take every opportunity to engage with fellow participants and the jury—let their experiences inspire your projects, your career, and your life. Above all, enjoy the unique spirit of the contest and the community you become part of.

Lina Tomasella

ASTROPHYSICIST AT INAF (ITALIAN NATIONAL INSTITUTE FOR ASTROPHYSICS); ASTRONOMICAL OBSERVATORY OF PADOVA
EUCYS 1989

I won the first prize at the 1st EUCYS in 1989, which took place in Brussels, presenting a project which was a mixture of biology, ecology and mathematics applied to underground ecosystems (my hobby and passion in that period of my life was speleology). It has been a dream to be selected during the National Contest to take part in EUCYS; then I was really excited to be in Brussels, in a great international context for the first time!

The first prize gave me a lot of self-confidence and I got first-hand experience of how wonderful it is to work in the international world of research. In Brussels, I realised that research is one of the best job areas in which one can work, combining creativity, curiosity and scientific precision with the possibility to meet extraordinary people.

EUCYS was a landmark for my future career as a researcher: it gave me a very early opportunity to expose myself to the rigours of international research, and I gained valuable experiences in planning, executing, writing and presenting scientific work.

After EUCYS, I decided to study Physics and to start a PhD in Astrophysics. Actually I am First Researcher at the Italian National Institute for Astrophysics, INAF. My Institute is the Astronomical Observatory of Padova, and the place of employment is the observational site of Asiago, where I am the institute-based coordinator and the telescopes' manager.

My research interests are devoted to the physical properties of explosive events, mainly supernovae. Actually, I am a member of the Italian GRAWITA collaboration (Gravitational Wave INAF team) and the European ENGRAVE (Electromagnetic counterparts of gravitational waves at the Very Large Telescope, ESO), which have the aim of carrying out multi-wavelength observational campaigns after the gravitational wave alerts released by the ground-based interferometers network (LIGO/Virgo/KAGRA). Indeed my career has often featured a strong

European connection: I am always involved in international cooperations, collaborating with European colleagues and using the European Southern Observatory telescopes so my work has a real European dimension, as experienced for the first time in EUCYS.

Physics is a wonderful adventure!

CONTESTANTS PROGRAMME

SEPTEMBER 15, MONDAY

Arrivals All day

Registration and preparation of stands All day
Hanzas perons

Integration - Ice breaking 18:00 - 19:00
Programme by the University of Latvia
Hanzas perons

Dinner 19:00 - 21:00
Hanzas perons

Integration programme - Ice breaking 19:30 - 21:00
Hanzas perons

SEPTEMBER 16, TUESDAY

Breakfast
Hotel

Opening Ceremony 09:30 - 10:30
Hanzas perons

Expo / Jury sessions 11:00 - 13:00
Hanzas perons

Lunch 13:00 - 14:00
Hanzas perons

Expo / Jury sessions 14:00 - 17:00
Hanzas perons

Excursion to the *Silver Grove* / Dinner 17:00 - 21:00
The grounds of the Latvian Song and Dance Festival in Mežaparks and to the SongSpace exhibition at the Latvian National Museum of Literature and Music
(Departure from Hanzas perons)

*NOTE The Program may change slightly

SEPTEMBER 17, WEDNESDAY EXPO open to the public

Breakfast
Hotel

Expo / Jury sessions 09:30 - 12:30
Hanzas perons

Lunch 12:30 - 13:30
Hanzas perons

Expo / Jury sessions 13:30 - 16:30
Hanzas perons

City walk *Flow Through Riga* with Roadgames / Dinner 18:00 - 21:00
Starting from the hotel, ending at the Riga Castle.
Departure to the National Evening at LIDO

SEPTEMBER 18, THURSDAY EXPO open to the public

Breakfast
Hotel

Expo / Jury sessions 09:30 - 12:00
Hanzas perons

National Organisers meeting 10:00 - 11:00
Hanzas perons

EIROforum lecture 12:00 - 13:00
Hanzas perons

Lunch 13:00 - 14:00
Hanzas perons

Dismantling of stands 14:00 - 15:30
Hanzas perons

Visit to the University of Latvia 16:30
(for participants who selected this option during registration)
Departure from the hotel

Departure to Jūrmala – The Baltic Sea Coast 17:30
(for participants who selected this option during registration)
Departure from the hotel

Sunset at the Beach (hopefully) / Dinner 19:30
Jurmala

SEPTEMBER 19, FRIDAY

Breakfast
Hotel

Free time

Lunch 12:00 - 13:00
Radisson Blu Latvija Conference & Spa Hotel

Award Ceremony 14:00 - 16:00
Splendid Palace

Reception 16:00 - 17:00
Splendid Palace

Farewell evening / Dinner 19:00 - 23:00
Latvian Railway History Museum in Riga

Buses to the hotel from 22:00

JURY PROGRAMME

SEPTEMBER 15, MONDAY

Arrivals	All day
Dinner	19:00

SEPTEMBER 16, TUESDAY

Breakfast Hotel	
Opening Ceremony Hanzas perons	09:30 - 10:30
Expo / Jury sessions Hanzas perons	11:00 - 13:00
Lunch Hotel	13:00 - 14:00
Expo / Jury sessions Hanzas perons	14:00 - 17:00
Excursion at the Museum of the Occupation of Latvia / Guided tour	18:00 - 19:30
Dinner	19:30

SEPTEMBER 17, WEDNESDAY EXPO open to the public

Breakfast Hotel	
Expo / Jury sessions Hanzas perons	09:30 - 12:30
Lunch Hotel	12:30 - 13:30
Expo / Jury sessions Hanzas perons	13:30 - 16:30
Excursion **Riga Art Nouveau tour**	17:15 - 19:00
Dinner	19:00

SEPTEMBER 18, THURSDAY EXPO open to the public

Breakfast Hotel	
Expo / Jury sessions Hanzas perons	09:30 - 12:00
Lunch Hotel	12:30 - 13:30
Jury deliberations Hotel	14:00 - 18:30
Dinner	19:30

SEPTEMBER 19, FRIDAY

Breakfast Hotel	
Free time	09:00 - 12:00
Lunch Hotel	12:00 - 13:00
Award Ceremony Splendid Palace	14:00 - 16:00
Reception Splendid Palace	16:00 - 17:00
Farewell evening / Dinner Latvian Railway History Museum in Riga	19:00 - 23:00

SEPTEMBER 20, SATURDAY

Breakfast Hotel	
Departures	All day

*NOTE The Program may change slightly

THE VENUES

HANZAS PERONS

VENUE OF THE EXPO, OPENING CEREMONY
AND EIROFORUM LECTURE

A former railway warehouse reimagined with sleek design for a modern audience

A modern venue with a historical soul. A former railway cargo warehouse in Riga's New Hanza district has been reborn as Hanzas perons – a contemporary concert hall and cultural platform for music, art, and multidisciplinary events. Merging more than 100 years of history with a modern, functional approach, the building now serves as an efficient and versatile space for organizing and hosting public and private gatherings. Following a sensitive renovation, the venue retains its historic identity, standing as a testament to Riga's rapid industrial evolution. Today, Hanzas perons is a recognised cultural destination – a space where artists connect with their audiences, creative minds bring their ideas to life, and culture lovers discover both emerging and established talent.

With the addition of a glass envelope around the original structure, Hanzas perons has been transformed into a striking architectural landmark. Inside, the spirit of the former warehouse is preserved – with restored 100-year-old brick walls, historic wooden beams, and original cargo doors that once served the Riga freight station.

Hanzas perons has received numerous architectural awards, including international recognition, as well as honours for being one of the most significant cultural venues in Riga.

Photos: Lauris Vīksne, Uldis Bertāns

Silver Grove, Riga, Mežaparks

SILVER GROVE AT MEŽAPARKS

LOCAL EXCURSIONS SITE

Dubbed the 'Silver Grove', it's one of Northern Europe's largest open-air stages, celebrating Latvian song and dance traditions

The Mežaparks Grand Arena is an iconic venue for the Latvia's Song and Dance Festival, held every five years to foster national identity and celebrate Latvia's cultural heritage. The newly reconstructed arena, named The Silver Grove (Sidraba Birzs), completed in 2020, draws inspiration from Latvian folk songs, symbolising beauty, unity, and harmony with nature. Adjacent to it, the "SongSpace" exhibition (Dziesmusvētku Telpa) showcases the rich tradition of Latvian choral music, honouring the festival's role in strengthening Latvia's cultural identity and statehood.

THE OLD TOWN OF RIGA *VECRĪGA*

LOCAL EXCURSIONS SITE

Riga's UNESCO-listed medieval heart, beloved by locals and guests for its remarkable architecture and charm

The historic Old Town of Riga, a UNESCO World Heritage Site since 1997, spans almost a square kilometre and features medieval architecture, cobblestone streets, and lively cafés. It houses key institutions like the Parliament of Latvia (Saeima), the national public-service radio broadcasting network's Latvijas Radio headquarters, and various ministries. You can explore landmarks such as the Riga Castle, the Riga Cathedral, and the Independence Square, enjoying the area's rich history, cultural significance, and vibrant atmosphere.

Photo: Riga Investment and Tourism Agency

THE GULF OF RIGA COASTLINE

LOCAL EXCURSIONS SITE

Sandy shores and Baltic breezes make for an untroubled escape

The region is renowned for its pristine, sandy beaches, walking paths, and picturesque coastal views, where the waves of the Baltic Sea meet the shoreline, providing an idyllic setting for sunbathing, swimming, and leisurely walks.

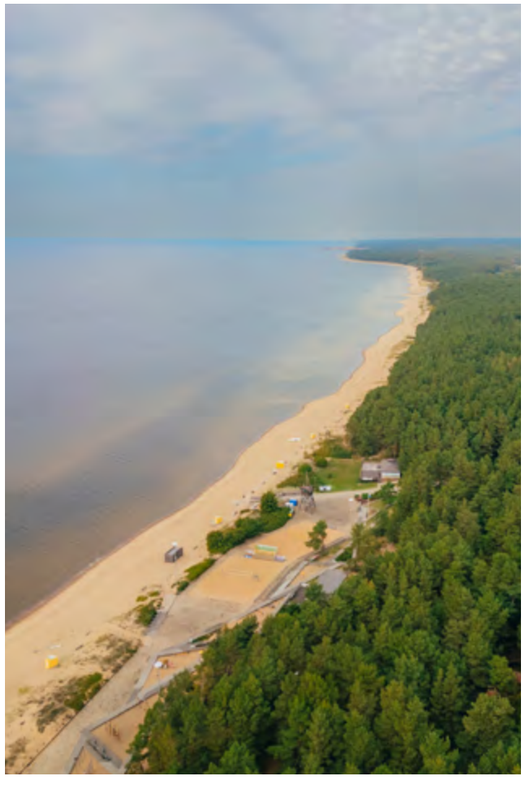


Photo: Saulkrastu pašvaldība

THE UNIVERSITY OF LATVIA

LOCAL EXCURSIONS SITE

www.lu.lv/en

The University of Latvia (UL) is the country's leading university offering more than 110 study programmes and with over 15 000 students from 74 different countries. Since its foundation in 1919, the University has played a significant role in the development of the education system and contributed to the overall economic growth of Latvia.

Today, UL is a modern centre for academic and professional studies and research in natural sciences, medicine, humanities, social and technical sciences.

Experienced academic staff, a modern campus, affordable living expenses and moderate tuition fees make UL an attractive place to acquire various types and levels of higher education, not only for local, but also international students. The University of Latvia - an excellent place for inquisitive minds.

Photo: University of Latvia

SPLENDID PALACE

VENUE FOR THE AWARD CEREMONY

One-of-a-kind Art Nouveau masterpiece – a cinema that's an experience all its own
www.splendidpalace.lv/en

Splendid Palace is one of the most magnificent and long-standing European cinemas that has brought joy to film lovers with excellent quality art since 1923.

Today, visitors can enjoy watching films in an architectural monument of national importance - it is the first ferro concrete building in Riga, designed by architect Frīdrihs Skujiņš. The building was designed in the Rococo style, which makes every visit to the cinema a memorable event.

In addition to watching films, the cinema also offers the opportunity to go on excursions or organize various film-worthy events.

Splendid Palace – a place to celebrate cinema!

Photo: Andrejs Strokins

THE LATVIAN RAILWAY HISTORY MUSEUM

VENUE FOR CLOSING CEREMONY

A place where the story of Latvia's railways unfolds while you unwind
railwaymuseum.lv/en

The Latvian Railway History Museum is a place where you can feel the charm of the railway, feel like a locomotive driver and experience the mood of traveling. The museum was founded in 1994 and is housed in a locomotive workshop building built in the 1880s. The museum's exposition tells the story of the time from the beginnings of the railway in Latvia in the 1860s, emphasizing solutions that are specific to Latvia and the importance of the railway in the development of the country's national economy.

Here you can see the largest collection of broad-gauge vehicles and the largest railway model on a scale of 1:87 in the Baltic states. The interactive exposition *Station Life* helps us understand the importance of the station building and its complexity and order in an attractive way. The films and videos help us to get to know not only the history of the railway and technical solutions of different eras, but also teach children about safety near the tracks. A special experience is to get into the museum's vehicles and explore them nearby. The museum hall not only demonstrates the grandeur of the railway and allows us to get to know the 3rd class passenger carriage built in Riga, but is also a great place to organize various events, exhibitions and concerts.

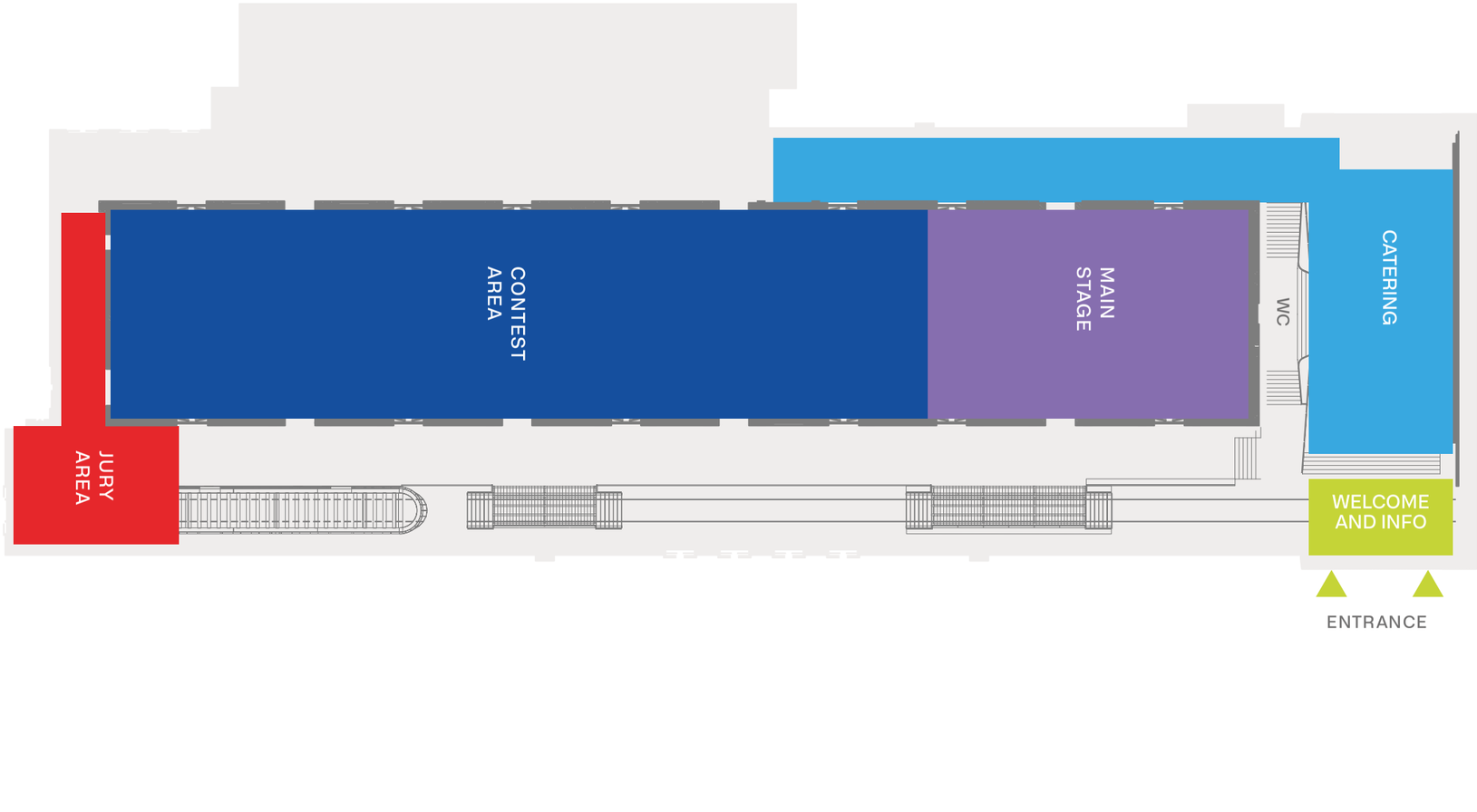
Photo: T. Kalnitis

THE VENUE LAYOUT

HANZAS PERONS

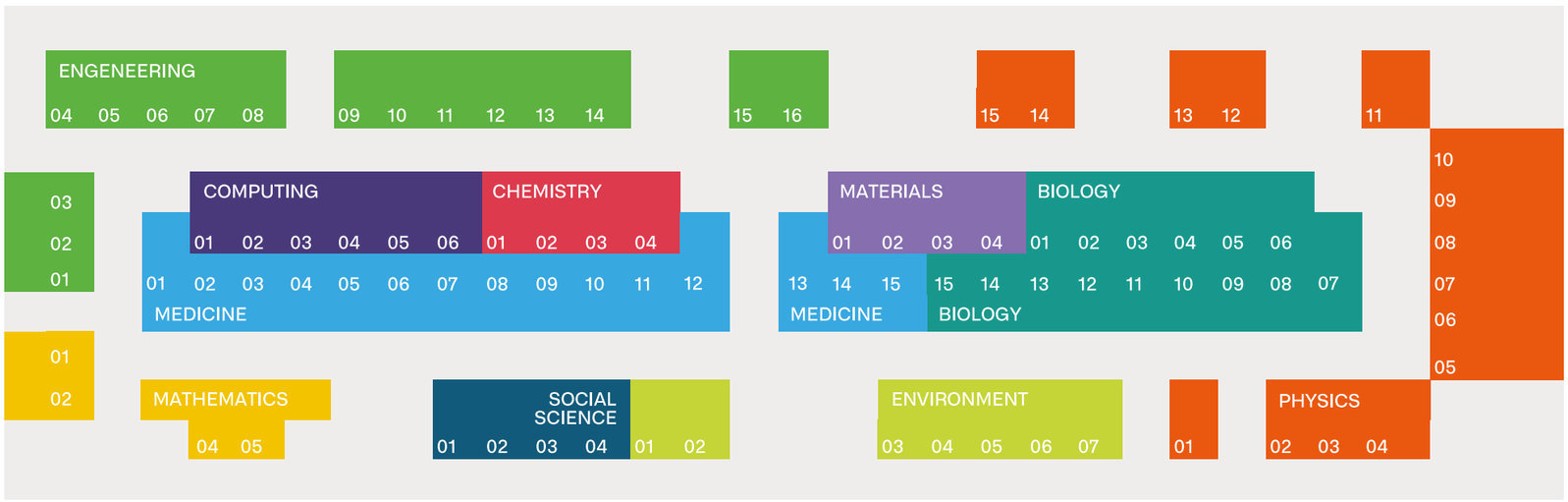
VENUE OF THE EXPO, OPENING CEREMONY AND EIROFORUM LECTURE

Contest area
Jury Area
Catering
Welcome and Info
WC



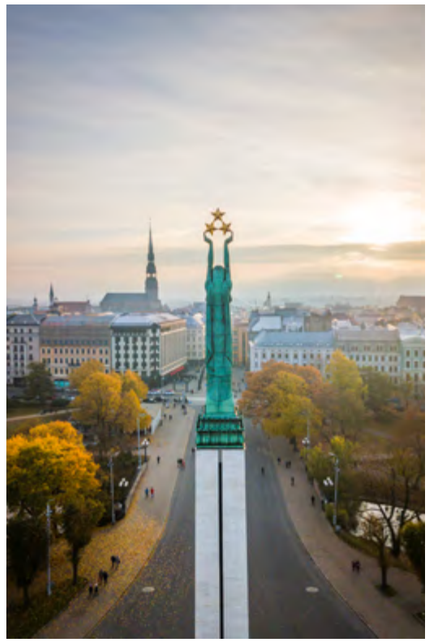
CONTEST AREA

Biology
Chemistry
Computing
Engeneering
Environment
Materials
Mathematics
Medicine
Phsics
Social Science



RIGA – HOST CITY!

Riga, the dynamic capital of Latvia, seamlessly blends centuries of history with cutting-edge innovation



Culture and History

Riga, founded in 1201, is one of the oldest cities in the Baltic. Shaped by German, Swedish, Polish, and Russian influences, it thrived as a trading hub during its time in the Hanseatic League. Although it changed hands over the centuries, it always held onto its cultural and economic significance. Today, as Latvia's capital, Riga blends its storied past with a fresh, vibrant energy. The UNESCO-listed Old Town (Vecrīga) and Art Nouveau gems are just glimpses of its ever-evolving identity.

