Get Smart

#09

INTERVIEW

Eva Rojíková

TOPIC

Talented Young Individuals and the GoHigher Community

INTERVIEW

Marek Bárdy

RESEARCH, DEVELOPMENT, AND INNOVATION IN THE PILSEN REGION
Published in November 2025, as part of the Smart Accelerator of the Pilsen Region III project

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A colour-edited photograph shows a detail from the Licht und Sicht exhibition at the Swiss Science Center Technorama in Winterthur, Switzerland, visited by the GoHigher community during their trip to CERN.

Dear readers,
you will no doubt agree that the younger generation is the driving force behind every region around the world. They bring new ideas, energy, and creativity that promote innovation and increase the competitiveness of local businesses and institutions. Their involvement in scientific, entrepreneurial, and cultural life attracts investment, creates job opportunities, and enhances the region’s attractiveness to other people and investors. Supporting young talent is not only an investment in individuals, but also in the future prosperity of the entire region, which the Pilsen Region and its governance are fully aware of. It has been supporting gifted students (and others) for more than 15 years and recognizes that the support must be continuous, long-term, and systematic.

In an ideal education system, differentiated care should be given to pupils and students with lower cognitive abilities as well as to those who are more talented in studying and acquiring knowledge. The Pilsen Region has decided to give special support to gifted pupils and students. Apart from long-established programmes such as Olympiads, secondary school research projects, and summer camps for talented pupils, a tool to support comprehensive extracurricular provision for gifted pupils was piloted as part of the Smart Accelerator project. The emphasis was on fostering mutual connections, sharing opportunities for the development of their talents and interests, and actively involving them in the creation of the programmes in which they participate together. This project, known as GoHigher, has gradually attracted over 350 talented and active secondary school pupils in our region, which I consider an extraordinary success. The initiator and leader of the programme is Ms Eva Rojíková. I’d just like to add that I’m a little jealous of her, especially her regular contact with gifted pupils. They are a great source of inspiration and drive for her.

The gifted outreach programme covers a wide range of activities. These include visits to research facilities at companies with interesting innovations, joint debate sessions, and places of interest in the fields of technology and natural sciences. In May this year, we even managed to arrange a visit to CERN, one of Europe’s most important research facilities. Maybe one of our pupils will work there one day. Of course, companies and research organizations in our region are also happy to offer great programmes for gifted students. I can safely say that the hosts were just as enthusiastic about the visits as the young people; the experts were impressed by their spontaneous interest.

Gifted individuals and their application in the field of research, development, and innovation (R&D&I) are of fundamental importance for the development of our region, and their community must be nurtured continuously. Hopefully, we will finally be able to find, attract, and engage gifted individuals, but the challenge of achieving success in R&D&I falls on the gifted themselves. As Albert Einstein said, “*Genius is 1% talent and 99% hard work.*”

I am delighted that the leadership of the Pilsen Region has decided to extend its support for this successful pilot programme beyond the end of the Smart Accelerator project. Thanks to this programme, we have created an amazing community of active pupils who share their experiences, are friends and support, and inspire each other – and that is often what matters most.



Ing. Filip Uhlík
Director of the Regional Development Agency of the Pilsen Region

Regional news you cannot miss

Anna Krebsová Represents Pilsen Region's Young Talent in Zero Gravity

What is zero gravity like? Thanks to the Czech Journey to Space project and its Zero-G mission, 26 Czech pupils found out in March. Anna Krebsová from Pilsen was also on board of the Airbus A310, which took them on a parabolic flight and simulated zero gravity. A successful graduate of the Mikulášské náměstí Grammar School, she has been one of our most promising young scientists since September. Last year, she even became the youngest ever recipient of the City of Pilsen Award! A member of the LASAR student team, she was the only representative of the Pilsen Region. "*The experience was incredible,*" the young pupil, who is also active in the GoHigher community, shared excitedly. Like the others, she went through six rounds of a demanding selection process, and the mission actually fulfilled two of her dreams at once because Anna's fascination involves not only space but also aviation. As the following months showed, she could just as easily do scuba diving, as she spent another day training with the other members of the mission in the deepest Czech swimming pool at Aquapalace Prague, and she might as well be a science promoter, as she gave talks about her experiences at several schools, including her own. It is no surprise that Anna and the other cadets attended the ceremonial reopening of the Prague Planetarium in June, where future Czech astronaut Aleš Svoboda launched his book. She already knew him from the Zero-G mission, where she took a selfie with him. How about you? Would you also like to reach for the stars? The Czech Journey to Space project, which made all this possible, offers opportunities to pupils, students, the public, and companies. You can find out all about it at ceskacestadovesmiru.cz. ●