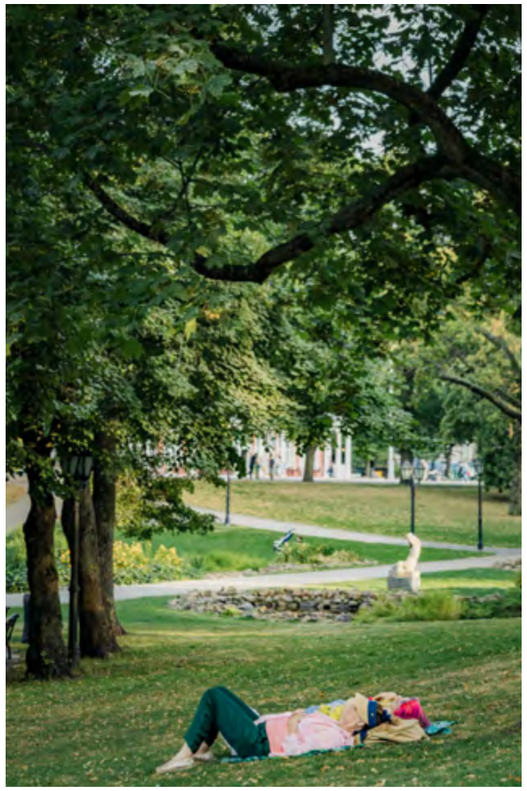
The Art Nouveau Experience

As you probably have sensed by now, Riga stands out for its Art Nouveau architecture, with over 800 buildings showcasing this style. It's one of Europe's best-preserved districts of its kind, earning UNESCO World Heritage recognition in 1997. You can experience this captivating blend of history and beauty firsthand in the city's centre. Alberta Street's Art Nouveau Museum offers a closer look at this architectural treasure, inviting us to appreciate its charm and significance even more.

Architecture

Riga's skyline is a beautiful mix of history and modernity. From Gothic and Baroque to Art Nouveau, the city's architecture tells a unique story. Iconic landmarks like the Three Brothers and St. Peter's Church speak to its medieval roots. At the same time, the city's Art Nouveau district, a UNESCO World Heritage Site, is a testament to the early 20th century's creative spirit. Riga embraces architectural innovation too, with exceptional examples like the National Library and Spīķeri Creative Quarter.

Photo: Riga Investment and Tourism Agency



Eco-Friendly Vision

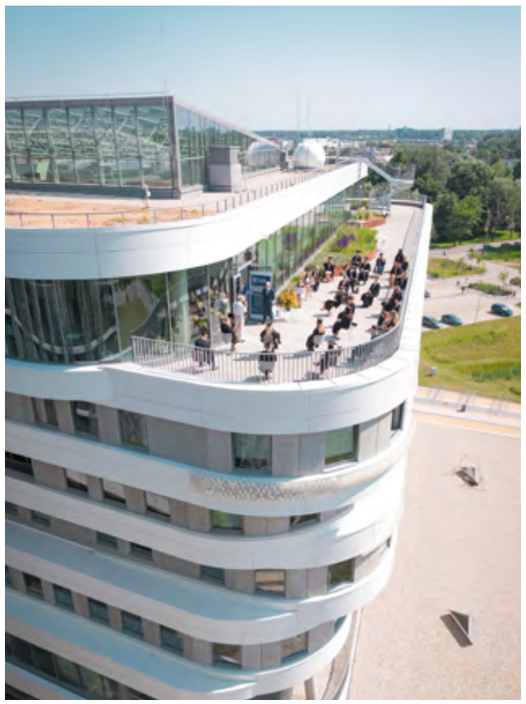
Riga is on its way to becoming a green capital by 2030, pushing forward with sustainability projects like more green spaces, better public transport, and a focus on renewable energy. These initiatives are shaping the city into a healthier, more sustainable place to live.

Photo: Riga Investment and Tourism Agency

Life in Riga

Living in Riga is about finding balance – history and modernity come together in neighbour hoods with their own unique vibe. Pārdaugava is perfect for quiet moments in green spaces, while Mežaparks offers outdoor adventures. The Old Town is full of medieval charm, alongside its lively social scene. Modern areas like Teika and Purvciems offer cozy cafes and local shops. Whether strolling by the river Daugava or exploring the cultural hubs, Riga's efficient public transport makes it easy to get around and experience it all.

EXPLORE RIGA
liveriga.com



THE SYMBOL – THE ROOSTER

Photo: Riga Investment and Tourism Agency

RIGA EUCYS 2025

Why do roosters crown the spires of Riga's churches?

The symbol of this year's EUCYS 2025 host city is the rooster — a figure deeply rooted in the history and identity of Riga. Golden copper roosters, not crosses, adorn the spires of Riga's oldest churches: St. Peter's, the Dome Cathedral, St. John's and St. James's. The rooster symbolizes the break of dawn and the triumph of light over darkness. In Latvian folklore, it is seen as a guardian against evil, while in Christianity, it represents resurrection and vigilance.

Historically, the rooster also served a practical purpose as a weather vane, helping townspeople anticipate trading conditions. This tradition has been preserved in Riga for centuries, with each church having its own unique story about the rooster atop its tower.

Famous roosters in Riga

The most famous rooster crowns the spire of St. Peter's Church. The first rooster was installed there in 1491; by 1941, there had been six, and the current — the seventh — was restored and reinstalled in 2009. A rooster has adorned the Dome Cathedral's spire since 1595 and still functions as a weather vane. The current version was crafted in 1985. At St. John's Church, the first rooster was mounted on a decorative sphere on May 5, 1680. It was later restored on May 22, 1764, after the tower's reconstruction. The spire of St. James's Cathedral features a gilded rooster that has recently been restored and remains one of the most visible elements of this Roman Catholic church in Riga.

Riga's roosters are not just confined to church towers. The cukurgailītis (sugar rooster) — a traditional Latvian candy — is also beloved. It lifts the spirits, energizes, and brings joy.

St. Peter's Church, Riga

LATVIA – HOST COUNTRY

Nature

Latvia’s landscape is a mix of wild beauty and serene charm, with over 2,000 km of coastline, sprawling forests, and wetlands teeming with life. The four national parks located all over Latvia and taking up almost 1,900 km2 are havens for rare birds, diverse habitats, and peaceful trails. The Baltic Sea coastline offers scenic beaches and marshes teaming with wildlife, while more than half of the country is cloaked in forests, perfect for mushroom and berry foraging or leisurely hikes. A huge amount of Latvia’s lakes and rivers, with their clean waters, are ideal for swimming or fishing. You guessed it! Nature isn’t just scenery here—it’s a way of life. Our way.

Tech-savvy innovation

Latvia is a rising star in Europe’s tech landscape, with a thriving startup ecosystem and a strong focus on digital innovation. Riga hosts numerous tech events, attracting entrepreneurs and investors. E-governance initiatives keep everyday life efficient, with services like healthcare and education just a click away, powered by the electronic ID system. Latvia has long been inventive—have you ever heard about Minox, the world’s tiniest camera? Yeah, that was us. Today, it’s the same innovative spirit driving Latvia into the digital future, leading with AI, blockchain, and cybersecurity, to name a few.

Kuldīga. Photo: Investment and Development Agency of Latvia

Rich cultural heritage

Latvia’s cultural soul is woven from centuries of folklore, craftsmanship, and resilience. From intricate weaving to heartfelt folk songs (called the dainas), tradition thrives while inspiring modern art and music. Festivals like Midsummer (Jāņi), with bonfires and songs, connect Latvians to their roots. Whether it’s the Song and Dance Festival, UNESCO-recognized in 2003 for its cultural importance, or the timeless beauty of Latvian woodcraft, the country’s traditions remain vibrant today through folk music, dance, traditional dress and crafts, preserving Latvia’s rich past. And by rich, we really do mean abundant.

Photo: Jānis Romanovskis

National Library of Latvia: Photo Reinis Hofmanis

Contemporary cultural highlights

Latvia’s cultural life is a dynamic blend of tradition and innovation, with globally celebrated talent shaping its creative landscape. Survival Kit is an annual festival of contemporary art, while the Mark Rothko Museum and The National Art Museum, together with smaller institutions like Zuzeum and Kim? Investigate the intersection between local creativity and international influences.

Iconic Latvian musicians—like conductor Andris Nelsons, violinist Gidons Krēmers and mezzo-soprano Elīna Garanča enjoy top billing on the world’s grandest stages and countless others perform in orchestras all over the world. In turn, festivals like Positivus and Sansusi draw international audiences here.

Latvia’s creativity reflects resilience, depth, and global reach, through the work of composers like Peteris Vasks, author Nora Ikstena and filmmaker Laila Pakalniņa. The latest testament to this is Gints Zilbalodis’ 2024 animated film Flow (Straume). Just look it up, you’ll understand.

EXPLORE LATVIA:

latvia.travel

Flow, Director: Gints Zilbalodis, Produced by Dream Well Studio

Discover science in Latvia

Here is a challenge for curious minds!
Can you find 10 key terms which describe research in Latvia in the word grid? Words are hidden in various directions – backward, upward, downward, and diagonally. Can you find them all?

V	L	X	C	K	D	W	J	P	D	P	K	W	Y	Z	Q	Z	Y	R
S	W	J	C	O	Y	O	I	G	B	D	T	I	Q	M	Y	X	V	E
J	V	A	R	X	S	P	I	R	U	L	I	N	A	V	T	U	L	S
Y	L	E	K	O	E	V	N	I	G	J	B	V	S	T	D	W	U	E
N	F	P	Q	B	Z	U	H	X	C	N	N	G	J	O	W	H	L	A
W	R	S	G	S	K	V	N	F	J	X	U	M	O	U	W	S	H	R
C	M	A	G	E	Z	Q	E	O	F	E	Z	W	Q	L	O	E	I	C
H	U	O	J	R	I	J	E	V	J	J	Y	E	U	M	W	L	T	H
N	G	X	E	V	N	O	A	J	W	L	P	M	A	Q	O	C	L	E
O	S	I	A	A	L	A	Y	W	P	O	E	V	N	P	D	I	X	D
U	J	L	P	T	G	U	V	W	C	L	A	Z	T	B	Y	T	O	O
K	E	S	F	O	R	X	U	S	D	Z	V	B	A	F	V	R	M	D
C	C	F	R	R	D	N	E	O	C	R	I	D	F	H	E	A	I	S
D	K	E	Y	Y	U	L	N	Y	Q	B	Y	U	K	Y	T	P	N	A
Z	U	C	S	E	E	I	Q	P	T	J	C	Z	V	R	H	O	O	V
Z	Y	S	D	T	U	B	N	R	Y	R	F	B	P	L	H	N	X	U
W	M	Z	L	M	R	L	F	S	C	O	H	R	K	C	Z	A	A	Y
S	J	W	S	L	A	I	R	E	T	A	M	O	I	B	D	N	U	F
W	Q	K	O	I	W	A	L	D	E	N	R	B	Z	Q	C	A	K	H

Words: **BIOMATERIALS, MELDONIUM, MINOX, NANOPARTICLES, OBSERVATORY, PLYWOOD, QUANTA, SPIRULINA, TELESCOPE, WALDEN**

researchlatvia.gov.lv

research Latvia
Value Through Knowledge

Have you ever wondered how science shapes our world? In Latvia, research is a space where creativity meets innovation, and young people like you are inspired to explore and discover!

Latvia is home to talented scientists and research tackling global challenges – from medicine and sustainability to space exploration.

To showcase these achievements, the Ministry of Education and Science launched *researchLatvia,* a national science communication brand and platform that connects you with groundbreaking discoveries and the minds behind them.

Latvian research is collaborative and future-focused. Dive in, get inspired, and be part of tomorrow's innovation!

BIOMATERIALS
The Baltic Biomaterials Centre of Excellence is driving innovation in medical applications like bone and tissue regeneration. It unites Rīga Technical University (RTU), the Latvian Institute of Organic Synthesis, the Rīga Stradiņš University (RSU), the RSU Institute of Stomatology, and global partners.

MELDONIUM
Also known as mildronate, this cardioprotective drug was developed in Latvia by researchers at the Latvian Institute of Organic Synthesis.

MINOX
The miniature camera Minox was invented by engineer Walter Zapp (1905–2003) and was once produced in Rīga. It is included in the Latvian Cultural Canon for architecture and design.

NANOPARTICLES
Latvian scientists have made major strides in nanoparticle research. For example, the Institute of Solid State Physics (ISSP), University of Latvia (UL) develops novel nano-sized oxide materials and advanced nanoparticle array technologies.

OBSERVATORY
Since 2008, over 140 asteroids have been discovered at the UL Astrophysical Observatory in Baldone, which houses the only Schmidt telescope of its kind in the Baltics and ranks among the largest of its type worldwide.

PLYWOOD
In partnership with the Latvian State Institute of Wood Chemistry, Latvijas Finieris Ltd. leads globally in high-value-added birch plywood research and development.

QUANTA
Latvian scientists have created ~10% of known quantum algorithms. Additionally, researchers at the UL have developed quantum pump theory, advancing nanoelectronics.

SPIRULINA
Developed at the RTU, spin off SpirulinaNord is a microalgae superfood with high nutritional value.

TELESCOPE
The RT-32 Irbene radio telescope, located at the Ventspils International Radio Astronomy Centre, is the largest radio telescope in Northern Europe, and it contributes to international radio astronomy networks. The nearby LOFAR *(Low-Frequency Radio Astronomy Array)* station is part of a global network, with advanced sensors that make Latvia a valuable contributor to the International LOFAR Telescope (ILT) system.

WALDEN
Paul Walden (1863–1957), a Latvian-German chemist, discovered the Walden inversion in 1896, laying the groundwork for stereochemistry.

RIGA
EUCYS
2025

PROJECTS

BIOLOGY

EUCYS RIGA 2025

Epigenetic Repression of Oncogene Using tDeg System

This study aims to overcome the limitations of dCas9-regulator systems commonly used in conventional epigenetic editing approaches by utilizing synthetic biology tools based on epigenetic regulators. However, aberrant regulation of epigenetic regulators can lead to serious side effects such as promoting cancer initiation and progression. To address this issue, this study introduces the tDeg system, which selectively degrades unbound dCas9-regulators that are not complexed with gRNAs, thereby enabling the development of a highly specific synthetic gene regulation module. These findings highlight the potential of this refined epigenetic regulation tool to contribute significantly to cellular therapies for diseases such as cancer.

Sunghyeon Lee
17 years

Yechan Hong
18 years

Jungwook Yang
17 years

PROJECT **BIOLOGY 01**

COUNTRY **SOUTH KOREA**

Role of RECQ4 in DNA Replication Initiation

DNA replication initiation is a tightly regulated process critical for genome stability. RECQ4 is essential in this process, and its dysfunction is implicated in genetic disorders such as Rothmund-Thomson syndrome. To better understand RECQ4's molecular role, we investigated its interactions with replication initiation factors MCM10 and CDC45. We found that MCM10 stimulates RECQ4's DNA binding and promotes liquid-liquid phase separation—a process thought to help spatially organize replication factors. In contrast, CDC45 inhibits both properties. Despite their opposing effects, all three proteins form a complex. These findings offer new insight into RECQ4 regulation and may help clarify its role in disease.

Anna Černá
19 years

PROJECT **BIOLOGY 02**

COUNTRY **CZECHIA**

Bacterial Nanoweponds: The Role of Uncharacterised Genes in the Activity of the Acinetobacter baylyi Type VI Secretion System

The Type VI secretion system (T6SS) is a molecular weapon used by bacteria to inject toxic proteins into rival cells. While well studied in some species, its function in Acinetobacter baylyi is less understood. This project explored T6SS-related genes by using Pseudomonas aeruginosa as a competitor to select mutant strains. These were analysed using competition assays, live-cell microscopy, and genome sequencing. Key findings highlight the importance of VipA / VipB interaction and the presence of TslA in assembly as well as the essential role of ClpV in disassembly of the structure. The results provide insights into the function of the T6SS bacteria, contributing to our understanding of how bacteria compete and survive.

William Oliver Nigel Blättler
20 years

PROJECT **BIOLOGY 03**

COUNTRY **SWITZERLAND**

Nano Support - Application of Chitosan Nanoparticles and Chitosan Powder for Alleviating Water Stress in Lepidium Sativum

The project developed a fertilizer based on chitosan nanoparticles (a sugar derived from shrimp shells or fungi) to support crops during drought. Plants irrigated with nano- or bulk-chitosan solutions were grown under conditions of either sufficient water availability or drought. The results showed that chitosan nanoparticles at concentrations of 0.2 g/L and 0.4 g/L significantly improved growth, the number of healthy leaves, seedlings survival, and both dry and fresh biomass compared to water-irrigated groups. The bulk-chitosan solution (0.2 g/L) enhanced seedling growth. The findings indicate that chitosan irrigation can be an environmentally friendly method of protecting crops from water stress, which could enhance food production and availability in the most drought-affected regions.

Zuzanna Kassner
18 years

PROJECT **BIOLOGY 04**

COUNTRY **POLAND**

The Efficacy of Natural Plant Oils in Ultraviolet Radiation Absorption

Humans need safe, natural ultraviolet (UV) radiation protection products that do not interfere with hormones, pollute ecosystems, or cause cancer. However, current sunscreen testing is costly. To address this problem, I evaluated plant oils (rapeseed, linseed, pumpkin seed, hemp seed, sesame) as synthetic UV filter alternatives by two methods: a traditional spectrophotometric approach and a self-made method – studying the growth of baker's yeast in Petri plates after using plant oil filters during UVA irradiation. All tested oils can absorb UVA radiation. The future of sunscreen production can be cheaper and greener: the developed method can significantly reduce sunscreen price, make the market consumer-friendly, and help companies save precious resources by providing preliminary results.

Evita Mārtinsone
18 years

PROJECT **BIOLOGY 05**

COUNTRY **LATVIA**

Bacteria on the Menu 2.0

In our project, we discovered the new phage variant Mi-Rila, which specifically targets the plant pathogen Rhizobium rhizogenes, the causative agent of hairy root disease. We isolated Mi-Rila ourselves from compost soil, purified and propagated it, and characterised it under various environmental conditions to test its suitability for biocontrol use. Using TEM, SEM and CryoET imaging methods, we determined its morphology: it belongs to the Podoviridae family and has double-stranded DNA. Host range assays confirmed its specificity for the plant pathogen. Genome sequencing verified that Mi-Rila is a novel phage variant. In future experiments, we plan to infect dicotyledonous plants with bacteria in order to demonstrate the preventive effect of our phage in a plant model.

Mia Maurer
15 years

Misha Hegde
15 years

PROJECT **BIOLOGY 06**

COUNTRY **GERMANY**

An Investigation on the Effect of Hormone Pollution on Surrounding Plant Life

This investigation examines the impact of hormone pollution on plant life by evaluating the effect of varying concentrations of a combination estrogen-progestin contraceptive (Yaz) and a progestin-only pill (Utrogestan) on the biomass of Phaseolus vulgaris over five days. Results showed a significant reduction in plant biomass at higher hormone concentrations, especially with the combination pill. These findings highlight environmental concerns regarding hormone contamination in water sources and its disruptive impact on plant growth.

Sofia Koivumäki
19 years

PROJECT **BIOLOGY 07**

COUNTRY **FINLAND**

Calcium2+ Levels in Cardiomyocytes of PLN-Patients

In this project the effects of the PLN-R14del mutation on cardiac spheroids and thus on cardiomyocytes have been researched. These spheroids, which are 3D cell structures, have been derived from human-induced pluripotent stem cells, meaning that the cardiac spheroids represent the cardiac workings of the patient they are derived from. These spheroids have been compared to 'healthy' spheroids, in which the mutation has been corrected through the use of CRISPR-Cas9. Through the use of Calcium2+ screening we have found that the PLN-R14del mutation mainly causes a longer decay time in the Calcium2+ cycle of the cardiomyocyte, which can result in diastolic disfunction, causing symptoms as shortness of breath, fatigue and weakness.

Fenna Theodora Engelina van Ginkel
17 years

Sifra Aardema
18 years

PROJECT **BIOLOGY 08**

COUNTRY **NETHERLANDS**

Analysis of the Effectiveness of Gene Electrotransfer Therapies on CT26 Tumor Models with DRAP and the Development of a DRAP-Based User Interface

This study explores gene therapy combined with radiotherapy in the CT26 colon cancer mouse model using DRAP - the first integrated platform for drug response analysis on PDX models. A secondary objective was to develop an accessible interface for DRAP, allowing simpler, programming-free, and faster analysis. Gene electrotransfer (GET) was used to deliver plasmids encoding chemokines CCL5 and CCL17 as a monotherapy and with radiotherapy. Two GET protocols were assessed: electrochemotherapy (ECT) and high/low voltage (HV-LV) pulses. DRAP showed that ECT was superior to HV-LV. CCL5 (ECT) with fractionated radiotherapy (3×5Gy) was the most effective. By combining molecular biology and computational analysis, the study offers an interdisciplinary approach vital for advancing cancer research.

Lucijan Škof
19 years

PROJECT **BIOLOGY 09**
COUNTRY **SLOVENIA**

A Novel Biological Treatment for Antibiotic-Resistant Vibrio Infection in Aquaculture

Vibrio infections are an increasing global concern and a leading cause of mortality in aquaculture. Conventional treatment with antibiotics has increased antibiotic-resistant bacteria in the environment, posing ecological and health threats. Therefore, it is urgent to find new ways to combat vibriosis. This project tested whether Bdellovibrio and like organisms (BALOs), which are predatory bacteria, could prey on antibiotic-resistant Vibrio and reduce oyster larval mortality. When BALO was applied to treat oyster larvae challenged by pathogenic Vibrio strains, the mortality rates were significantly decreased by up to 73%. This approach functions as a novel treatment for antibiotic-resistant vibriosis in aquaculture, reducing economic loss and protecting coastal resources across the world.

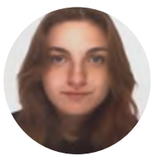
Abigail Hou Qi
16 years

PROJECT **BIOLOGY 10**
COUNTRY **USA**

Bio-RuBisCO2

The project aims to reduce agricultural waste by recovering proteins from leaf extracts, typically discarded during crop production. Focus was placed on RuBisCO, an abundant and hypoallergenic protein rich in essential amino acids, making it suitable for human or animal nutrition. Using waste material brings environmental and economic benefits by lowering disposal costs. A simple method was developed to estimate RuBisCO abundance in leaf waste from various plant species, involving fragmentation in water and ultrasonication. Future efforts will focus on isolating the protein for use in the novel food sector, supporting zero waste and circular economy principles.

Elia Pietro Galli
18 years



Alice Barbieri
19 years

Giorgia Merolli
18 years

PROJECT **BIOLOGY 11**
COUNTRY **ITALY**

InThermal: Warming Your Body from the Internal

This project focuses on developing a natural thermoregulation capsule designed to help the body generate internal heat through the stimulation of thermogenesis. The capsule combines capsaicin, piperine, ginger, cinnamon, and ginkgo biloba, which enhance circulation and metabolism. Capsaicin, derived from chili peppers, triggers a chemical reaction in the stomach that generates heat. This heat, along with the metabolic increase and the vasodilatory effects of the other ingredients, helps maintain warmth for a few hours. The research highlights the potential applications of this capsule in combating hypothermia.

Giulia Masetti
17 years

PROJECT **BIOLOGY 12**
COUNTRY **BELGIUM**

A Mathematical Modeling Study on the Impact of Enteric Glia-Derived Interferon-Gamma on Glioblastoma Progression

This study aims to investigate the neuroimmune interaction between interferon-gamma (IFN-γ), secreted by enteric glial cells in the enteric nervous system, and glioma cell proliferation in Glioblastoma Multiforme (GBM) using mathematical modeling. Five nonlinear differential equations representing glioma, macrophages, TGF-β, and CD8+ T cells were solved via MATLAB's ode45 solver. A parameter ΔEGC was introduced to model IFN-γ secretion. Key immune parameters linked to ΔEGC were identified and defined as ΔEGC-dependent functions. Sensitivity analysis was used to quantify their effects. The model revealed a decrease in glioma cells and supported findings in the literature suggesting that enteric glia-derived IFN-γ may represent a promising target for alternative immunotherapy in GBM.

Ceren Sel
17 years

PROJECT **BIOLOGY 13**
COUNTRY **TÜRKİYE**

Grazing Impacts on the Role of Soil Macrofauna in Plant Litter Decomposition in a Dryland Ecosystem

As drylands expand due to climate change and unsustainable land use (e.g. overgrazing), understanding dry ecosystems is ever so important. In drylands, macro-detritivores (e.g. termites and woodlice) play a crucial role in plant litter decomposition compared to microorganisms, due to better adaptability to dry conditions. We hypothesized that large herbivore grazing, a major land use in drylands, affects macro-detritivore contribution to decomposition through effects on the plant community and the physical environment. Our results show grazing facilitates macro-detritivore contribution to decomposition via effects on the plant community. These findings suggest interactions between grazing, plant community composition and decomposer size are significant to elemental cycling in drylands.

Noa Peled
16 years

PROJECT **BIOLOGY 14**
COUNTRY **ISRAEL**

Are Peptides the Antibiotics of the Future? - A Practical Study on the Development of Resistance Against Antimicrobial Peptides in Gram-Negative Bacteria

AMPs are promising antimicrobials against multi-resistant bacteria. Here I study the effect of the AMP nisin combined with the chelator EDTA on three strains of the gramnegative bacteria E. coli with varying resistance. A systematic study of the development of resistance against the substances was also carried out. Results indicate a limited ability to evolve resistance against nisin and EDTA. There are however signs of cross resistance with some other AMPs and the disinfectant BAC. Moreover I found that the mechanisms of resistance resembled each other and that most were based on the layer of LPS found on gram-negative bacteria. These findings could serve as a basis for future research.

Lukas Lundgren
19 years

PROJECT **BIOLOGY 15**
COUNTRY **SWEDEN**

BIOLOGY

CHEMISTRY

Synthesis of Zinc Nanowires, Study of Properties and Application in Modification of Battery Electrode

This research is studying how zinc nanowires are affecting the charge capacity of batteries. For instance, zinc nanowires are approximately 15 times thinner than a single human hair! To study this, zinc nanowires were put into these batteries as an electrode alongside with regular zinc, and then these both batteries were recharged for 100 times. Results have shown that the battery with zinc nanowires has a 50 times higher charge capacity, which means that it can store 50 times more energy. Batteries that are using zinc are eco-friendlier, cheaper, and less dangerous than lithium ion batteries, which we are using in our everyday life. This research could be a start for a whole new, sustainable energy storing industry!

Rolands Eisāns
18 years

PROJECT **CHEMISTRY 01**

COUNTRY **LATVIA**

AquaPure: Transforming Polluted Water Through Innovation

Water pollution with heavy metals and plastic waste are major global concerns. We developed a solution addressing both: a carbon-based sorbent derived from plastic distillation, particularly plastic bottles. Analysis revealed humic acid residues. Moreover, the structure of the sorbent is enhancing surface activity and porosity for heavy metal adsorption. Unlike activated carbon, our sorbent requires no costly activation and effectively adsorbs Zn2+, Pb2+, Cu2+ ions. Optimal-temperature use yields results comparable to coal. A hybrid tower-basin system proved most efficient. Additionally, our sorbent not only does not affect the taste and odor of water, but also reduces water hardness and removes carcinogens, offering an eco-friendly, affordable approach.

Sofya Seyranyan
17 years

Mesrop Petrosyan
17 years

PROJECT **CHEMISTRY 02**

COUNTRY **ARMENIA**

PLA Production Using Chlorella Vulgaris

The PLA production using the algae “Chlorella Vulgaris” could help reduce environmental pollution caused by throwing away plastic and by absorbing CO2 harming our ozone layer. Cultivating the Chlorella Vulgaris, drying them, performing a hydrolysis with enzymes like maxilase and cellulase, executing a two-day fermentation using lactobacilli and finally doing a polymerization with SnCl2 does in fact produce polylactic acid. Using this sequence of processes on a bigger scale, our project should be able to protect the environment while producing bio-degradable plastic which has multiple purposes like (medical) packaging, toys and filaments for 3d-printing.

Noah Lindenlaub
18 years

Fréderik Mortier
18 years

PROJECT **CHEMISTRY 03**

COUNTRY **LUXEMBOURG**

Understanding Colour

We have always been fascinated by colours. They evoke emotions, affect our mood and appear everywhere around us. Nevertheless, it was not until recently that Maxwell could explain what colour actually is - photons interacting with atoms. Thereby, we began to understand why certain metal complexes exhibited vivid and varying colours. Specifically, this project explored the colour variations in cobalt complexes. Three cobalt complexes were synthesized and analyzed with a spectrophotometer. Their chemical properties were similar, but not their colours. To explain the observed phenomena, ligand field theory was applied. By accounting for the orbital energy differences that the ligands give rise to and comparing standard values to those obtained, the different colours were understood.

Sigrid Hall
18 years

PROJECT **CHEMISTRY 04**

COUNTRY **SWEDEN**

CHEMISTRY

COMPUTING

Cross Linguistic Diagnosis of Parkinson's Disease Using a Fine-Tuned Audio Spectrogram Transformer

Parkinson's disease (PD) is a neurodegenerative disorder marked by progressive motor and non-motor impairments, with hypokinetic dysarthria as a salient, measurable symptom. Although traditional diagnostics are accurate, their cost and invasiveness hinder widespread screening, especially in low-resource settings. This study investigates the cross-linguistic diagnosis of fine-tuned multilingual Audio Spectrogram Transformer (AST) models trained on Korean, English, Italian, and Slovakian speech. Each model was trained monolingually and evaluated in-language and cross-lingually. The Korean-trained model achieved the highest native F1-score (0.95) and best cross-lingual average F1-score (0.91), suggesting certain languages enable better generalization for broader diagnostic transfer.

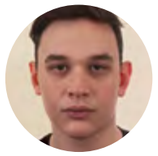
Hyunjoon Seo
17 years

PROJECT
COMPUTING 01

COUNTRY
SOUTH KOREA

Heart Disease Prediction Using Artificial Intelligence

In 2019, cardiovascular diseases were responsible for approximately 20.5 million lives, and 22 million deaths are expected in 2030 (World Heart Vision, 2025). This problem is partly caused by the lack of early and accurate diagnosis. This paper aims to develop an AI diagnostic tool that predicts the likelihood of heart disease. The model was based on the Random Forest Classifier, a machine learning method, and trained with pre-processed data of 303 patients. The SHAP method was applied to make the model interpretable and trustworthy. In order to achieve 94% accuracy, it was optimized through hyperparameter tuning. We integrated this model into a website to build a trustworthy and accessible prediction tool.



Alexandros Tzioras
17 years

PROJECT
COMPUTING 02

COUNTRY
GREECE

Auditory Desensitization and Neuromodulation System (ADNS)

This project presents the Auditory Desensitization and Neuromodulation System (ADNS), an innovative AI-powered headset developed to mitigate the effects of misophonia. The system uses advanced real-time sound filtration and active noise cancellation to selectively suppress triggering sounds such as chewing or breathing without distorting the overall auditory experience. A custom-trained AI model enhances accuracy by identifying and filtering specific stimuli. Real-world testing across diverse environments confirmed the device's reliability, minimal latency, and potential for scalable personal and clinical applications.

Ibrahim Eissa
17 years

PROJECT
COMPUTING 03

COUNTRY
EGYPT

Kivy - Applying Deep Recipe Embeddings for Generation, Retrieval, and Nutritional Analysis through a System for Augmented Surface Interaction

Kivy is a hybrid hardware-software system that transforms the kitchen into a smart, touchless space. The wall-mounted device projects an interactive display onto any surface and uses a camera with hand gesture recognition for controlling timers, converting units, or following recipes via a voice AI assistant. Its AI component uses a custom autoencoder trained on 2.5M+ recipes to create vector embeddings that enable ingredient substitution, similar recipe search, classification, nutrition estimation, and personalized recommendations - blending physical utility with intelligent, user-focused assistance.

Alexandru Simedrea
17 years

Christian Matei Cazacu
18 years

PROJECT
COMPUTING 04

COUNTRY
ROMANIA

Biologically Inspired Hierarchical Vision-Language-Action System for Robotics

This project presents a biologically inspired hierarchical Vision-Language-Action (VLA) system for robotic control. It separates high-level reasoning from low-level execution, similar to how the human brain works. A Phi-4-multimodal model interprets visual scenes and natural language instructions, using chain-of-thought reasoning to break tasks into steps. A CLIPort-based visuomotor policy then executes each step precisely. Tested in simulation with a Franka Emika Panda arm, the system shows strong generalization across tasks. This modular design combines flexibility and precision, offering a scalable path toward more adaptable and intelligent robotic behavior.

Stoyan Hristov Ganchev
19 years

PROJECT **COMPUTING 05**

COUNTRY **BULGARIA**

Explainable AI Approach to Analyzing and Improving Basketball Shooting Ability

AI models act as “black boxes,” with decision processes that aren’t visible. This paper presents an explainable AI (XAI) method for a model predicting basketball shot success or failure. The model, trained on body posture sequences using LSTM, identifies what minimal posture adjustments can turn a failed shot into a success through a new technique called Input Gradient Descent. The system provides players with clear visual and verbal feedback, offering practical, transparent guidance to improve performance. This approach could even be generalized to LLMs.

Aviv Yakov Solan
17 years

PROJECT **COMPUTING 06**

COUNTRY **ISRAEL**

ENGINEERING

RIGA EUCYS 2025

Robot J4, a Robotic Arm Designed to Play Connect Four Against a Human Using the Minimax Algorithm

We designed a robotic arm capable of playing Connect Four against a human, with several difficulty levels. This project strengthened our skills in mechanics (stepper motors, belts), programming (motor control, game algorithm), and electronics (power supply, wiring). We also developed a token dispenser with no mechanical intervention. By combining and modifying open-source plans, we created an autonomous and efficient machine. Our scientific approach included identifying key requirements (precision, autonomy, efficiency, smoothness, adaptability) and leveraging each team member's strengths.

Emma Coutelet
18 years

Kalvyn Martin
18 years

Bastien Alexandre Gaffet
18 years

PROJECT **ENGINEERING 01**

COUNTRY **FRANCE**

AI-Powered Aerial System for Intelligent Search and Rescue Operations

RescuedBy is an innovative drone-based search and rescue system, designed to locate and assist lost individuals in remote areas, such as forests, mountains, disastrous areas etc. Using AI-Powered human detection and optimized route planning, drones will be able to efficiently search for lost people. It also deploys smart beacons, which signals light and sound to be found by humans. Beacon is equipped with a map and compass that will guide individuals toward safety. This technology will help humans to communicate with rescue teams. Additionally, the drone will deliver first aid kits before help arrives, to provide assistance. The project enhances emergency response efficiency and has strong potential to save countless lives.

Sandro Chikovani
16 years

Nikoloz Gegenava
16 years

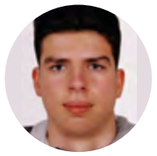
PROJECT **ENGINEERING 02**

COUNTRY **GEORGIA**

ENGINEERING

Design and Construction of a Low-cost and Scalable Ion Thruster

The project focuses on developing a small-scale ion thruster, an environmentally friendly propulsion system. Unlike traditional designs, it relies on the corona discharge principle instead of an ion gun. Utilizing 3D-printed parts, the thruster simplifies the process by using regular atmospheric air, making it cost-effective and easy to replicate at home. With no moving parts and minimal maintenance requirements, the thruster aims to contribute to greener and more efficient propulsion systems for future space missions. The goal is to assess its efficiency relative to conventional ion thrusters, marking a significant step in advancing sustainable space transportation. Current limitations and future applications will be discussed.



Konstantinos Kampanis
16 years

PROJECT **ENGINEERING 03**

COUNTRY **GREECE**

Black ice and its detection with light

Black ice, an invisible yet dangerous layer of ice, poses a substantial hazard for vehicles and pedestrians due to its low detectability. This study presents the design, experimental validation of a laser-based optical sensor for ice detection as well as ice thickness measurement. Utilising Snell's Law and light propagation principles, the system reliably identifies the presence and thickness of ice across varied surface conditions, achieving a mean relative error of under 9% for ice thickness measurements. Three improved sensor models were subsequently developed. Laboratory and field tests confirm the methods performance on real and simulated surfaces such as a smooth surface, sand, stones, concrete and lake-like ice.

Francis Roops
19 years

Aleksis Veide
18 years

PROJECT **ENGINEERING 04**

COUNTRY **LATVIA**

Zoo Management System

Zoo Management System (ZMS) is a self-developed modular platform designed to digitalise small-/medium-sized institutions, tested using a zoological facility. It combines automated climate control, animal data management, time tracking and resource planning. It was developed entirely independently using low-cost hard- and open-source software. The platform is easy to expand, customisable and significantly more affordable than commercial off-the-shelf systems. It aims to reduce administrative effort, simplify operations and improve animal care without licenses. A central user interface presents all functions to the user, running on all platforms. The system integrates seamlessly into daily routines and is specifically tailored to the requirements and constraints of non-profit organisations.

Vincent Engelbrecht
19 years

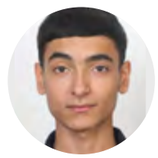
PROJECT **ENGINEERING 05**

COUNTRY **GERMANY**

SafeHand: A Modular Tracked Robotic Platform for Rescue and Field Operations

The goal of our project is to create a tracked robot platform that can be used in rescue operations, agricultural purposes and so-called "dark factories". Whether dealing with a natural disaster or a rescue mission in difficult terrain, there is increasing demand for robotic systems that are mobile, accurate, safe, and user friendly. It is a small, tracked robot platform with a 6-axis mechanical arm, real-time video feed via an FPV camera, and a fully manual control system without programming. The reduced control system provides the operators with the power to use the robot properly even in extreme situations.

Artsrun Petrosyan
17 years



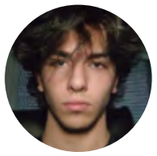
Alen Oganov
17 years

PROJECT **ENGINEERING 06**

COUNTRY **ARMENIA**

AURA, a Bracelet for Skin Protection Through Cancer and UV Detection

AURA is a wearable 3D-printed bracelet designed for both UV protection and early skin cancer detection. It integrates real-time UV monitoring, electrical impedance spectroscopy (EIS)-based lesion assessment, and AI-powered mole detection and classification in a compact, offline device. A UV analog sensor measures UV index, while the AD5933 chip enables impedance analysis of skin abnormalities. A CoreML model classifies moles from user-taken images with on-device AI. Paired with a mobile app via Bluetooth Low Energy, AURA empowers users to monitor UV exposure, evaluate lesions, and detect suspicious moles, combining prevention with accessible, early diagnosis.



Shaheen Aljourdi
17 years

Rodrigo Von Mayer Goulart
17 years

PROJECT
ENGINEERING 07

COUNTRY
LUXEMBOURG

From Thought to Movement

Parkinson's disease affects a patient's mobility because signals from the brain no longer reach the muscles. But the intention behind movement often remains intact - measurable and unique. This project presents a personalised neurotechnology for Parkinson's patients. A multimodal transformer model was trained on EEG, EMG, and IMU data collected from myself and, in the future, from my father (who has Parkinson's disease) to classify movement intentions in real time. I built the EEG hardware and designed the system based on an extensive literature review. A 6-axis robotic arm serves as proof-of-concept, controlled in real time by my biosignals. Future versions may restore motion via focused ultrasound and electrical muscle stimulation - creating a direct link from thought to movement.

Tobias Bendix Nielsen
20 years

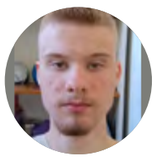
PROJECT
ENGINEERING 08

COUNTRY
DENMARK

Killing Bacteria with an Electric Fly Swatter

Portable solutions for water treatment are required until the infrastructure for water treatment is established. One method already used for the pasteurization of liquid foodstuffs on an industrial scale is PEF (Pulsed Electric Field) sterilization. We designed, constructed and tested a portable, battery-operated PEF water treatment device and assess its effectiveness in inactivating microbes present in water. We built our device using widely available materials such as an electric fly swatter, a metal straw, a steel rod and a spark gap made of two burned-out krypton bulbs. When tested, our device had a statistically significant effect in inactivating microbes. However our study had many sources of error and further studies are needed before PEF can be properly utilized in water treatment.

Hermanni Sallinen
18 years



Niilo Sipilä
18 years

PROJECT
ENGINEERING 09

COUNTRY
FINLAND

GlobalGuard: Design and Validation of a CubeSat Constellation for Environmental Disaster Monitoring and Response

GlobalGuard is a scalable network of CubeSats designed to provide low-cost, real-time monitoring of natural disasters. Based on the hypothesis that traditional satellite systems are too expensive and inaccessible for many regions, especially in the Global South, the project explores how CubeSats can measure key environmental parameters such as temperature, soil moisture, and atmospheric conditions. Data are transmitted to a mobile platform, ensuring access for local communities, authorities, and humanitarian organizations.

Ginevra Terrizzano
17 years

PROJECT
ENGINEERING 10

COUNTRY
ITALY

Development of an Autonomous Bionic Sea Turtle Robot for Ecological Monitoring using AI

Earth's oceans and waterways face threats from climate change, pollution, and invasive species. To protect these environments, we need reliable ways to monitor their health. This project introduces a bionic sea turtle robot, inspired by green sea turtles, to help survey ecosystems with minimal disruption to aquatic life. The robot was designed with a custom propulsion mechanism and optimized using computer simulations and pool testing. It can navigate autonomously at various depths, following a set path using onboard sensors and control algorithms. An AI-powered computer vision system was developed, capable of detecting coral bleaching with 96% accuracy. This nature-inspired robot demonstrates how biomimicry and advanced technology can support marine conservation and ecological research.

Evan Budz
15 years

PROJECT **ENGINEERING 11**

COUNTRY **CANADA**

Mechanical Arm Project

Our project aims to help people with muscular deficits regain greater autonomy in their daily lives through an exoskeleton designed for the arm. Two years ago, in reeducation, we met a hemiplegic man who had difficulty walking and moving his arm, despite the help of his wife and a physiotherapist. We shared with him and understood the challenges he faced on a daily basis. Later, our teacher asked us to make a science-expo project for our laboratory. Inspired by this meeting, we decided to design a device that could improve the lives of those in a similar situation.

Ugo Manfredi
18 years

Manon Carlier
18 years

Jarod Moury
18 years

PROJECT **ENGINEERING 12**

COUNTRY **BELGIUM**

Care Servos

Motor disability patients face daily challenges and a complex treatment journey, with physical therapy being the cornerstone of managing the disability. However, certain limitations in therapy can pose risks, such as falls or injuries during rehabilitation. Care Servos, an innovative robotic system, was developed with safety and support as its primary focus to address this. The device aims to prevent falls and ensure safety during therapy and daily movement. By integrating advanced motor technology, the robot enhances mobility and promotes a secure environment for rehabilitation. The design and development process was guided by extensive research and user needs consideration. The prototype has been successfully realized, with a success rate of up to 72%.

Yoana Bshay
17 years

Hebatallah Zidan
16 years

PROJECT **ENGINEERING 13**

COUNTRY **EGYPT**

HearMe : Convert Sign Language to Voice

Hearing-impaired individuals face various difficulties due to a lack of communication in daily life. The need for assistance in areas such as public transportation, hospitals, and banks can lead to negative situations such as social isolation, introversion, and isolation from society. The process of communicating with individuals who do not know sign language is not practical due to the time-consuming correspondence and the difficulty of accessing translators. This project aims to enable hearing-impaired individuals to communicate effectively and independently with individuals who do not know sign language. The research aims to improve the quality of life of hearing-impaired individuals by solving their communication problems in daily life and emergencies.

Elif Ece Gökdağ
15 years

Yağmur Özgül
15 years

PROJECT **ENGINEERING 14**

COUNTRY **TÜRKİYE**

DIFFY – A Continuous-Contact Mechanical Transmission System for Optimizing Robotic Applications with a Limited Number of Motors

The DIFFY introduces a Continuous-Contact Mechanical Transmission System based on a differential mechanism that dynamically distributes power from two motors between two outputs, each able to transmit power to an external mechanism. The system can either focus the combined power of both motors on a single output shaft and achieve high force and speed, or distribute the power evenly between two output shafts for multitasking or balanced output. By adapting power distribution to real-time tasks, the DIFFY focuses on energy efficiency and performance. The compact, modular design makes our solution well-suited for advanced robotics applications where space, weight, and power constraints are critical such as: space exploration robots, robotic arms, search and rescue robots.