The Scientific Journal ERGO Is a Showcase for the Rokycany Grammar School

Environmental Factors Determining the Structure of Invertebrate Communities in the Planá n. Lužnicí Gravel Pit. Measurement of Semiconductor Structures Prepared by the MOVPE Method. Articles with titles like these can be found in the scientific journal ERGO published by Grammar School and Secondary Vocational School Rokycany. It features the best research papers by students, selected for publication by the editorial board. The editor-in-chief is the school's principal, Pavel Vlach. ERGO is published once a year, and the first issue appeared two years ago when the institution celebrated its 150th anniversary. The magazine is a showcase for the school, which is also part of the GoHigher programme. "*All final-year pupils have to write a school-leaving thesis, many of which are of a very high standard. We also have very good experience with Students' Professional Activities, reflected in the fact that we are one of the most successful schools in the Czech Republic in this competition. So, I thought it would be good to have a platform where the best theses could be shared outside the school every year,*" the director explained about how ERGO was born. The articles in the magazine differ from the original graduation theses. "*The contributions are curated by editors and then revised by the authors, but the final graphic design is the work of our librarian Petra Krausová, who is behind the editing and typesetting, and I am very grateful to her for that,*" added Pavel Vlach. At first, Initially, ERGO only appeared in print. An electronic version is now also available on the website gasos-ro.cz/cs/dalsi-aktivity/casopisy. ●





Children with Thermal Cameras from the NTC Find Ways to Improve School Microclimates – Even Minecraft Helped

"*When we give children trust and tools, they can think about their community in a completely new and very inspiring way,*" the LabIR Edu educational platform team praised the seventh grade of Masaryk Primary School and Kindergarten in Žihle. It is one of eleven schools that participated in the first year of the Microclimate research project for schools this year, with the aim of showing children how the laws of nature affect their surroundings and how they can look for solutions themselves. The seventh graders from Žihle focused on a bus stop and its surroundings, which get very hot in summer. Among other things, their exact replica of the town centre, including its proposed modifications, in Minecraft, was really impressive. "*A bus stop like a sauna?*" they asked and answered: "*We can change that!*" They suggested where to add vegetation and water features, where shading would be useful, and pointed out that there used to be greenery around the bus stop. Everything is backed up by accurate data from thermal cameras. The LabIR Edu educational platform was created at the NTC research centre of the University of West Bohemia in Pilsen with the aim of "*inspiring the next generation of scientists and engineers to explore the world around us and contribute to its improvement*". The Microclimate project is one of its activities. Thanks to the NTC's experience, children can conduct experiments in classrooms and make outdoor measurements with thermal cameras according to methodological guidelines and evaluate everything themselves. Worksheets, manuals, and videos help them propose improvements to the microclimate. All this can be done over a long period of three to five months or short-term and intensely during project days or summer camps. Like in Žihle, the microclimate was tackled in schools north of Pilsen, in the Rokycany District, and in Mladá Boleslav during the past school year. You can read more about the individual proposals at edu.labir.cz. ●

University of West Bohemia Students Launch Company to Make Sitting Healthier

Two students from the Faculty of Economics at the University of West Bohemia in Pilsen, Eduard Šuster and Lukáš Pilc, decided to tackle the problem of back pain among people with sedentary jobs. In their view, existing solutions — such as balance chairs, exercises, or medication — do not address the root cause: poor sitting posture. To solve this, they teamed up with students from other departments at their university to develop sensors that not only alert users to incorrect posture but also provide guidance via an app on how to improve it, when to stretch, or when to adjust the height of one's desk, for example. To take their project to the next level, they registered their company, Ergosenc s.r.o., for the spring edition of the seventh year of the Business Innovation Centre in the Pilsen incubation programme, which started in early February 2025. With its support, the two students want to complete the development of their solution, obtain certifications, establish cooperation with manufacturers of complementary solutions, and launch production and sales. ●





GoHigher Project 2023–2025

The Pilsen Region has enormous potential in its talented young people. This has been demonstrated by its GoHigher project, which has been bringing together active secondary school pupils in the region for three years now. What does GoHigher offer them, what does it offer the region, and how is the region doing?