Sebastian Florin Tanase
19 years

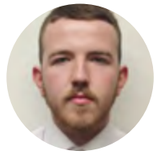
Dragos Babusanu
18 years

PROJECT **ENGINEERING 15**

COUNTRY **ROMANIA**

Modular Robots

Our modular robot advances autonomous robotics by integrating LiDAR, mmWave radar, and a vision-based robotic arm into a versatile platform. The custom mapping software fuses multi-sensor data for precise navigation in dynamic environments like warehouses, outperforming standard SLAM. Key innovations include adaptive sensor, a plug-and-play modular design, and real-time object recognition. Applications range from inventory management to assistive healthcare. Future work focuses on swarm coordination and edge AI enhancements. This project demonstrates how modularity and custom algorithms create adaptable, efficient automation solutions.



Igor Višňovsky
19 years

Martin Zayonc
19 years

PROJECT **ENGINEERING 16**

COUNTRY **SLOVAKIA**

ENVIRONMENT

RIGA
EUCYS
2025

Electrospun Nanofiber Membranes: A Sustainable Solution for Microplastic and Co-Contaminant Removal from Contaminated Water

This project presents a sustainable water filtration solution using electrospun cellulose acetate nanofiber membranes to remove microplastics and co-contaminants. By optimizing electrospinning parameters, the produced membranes demonstrated enhanced filtration efficiency and selective retention of various plastic types. Compared to conventional methods, the nanofiber structure improved mechanical strength, surface area, and microplastic adhesion. This eco-friendly technology shows great potential for environmental remediation and can be further developed for broader applications in water treatment.

Angeliki Giorgalla
18 years

Eliana Christodoulou
18 years

PROJECT ENVIRONMENT 01
COUNTRY CYPRUS

A Scalable Platform Synchronizing Bitcoin Mining with Live Renewable Energy for Carbon Neutral Profitability

This project presents Verdex, a platform that makes both time-based and geo-economic mining decisions. It has two components: DARB-RL which throttles the mining activity in accordance with real-time renewables forecasts, and OBMLS-2 which selects the optimal places to mine, in accordance with tax, grid and climate data. It is estimated that during a 56-day trial, Verdex utilized 71.3% (v. 38.4%) renewables, and increased profits 13% (about €75), while avoiding 112 kg CO_2e emissions. The platform did not drift with a marginal (<0.8%) increase in energy use (MAE = 5.2%, RMSE = 7.8%). Simulations indicated the AI could reliably serve any location and price, as per the EU Taxonomy.

Lenan Du
17 years

Fanxi Jiang
17 years

PROJECT ENVIRONMENT 02
COUNTRY LUXEMBOURG

Differences in Diversity and Number of Pollinators on Different Types of Meadows

Pollination is a vital ecological process, essential for biodiversity and food production. In our study, conducted from May to September 2023, we monitored the abundance and diversity of pollinators across six meadows of three types: extensive, intensive, and urban. Using a 50-meter transect method, butterfly nets, and direct observation, we assessed pollinator presence, while plant diversity was evaluated using the quadrat method. Extensive meadows showed the highest pollinator diversity and abundance, while urban meadows had the lowest due to frequent mowing. Butterfly diversity was greatest on extensive meadows. Intensive meadows had fewer plant species, but many were purple-flowered, a color known to attract pollinators.

Zala Salaj
19 years

Ema Mirič
18 years

PROJECT
ENVIRONMENT 03

COUNTRY
SLOVENIA

Melioration in Estonia and its Impact on the Pususoo and its Catchment Area

The purpose of research was to get overview about melioration history and practices in Estonia and to document hydrological changes in Pususoo bog and in its watershed. Pususoo is one of the biggest bogs in Harju district and it influences environment in three neighbouring counties. In 1981 Pususoo bog got national reserve status under name Laukesoo, what is round and extra bog pond rich part of this wetland. Since 2004 the reserve is part of the Natura 2000 protected areas network. During 2010—2020 took place the renewal and reconstruction of land improvement systems in Pususoo region, during what environmental changes occurred in its watershed. Environmental changes in this wetland influence roughly 1/3 of Estonian population because it regulates availability of their drinking water.

Mari Maurer
19 years

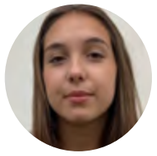
PROJECT
ENVIRONMENT 04

COUNTRY
ESTONIA

Using HUMAN HAIR to Adsorb Dyes from Polluted Water

This study investigates the efficiency of human hair as a low-cost, sustainable adsorbent for removing methylene blue (MB), a common cationic dye, from aqueous solutions simulating industrial effluents. Through various experiments involving different hair masses, agitation, solution concentrations, and contact times, the adsorption process was optimized and evaluated using spectrophotometry and isotherm models. The model that best describes the adsorption by hair is the Freundlich model confirming high adsorption efficiencies, reaching up to 97%, demonstrating human hair's potential in wastewater treatment applications. We believe that bioadsorption of methylene blue using human hair is an excellent solution to an environmental problem, as it is low-cost and uses a waste material.

Madalena Silva
18 years



Neuza Rodrigues
18 years

PROJECT
ENVIRONMENT 05

COUNTRY
PORTUGAL

ParFormer – A Calculation Tool for the Energy Transition

ParFormer is an innovative software tool designed to optimize the parallel operation of power transformers in electrical grids. By accurately calculating load distribution and enabling the efficient use of existing transformers, it reduces the need for purchasing new equipment. This leads to significant resource savings and lowers costs. Consequently, ParFormer accelerates the expansion and modernization of power networks, supporting a faster transition to smarter and more resilient grids. The project combines advanced algorithms with practical engineering to enhance grid stability and sustainability.

Anna Gasselseder
19 years

PROJECT
ENVIRONMENT 06

COUNTRY
AUSTRIA

Mediator-Free Bio-Photovoltaic Electricity Generation Using Ulva spp. Macroalgae

Photosynthesis is the process in which organisms utilize sunlight to convert water and carbon dioxide into sugars, releasing oxygen into the environment. Macroalgae perform photosynthesis with up to 3.5 times greater efficiency than land plants. Bio-photovoltaic (BPV) cells aim to harvest energy from these organisms. This project achieves nearly twice the power density of previous BPV systems and demonstrates the potential of using macroalgae in renewable energy. This project paves the path for more commercially competitive BPVs, a green-energy land-independent energy source that generates additional revenue stream for macroalgae farmers.

Saeed Geraise
18 years

PROJECT **ENVIRONMENT 07**

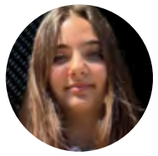
COUNTRY **ISRAEL**

From Sea to Sustainability: Crafting Innovative Products from Posidonia Oceanica Dead Leaves

This project explores how to sustainably reuse dead Posidonia oceanica leaves, which wash ashore in the Mediterranean. Instead of viewing them as waste, the goal is to create eco-friendly products like biodegradable packaging, supporting both the environment and local economies. Engaging communities raises awareness of the seagrass's importance, turning a problem into an opportunity for sustainability and economic growth.

Georgina Vassiliadou
14 years

Maria Louiza Vassiliade
15 years



Katerina Kyriakou
15 years

PROJECT **MATERIALS 01**

COUNTRY **CYPRUS**

Taffonisation, When the Sea Shapes the Mountain!

Taffonisation shapes up Corsica's magnificent landscapes, but it is also responsible for the degradation of our heritage. The menhir statues, evidence of the Bronze Age, are a case in point. Understanding the mechanisms behind this very particular type of erosion should enable us to protect our monuments more effectively. Our study focused on the influence of freeze/thaw and the action of salts in a damp environment. We also conducted experiments to quantify the pressures generated when water freezes. Then, in collaboration with the IRPA laboratory (Institut Royal du Patrimoine Artistique, Royal Institute of cultural heritage) we looked at the mechanisms by which salt is added and its influence on this degradation.

Tia Anne Nicole Bodson
16 years

Jean-Antoine Dary
16 years

Ugo Imran Hassam Ismail
17 years

PROJECT **MATERIALS 02**

COUNTRY **FRANCE**

MATERIALS

Development of a Manufacturing Method for 3D Printing Filament Containing Ferromagnetic Particles and Enabling the Production of Structures with Arbitrary Magnetization

The project focuses on the creation of magnetic shape-shifters that can transform in a controlled and predictable way. Such structures can find numerous applications in soft robotics and medicine, as they do not require electric energy to function properly but instead rely on appropriate changes of magnetic field. The aim of this research was the development and manufacture of an innovative 3D printing filament that remains elastic and durable while containing ferromagnetic particles. Currently, such filaments are not commercially available, making the obtained results promising. The 3D printed from fabricated filaments elements behaved as expected, deforming under an external magnetic field and returning to their initial geometry when the field was removed due to material's elasticity.

Emil Pająk
18 years

PROJECT **MATERIALS 03**

COUNTRY **POLAND**

Is it Glued?

This experiment puts nine adhesives to the test, challenging their strength and versatility across a range of surfaces, including slate, wood, plastic, and stainless steel, under different environmental conditions. Highlighting which adhesives are best suited for specific industries. This experiment also brings a focus to glue, something that most people overlook, providing a foundation for future research in the science behind glues and their chemical formula. Using a hammer-impact strength test, the adhesive performance after 48-hour curing periods was found. Demonstrating that adhesive selection must match both substrate material and environmental conditions for optimal performance.

Zen Joseph Caruana
17 years

Kristian Casingena
17 years

Danil Golomovzy
17 years

PROJECT **MATERIALS 04**

COUNTRY **MALTA**

MATHEMATICS

On Apollonian Cubics in a Triangle

For four points A, B, C, D lying on a common line in this order, we can consider the set of points X such that the angles AXB and CXD are equal. In general, this set forms a circle, known as the Apollonian Circle. One may ask how this set changes if one of the points A, B, C, D does not lie on the line containing the other three points. It turns out that instead of a circle, we obtain a curve described by a cubic equation. In my paper I study geometric and algebraic properties of such curves. I also show how to construct them and describe using barycentric coordinates. Using the derived theory, I also prove numerous complex theorems. In doing so, I show that cubic curves, like lower-degree curves, serve as a highly useful tool in solving geometric problems.

Antoni Łuczak
18 years

PROJECT **MATHEMATICS 01**
COUNTRY **POLAND**

Population dynamics for the Wolves in Europe: A Mathematical Mode

This research explores the dynamics of wolf populations in Europe using mathematical models that combine biological data and ecological theory. Beginning with standard population models, this research evolves towards spatially explicit simulations incorporating growth, movement, and environmental constraints. This model aims to understand current wolf distributions and predict future population spread. The work also demonstrates how mathematical biology can help interpret ecological patterns and inform conservation strategies.

Sam Lars van Ginhoven
18 years

PROJECT **MATHEMATICS 02**
COUNTRY **NETHERLANDS**

MATHEMATICS

How to Mathematically Evaluate Whether a Rigid Flat-Foldable Origami Design Will Unravel or Not and Whether it Will Unravel Completely or Incompletely When Pulled from Two Points?

This study develops a mathematical framework to evaluate whether a rigid flat-foldable origami structure will unravel completely, partially, or not at all when pulled from two points. Starting with single-vertex designs, the study introduces geometric theorems based on crease intersection and torque from the line of tension. These are extended to multi-vertex structures by incorporating stacking constraints, angular rotation, and degrees of freedom. The result is a deterministic algorithm that predicts unraveling behavior from crease patterns alone, offering practical applications in deployable systems, robotics, and material science.

Toma Kamata Sydnes
19 years

PROJECT **MATHEMATICS 04**

COUNTRY **NORWAY**

Properties of the Cobb Angle and the Parabola Inscribed an Angle and their Application for Modeling the Scoliotic Spinal Curve

The project focuses on developing mathematical tools to improve the accuracy of Cobb angle measurement, which is used to assess spinal curvature in humans. Traditional measurement approaches may produce errors in the presence of spatial spinal deformities, such as vertebral rotation. This study investigates how vertebral rotation affects the Cobb angle and introduces a method for its more precise calculation. It is proposed to use a parabola for mathematical modeling of the shape of the human scoliotic spinal curve. Based on the project findings, a simple computer tool is suggested, which can enhance the accuracy of Cobb angle measurement and assist in monitoring changes in spinal condition over time.

Viktoriia Goncharenko
16 years

PROJECT **MATHEMATICS 05**

COUNTRY **UKRAINE**

MEDICINE

Molecular Targets for Antiviral Therapy of Intestinal Infections

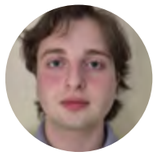
Viruses are minuscule infectious particles that cause tremendous health problems around the world. The cellular infection process occurs in every single one of us whenever we get sick. Therefore, understanding virus biology is critical for developing effective therapeutic approaches. I studied how the protective mechanisms of cells fighting infections alter the way these cells work, grow, and interact with other cell types. I discovered that when two cell populations grow together, the cells called fibroblasts protect intestinal epithelial cells from dying. This allows cells that line the intestine to grow and maintain their physiological functions. My results indicate novel molecular pathways that can be exploited to fight viral infections and lessen the suffering of people.

Artūras Makselis
19 years

PROJECT **MEDICINE 01**
COUNTRY **LITHUANIA**

Control of Neural Micro-Network Properties by Electrical Stimulation, Its Mechanisms and Significance

Neural networks have a fascinating ability to change their properties. Selective activation occurs in response to different patterns of electrical impulses, which forms the basis of sensory discrimination in the nervous system. It was found that these neural networks change their properties under conditions of prolonged, varied stimulation. Therefore, the conclusion is that if it is possible to alter the properties of neural networks in this way, then it should also be possible to restore pathological neural networks to a normal condition. That is, their excellent healing ability, which will allow us to treat a number of neurological disorders.



Lazare Garibashvili
17 years

PROJECT **MEDICINE 02**
COUNTRY **GEORGIA**

From Treatment to Harm: Immune Dynamics of Chemotherapy-Induced Pain

Neuropathic pain affects over half of chemotherapy patients, yet effective treatments remain limited. This study focused on the surroundings of the choroid plexus, hypothesizing that its immune cells influence ependymal macrophages via cytokines. Using a rat model of paclitaxel-induced neuropathy, proinflammatory (activated, ED1+) and anti-inflammatory (resident, ED2+) macrophages in the ependymal layer were labeled by immunofluorescence. Microscopy was used for visualization and quantification per mm^2. Results showed an early rise in ED1+ cells, followed by the occurrence of the ED2+ compensatory mechanism by day 7. Findings suggest a dynamic immune response and help to clarify the potential role of the choroid plexus in chemotherapy-induced neuroinflammation.

Evelína Voleská
19 years

PROJECT **MEDICINE 03**
COUNTRY **CZECHIA**

Nanoparticle-Drug Systems Against Cancer. A Comparative Study of the Encapsulation of Mono- and Tetra-Substituted Porphyrins in Various Nanoparticles

Photodynamic therapy (PDT) is a cancer treatment that utilizes light, molecular oxygen, and a photosensitizer (PS) to produce reactive oxygen species. While porphyrins are known PSs, encapsulating them in nanocarriers remains difficult. This is problematic since there is no clinical method for delivering PSs directly into cancer cells. Using ^{1}H-NMR and ^{1}H-^{1}H NOESY spectroscopy, this study shows the encapsulation of mono-TCPP and tetra-TCPP in different nanoparticles. Tetra-TCPP was encapsulated in 87.5% of the nanoparticles, while mono-TCPP was found in 50%, demonstrating the versatility of tetra-TCPP. Although stability requires additional testing, these findings clarify on how to optimize drug delivery for PDT.

Lukas Emanuel Gurzeler
19 years

PROJECT **MEDICINE 04**
COUNTRY **SWITZERLAND**

Designed for Men, Prescribed to Women. CYP1A2 Activity During The Menstrual Cycle

Sex differences in pharmacokinetics causes medicine to be metabolized differently in women, and leads to women experiencing more side effects. This study aims to investigate whether the activity of enzyme CYP1A2 fluctuates between the early follicular phase and around ovulation. Caffeine and its main metabolite paraxanthine, was used as a marker for CYP1A2 activity measured by ratio(paraxanthine/caffeine). Urine samples were collected from six test subjects (age 16-19), and analysed using HPLC-MS. The results of the study suggest a possible link between women's menstrual cycle and variation in CYP1A2 activity. It highlights the need for further studies with larger groups of participants, to better understand the pharmacokinetic differences between men and women.

Amanda Refslund Ravn
18 years

PROJECT **MEDICINE 05**
COUNTRY **DENMARK**

The Effect of Treatment, Physical Activity, and Diet on Muscle Function in an Adolescent Girl with Hodgkin's Lymphoma

The research paper presents the case of a teenage girl with Hodgkin's lymphoma (HL), investigating the effects of disease and treatment on muscle mass and function during and after therapy. Three factors—disease with treatment, physical exercise, and nutrition—were monitored over six months of therapy and six months afterward. Various methods were employed to collect and analyze data. Muscle function was assessed through periodic tests compared to a control group, and muscle mass was measured by BIA and DXA. The study showed that despite the cancer and aggressive treatment, the adolescent preserved muscle mass and function through proper nutrition and physical activity.

Vita Pestotnik
20 years

PROJECT **MEDICINE 06**
COUNTRY **SLOVENIA**

RetinAI: A Low-Cost AI System With a Wearable Headset and Retinal Imaging for Eye Tumor Home-Screening

Access to accurate early screening for retinoblastoma (RB) remains challenging despite the fact that later stages can lead to enucleation and blindness. To address this issue, this study develops RetinAI, the first low-cost wearable headset and retinal camera with AI-powered systems for early detection of RB. RetinAI consists of two innovations, an extraocular detection device coupled with a YOLOv11 model to detect the early sign of RB, leukocoria, and an internal retinal imaging system powered by ResNet-50 and YOLOv11 to detect retinal tumors. RetinAI's clinical tests showed that it can detect both retinoblastoma and normal cases. RetinAI can significantly improve RB early detection and can be used at home, annual check-ups or small clinics without eye specialists.

Ethan Shuai Yan
16 years

PROJECT **MEDICINE 07**
COUNTRY **USA**

ACT {Aid, Care, Treat} - an Immediate, Accessible, Technological Aid to Assist in Emergencies, Supported by a Comprehensive Repository of Medical Information

ACT is an innovative emergency response application designed to Aid, Care and Treat an injured party in a medical emergency situation, to enhance and radically improve existing emergency response processes and, ultimately, to save lives. The development of ACT is driven by a commitment to optimise the traditional process in order to improve patient outcomes in critical situations. We have created a technological aid which facilitates the direct and instantaneous transmission of an end-user's personal and medical information, as well as their geolocation coordinates, to responding service providers in the event of an emergency. It also equips end-users with the tools and guidance to take prompt, potentially life-saving actions whilst awaiting professional medical intervention.

Saoirse Murphy
16 years

Ciara Murphy
18 years

PROJECT **MEDICINE 08**
COUNTRY **IRELAND**

Robo-ProT 3.0 + Robo-ProT_Alzheimer's disease

Robo-ProT 3.0 is an innovative robotic system designed to formulate personalized probiotic and bioactive therapies in real time. It combines a modular hardware device, a curated and expandable database, and an intelligent algorithm capable of designing targeted treatments based on patient symptoms. A dedicated application focuses on Alzheimer's disease prevention through specific microbial formulations and predictive simulations using AI. The platform currently supports over 10^{79} unique therapeutic combinations, offering a groundbreaking, scalable solution in the field of personalized medicine, with practical applications in hospitals, clinics, pharmacies, and preventive healthcare settings.

Matteo Quistaini
19 years

PROJECT **MEDICINE 09**
COUNTRY **ITALY**

Neurobiologically Informed Targeted Schizophrenia Treatment: A Multi-Omic, fMRI Approach

About one-third of people with schizophrenia don't respond to current medications, and many discontinue treatment due to severe side effects. I analyzed brain scans and gene expression data from individuals with schizophrenia and found major disruptions in GABAergic interneurons—cells crucial for maintaining brain balance. Using this insight, I designed a drug aimed at restoring healthy brain function rather than just suppressing symptoms. Then, I tested its binding to three key brain receptors and compared it to three commonly used antipsychotics. My compound outperformed all three, suggesting it could offer a more effective treatment with fewer side effects and more lasting relief for those living with schizophrenia.

Sara Waqas
16 years

PROJECT **MEDICINE 10**
COUNTRY **CANADA**

Development of Peptide-drug Conjugates Targeting Glioblastoma Stem Cells

Glioblastoma accounts for 50.1 percent of all primary malignant brain tumours. Tumour stem cells play a key role in treatment resistance and tumour recurrence, as they are capable of self-renewal, have tumour-initiating capabilities, and are adaptable to environmental stress, including chemotherapy. The aim of this study was to generate variants of an already published peptide that specifically targets the Cadherin 2 membrane proteins and receptors found on glioblastoma stem cells, which may improve diagnostics and therapeutic targeting. The most important result of the study so far is the structure-activity relationship of the peptide – daunomycin conjugates based on the CD spectroscopy analysis and MTT assays.

Lili Szokolai
18 years

PROJECT **MEDICINE 11**
COUNTRY **HUNGARY**

Is Scopaesthesia a Real Phenomenon? An Experimental Investigation of the Ability to Detect an Unseen Gaze

Scopaesthesia, the ability to detect an unseen gaze, is claimed by some researchers to be a real phenomenon, potentially challenging conventional models of visual perception. The present study aimed to test this experimentally by assessing whether 20 participants could determine if they were being watched from behind across 20 randomized trials each. Three hypotheses were tested: one examining the participants´ ability to indicate better than chance whether they were being observed or not, one based on difference in accuracy depending on being observed or not, and one based on the blindfolding of participants. The results of the hypothesis tests did not support scopaesthesia as a real phenomenon, and the study therefore does not challenge the prevailing explanations of visual perception.

Helle Kvam Songe-Møller
18 years

PROJECT **MEDICINE 12**
COUNTRY **NORWAY**

Efflux Pump Inhibition as a Strategy to Enhance Antibiotic Sensitivity in Escherichia coli: A Study on ΔtolC Mutants Under Acidic Stress

Facing the global health crisis of antimicrobial resistance, my research tackles a critical defense mechanism in E. coli. This project is dedicated to engineering a new pathway to more effective and sustainable treatments for persistent bacterial infections. E. coli, is a widespread Gram-negative pathogen and frequently causes severe conditions from UTIs to sepsis. While antibiotics are the frontline, this bacterium has evolved formidable resistance. One of the mechanisms that helps E. coli resist these antibiotics are efflux pumps, they actively expel these drugs. My investigation centers on the pivotal role of these pumps, proposing an innovative strategy: their inhibition. By exploring how disrupting efflux pump function under varying acidic conditions impacts bacterial vulnerability.

Kawtar Hamioui
18 years

PROJECT **MEDICINE 13**
COUNTRY **BELGIUM**

A Language-Independent Speech-Based Classifier For Early Detection of Alzheimer's Disease

The burden of Alzheimer's disease demands accessible early detection tools. Speech analysis offers an accessible method, but current speech-based classifiers are monolingual, yet over 8,000 languages lack AD speech datasets, leaving millions unserved. Amyloid-β protein accumulation in the brain disrupts the left inferior frontal gyrus, dorsomedial prefrontal cortex, and posterior superior temporal sulcus, producing flattened prosody, irregular pauses, and slowed articulation. We propose the first truly language-independent acoustic biomarker classifier by extracting prosodic entropy, pause variability, articulation rate, and other features from speech data. Trained solely on English, our model generalizes zero-shot to diverse languages, enabling accessible global early AD screening.

Eyad Khedr
17 years

Omar Ahmed
17 years

PROJECT **MEDICINE 14**
COUNTRY **EGYPT**

Inhibition of Salivary α-Amylase by a Bistorta Major (S. F. Gray) Extract as a Therapeutic Strategy for the Treatment of Diabetes Mellitus

Diabetes mellitus affects millions worldwide, and postprandial hyperglycemia driven by salivary α-amylase (SAA) activity remains difficult to control with conventional inhibitors like acarbose due to gastrointestinal side effects. To address this, we introduce hydroalcoholic rhizome extracts of Bistorta major as a natural SAA inhibitor. We prepared and characterized the extracts via moisture determination, partial phytochemical screening, and LC-ESI-MS/MS profiling before evaluating in vitro SAA inhibition. The extracts exhibited moderate yet significant inhibitory activity (IC_{50} = 148 µg/mL), highlighting their potential as a practical, safer antidiabetic therapy and motivating further in vivo and molecular docking studies.

Aleksandra Chavdarova Nikolova
19 years

PROJECT **MEDICINE 15**
COUNTRY **BULGARIA**

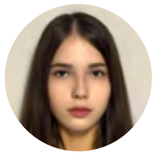
PHYSICS

RIGA 2025 EUCYS

An Innovative Head-Worn Device for Individuals with Visual Impairments

An innovative head-worn device for individuals with visual impairments, OptiMind, aims to improve the mobility and social inclusion of visually impaired individuals through advanced technology. Traditional tools like white canes or guide dogs offer limited safety and independence. They cannot detect fast-moving or distant objects, nor interpret social cues like facial expressions or gestures. We propose a device that combines AI, a camera, ultrasonic sensors, and GPS to provide real-time voice feedback about the environment. It detects obstacles, warns of dangers, analyzes emotions, and offers voice navigation. This is not just a mobility aid, it promotes equality, independence, and dignity, helping users fully engage with society.

Salome Sulamanidze
17 years



Ana Lobzhanidze
15 years

PROJECT **PHYSICS 01**

COUNTRY **GEORGIA**

AI in Solar Observations: Classifying Active Sunspot Regions

In this innovative, first-of-its-kind study, over 7,000 daily sunspot drawings spanning a longstanding 52-year period from 1971 to 2023 were analyzed using artificial intelligence to classify active sunspot regions. A convolutional neural network was developed and trained on this rare dataset of hand-drawn solar observations from the Astronomical Institute of the Czech Academy of Sciences. The model successfully categorizes sunspot groups according to the McIntosh classification system. This research shows that machine learning is a valuable tool in solar astronomy, enabling more accurate and automated classification of solar activity. It opens the door to improved space weather forecasts, whether detecting dangerous eruptions or beautiful auroras.

Eduard Plic
19 years

PROJECT **PHYSICS 02**

COUNTRY **CZECHIA**

Hybrid Turbineless Propulsion Engine with On-board Aluminum-based Hydrogen Production

A novel hybrid propulsion system combining Electric Ducted Fans with hydrogen combustion, where hydrogen is produced in real-time via the reaction of aluminum with water and sodium hydroxide. The turbine-free design eliminates pressurized hydrogen storage, offering a lighter and safer alternative for UAVs and small aircraft. Two EDFs supply air to a static combustion chamber, where injected hydrogen increases thrust. Fuel production is dynamically controlled by adjusting aluminum surface exposure. Experiments confirm a linear relation between hydrogen output and aluminum mass/surface, with peak efficiency around 21%. The system operated stably, and the aluminum hydroxide by-product shows potential for carbon capture, pointing toward sustainable, potentially carbon-negative aviation.

Ermis Tatsis
16 years

PROJECT **PHYSICS 03**

COUNTRY **GREECE**

Simulative Framework for the Development of Electrode-Less ECR Electric Propulsion Systems

In this project, a new type of electrodeless electron cyclotron resonance ion thruster was developed using parameterised simulations. This thruster generates plasma without electrodes using electron cyclotron resonance (ECR) and accelerates it through a so-called magnetic nozzle, which consists of a divergent magnetic field. The electrodeless design significantly extends the thruster's operational lifetime by minimising erosion of its components. The simulation tool used, "IonSolver", was entirely self-developed. It is computationally efficient, scalable up to supercomputers, and highly optimised for a wide range of problems in plasma physics.

Johanna Freya Pluschke
19 years

PROJECT **PHYSICS 04**

COUNTRY **GERMANY**

Increasing the Efficiency of Solar Panels with Gold Nanoparticles

Silicon solar cells dominate the photovoltaic market for “efficient” light-energy conversion. However, silicon is a semiconductor that has an indirect band gap which restricts its optical properties. Additionally, when combined with other factors such as thermalization losses and limited spectral absorption, the result is a theoretical efficiency ceiling of about 28%. We solved this problem by coating solar cells with gold nanoparticles (GNPs) of sizes ~15nm and we witnessed the absorbance of thin solar cells rise to that of thicker, more expensive ones. This increase is explained by the Localized Surface Plasmon Resonance and the Quantum Confinement effects. Moreover, coating solar cells with GNPs proved to be more cost effective rather than buying more expensive, thicker solar cells.

Georgi Orbelyan
17 years

Albert Shahinyan
16 years

PROJECT **PHYSICS 05**

COUNTRY **ARMENIA**

Soap Films as Minimal Surfaces: A Study on Soap Film’s Behaviour Statically and Dynamically

Understanding the behavior of liquids governed by surface tension can be crucial. This project aims to describe how a soap film (a soap bubble) shaped as a catenoid behaves, using mathematical and physical principles. Through a detailed study, three mathematical models and one conceptual model have been developed. The mathematical models describe the soap film in three stages: statically, dynamically, and its oscillations after a topological change. The conceptual model proposes how the soap film changes shape. These models were confirmed through a series of experiments. Using them, the energy holding the soap film together could be determined. The conceptual model provides insight into how topological changes occur in fluids, contributing to both mathematics and physics.

Sille Porsborg Christensen
20 years

PROJECT **PHYSICS 06**

COUNTRY **DENMARK**

Determining Stellar Evolutionary Phases: Constructing an H-R-Diagram from Observational Data

This study investigates the stellar life cycle by constructing an Hertzsprung-Russell (H-R) -diagram from observational data. Using both spectroscopy and photometry, the effective temperature and brightness of 50 stars was measured for a diverse sample of various evolutionary stages. The spectroscopic measurements of effective temperature were done by measuring the spectral class of the sample stars. In this part of the research, a telescope and Star Analyser 100-grating was used. The photometric data was gathered with a DSLR camera. Calibration with Vega for all data allowed precise instrument correction and atmospheric extinction adjustment. The resulting diagram clearly shows the main sequence and giant branch, confirming key astrophysical models of stellar evolution.

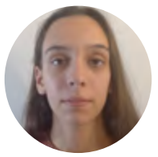
Zofia Järvinen
18 years

PROJECT **PHYSICS 07**

COUNTRY **FINLAND**

Observational Constraints on Vector-like Dark Energy

Acosmological constant is the foundation for the canonical ΛCDM model which explains the observed acceleration of the Universe, and most alternatives use scalar fields. We present a quantitative analysis on the cosmic triad, a class of models which instead relies on vector fields, while preserving isotropy at large scales. We show that the triad is an extension of ΛCDMand constrain various subclasses of the model through a standard statistical analysis with low-redshift background data, which is enough to constrain any deviations from ΛCDM to be small. We further explore how the statistical priors and the choice of potential affect the results. We conclude that vector fields are viable alternatives to ΛCDM, but that the latter constitutes a good approximate description of our universe.



Carolina Coelho
18 years

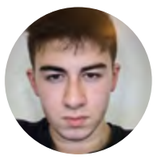
PROJECT **PHYSICS 08**

COUNTRY **PORTUGAL**

EM-A: Electromagnetic Anemometer with Dynamic Sensitivity

Throughout history, wind has held great importance for humanity. Accurately measuring its speed and direction plays a vital role in fields such as agriculture, navigation, meteorology, and aviation. Devices developed for this purpose are called anemometers. In our project, we aimed to develop a completely new anemometer that overcomes the common issues in existing types, such as low sensitivity, narrow range, environmental vulnerability, and high cost. To test our theory, we first conducted simulations. Then, we produced a prototype and carried out lab experiments. As a result, we successfully developed an electromagnetic-based anemometer that works by charging incoming particles, applying a magnetic field, and measuring the resulting potential difference.

Hasan Yağiz Özer
16 years



Eren Kaygisiz
17 years

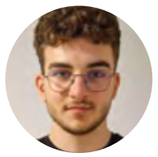
Kerem Gelir
17 years

PROJECT
PHYSICS 09

COUNTRY
TÜRKİYE

Analysis of Electromagnetic Wave Propagation Using Microcontrollers

The project provides an in-depth understanding of the propagation of electromagnetic waves emitted by wireless equipment in various environments, as well as a solution for data loss caused by known physical phenomena. We assembled a device capable of measuring and intuitively displaying signal strength, so that the data can later be processed using AI systems to optimize the placement of devices within a user-defined space. The rigor of the work offers insight into the wave-like nature of Wi-Fi signals, a technology described by the IEEE 802.11 standard.



Vlad Pavel Geleriu
18 years

Tudor Nicolae Grama
18 years

PROJECT
PHYSICS 10

COUNTRY
ROMANIA

PRISM

Project PRISM aims to develop a highly efficient laser system that can be pumped with polychromatic light and has a monochromatic output. Since the properties of such a media are defined by its molecular construction, we need to determine the exact molecular structure and composition based on our target characteristics. In order to do so, we developed a learning algorithm combined with quantum chemical simulation. At the end of our project, we want to present a molecule (for doping the medium) that allows us to design a monochromatic laser system capable of using a polychromatic pump source.

Alexander Maximilian Pflegerl
20 years

Andreas Walter Walter
18 years

Jonas Stadelmann
18 years

PROJECT
PHYSICS 11

COUNTRY
AUSTRIA

Experimental and Theoretical Study of the Variation in Vertical Velocity of a Falling Maple Seed as a Function of its Total Length

First, we developed a method for quickly and efficiently predicting the lift of a maple seed as a function of its lift and drag coefficients, rotation speed, surface area, length and profile, then using 3D profile, geometric characteristics and Blade momentum Theory. To achieve this, we relied on a publication entitled “The aerodynamics of a falling maple seed”, which provided us with theoretical support after adapting its approach and circumventing certain sources of imprecision. We then turned to the statistical distribution of samaras in nature. By developing “synthetic samara seeds” , we tried to see if the slowest were the most numerous, and if there was a natural law that optimized the samara’s length/mass ratio.

Mona Joséphine Angèle Sonck
18 years

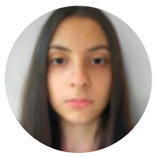
Arno Bonnamy
18 years

PROJECT
PHYSICS 12

COUNTRY
EUROPEAN SCHOOLS

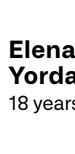
Calculation of the Hubble Constant Using Photometry of Supernovae Type Ia

In this study, we use the light curves of significant number (more than 200) of supernovae of type Ia to calculate the value of the Hubble constant. After correcting these curves for their redshifts, we measure the time intervals for which their brightness decreases by 2 and 3 magnitudes from the peak value. We confirm the linear correlation between the relative value of this time interval (s-factor) and the absolute magnitude at the maximum of their brightness Mpeak. Using the obtained relation, we calculate the luminosity distances and the proper distances to the galaxies, hosting those supernovae. Having independently measured redshifts z, we calculate the receding speeds of each supernovae. Based on that we calculate the value of the Hubble constant H0 and the Hubble time tH.



Elena Darinova Yordanova
18 years

PROJECT **PHYSICS 13**
COUNTRY **BULGARIA**



Investigation Into the Depth Dependent Dynamics of Columnar Skyrmions

Our smart devices are getting increasingly intelligent, but traditional silicon chips used today are reaching physical limits. Future technology will be utilizing quantum spin to process and store data. A promising candidate for future spintronic devices is skyrmions - a stable magnetic whirlpool which can store information with a high density and requires very little energy to do so. This study focused on how the dynamics of skyrmions change with respect to depth in the multilayer material Pt/CoFeB/Ru. This was done through a technique utilizing muons to probe the internal magnetic fields of a material. We discovered that there are depth dependent behavioural changes in the material, and this is crucial to understand for developing skyrmion-based technology.

Dani Zuhair
19 years

PROJECT **PHYSICS 14**
COUNTRY **SWEDEN**

Detection of Transit Signals of Exoplanets in Sector 85 of the Telescope TESS

This work studied 12,993 light curves from stars observed by the Transiting Exoplanet Survey Satellite in autumn 2024 to search for transit signals of exoplanets, tiny dips in brightness, when an exoplanet passes in front of a star and blocks a little of its light. Using visual analysis methods, 139 transit signals were detected. Among them, 10 are known confirmed exoplanets, 121 are candidates, which are potentially exoplanets but not yet confirmed, and 2 are new high-priority exoplanet candidates. These 2 last objects passed validation false-positive tests and may represent new discoveries worth further study. Physical parameters of 133 exoplanets, exoplanet candidates, and host stars were calculated. Most of the exoplanets are gas giants with short orbits around G-class stars.

Mariia Yatsiuk
16 years

PROJECT **PHYSICS 15**
COUNTRY **UKRAINE**

PHYSICS

SOCIAL SCIENCES

RIGA EUCYS 2025

The Influence of Hippie Pop Culture on the Vietnam War

In the Vietnam War era, music became a weapon of peace. Protest songs by Baez, Country Joe, Hendrix, Starr and many others mobilized millions, shaped public opinion, and challenged war itself. The constant drip of cultural criticism slowly wore away at the foundations of public support, becoming one of the forces that ultimately helped push the United States toward withdrawal from the Vietnam War. This interdisciplinary study connects history, cultural studies, and musicology to reveal how art reshaped politics — then asks why today's pop culture remains silent amid global conflicts. With influences from civil rights, Afro-American voices, and the hippie movement's diverse roots, it reflects on music's timeless power to confront violence and spark social change.

Anna Marina Roos
19 years

PROJECT **SOCIAL SCIENCES 01**

COUNTRY **SWITZERLAND**

An Examination of the Impact of the Syrian Civil War on the Kurdish Independence Movement in Northern Syria

The Kurds are an ethnic group in the Middle East divided among four countries. This paper examines the impact of the Syrian civil war on the Kurdish independence movement in northern Syria. The research was conducted through a literature review and interviews with experts on the Kurdish question. The findings show that after the war broke out, the Kurds saw an opportunity to gain greater autonomy. However, internal divisions have undermined the effectiveness of their efforts. At the same time, they faced attacks from ISIS, TÜRKİYE, and other forces. In conclusion, the Syrian civil war has presented both opportunities and challenges for the Kurdish independence movement. While the Kurds have gained more autonomy, full independence remains difficult to achieve.

Awaz Ahmad
18 years

PROJECT **SOCIAL SCIENCES 02**

COUNTRY **NETHERLANDS**

DIVE&CLEAN: An Innovative Global Movement to Clean the Coastal Seabed and Inspire Social Change

Plastic waste is piling up along our coasts, much of it settling on the seabed. Recreational divers—who explore exactly these shallow zones—rarely carry collection gear, so bottles, toys and plastic fragments are left behind. My project is a social science and behavioural change initiative: I conducted large-scale surveys to find out whether people would accept and use underwater bins. The result is my patent-pending underwater bin—light, safe for marine life, able to filter microplastics, and flat-packed for global shipping and easy on-site assembly. Shore signs mark its location so anyone can take part, from snorkellers to experienced divers. It's a movement that turns individual effort into shared responsibility—and makes cleaning the ocean as normal as using a bin on land.

Laura Ivánka
14 years

PROJECT **SOCIAL SCIENCES 03**

COUNTRY **HUNGARY**

The United Nations' Response to the Ebola Epidemic: Sovereignty Issues Whilst Providing Humanitarian Aid

The essay delves into the multifaceted relationship between foreign-Intergovernmental actors and countries receiving humanitarian aid. This political issue is explored principally through the World Health Organisation's impacts on West African state sovereignty during the 2014 Ebola Epidemic. The degree of sovereignty violation is measured in 3 stages with increasing severity and the effectiveness of the World Health Organisation's aid is compared to that to other foreign humanitarian actors.

Morgan Ovens
18 years

PROJECT **SOCIAL SCIENCES 04**

COUNTRY **NORWAY**

RIGA
EUCYS
2025

THE JURY

THE JURY

The contest jury is composed of 21 highly qualified scientists and engineers with worldwide reputations in their chosen field. The jury carry out their duties at the contest as independent scientific experts and not as representatives of any institution, organisation or country. The European Commission appoints the jury annually, basing its selection on the scientific and technological needs of the contest. They jury are selected both from academia and industry. The Commission ensures an appropriate geographical and gender balance. Jury members normally remain on the jury for up to 5 years. In exceptional circumstances, the EC reserves the right to appoint jury members for more than 5 terms.

The role of the jury at EUCYS is of the utmost importance. The jury follows the jury Rules and Guidelines established by the EC. The jury assesses and scores the competing projects based on the written descriptions submitted by the projects and through interviews with the contestants carried out during the contest. Based on their assessment of the projects and on lengthy discussions with other jury members, the jury draws up the lists of winners of the core prizes and the special prizes. The decision of the jury is final.

HANS LANGEVELD

President of the Jury

Hans Langeveld is a tropical agronomist analysing land use and bioenergy technology. He focuses on sustainable land management and biobased production with emphasis on the generation of biogas, and the impact of organic fertilizers on soil health. Hans obtained an MSc at Wageningen University, and worked for the Centre for World Food Studies (Free University, Amsterdam) and Plant Research International (part of Wageningen University and Research) before starting a research and consultancy firm in 2008. Hans was a reviewer for Horizon 2020 and the Circular Bio-based Europe Joint Undertaking (CBE JU). Between 2008 and 2018, he was member of various Bioenergy Technology Collaboration Programme (International Energy Agency) working groups. Currently, Hans is leading a project on the valorisation of organic fertilizers in Africa. He also participates in a new project developing innovative technologies that convert low-grade organic waste into durable, sustainable materials, and is working as an advisor to the Dutch government on ammonia emission policies. Hans is a project reviewer in the field of bioenergy and the biobased economy. As a EUCYS jury member, Hans' objective is to help students to find the object(s) of their passion and set out a route to develop their skills and interest in the subject.

FRANCO ALGIERI

Franco Algieri is Associate Professor of International Relations and Head of the International Relations Department at Webster Vienna Private University and a member of the Science Commission of the Austrian Ministry of Defence. In previous positions, he was Director of Research at the Austrian Institute for European and Security Policy (AIES), Senior Research Fellow at the Center for Applied Policy Research (C.A.P) Munich and lecturer at the Institute of Political Science University of Tübingen and at the Geschwister Scholl Institute University of Munich. He was also an appointed Guest Professor at Renmin University of China Beijing. Algieri studied Political Science and Sinology in Freiburg, Tübingen and Taipei, and European Studies in Bruges. He received his doctorate and M.A. both from the University of Tübingen, and a Diploma of Advanced European Studies from the College of Europe Bruges. His research and publications cover European foreign and security policies, Asian security issues, and EU-Asia relations, with special emphasis on EUChina relations.

HENRIK ARONSSON

He pursued his PhD degree in Plant Physiology at the University of Gothenburg. He graduated in 2001 and spent the following year and a half as a postdoctoral student at Leicester University. The next year he spent at Gotland University and Skövde University as a senior lecturer. He then returned to the University of Gothenburg in 2004, where he attained full Professorship in Plant Molecular Biology 2016. He was the Head of the Department of Biological and Environmental Sciences, University of Gothenburg, 2016-2022. As a graduate student, he studied protein targeting of a chlorophyll related protein to the envelope and the thylakoid membrane. He then switched during his postdoctoral period to study the chloroplast protein import machinery with a focus on the components that make up the machinery. Back in Sweden his research group also added studies of vesicle transport inside the chloroplasts. He has worked with different plant systems i.e. pea, barley, Arabidopsis and wheat. His current research took off as a pilot project in 2012 and involves molecular breeding of wheat to fight salt affected soils using salt tolerant wheat by studying e.g. transcription factors. Part of the project aim to produce salt tolerant non-GM wheat to increase the crop yield and thereby the daily food intake for the people of e.g. Bangladesh. He is one of the founders of OlsAro Crop Biotech, a plant biotech company providing AI enabled crop improvement for a future with food for all.