What Does GoHigher Bring to Active Pupils?

Support and courage
A safe, respectful environment that encourages and helps overcome the fear and shyness of presenting one's ideas.

Mutual inspiration
Sharing experience and motivation for joint learning and growth.

Personal development
Strengthening self-reflection, self-management, self-organization, and self-evaluation within a group.

Network of contacts
Establishing connections with peers and experts, opening doors to high-end workplaces and research teams.

Practical skills
Developing professional, communication, organizational, and language skills while working on real projects.

Active role
The opportunity to help create the programme, implement your own ideas (3D printing, reviewing professional articles, etc.) and be part of the community.

What Does GoHigher Bring to the Region?

Identification and development of talent
Effective recognition of gifted and motivated individuals at secondary schools and universities.

Career guidance support
Early identification of interest in research, development, and innovation with motivation for a career in R&D&I.

Retaining and attracting experts
Presenting the Pilsen Region as an attractive destination for young scientists and potential employees of research organizations.

Strengthening R&D&I capacities
Ensuring a sufficient number of secondary school pupils are focused on natural sciences, technical, and medical fields.

Economic prosperity
Long-term consolidation of the region's competitiveness and support for its growth through innovation potential.

Innovation ecosystem
Building a reputation as an evolving scientific community with the possibility of returning and engaging talent even after leaving the region.

Pilsen Region in Data

56 secondary schools

15 grammar schools

Nearly
28,000
secondary school pupils in the PR in the school year 2024/2025

2
universities:
University of West Bohemia in Pilsen, Faculty of Medicine in Pilsen, Charles University

Nearly
11,300
students (incl. 11,700 PhD students) at UWB in Pilsen (9 faculties, 62 departments, 303 study programmes)

More than
2,300
students (more than 2,500 incl. PhD students) Faculty of Medicine in Pilsen, Charles University

GoHigher Project in Data

The programme has gradually involved:

- **360+** gifted secondary school pupils
- **19** secondary schools
- **14** organizations
- **17** school ambassadors
- **60** practising professionals

Concrete activities by the numbers (September 2023–September 2025)

- **16** project days
- **7** "Inspiration" lectures
- **4** two-day excursions
- **1** international excursion
- **15** informal meetings

UWB: Smart materials, Quantum technologies, Digital archaeology
Faculty of Medicine, CU: Biomedical Center, Physiology, Biology, Histology
UWB + Faculty of Medicine, CU: Biomedicine and Technology in Healthcare and New Materials
University of South Bohemia: Parasitology, Molecular Genetics, Archeobotany, and Paleoecology
Streicher: Space programme | **BMW:** Smart mobility | **VR Medical:** Medical technology | **ÚJV Řež:** Energy | **ATC SPACE:** Space programme | **NVIAS:** Hydrogen technologies, AI in healthcare | **CERN:** European Organization for Nuclear Research

Science Within Reach
Inspiring lectures and excursions:
XenoCell + Faculty of Applied Sciences (Biomedicine), Particle Physics & Plasma Technologies (Energy), CERN – History, Experiments, Future | "Window to the Universe" (Astrophysics), AI & Quantum Technologies ("q-bits") | The impact of digital technologies on the human brain

Peer-to-Peer & Buddy Programme
GoHigher Café: informal meetings
3D print workshops
Consider Science!
MeetUp: involvement of GoHigher in the preparation of activities

Connecting with Practice
Part-time jobs, secondary school research projects, internships, shadowing professionals, mentoring by scientists and engineers

Mental Health & Support
OpenMind:
Self-reflection, Q&A, Counselling Centre, Accessible to students, teachers, experts and parents

Education for Teachers and Professionals
Regular training courses with the National Pedagogical Institute working with gifted students and potential talent for R&D, for GoHigher experts and teachers

GoHigher World in Pictures

Over the course of two years, the GoHigher programme organised 16 project days, 7 inspirational events, 4 two-day excursions, 1 international excursion and 15 informal GoHigher Café meetings.



















I Deeply Respect Them All and Feel Honoured to Meet Such Young People



We spoke with Eva Rojíková, the Manager for the Building a Community of Talent for Research, Development, and Innovation and the GoHigher projects, about education, community-building for talented youth, and working with gifted pupils three years ago. At that time, the GoHigher community did not exist yet. Today, it involves over 360 talented pupils from the region. Eva Rojíková collaborates with nearly twenty secondary schools and has participated in dozens of meetings, excursions, project days, and other activities for the young and gifted. They are an inspiration to one another. The secondary school pupils from the GoHigher community adore Eva – she provides them with inspiring experiences and opportunities for further education, which there is often no room for at school.

Eva, we did an interview together exactly three years ago. That was right at the beginning of the GoHigher project. The community of talent only started to emerge later. Did you have any idea back then that the project would take off like this, that it would be so successful, and that it would attract so much interest? I mean especially from the gifted students themselves.

Yes, three years ago we prepared a project based on a thorough analysis and, in particular, personal conversations with talented pupils in the Pilsen Region, which revealed the need to offer them an opportunity to meet informally and enjoy a comprehensive offer of activities prepared especially for them. If I hadn't believed in it, I would never have joined the project. But I think you're referring to the size of the community. The project was set up as a pilot, counting on the involvement of pupils of five secondary schools. This vision quickly dissolved at the very first informal GoHigher Café meeting, which was attended by pupils from other schools, too, resulting in the emergence of a highly active and diverse community. Currently, more than 360 pupils from 19 secondary schools are involved in it.

How do parents, other collaborating organizations, and the region perceive the success of GoHigher?

A survey of parents and students involved in GoHigher has not been planned, but when I had the opportunity to talk to some of them, their perception of GoHigher was very positive, and they said that their children were thrilled to have the opportunity to meet each other and gain lots of new ideas for their professional and personal development. They are much more involved in cooperation with experts, often change the direction of their further studies based on this experience, and also feel that the community has a positive impact on their mental health.

Schools express similar views that the students involved are becoming more mature individuals, with clear goals, conscious communication and self-presentation skills, and the ability to plan their activities effectively, and use their time efficiently. When specialized events are held, partner organizations are often pleasantly surprised by how active the GoHigher group is, and many of them change their approach to planning new activities. How does the Pilsen Region see GoHigher? That's rather a question for the regional representatives, but in my view – as we have the opportunity to talk to regional representatives – the Pilsen Region is fully aware of the need to support active secondary school students interested in R&D&I in connection with the innovative development and economic growth of the region in the future.

"I am happy when I see them shining and happy, and I am also pleased that they feel good about stepping out of their comfort zone and gaining new inspiration and perhaps even a new perspective on their future career path."

The headline of the interview at the time was Opening Science to Talented Minds and Advancing the Region Among the Elite. Would you say that this is succeeding, also thanks to your work and dedication? Young people are creating the potential for highly qualified professionals in the region.

It is still early days, as GoHigher has only been operating in the region for three years, but we are already seeing a significant shift in how our community is perceived by collaborating entities as a hotbed for young, active secondary school students interested in science. More and more often, I encounter efforts to identify and engage these young future scientists early, encouraging them to stay in the region and help develop it, so that together they can reach greater heights. It has been clearly proven that the driving force behind the development of society is unburdened young and energetic thinking, a desire to learn, seek new solutions, and work on research tasks with leading experts. I am convinced that the community is one of the tools for identifying active, talented secondary school pupils early on, presenting the region to them as a place where it is possible to do interesting, cutting-edge science, and involving them in scientific teams as soon as possible, thereby contributing to the region's advancement among the elite regions.

It should also be noted that the Pilsen Region is the only region in the country that has such a well-established community of talent interested in R&D&I. We present our experience together with the pupils at various conferences and expert panels at the national level.

What surprised you most about GoHigher?

The biggest surprise for me was the gratitude of the pupils involved for someone paying attention to them, respecting their needs and specifics, listening to them, treating them as partners, facilitating meetings with leading experts based on their suggestions, and allowing them to actively participate in planning the content of these meetings and programmes. Simply, someone being here for them. This also applies to me being part of the community regardless of the age difference. I was also surprised by the initiative of the participants to become ambassadors at their schools and actively inform their peers about the activities offered by GoHigher.