TOM BLIGHT

Tom Blight is a building physicist, working with architects and engineers to find sustainable solutions for the comfort and usability of the buildings and spaces we inhabit. Since completing his Masters in Physics at the University of Exeter in 2009, he shifted from studying magnets using ultrafast lasers, to eco-homes, studying environmental physics and simulation of the built environment for his PhD at the University of Bath. He spent four years working at BuroHappold Engineering as a Senior Consultant, before moving to the Netherlands and setting up his own consultancy, Simstream, in 2018. Through Simstream, Tom provides a variety of building physics and energy modelling services, helping a range of clients achieve ambitious goals in their projects, including football stadia, high-tech labs, and flagship office projects. As an EUCYS jury member, Tom is excited to spend time meeting and supporting budding scientists and young engineers with a passion to explore, create, and change!

VICTORIA BLOODWORTH

Dr. Victoria Bloodworth studied Aeronautical Engineering at Imperial College London, UK, earning her PhD in 2008, specialising in carbon fibre composite structures. She then spent the next eight years working at Aerotrope, a small and radical engineering consultancy based in Brighton, UK. During this time, she was part of the design team with a di- verse project portfolio, providing design engineering for wind turbines, large scale artworks and zero carbon vehicles, which includes the cur- rent world speed sailing record holder Vestas Sailrocket 2. In 2017, she moved to Denmark to join the world's largest wind turbine manufacturer, Siemens Gamesa Renewable Energy, in the Blade Design department where she was part of the team that designs and produces the largest turbine blades in the world. At the end of 2021, she decided to take time out and try something different in life – living aboard her sailing boat and exploring the world. She is now back to designing and making wind turbines again.

ATTILA BORICS

Dr. Attila Borics graduated as a chemist and a chemistry teacher from the University of Szeged in 2001, then received his PhD degree in 2005 from Creighton University (USA) for his contribution to the field of chiroptical spectroscopy and conformational analysis of peptides. Currently he is working in the Biological Research Centre of the Hungarian Research Network in Szeged (Hungary) as a senior research associate and group leader. As honorary associate professor, he also teaches structural biology and molecular modeling at the University of Szeged. His research focuses on biomolecular structure, more specifically protein and peptide structure and interactions, conformational analysis and structure-activity studies. This includes the investigation of the three dimensional structural determinants of the biological activity of various biological compounds and drug candidates, explanation of the mechanism of action of enzymes and receptors on a structural basis and the location of interaction sites of proteins.

MILENA HORVAT

Prof. Dr. Milena Horvat is Head of the Department of Environmental Sciences at the Jožef Stefan Institute and Dean of the Jožef Stefan International Postgraduate School. A recognized leader in chemistry and environmental sciences, she specializes in mercury research spanning analytical chemistry, human health, polluted ecosystems, marine environments, and clean technologies, including sensor development. She has authored over 350 SCI-indexed publications and 24 book chapters, organized numerous international conferences, and served as guest editor for 16 journal special issues. Prof. Horvat has played key coordinating roles in many international research projects, actively shaping science-policy dialogue through initiatives such as the Minamata Convention on Mercury. Her contributions have earned her prestigious awards, including the National Ambassador for Science Award (2002), the Zois Award for Research Excellence (2014), and the International Life Achievement Award at ICMGP (2019). Deeply committed to education, she has supervised over 20 PhD dissertations and many master's theses, fostering the next generation of environmental scientists.Her vision combines scientific excellence, innovation, and sustainability, delivering solutions for global environmental and health challenges.

EMILIA KVASNICKA

Emilia Kvasnicka is a physician at the University Hospital Basel in Switzerland, where her research focuses on oncology. Originally from Slovakia, she earned her medical degree from Charles University in Prague, Czechia, and has completed research internships at leading institutions, including the Mayo Clinic in the United States and the University of Heidelberg in Germany. Her dedication to advancing cancer research is matched by a passion for interdisciplinary collaboration. Emilia played a key role in the Bratislava Declaration of Young Researchers, an initiative that brought together early-career scientists to present proposals for improving research conditions across Europe to the European Commission and Member States. In recognition of her contributions, she received a Special Prize at the European Union Contest for Young Scientists (EUCYS) in 2013 and was later named to the Forbes Slovakia "30 Under 30" list.

SUSANA LADRA

Susana Ladra earned her degree in Computer Science Engineering in 2007 and her PhD in Computer Science in 2011 from the University of A Coruña. She also obtained a bachelor's degree in Mathematics from the Spanish National Distance Education University in 2014. Currently, she is a Full Professor at the Faculty of Computer Science at the University of A Coruña. She leads several national and international research projects. Her main research interests include the design and analysis of algorithms and data structures, data compression, and data mining, particularly in information retrieval and bioinformatics, as well as green algorithms and energy efficiency. She has served on evaluation committees for national and international research programs and has completed research stays at prestigious institutions such the University of Chile (in collaboration with Yahoo! Research Chile), the University of Helsinki, and the University of Waterloo. Her achievements have earned her awards such as the Distinction at the RAGC-UIE Awards for young researchers, awarded by the Royal Galician Academy of Sciences (RAGC) in 2024, and the 2020 Ada Byron Award for Young Women Technologists by the University of Deusto (Spain).

MORTEN LENNHOLM

Morten Lennholm has worked in the field of Nuclear Fusion Research for the last 34 years. From a microwave and control engineering education, he developed his knowledge of plasma physics and much of his work has involved a combination of engineering and plasma physics. He has published in journals such as 'Physical Review Letters' and 'Nuclear Fusion' on the control of fusion plasma, plus in 'Nature Communications' to describe the potential for control of certain plasma instabilities through 'phase space engineering'. He received his PhD degree from Eindhoven University of Technology in 2014 for his work on 'Real Time Control of the Sawtooth Instability in Fusion Plasmas with Large Fast Ion Populations'. Based at the Culham laboratories in Abingdon, England, Morten was operating the JET tokamak until it's closure at the end of 2023 and he is now leading the design of the plasma control systems for the STEP fusion power plant.

THE JURY

MARIYA LYUBENOVA

Dr. Mariya Lyubenova is a researcher who thrives at the intersection of fields, disciplines, and sectors of society. She holds an MSc in Physics from Sofia University in Bulgaria and a PhD in Astronomy from the University of Munich, Germany. She currently works at the foremost intergovernmental organisation in astronomy, the European Southern Observatory (ESO), where she is head of Media Relations, Science and Public Affairs Advisor to the Department of Communication, editor of ESO's science & technology journal, and an active researcher in the area of galaxy evolution, black holes, and stellar clusters. Dr. Lyubenova is a member of the Governing Council of the European Astronomical Society, as well as a contributing member of the Policy Hub of the International Astronomical Union's Centre for the Protection of the Dark and Quiet Sky from Satellite Constellation Interference. Aside from being invested in research and science communication, Dr. Lyubenova enjoys mentoring women and other minorities interested in pursuing a career in STEM (Science, Technology, Engineering, and Mathematics).

MILAN MACEK

Professor Milan Macek Jr. MD, DSc is the chairman of the largest academic medical / molecular genetics institution in the Czech Republic - Department of Biology and Medical Genetics of Charles University Prague 2nd School of Medicine and Motol University Hospital, and of the National Coordination Centre for Rare Diseases (www.nkcvo.cz; NKCVO) responsible for implementation of the ten year national strategy on rare diseases and resulting three national action plans. In addition, he is chairing the national Rare Disease Taskforce at the Ministry of Health. In this capacity his institute has been serving as a "clearing centre" for the dissemination of knowledge gathered within various international projects on rare disease-related research and diagnostics (e.g. EuroGentest.org, RD-Connect.eu, Solve-RD. eu, Norway Grants) to partners in Eastern Europe, Transcaucasia and the Middle East. In this capacity Prof. Macek is also the Czech National coordinator of Orpha.net. In his capacity as chairman of NKCVO he assured that since 2017 Czechia is ranking first within EU13 in terms of participation in European Reference Networks (ERN) for rare diseases.

LIDIJA MATIJA

Lidija Matija is a professor at the University of Belgrade Faculty of Mechanical Engineering where she received her PhD in Control Engineering in 1997. She has been working in the Institute for Chemical Power Sources, Belgrade, Serbia, in the field of fullerene-based materials, its production and application for battery production. In 2002 she has changed her field of research and moved to the Institute of Technical Sciences, Serbian Academy of Science and Arts, where she investigated fullerene and carbon based materials for biomedical applications. In 2005, Professor Lidija Matija moved back to the University of Belgrade Faculty of Mechanical Engineering where she joined the group for Biomedical Engineering within the department for control engineering and became the Chair of NanoLab. In the period from 2008 - 2010 she was appointed as Seconded National expert (SNE) in European Commission, DG RTD, Brussels, where she worked as scientific officer. She is a founder and the Head of the Department of Biomedical Engineering at the University of Belgrade Faculty of Mechanical Engineering. Her main fields of research are: Clinical engineering, Early Detection of Skin Cancer and Melanoma, Intelligent Materials, Fullerenes and Carbon Nanotubes, and Nanotechnology. Professor Matija's fields of teaching are: Control Systems, Biomedical Engineering, and Nanotechnology. She was several times awarded in her country for her research achievements in the field of nanotechnology and she was the coordinator of several national research projects of which more than half had industry involvement.

MARIA MINAROVA

Maria Minarova is a mathematician. She is an associated professor at the Slovak University of Technology. Both teaching and doing research is her mission there. Besides direct teaching on courses in theoretical and applied mathematical subject, she supervises bachelor, diploma and PhD. theses focused mostly on problems of applied mathematics or interdisciplinary and transdisciplinary research involving mathematical problems and where mathematical models can be set up as simulating physical, biological or societal processes. Among focused fields of study bioengineering, biomechanics, rheology, thermal performance of buildings, fluid flow, immoderate moisture and moulds problems in building interiors, etc. can be named. Her work is one of her hobbies. The others are sports, music, literature and nature.

ESTELLE MOSSOU

Physicist by training, I have carried out my PhD on the structural studies of biomedically and biotechnologically relevant filamentous structures. Since then I have been working for more than 15 years in neutron and synchrotron structural biology, using and contributing to the development of state-of-the-art instruments for high-resolution macromolecular and small-molecule crystallography. As an industrial liaison scientist at the European Synchrotron Radiation Facility (ESRF) – the world's brightest synchrotron light source – I work closely with the pharmaceutical industry, providing access to our state-of-the-art beamlines to investigate the structure of biological macromolecules for drug discovery.

LUISA PEREIRA

Luisa Pereira has a degree in Biology and a PhD in Human Population Genetics. She is a senior researcher and group leader at i3S (Institute of Research and Innovation in Health, University of Porto) who is interested in using genetics to infer the past and evolution of human populations and to evaluate the susceptibility of human populations to complex diseases. She is a co-author of 145 peer-reviewed papers in international journals and a book on popular science. She has been engaged in presenting her work to the general public, including young students in high schools, and regularly collaborates with local media.

BOJAN RIBIC

Dr. Bojan Ribić is Head of Department at Zagreb City Holding – Čistoća, where he is involved in operational environmental services since 2009. He holds a PhD in Chemical Engineering, with a research focus on the application of artificial neural networks in environmental engineering. His broader areas of expertise include renewable energy, energy efficiency, and urban environmental sustainability. Dr. Ribić began his professional career in the gas and oil industry in the early 2000s, gaining experience in industrial energy systems and process engineering. Over the past 15 years, he has played an active role in numerous EU-funded research and innovation projects (including FP7, Horizon 2020, LIFE, Erasmus+), acting as either a project coordinator or partner on initiatives focused on environmental protection and resource efficiency. In the last decade, he has been engaged as an expert evaluator and reviewer for the European Commission, contributing to the assessment of research proposals related to environmental technologies, raw materials, and circular economy under different EU programs such as Horizon 2020 and Horizon Europe. Alongside his professional and advisory roles, Dr. Ribić is a dedicated researcher and scientific reviewer. He has authored or co-authored numerous peer-reviewed publications in journals and conference proceedings. Also, he regularly serves as a reviewer for several international scientific journals.

LINA TOMASELLA

Lina Tomasella is an astrophysicist of the Italian National Institute for Astrophysics, INAF. She has a degree in physics and a PhD in astronomy from the University of Padova. Her research interests are devoted to the physical properties of explosive events, mainly supernovae. She is a member of the GRAWITA (Gravitational Wave INAF team) and ENGRAVE (Electromagnetic counterparts of gravitational waves at the Very Large Telescope, ESO) collaborations, which have the aim of carrying out multi-wavelength observational campaigns after the gravitational wave alerts released by the ground-based interferometers network (LIGO/Virgo/KAGRA). Her scientific work is summarised in about 140 peer-reviewed papers published in international specialist journals.
Lina Tomasella lives in Asiago, a large plateau that hosts the observing facilities operated by INAF Astronomical Observatory of Padova atop Mount Ekar, where there are the largest optical instruments in Italy. In Asiago she is the institute coordinator and telescopes manager.
Lina was awarded the first prize in the 1st EUCYS in Bruxelles, 1989.

MIRA VAN THIELEN

Mira Van Thielen has a degree in pharmaceutical and medical sciences. At the age of 16, she won several (inter)national prizes with her medical project. At the same time, she was one of the founders of the educative youth organisation at the public observatory MIRA (Belgium). Nowadays, she works as a staff member at the Department of Anaesthesiology at Leuven University Hospital (Belgium). Her research interests are devoted to a combination of physics and medical sciences. Moreover, she is a board member of 'Jeugd, Cultuur & Wetenschap', a scientific youth organisation in Belgium.

EMER WESTMUCKETT

My work combines machine learning and cognitive neuroscience. In many ways, machine learning models are functionally similar to the human visual system in that they can do some visual processing tasks as well as, or even better than, we can. I am interested in quantifying how mechanistically similar these models are to the human brain: do they perform these tasks in a similar way to human visual processing? How can we compare how well different machine learning models explain the human visual system? Some approaches I use include building Bayesian hierarchical models to systematically compare many neuroimaging datasets and internal patterns of machine learning models, and looking at whether different machine learning models exhibit the same performance patterns when damaged as we see in progressively severely affected semantic dementia patients. I studied physics at the undergraduate level before moving to cognitive and computational neuroscience in York and Cambridge. I have enjoyed lecturing statistics and doing some data science work in industry alongside research.

ANNA ZAJAKINA

Dr. Anna Zajakina is the head of the Cancer Gene Therapy Group at the Latvian Biomedical Research and Study Centre. She earned her PhD in 2005 from the University of Latvia, specializing in Molecular Virology and Biochemistry. Dr. Zajakina further expanded her expertise at the University of Rostock (Germany), Uppsala University (Sweden), and the University of Bordeaux (France). She is the author of over 40 scientific papers and conference presentations in the fields of cancer research, molecular biology, and virology. Her primary research interests centre on developing novel, clinically translatable cancer therapies using gene therapy vectors, often in combination with chemotherapy and immunotherapy. Currently, her main projects focus on the delivery of therapeutic genes via viral vectors, with the goal of smartly modulating the tumour microenvironment. Dr. Zajakina collaborates closely with students and researchers from various organizations and universities across Europe, actively supporting interdisciplinary research through strong partnerships with biologists, physicists, and chemists.

THE PRIZES

CORE PRIZES

The Core Prizes are the main monetary prizes awarded by the European Commission at the contest. In the case of a team winning such a prize, the amount is shared equally between the members of the team. There are four categories of Core Prizes:

4 First Prizes € 7 000 each
4 Second Prizes € 5 000 each
4 Third Prizes € 3 500 each
Special Jury Award for Youth € 2 500

The contestants compete for a number of core prizes on the basis of a written description of their work, their exhibited material and the interviews with the contest jury. In addition to this, the jury awards a limited number of special donated prizes. These prizes offer some winners the opportunity to benefit from the specific experiences linked to the prize. It is up to the jury to decide whether a prize winner can receive both a core prize and a special donated prize.

Funded by the European Union

These prizes are awarded directly by the European Commission and represent the highest recognition for the best scientific projects presented during the contest.

HONORARY PRIZE ASSOCIATED WITH THE FIRST PRIZES

London International Youth Science Forum (LIYSF) – up to 3 participants

The chosen winners will represent their country at the 67th London International Youth Science Forum (LIYSF), 19th July – 1st August 2026. LIYSF is a two-week residential event held at Imperial College London, with lectures and demonstrations from leading scientists, visits to industrial sites, research centres, scientific institutions and organisations, including world class laboratories and universities. LIYSF attracts 500 of the world's leading young scientists aged 16-21 years old from more than 80 participating countries. There is an active social calendar with events designed to enable those from around the world to learn about different cultures. The scope of LIYSF extends further than broadening scientific understanding to engage students in education on other cultures and develop lasting, international friendships.

LIYSF website: liysf.org.uk

Stockholm International Youth Science Seminar (SIYSS) – up to 2 participants

The Stockholm International Youth Science Seminar (SIYSS) is an annual week long event for international young scientists, arranged in connection with the Nobel festivities by the SIYSS Committee of the Swedish Federation of Young Scientists in collaboration with the Nobel Foundation. The history of SIYSS dates back to 1976 when the first seminar was organised by the Swedish Federation of Young Scientists together with the Nobel Foundation, with inspiration from the Society for Science & the Public in USA. Turning into a great success, the SIYSS program has continued to combine Swedish science with the Nobel Prize Awarding Ceremonies with an intense social program.

The programme aims to promote international understanding and friendship, bringing together young people from all over the world with similar interests. The participants are selected in different ways; some are winners of national science fairs, others represent organisations for young scientists or are selected by merit at their home universities. Whatever their background, they all have two things in common: a great interest in natural sciences and a curiosity for other cultures and people.

These non-monetary awards provide valuable international experience and networking opportunities with scientists from around the world.

For further information, please contact:
The SIYSS Organizing Committee Förbundet Unga Forskare Lilla Frescativägen 4C S-104 05
Stockholm, Sweden
Email: siyss.international@ungaforskare.org

SPECIAL DONATED PRIZES

Every year, EUCYS also features a selection of Special Donated Prizes provided by sponsors and science institutions. These prizes are tailored to support young scientists in continuing their scientific journey and are awarded based on the Jury's assessment and the criteria set by the prize donors.

The Luxembourg International Science Expo award

The Luxembourg International Science Expo award is a non-competitive international exhibition organised by the Fondation Jeunes Scientifiques Luxembourg that aims to promote international relations and the exchange of ideas and cultures among participants. During the LISE event, which takes place over several days, participants not only get to showcase their scientific projects but also take part in many cultural and social activities that allow them to make lasting memories and friendships with like-minded but diverse people. In the past editions, close to 30 countries sent delegates to the exhibition. Three students will be invited to attend Expo-Sciences Luxembourg with their individual projects.

Ellison Scholars Prize

This prize offers a trip to visit Oxford, including a visit to a University of Oxford college and department plus a tour around the Ellison Institute of Technology's offices, to learn more about EIT's work to develop and deploy commercially sustainable solutions to solve some of humanity's most enduring challenges.

This prize will include travel, food, and accommodation for up to three students young students aged 15 or 16 at the time of the visit who, according to the jury, will benefit from this stay. The trip will take place in spring/summer 2026 and also covers travel, food and accommodation for one accompanying adult per winning student.

International Swiss Talent Forum (ISTF): Finding Solutions for Universal and Long-Term Challenges of our Time

The International Swiss Talent Forum (ISTF) is a politically independent think-tank for young adults (18 to 23 years) who are interested in the universal and long-term challenges of our time. It was launched by the foundation Swiss Youth in Science in 2009 and brings talented young people to Switzerland from all over the world.

By placing students alongside experts, decision-makers, and lateral thinkers, the ISTF creates a space for innovation, interaction and debate aimed at developing new solutions to current global issues. Working closely in such a setting, the participants will learn how to tackle interdisciplinary challenges with solution-oriented approaches. They also have the chance to build a network of national and international contacts – a launchpad for their aspirations in business, science or politics. Two young scientists will be invited to participate to the ISTF 2026.

Swiss Youth in Science is a Swiss foundation based in Bern that fosters scientific curiosity and independent thinking among children, adolescents, and young adults. We support young people in discovering their intrinsic motivation, talents, and creativity. Through targeted coaching, we encourage independent research, critical thinking, and innovative exploration. In doing so, we contribute to the sustainable development of Switzerland by empowering future generations to question the status quo and shape tomorrow's solutions.

Bulgarian National Coding Theory Workshop Prof. Stefan Dodunekov Prize

The award will be given to one project and includes an invitation to participate in the Bulgarian National Coding Theory workshop, or another mathematical forum aligned with the topic of the project.

The workshop, now named after its founder, Professor Stefan Dodunekov (1945–2012), was established in the 1980s and serves as a forum dedicated to topics such as coding theory, cryptography, communication theory, and other foundational areas of computer science. The seminar brings together researchers from various countries and career stages—from leading specialists to undergraduate students and PhD candidates. Special sessions are devoted to emerging research topics, interdisciplinary connections, and the development of project-based and long-term collaborations.

Professor Dodunekov, a renowned scholar in the algebraic and combinatorial theory of error-correcting codes and their applications in data protection and information security, was the founder of the forum. As part of his vision, during his tenure as Director of the Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences, he initiated numerous programs to support secondary and university students pursuing careers in science.

SPECIAL
DONATED PRIZES

Spanish National Centre for Cardiovascular Research (CNIC) Prize

The winner of the 2025 contest, selected for their individual biomedicine project, will be awarded a five-day stay at the CNIC in July 2026 as part of the CNIC-Joven Acércate Program. This prize is intended for the participant who, in the opinion of the jury, stands to benefit most from this experience. The award covers travel expenses, meals, and accommodation. During the stay, the awardee will have the opportunity to engage directly with CNIC researchers and technical staff, gaining firsthand experience of ongoing projects. They will also explore the Center's state-of-the-art infrastructure and cutting-edge technologies employed in addressing key challenges in cardiovascular health and disease research.

Requirements for the CNIC award winner:
age: 18 or 19
project: individual and in the biomedicine field

EuCheMS

The European Chemical Society is pleased to offer a prize of €1,000 to the best Chemistry project

The European Chemical Society (EuChemS) brings together 50 member organisations from 36 countries, representing more than 140,000 chemists working in academia, industry, government, and professional organisations across Europe. Founded in 1970, EuChemS provides a unified voice on key scientific and policy issues, grounded in expert knowledge, and promotes chemistry as a central contributor to addressing societal and environmental challenges. Its Professional Networks span all areas of chemistry, supporting collaboration among European scientists and contributing expert input to policy discussions. EuChemS organises the biennial EuChemS Chemistry Congress, open to all, and runs an event recognition scheme to support and promote chemistry-related events throughout Europe. Through its prestigious awards, EuChemS recognises excellence in science, innovation, and societal impact, celebrating individuals and teams whose work drives progress and benefits society. In addition, EuChemS actively promotes clear and accessible communication of chemistry and science-policy through its magazine, website, social media, and events, raising public awareness of chemistry's vital role in tackling global challenges.

Circular Bio-based Europe Joint Undertaking

The Circular Bio-based Europe Joint Undertaking (CBE JU) is a partnership between the European Union and the Bio-based Industries Consortium (BIC) that funds projects advancing sustainable, circular bio-based innovations across Europe. By de-risking investments in the development of sustainable chemicals, materials, food and feed ingredients, and soil nutrients, among other solutions derived from biological resources, the partnership supports the emergence of strong European bio-based industries while promoting the efficient use of sustainably sourced biomass, including waste and residues. Since 2014, CBE JU has invested €1.3 billion in 220 projects and supported 1,700 organisations across 45 countries. Each euro invested by CBE JU has attracted €3.5 in private funding.

www.cbe.europa.eu

Regeneron ISEF

Each year more than 1,600 finalists earn the right to compete at Regeneron ISEF by winning a nomination at a Society for Science affiliated local, regional, state or national science fair. Society for Science is proud to partner with the European Union Contest for Young Scientists to offer two contestants the opportunity to participate as finalists at Regeneron ISEF 2026 in Phoenix, Arizona. Winning contestants will travel with their country's official party and will have their travel and accommodation expenses covered to attend the 2026 Regeneron ISEF. The winning contestants will also be eligible to receive both Grand Awards and Special Awards while competing in the 2026 Regeneron ISEF. We look forward to welcoming winning contestants from the European Union Contest for Young Scientists in Phoenix, Arizona.

EIROFORUM PRIZES

European X-Ray Free-Electron Laser Facility GmbH (**European XFEL**) offers one project prize (up to 3 people) of a one-week placement at its site in Schenefeld (Hamburg metropole)

The European Space Agency (**ESA**) offers a single prize winner the opportunity to participate in an ESA Academy training session in ESEC, Belgium. The winner should be an eligible* tertiary education student. The eligibility criteria are as follows:

- aged minimum 18 years old;
- be a citizen of an ESA Member State, an ESA Associate Member (Latvia, Lithuania, or Slovakia), or Canada;
- be enrolled as a university student for the academic year 2025-2026.

European Southern Observatory (**ESO**) offers a project prize (for up to 3 people) of a visit of up to one week to the ESO headquarters in Germany. The age minimum for ESO's prize is 16 years;

The European Molecular Biology Laboratory (**EMBL**) offers a project prize (for up to 2 people as a team) as a conference voucher plus a short visit to a facility or lab at EMBL Headquarters in Heidelberg, Germany;

The Institut Laue-Langevin (**ILL**) offers up to 2 people (3 if the ILL prize is combined with that of the ESFR) of a winning project, a one-week visit to its site in Grenoble;

European Synchrotron Radiation Facility (**ESRF**) offers up to 2 people (3 if the ESRF prize is combined with that of the ILL) of a winning project, a one-week visit to its site in Grenoble;

EUROFusion offers one project a one-week stay (for up to 3 people) at a EUROfusion member research facility;

The European Organization for Nuclear Research (**CERN**) offers a project prize (for up to 3 people) of a week's visit to its Geneva site.

LOCAL PRIZES

Special Prize of the University of Latvia

The University of Latvia offers as a prize for one participant the attendance to the international Deep Tech Atelier 2026 conference in Riga and a two-day visit to the University of Latvia's laboratories. All travel and accommodation expenses for the awardee (1 person) will be covered. Deep Tech Atelier is the largest technology conference in the Baltics, bringing together entrepreneurs, scientists, investors, and industry experts to discuss topics such as artificial intelligence, quantum technologies, space, and defence.

The University of Latvia is the country's leading university offering more than 110 study programmes and with over 15 000 students from 74 different countries. Since its foundation in 1919, the University has played a significant role in the development of the education system and contributed to the overall economic growth in Latvia.

Today, UL is a modern centre for academic and professional studies and research in natural sciences, medicine, humanities, social and technical sciences. Experienced academic staff, a modern campus, affordable living costs and moderate tuition fees make UL an attractive place to acquire various types and levels of higher education not only for local, but also international students. The University of Latvia - an excellent place for inquisitive minds.

www.lu.lv

Special Prizes of the Latvian Council of Science

The Latvian Council of Science (LCS), within the framework of the Swiss–Latvian Cooperation Programme, will award prizes to up to four projects with the highest-rated scientific projects in the fields of smart materials, information and communication technologies (ICT), which are project fields of the Swiss–Latvian Cooperation programme and align with EUCYS categories such as Computing, Materials, Environment, Physics, and Engineering.

The prize will be an online training course aimed at the further development of the young participant's scientific project. This course will provide an opportunity to strengthen scientific knowledge, acquire new skills, and receive guidance from experts to advance the project towards practical implementation, innovation, or commercialization. It will include mentorship, interactive learning and practical tasks tailored to support the next stages of the participant's research work.

www.lzp.gov.lv

Latvian Council of Science

THE NATIONAL ORGANISERS

The National Organisers are responsible for selecting projects, submitting applications, and for all communication with the Commission. All contestants will be accompanied in the EU Contest by their National Organiser, or by an adult escort appointed by the National Organiser. The National Organiser, as the principal contact in all participating countries, will assure liaison between the contestants and the EU Contest in all matters concerning the Contest. National Organisers and/or escort(s), together with their contestants, constitute their respective country's official delegation and are the only parties that can enjoy access to all public and private events associated with the Contest. National Organisers assume responsibility for the wellbeing and behaviour of their party.

They ensure that the latter travels with adequate health, accident and travel insurance to cover them for both travel and the duration of the contest; to handle linguistic or other problems which may arise during the contest or in relation to associated activities, and to ensure that they have their own measures in place to assure their behaviour remains beyond reproach.

HARUTYUN SARGSYAN
National Organiser
Armenia

JANA BREYER
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Austria

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National Organiser
Belgium

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ELITSA FOTEVA
National Organiser
Bulgaria

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YASSER ELTANTAWY
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ANNELY ALLIK
National Organiser
Estonia

KATRIN SAART
Adult-in-charge/escort
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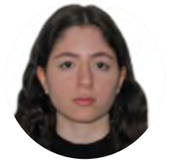

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ELIZABETE VIOLA JANKOVSKA

EVA EVELĪNA KĻAVIŅA

ANNA BĒTA

MARTA KĀTIŅA

PAULA LĪBEKA

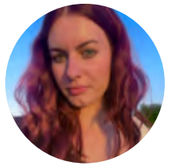
ELZA MIĶELSONE

AMANDA DUBKEVIČA

ELENA LOPEZ LOPEZ

MARTA MĀRTIŅSONE

NEŽA KUNIČ



EMA ŽELEZNIK

BEĀTE SAMA

WIKTORIA STEFANOWICZ

EMĪLIJA VAHERE-ABRAŽUNE

EVELĪNA VAHERE-ABRAŽUNE

STEFĀNIJA CUNSKA

THE EUCYS TEAM

The State Development Agency of Latvia is honored to host EUCYS 2025 in Riga. As the primary organiser, the agency is committed to providing a conducive environment for young scientists to present their research and engage with peers and experts from around the world. Hosting EUCYS 2025 aligns with Latvia's dedication to promoting scientific excellence and fostering international collaboration in research and innovation.

RIGA TEAM 2025

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State Development Agency of Latvia, Head of the Cooperation Projects Department

DAINA MARKOVA
EUCYS project manager

DŽOANNA KOTA
Technical producer

ILZE OZOLA
Public relation manager

EUROPEAN COMMISSION TEAM

EVELĪNA VANAGA
Marketing and Brand Manager

RASA PĀVULĒNA
International Guest Coordinator

JĒKABS JOSTSONS
Volunteer coordinator

LINDA PUNGA
Jury Secretary

MARIA MECENERO
EUCYS Project Officer, Directorate-General for Research and Innovation, European Commission

IRINA ELENA TIRON
EUCYS Project Officer, European Research Executive Agency, European Commission

GIULIA CARPINETI
EUCYS Communications Officer, Directorate-General for Research and Innovation, European Commission

RIGA
EUCYS
2025

PREVIOUS WINNERS

2020 2024

PREVIOUS WINNERS
2020 - 2024

31nd EUCYS SALAMANCA 2020

THE FIRST PRIZE
Feridun Balaban
Türkiye
Investigation of Spectral Response and Efficiency of Boron and Nitrogen doped Diamond-like carbon as a Top Junction on Multijunction Solar Cells

Cormac Thomas Harris
Alan Thomas O'Sullivan
Ireland
A Statistical Investigation Into the Prevalence of Gender Stereotyping in 5-7 Year Olds and the Development of an Initiative to Combat Gender Bias

THE SECOND PRIZE
Ophélie Léna Rivière
Switzerland
Sinking Bubbles – On the Behavior of Air Bubbles in a Vertically Oscillating Column of Liquid

Yordan Tsvetkov Tsvetkov
Bulgaria
Training Quadrupeds to Walk via Evolution Strategies and Sinusoidal Activation Functions

THE THIRD PRIZES
Dmitriy Gorovoy
Belarus
On Graphs With Unique Geodesics or Antipodes

Jarosław Jakub Brodecki
Poland
An Assessment of the Pollution of Urban Rivers by Microplastics and their Penetration of Food Webs Based on the Example of the River System in the Łódź Agglomeration (Central Poland)

LIYSF
Feridun Balaban
Türkiye
Investigation of Spectral Response and Efficiency of Boron and Nitrogen Doped Diamond-like Carbon as a Top Junction on Multijunction Solar Cells

JRC
Boglárka Ecsedi
Hungary
Rip Current Detection – An Orientation-aware Machine Learning Approach

EUROfusion Prize
Adam Stanisław Barański
Poland
On Divisibility of the Solutions of Pell's Equation

EMBL PRIZE
Aleks Brumec
Slovenia
The Effect of Oxidative Stress Genes on the Response to Anti-TNF Therapy in Patients with Crohns' Disease

ILL
Paul Erik Olli
Estonia
Metal-air Battery

XFEL
Yana Holovatska
Ukraine
Spring Based on Ring Magnet

THE PRACE EUCYS AWARD
William Bille Meyling
Denmark
Universal Autonomous Graph-Based Image Segmentation with Near-Linear Average Complexity

International Swiss Talent Forum Prize
Anna Pauliina Rumm
Estonia
Immune Response Against Cytomegalovirus and its Association with Inflammatory Diseases in Old Individuals

Expo-Sciences Luxembourg Prize
Uri Sadan-Yarchi
Israel
Using Cylindrical Capsule and Magnetic Fields to Achieve Ignition Conditions in the ICF Method

Award from the Ministry of Universities
Eduardo Gabriel Guerrero Riesco
Spain
Transhumanism: Will we still be Human?

UNIVERSITY OF SALAMANCA
Bioinformatics, Intelligent Systems and Education Technology (BISITE) Prize
Valtteri Aurela
Finland
Sampling from a Discrete Probability Distribution Using a Discrete Uniform Probability Distribution

UNIVERSITY OF SALAMANCA
Salamanca Cancer Research Center (CIC) Prize
Aleksander Leon Łysomirski
Poland
Fisetin, a Natural Flavonoid, Diminishes the Metabolic Activity of Senescent Colorectal Cancer Cells and may Affect the Process of Autophagy in HCT116

UNIVERSITY OF SALAMANCA
Institute for Agrobiotechnology Research (CIALE) and Institute of Functional Biology and Genomics (IBFG) Prize
Noa Priselac
Israel
The Role of ARTS in Stem Cell Apoptosis: Identifying a Novel Compound for Regenerative Medicine and Disease Therapies

UNIVERSITY OF SALAMANCA
Institute of Neurosciences of Castilla y León Prize
David Emanuel Lawyer
Etienne André Leroy
Sarah Mackel
Luxembourg
Modelling Treatment For Als

32nd EUCYS SALAMANCA 2021

THE FIRST PRIZE
Viktor Stilianov Kolev
Bulgaria
Neural Abstract Reasoner

Carla Caro Villanova
Spain
Formulation and Implementation of a Support Vector Machine on D-Wave's Quantum Annealer

Illia Nalyvaiko
Ukraine
Properties of Possible Counterexamples to the Seymour's Second Neighborhood Conjecture

Marik Müller
Germany
Enzymatic Inactivation of the Veterinary Antibiotic Florfenicol

THE SECOND PRIZE
Mehmet Sertaç Çeküç
TÜRKİYE
Artificial Antibodies: Development of Micro-Fluidic Sensors for The Detection of Environmental Contaminants and Apply to Mathematical Models

Hardit Singh
Canada
Speculor: A Comprehensive Teleophthalmology Platform for People Centered Eyecare

Sophie Lynn Wiesmann
Switzerland
Temperature-Dependent Toxin Production of the Cyanobacterium Microcystis Aeruginosa

Giovanni Benetti
Italy
Distorted Interstellar Bubbles: a New Mathematical and Computational Model

THE THIRD PRIZE
Gregory Guy Tarr
Ireland
Towards Detecting State-of-the-art Deepfakes

Matus Mlynar
Slovakia
The dynamic Effect of Oxytocin Treatment on Autistic-like Behaviors in a Genetic Model of Autism

Emirhan Kurtuluş
TÜRKİYE
Deep Learning Based Stereotactic Cranial Surgery Planning

Michal Bravanský
Czechia
Be Informed: a News Agregator

LIYSF
Marik Müller
Germany
Enzymatic Inactivation of the Veterinary Antibiotic Florfenicol

JRC
Clément Desjonqueres
Nahomé Vesvard
Marin Luet
France
Intra Body Communication

Sara Ribeiro Couto
Klára Sofia Varga
João Carlos Pereira Carvalho
Portugal
ATMOS

European Space Agency (ESA) Prize
Miroslav Cibula
Slovakia
Omnis: Modular Question Answering Web Search Engine

European Organization for Nuclear Research (CERN) Prize
Leonard Ulrich Münchenbach
Leo Neff
Germany
Physical Description and Modelling of Paper Strip Flights

European Synchrotron Radiation Facility (ESRF) Prize
Teodor Kirilov Kirilov
Bulgaria
Image Analysis of Single DNA Molecules

European Southern Observatory (ESO) Prize
Lukas Weghs
Germany
Photometric Search for Exomoons by using Deep Learning and Convolutional Neural Networks

The EUCYS Bioeconomy Bio-Based Industries Prize (BBI JU) Prize
Alba Serrano Garcia
Patricia Marco Gaya
Spain
Triops Cancriformis. How to Survive at Climate Change?

The European Food and Drink Industry Prize
Awarded by FoodDrinkEurope
Inbar Kedem
Israel
Detection and Quantification of Macrobrachium Rosenbergii Larvae in Culture Tanks, Using Image Processing with Artificial Intelligence

The PEPSICO Prize
Andrea Letizia
Sara Peverali
Italy
GOLD RICE: Gold Nano-Sensors for the Protection of the Health and the Environment

International Swiss Talent Forum Prize
Hristo Todorov Todorov
Bulgaria
Limited Query Black Box Adversarial Attacks in the Real World

Expo-Sciences Luxembourg Prize
Eliis Grigor
Estonia
Characterization of the Activities and Biochemical Parameters of Maltase AG2 From the Non-Convential Yeast Blastobotrys Adeninivorans

EuChemS Prize
David Barbin
Louenn Colineaux
France
Is the Study of Chemical Reactions Possible on the Scale of a Drop?

Award from the Ministry of Universities
Calvin Karthik
Canada
A Mighty Mushroom and the Power of Poop : Testing Biogas Production Using Spent Mushroom Substrate Phase 2

The Iberdrola Prize
Leonardo Cerioni
Linda Paolinelli
Matteo Santoni
Italy
Laying Waste to Energy Problems

UNIVERSITY OF SALAMANCA
Bioinformatics, Intelligent Systems and Education Technology (BISITE) Prize
Jakub Krzysztof Bachurski
Poland
Approximate Pattern Matching with Bounded Absolute Error

UNIVERSITY OF SALAMANCA
Salamanca Cancer Research Center (CIC) Prize
Erik Seitz
Hungary
Development of a New, Multicellular Network Model of the Epithelial-Mesenchymal Transition (EMT) and Finding a New Potential Drug Target by Building Hybrid EMT in the Model

UNIVERSITY OF SALAMANCA
Institute for Agrobiotechnology Research (CIALE) and Institute of Functional Biology and Genomics (IBFG) Prize
Jakub Lewandowski
Igor Piotr Jaszczyszyn
Poland
Synthesis and Characteristic of a Composite Based on Metal Oxides and Silica for Use in Photocatalysis and Capturing Pollutants

UNIVERSITY OF SALAMANCA
Institute of Neurosciences of Castilla y León Prize
Tamar Meshorer
Israel
Brain Circuits Underlying Category Learning

Bulgarian National Seminar on Coding Theory
"Professor Stefan Dodunekov" Prize
Zdeněk Pezlar
Czechia
Interesting Uses of Algebraic Number Theory

33rd EUCYS LEIDEN 2022

THE FIRST PRIZE
Aditya Kumar
Aditya Joshi
Ireland
A New Method of Solving the Bernoulli Quadrisection Problem

Andreas Strommer
Michael Lukas Strudler
Austria
Vertical Axis Wind Turbine With Integrated Centrifugal Flaps

Meda Surdokaitė
Lithuania
Optimization of the Synthesis of the Fluorescent Dye "Nile Red"

Konrad Basse Fisker
Denmark
Integration of Dsup in Nannochloropsis Oceanica

THE SECOND PRIZE
Veronika Martinková
Czechia
Rearrangements of N-aryl Hydroxamic Acid Methanesulfonates

Radostin Lozanov Cholakov
Bulgaria
An Attention-Based Deep Learning Architecture For Tabular Modeling

Hanze (Louis) Wu,
Koral Kulacoglu
Canada
FourSight: Analysis of Cancerous Genetic Profiles With Artificial Neural Networks

Jakub Gál
Slovakia
Optimized CNN Implemented on TPU Camera on Autonomous Robot and Open-Source Analogue Neural Network Accelerator with a Parallel Pipeline

THE THIRD PRIZE
Angelos-Michail Chouvardas,
Aleandro Kurtidhis
Greece
E-aimodotes/Information System and Immediate Notification of Blood Donation Needs

Gaetan Barette
Belgium
Automated Darts Robot

Annabelle Rayson
Canada
Plankton Wars: An Innovative Analysis of Daphnia Genotype Biomanipulation for Algae Bloom Prevention

Bartłomiej Bychawski
Poland
Some Finite Index Subgroups of the Braid Group B_3

HONORARY AWARDS STOCKHOLM INTERNATIONAL YOUTH SCIENCE SEMINAR (SIYSS)
Meda Surdokaitė
Lithuania
Optimization of the Synthesis of the Fluorescent Dye "Nile Red"

Konrad Basse Fisker
Denmark
Integration of Dsup in Nannochloropsis Oceanica

SPECIAL DONATED PRIZES
JRC – JOINT RESEARCH CENTRE
Alice Louise Heiman,
Alicia Hedvig Helena Larsen
Sweden
Exposure to Fine and Ultrafine Particles in the Stockholm Subway

Jitka Waldhauserová
Czechia
The Influence of Landscape on Nest Preferences and Behavior of Twig Nesting Hymenoptera

Anish Reddy Athmakoor
Norway
What is the Price Elasticity of Demand (PED) of Sugary Foods for Teenagers at an Online Sweet Shop Located in Stavanger, Norway?

ESA – THE EUROPEAN SPACE AGENCY
Nadezhda Komarova
Slovenia
Reconstruction of the Image Space Depicted in Paintings

CERN – THE EUROPEAN LABORATORY FOR PARTICLE PHYSICS
Steven Ognyanov Spasov
Bulgaria
Bidiagonal Decompositions of (singular) Vandermonde-type Matrices

EUROFusion
Patricia González Piquero
Spain
Influence of the Cultural Level in the Extinction of Homo Neanderthalensis in its Competition with Homo Sapiens: Analysis Through the Game of Contests

ESRF – THE EUROPEAN SYNCHROTRON RADIATION FACILITY
Benedek László Barna
Hungary
Developing a Motorized UV Illuminator Device for Photochemical Ligand-Binding

EMBL – THE EUROPEAN MOLECULAR BIOLOGY LABORATORY
Alexander Marks
August Andre Lukkassen
Martin Thormodsrud
Norway
Antibiotic-induced Release of Li-popolysaccharide from Escherichia Coli

ESO – THE EUROPEAN SOUTHERN OBSERVATORY
Vanessa Guthier
Germany
A Solution for the Enigma of Gamma Rays: Star Clusters Creating Gamma Sources

ILL – THE INSTITUTE LAUE-LANGEVIN
Kahan Petr
Czechia
Preparation and Characterization of Spin Polarized Tips for Tunneling Microscopy

XFEL – THE EUROPEAN X-RAY FREEELECTRON LASER FACILITY
Maximilian Peter Theimer
Switzerland
3D Printing a Geometry Optimized BMX Sized Bike Frame at Home

CNIC PRIZE
Lucia Cengelova
Slovakia
Computational Design and Experimental Construction of Stable Enzymes

CBE JU
Lucas Joaquim Sousa Dória
José Tiago Fernandes Vieira
Portugal
Use of Banana Tree Cellulose Pulp for the Removal of Microplastics From Contaminated Water

SWISS TALENT FORUM
Gabriela Szczepanik
Poland
Penetration Field Preference of Pollinators

EXPO-SCIENCES LUXEMBOURG
Jasmin Schalli
Lorenz Paul Hinterplattner
Markus Bollwein
Austria
Finding a Specific Agent and its Dosage Against American Foulbrood

EuCheMS
Ema Bojnec, Daša Žuman
Slovenia
A Linear Structure Notation for Compounds for the Blind in Chemistry

NATIONAL WORKSHOP ON CODING THEORY
Miro Keimiöniemi
Finland
The Pricing of Digital Goods in the Music Production Software Industry

HOST COUNTRY AWARDS
NATURALIS BIODIVERSITY AWARD
Lukass Roberts Kellijs
Latvia
Forest Damage – Bark Beetle Identification Using Remote Sensing in Latvian Territories

FOUNDING PARTNERS AWARD
Nóra-Anna Kovács
Hungary
Rusty, The Social Mirror Technology

Oleh Ivankiv
Ukraine
The Newest Smart Charging Station "Aker"

Eslam Mohamed Amen Nasr Mostafa
Egypt
The Green Gold

34TH EUCYS, BRUSSELS 2023

THE FIRST PRIZE
Maksymilian Gozdur
Poland
Justice Institutions Stipulated in French and Polish Criminal Procedure Codes, and Fair Trial Standards Included in International Law Standards and Convict Rehabilitation

Elizabeth Chen
Canada
Optimization of CAR-T Cell Therapy using RNASequencing Analysis for Biomarker Identification

Martin Stengaard Sørensen
Denmark
Development of Small Regeneratively Cooled Rocket Propulsion Systems

Afonso Jorge Soares Nunes
Inês Alves Cerqueira
Mário Covas Onofre
Portugal
SPIDER-BACH2

THE SECOND PRIZE
Clément Hervé Joël Vovard
Netherlands
Developing and Testing a Lagrangian Model of the Floating-Arm Trebuchet

Arushi Nath
Canada
Developing Algorithms to Determine an Asteroid's Physical Properties and the Success of Deflection Missions

Liam Brendan Carew
Shane O'Connor
Ireland
Assessing the Impact of Second-Level Education on Key Aspects of Adolescents' Life and Development

Filippo Mutta
Italy
Operating Systems: The Key To A New World

THE THIRD PRIZE
Lyubomir Andonov Nenov
Bulgaria
Dynamic Proactive Secret Sharing for Confidential Byzantine Fault-Tolerant Services using Multi-party Computation

Alex Kanderka
Jozef Jabczun
Slovakia
Remediation of Polychlorinated Biphenyls (PCBs) and Heavy Metals via Sustainable Removal Techniques

Aias Tatsis
Greece
Development and Evaluation of a Hybrid Solar-Thermoelectric Power Generation System in a Marine Environment and Usage of Hydrodynamic Propulsion

Mert Kemal Uçkan
Emel Karahan
Germany
Modelling of a Population During Climate Change

SIYSS
Maksymilian Gozdur
Poland
Justice Institutions Stipulated in French and Polish Criminal Procedure Codes, and Fair Trial Standards Included in International Law Standards and Convict Rehabilitation

Clément Hervé Joël Vovard
Netherlands
Developing and Testing a Lagrangian Model of the Floating-Arm Trebuchet

LIYSF
Filippo Mutta
Italy
Operating Systems: The Key To A New World

ESA
Martin Stengaard Sørensen
Denmark
Development of Small Regeneratively Cooled Rocket Propulsion Systems

CERN
Szilveszter Laskai
Hungary
Design of Traction Inverter with SiC Semiconductors

EUROFusion
Anastasia Bolkvadze Irakli Veshapeli
Georgia
Making a High-Aperture Varifocal Membrane Reflector Telescope

ESRF
Ilja Niks Stoligvo
Latvia
Empirical Prediction of Chalcopyrite Lattice Parameters From Chemical Properties of Their Constituent Elements

EMBL
Marina Sokolova
Czechia
Study of the R38-K40 Ribosome Binding Site in the Rack1 Protein Using the Morg1 Protein Mode

ESO
Julian Seeholzer
Switzerland
Theoretical and Experimental Analysis of a Generalised Brachistochrone Problem for Mechanical Systems Including Coulomb Friction and Rotational Motion

ILL
Charlotte Klar
Katharina Austermann
Germany
Thermally Triggered Motion of Pyrolytic Graphite on a Magnet Array

XFEL
Afonso Jorge Soares Nunes
Inês Alves Cerqueira
Mário Covas Onofre
Portugal
SPIDER-BACH2

CNIC Prize
Sachi Premaratne
Sweden
Antibodies Targeting Transient Receptor Potential Vanilloid 1 as Potential Drug Candidates for the Treatment of Chronic Pain

CBE JU
Elisa Jääskeläinen
Finland
Valuable Products from Waste Cotton – Optimising the Pre-Treatment of Cellulose Nanocrystal Production

International Swiss talent forum
Shachar Perlman Jonathan Halperin
Israel
Using Network Centrality Measures as Predictors of Gene Drive Deployment Outcomes

Expo-Sciences Luxembourg
Nanna Elizabeth Rosa Kalmar
Denmark
Let There Be (Optimal) Light

EuCheMS
Martyna Kniazevaitė
Lithuania
Reduction of Perchlorate Ion Concentrations in Martian Soil using Azospira oryzae

Bulgarian Workshop on Coding Theory
Szymon Perlicki
Poland
A Novel Method of Constructing Block Ciphers Resistant to Linear and Differential Cryptanalysis

Regeneron ISEF 2024 Los Angeles, California (May 2024)
Felix von Ludowig
Tim Arnold
Germany
Rekari – the Intuitive Platform for Diverse Drone Operations

Deyan Deyanov Hadzi-Manich
Bulgaria
A Graph Isomorphism Kernel Based on kVertex Connectivity and its Application in Graph Neural Networks

35TH EUCYS, KATOWICE 2024

THE FIRST PRIZE

Piotr Olbryś
Poland
Design of New Oyrene-4,5,9,10-Tetraonebased Heterocyclic Derivatives as Highcapacity Organic Cathode Materials: a Density Functional Theory Study

Nikhil Vemuri
United States of America
ANOMaLY: A Real-Time Globalized System for Effective Regional Mitigation of Agricultural Nitrous Oxide Emissions

Lamia Music
Austria
Sustainable and Advanced Approaches to Dye-Sensitized Solar Cells

Aleksandra Petkova
Bulgaria
Theoretical and Experimental Investigation of Ship Wakes

THE SECOND PRIZE

Seán O'Sullivan
Ireland
VerifyMe: A New Approach to Authorship Attribution in the Post-ChatGPT era

Adam Kovalcik
Slovakia
Design and Synthesis of New Green Furanbased Hemisynthetic Perfumic Compounds Derived from Agricultural Waste

Leon Verreijt
Netherlands
Designing, Building, and Testing a Multi-Wire Proportional Chamber

Ann Wang
Canada
Eradicating Cystic Fibrosis Biofilms by a Novel Non-Toxic, Multi-Pathway Salicylate Therapy

THE THIRD PRIZE

Angela Cao
Canada
S2S: AI-Powered Translation Between Sign and Spoken Languages

Nicolas Dominic Huber
Switzerland
Pushing the Limits - Active Safety in Paragliding

Kamilė Milkintaitė
Lithuania
Towards Improved Brain Tumor Treatment: Novel Therapeutic and Diagnostic Targets

Márton Krisztián Hegedűs
Hungary
Photocatenane - Robotics on the Molecular Level

Jury Special Award
Ido Somekh
Luxembourg
AllergyScan

Leonardo Magnani
Luxembourg
AllergyScan

SIYSS
Piotr Olbryś
Poland
Design of New Pyrene-4,5,9,10-Tetraonebased Heterocyclic Derivatives as Highcapacity Organic Cathode Materials: a Density Functional Theory Study

Aleksandra Petkova
Bulgaria
Theoretical and Experimental Investigation of Ship Wakes

LIYSF
Lamia Music
Austria
Sustainable and Advanced Approaches to Dye-Sensitized Solar Cells

Adam Kovalcik
Slovakia
Design and Synthesis of New Green Furanbased Hemisynthetic Perfumic Compounds Derived from Agricultural Waste

ESA
Delyan Lyubomirov Boychev
Bulgaria
Synthetic Image Detection via Supervised Contrastive Learning

CERN
Leon Verreijt
Netherlands
Designing, Building, and Testing a Multi-Wire Proportional Chamber

EUROFusion
Julius Gutjahr
Germany
New Insights on Antibubbles

Maja Leber
Germany
New Insights on Antibubbles

ESRF
Federico Bergo
Italy
DSUP Project

EMBL
Nathaniel Kashani
Israel
T Cell Engineering as a Treatment for IgEmediated allergy

ESO
Manu Kiiskilä
Finland
Evolving Deep Architectures: A New Blend of CNNs and Transformers Without PreTraining Dependencies

ILL
Nikolas Pippal
Czech Republic
Intraoperative Brain Tumor Detection Using Raman Spectroscopy Data and Machine Learning

XFEL
Jakob Quinten Schildhauer
Switzerland
Seeing Sound – A New Method For Measuring Vibrations With Cameras

Regeneron ISEF 2025
Seán O'Sullivan
Ireland
VerifyMe: A New Approach to Authorship Attribution in the Post-ChatGPT era

Aleksandra Petkova
Bulgaria
Theoretical and Experimental Investigation of Ship Wakes

World EXPO 2025
Kamilė Milkintaitė
Lithuania
Towards Improved Brain Tumor Treatment: Novel Therapeutic and Diagnostic Targets

Márton Krisztián Hegedűs
Hungary
Photocatenane - Robotics on the Molecular Level

CNIC Prize
Ludmila Kvasnovska
Slovakia
Potential Biomarkers of Age-Related Chronic Inflammation

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Julija Skrt
Slovenia
Influence of Hydrolytic Enzymes on Antioxidant Efficiency of Olive Leaf Extracts

Jaša Krevh
Slovenia
Influence of Hydrolytic Enzymes on Antioxidant Efficiency of Olive Leaf Extracts

Swiss talent forum
Jack Christopher Shannon
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Global Carbon Sinks: Remote Sensing for Monitoring Peatland Restoration

Hanseo Kim
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The Future of Carbon Capture Technology: A Novel Moisture Powered Thin-Film Supercapacitor that Adsorbs Carbon Dioxide

Expo-Sciences Luxembourg
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Complete Solution for PCB Assembly (Kinetic Assemblies)

Tudor Dochia
Romania
Complete Solution for PCB Assembly (Kinetic Assemblies)

EuCheMS
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Synthesis of New Selective-Dual Inhibitors of Cyclin-Dependent Kinases

Transform4Europe study visit
Nicolas Dominic Huber
Switzerland
Pushing the Limits - Active Safety in Paragliding

Annika Moppel
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Russia's Propaganda in the Information War: The Examples of the First Crimean Bridge Explosion and Propaganda Used by Rossiyskaya Gazeta

Nora Lara Artico
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Bacteriophages: a Glimmer of Hope in Medicine - When Antibiotics Fail to Treat Bacterial Infections

Silesian Science Festival
Yujeong Ha
Korea (South)
Innovating Crop Protection: Jeju Soil Bacteria-Powered Sea Breeze-Responsive Vaccine System

Silesian University of Technology
Ediz Osman
Germany
Pioneering the Development of a CarbonFree VTOL Jet for Civil Aviation

University of Economics Katowice
Mohamed Abdalla
Egypt
Mouseless Mouse

Mohamed Farrag
Egypt
Mouseless Mouse

Medical University of Silesia
Ann Wang
Canada
Eradicating Cystic Fibrosis Biofilms by a Novel Non-Toxic, Multi-Pathway Salicylate Therapy

Ridhima Pal
Denmark
BMI vs. Body Fat Percentage

Aleksander Zieliński
Poland
Impact of the Ability to Block the Pathogenesis of Autoimmune Diseases with Newly Designed Fab Domains of Anti-Baff, anti-April Antibodies

Workshop on Coding Theory
Artem Kovtun
Ukraine
Research of the Dynamics of a Non-Binary system with a Directed Influence

EUROPEAN UNION INITIATIVES FOR RESEARCHAND YOUTH

The European Framework Programme for Research & Innovation (R&I), Horizon Europe, is currently the biggest programme for R&I ever, with a budget of over €93 billion during the period 2021 – 2027. The European Commission has also recently proposed to almost double the programme's funding to €175 billion for the next Multiannual Financial Framework for the period 2028-2034 to enable a more ambitious and impactful R&I agenda, including support to research careers and young people in science.

Horizon Europe, together with the European Research Area (ERA), aim to to break down barriers to create a truly functioning single market for knowledge, research and innovation. The European Union also recognises the need to start the process of integration at the grassroots level. The Commission is actively promoting European cooperation in the fields of science education, trainng and careers, as well as in trying to stimulate young people's interest in science outside formal education. In addition to the EU Contest for Young Scientists, the European Commission has several other initiatives to encourage young people to consider careers in science.

MARIE SKŁODOWSKA-CURIE ACTIONS

The Marie Skłodowska-Curie Actions fund excellent research and innovation and equip researchers at all stages of their career with new knowledge and skills, through mobility across borders and exposure to different sectors and disciplines. The MSCA help build Europe's capacity for research and innovation by investing in the long-term careers of excellent researchers. The MSCA also fund the development of excellent doctoral and postdoctoral training programmes and collaborative research projects worldwide. By doing so, they achieve a structuring impact on higher education institutions, research centres and non-academic organisations. The MSCA promote excellence and set standards for high-quality researcher education and training in line with the European Charter for Researchers and the Code of Conduct for the recruitment of researchers.

MARIE SKŁODOWSKA-CURIE ACTIONS

EURAXESS RESEARCHERS IN MOTION

EURAXESS is a user-friendly web portal for researchers with the aim of improving their career development and mobility, offering tailored information, job opportunities, career development guidance, free tools and much more for researchers and research performing organisations in Europe and beyond.

With 43 European countries and 9 worldwide hubs, EURAXESS is the largest pan-European initiative to foster researchers' mobility and career development, strengthening scientific collaboration between Europe and the global community. EURAXESS also offers expert career guidance and access to a network of more than 600 Services Centres located in 43 European countries that offer free personalised assistance to researchers and research performing organisations.

euraxess
RESEARCHERS IN MOTION

EUROPEAN RESEARCH COUNCIL (ERC) STARTING GRANTS

The ERC is a special funding component of Horizon Europe which promotes investigator-driven frontier research. Its main aim is to stimulate scientific excellence in Europe by supporting and encouraging the very best, truly creative scientists, scholars and engineers to go beyond established frontiers of knowledge and the boundaries of disciplines. ERC grants are awarded through open competition to projects in any field of research. The ERC has launched a Starting Independent Researcher Grant scheme (ERC Starting Grants) with the objective of supporting excellent researchers with leadership potential, located in or moving to the EU and Associated Countries, who are about to establish their first research team or to start conducting an independent research programme.

European Research Council
Established by the European Commission

CHOOSE EUROPE FOR SCIENCE

The Choose Europe for Science initiative was announced at La Sorbonne University on 5 May 2025 by Commission President Ursula von der Leyen, together with a new €500 million dedicated package for 2025-27 to make Europe a magnet for researchers, including further support for young scientists under MSCA and additional funding to the European Research Council (ERC) 'super grants' to support breakthrough science.

Beyond EU-level action, the Commission also showcased the diversity of initiatives at national and regional levels, accessible to researchers from around the world with a comprehensive overview of these initiatives. The latest version is available on EURAXESS, which lists over 70 initiatives including 12 German initiatives such as Else Kröner Excellence Grants, Emmy Noether Programme, Mercator Fellowship, Helmholtz Female Professorship Programs, PRIME, Helmholtz Investigator Group, etc.

Moreover, the Commmission launched a new 'Choose Europe' web portal acting as a repository of all news and relevant updates for EU and international researchers, practical information for coming, working and living in Europe, and all existing opportunities and EU-funded calls dedicated to researchers

Choose EUROPE for SCIENCE

Choose Europe platform

OTHER INITIATIVES FOR STUDENTS AND YOUNG PEOPLE

The European Commission and the EU provides young people with opportunities through a variety of initiatives (training, non-formal education and mobility opportunities) aimed at supporting and empowering them and to foster youth participation, inclusion, and the development of skills. The key programmes include:

- Erasmus+, providing funding and support for education, training, youth, and sport in Europe. It offers opportunities for young people to study, train, volunteer, and work abroad, promoting intercultural exchange and skills development. Erasmus+ also supports organizations in developing partnerships for innovation in education, training, and youth.
- European Solidarity Corps, offering young people opportunities to engage in solidarity activities, either in their own country or abroad, that benefit communities
- DiscoverEU, allowing18-year-olds to explore Europe by winning travel passes.
- EU Youth Dialogue, a mechanism fostering dialogue between young people and decision-makers on EU policies, ensuring that young people's voices are heard.
- European Youth Portal, a means of giving access to information specifically targeted at young people who are living, learning and working in Europe. The portal is a gateway to European and national information on 33 countries in 27 languages. It allows young people to have their views heard through online discussion forums, and their questions answered through the Eurodesk Network.
- Eures, the European Job Mobility Portal helping young people find job opportunities abroad.

TRAINEESHIPS IN THE EUROPEAN INSTITUTIONS

The European Parliament, the Council, the Commission, the Court of Justice, the Social and Economic Committee, the Committee of the Regions and the European Ombudsman offer paid traineeships, each lasting 5 months and starting in two rounds every year. These traineeships aim to provide an understanding of the objectives and goals of the EU integration processes and policiesm as well as an opportunity to work in a multicultural and multilingual environment, contributing to the development of mutual understanding, trust and tolerance.

GENERAL INFORMATION ABOUT THE EU

European integration has delivered half a century of stability, peace and economic prosperity. It has helped to raise standards of living, built an internal market, launched the euro and strengthened the Union's voice in the world. The process started shortly after the devastation of World War II and was launched on 18 April 1951 with the signing of the Paris Treaty which established the European Coal and Steel Community (ECSC) involving six countries: Belgium, France, Germany, Italy, Luxembourg and the Netherlands. On 25 March 1957, the Treaty of Rome was signed to establish the European Economic Community (EEC) in order to promote the free movement of people, goods and services, and capital. A major revision of the Treaty of Rome was signed on 17 February 2003 in Maastricht, which would lead to the strengthening of the economic and monetary ties between the members and define what we today call the European Union. Over the years membership grew, bringing us to the 27 Member States composing the EU today. The European Union is based on the rules of law and democracy. It is neither a new State replacing existing ones nor is it comparable to other international organisations. Its Member States delegate sovereignty to common institutions representing the interests of the Union as a whole on questions of joint interest. All decisions and procedures are derived from the basic treaties ratified by the Member States.

SCIENCE COMES TO 2026 TOWN

sctt-2026.eu

SPLIT

Curiosity meets everyday life as “Science comes to town” lights up Brest, Kiel, and Split with a full year of discovery.

BREST

For 365 days, these cities become a vibrant centre of groundbreaking discoveries, interactive exhibits, and visionary thinkers.

KIEL

This is where big ideas meet bold action, right in your region. Be inspired, connect with pioneers, and help shape tomorrow.

Funded by the European Union

Driven by Curiosity. United in Science.

EUCYS 2026
KIEL, GERMANY
22 – 27 September 2026

European Union Contest for Young Scientists

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Kiel University
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jugend forscht

SCIENCE COMES TO TOWN

Funded by the European Union

PRACTICAL TIPS FOR FIRST TIMERS

CLIMATE

Latvia experiences a temperate maritime climate with four distinct seasons. Winters can be cold, with temperatures ranging from –5°C to –20°C, transforming the landscape into a snow-covered wonderland. Summers can reach 30°C, with long days perfect for exploring. Spring and autumn bring vibrant changes, with blooming flowers and golden fall leaves. Each season in Latvia offers a unique experience.

DIVERSITY

Latvia is a vibrant mix of cultures, including Latvians, Russians, Poles, Ukrainians, Lithuanians and more, creating a rich and dynamic cultural fabric. This diversity isn't just about nationality—it extends to values like gender equality and social inclusion. Over the past decades, Latvia has made significant strides in fostering equality in workplaces and public life. It's a place where diverse identities are recognized, all the while striving for a shared and evolving sense of national identity.

LANGUAGE

Latvian, the official language of Latvia, belongs to the Baltic branch of the Indo-European family. It has ancient roots in Proto-Baltic and developed through various dialects. The 19th-century New Latvians (Jaunlatvieši) movement helped standardize the language, shaping it as a symbol of national identity. Today, around 1.5 million people speak Latvian, primarily in Latvia. It is also home to Latgalian, a Baltic language with its own literary tradition, and Livonian, a tiny language which is undergoing revitalization. Latvian remains central to the nation's culture, education, and government.

latvia.eu

Photo: Investment and Development Agency of Latvia

ALL THAT SAID, HOW ABOUT SOME LATVIAN?

Sveiki! – Hello!
Kā tev iet? – How are you?
Paldies! – Thank you!
Lūdzu! – You’re welcome!
Uz redzēšanos! – Goodbye!
Jā! - Yes!
Nē! - No!
Saule - Sun
Dziesma - Song
Kaķis - Cat
Straume - Flow
Kafiju, lūdzu - Coffee, please
Ūdeni, lūdzu - Water, please
Man garšo saldējums. – I like ice cream.

Es piedalos EUCYS2025 Rīgā.
– I am participating in EUCYS2025 in Riga.

Riga, Latvia, captured by the Copernicus Sentinel-2 mission, European Space Agency

ORGANISER

Ministry of Education and Science Republic of Latvia

State Education Development Agency Republic of Latvia

SUPPORTER

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University of Latvia

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Latvia travel

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Value Through Knowledge