The programme included a number of interesting excursions and project days. Which one would you highlight as the most interesting, most beneficial, or the one that really engaged the participants?
It's hard to choose, as all the events we organize are aimed at activating gifted secondary school pupils with an interest in R&D&I. From a questionnaire survey among the participating pupils, I know that each event appealed to a certain part of the community. We follow the principle of offering events in cooperation with top institutions, introducing pupils to the latest developments in the region's areas of specialization, never repeating an event with the same content, emphasizing the importance of interdisciplinary overlap, and each time focusing on a different field of science. The most beneficial events in terms of community building are multiple-day multidisciplinary events, where pupils from different schools and fields meet and have time to get to know each other better. To maintain and foster the community, it is important to hold regular informal meetings at the GoHigher Café, where they can meet and share their experience in a safe environment. The most attractive event was an excursion to Swiss science centres, specifically a visit to the world's most important science centre, CERN, including an interactive workshop. I feel I owe something to the other students in the community, because it was not possible to organize a foreign excursion also for students with a different focus.

From my personal encounters with talented young people, I know that they are truly grateful to be able to meet and inspire each other and to see that there are many peers who are interested in science. I suppose you feel that you are working on an important project and that it gives you energy, even though leading it is surely demanding?
Yes, you're right, preparing and implementing activities is demanding and requires more than just an eight-hour workday. We are often involved with the community issues during our free time, but it all makes sense to me. I deeply respect them all and feel honoured to meet such young people and help them as much as we can.

I am happy when I see them shining and happy, and I am also pleased that they feel good about stepping out of their comfort zone and gaining new impulses and perhaps even a new perspective on their future career path.

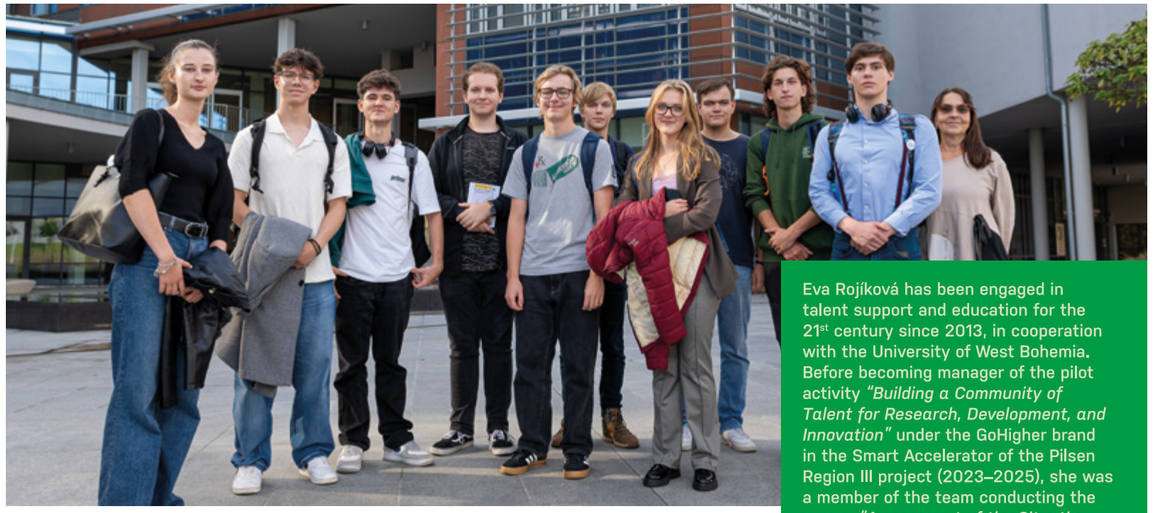
It's wonderful to see those who are already at university coming back and helping their younger counterparts. We have also created a completely new space on the website for psychology topics, which can be found under the Mind icon.

"I think we must not forget an aspect that is both crucial and very fragile for the development of gifted pupils and for sustaining the community – namely to continue guaranteeing and carefully protecting a safe, respectful, creative, and supportive environment, which, according to the students' feedback, has been successfully built."

Two years ago, we also talked about the fact that there are many projects and programmes for young talented individuals in the region, but they are scattered. Have you managed to bring them together?
We believe we are doing very well. A database of activities has been created on the revamped portal www.gohigher.cz. We know that this is a never-ending process and there is always room for improvement. Keeping the database up to date requires a lot of energy. We have managed to set up information flows so that experts, representatives of organizations, and companies that offer events for active secondary and primary school pupils can enter events into the database themselves. At the same time, our team registers all the activities and continuously adds to them.

I also asked then why, according to data from the Ministry of Education, Youth, and Sports, we have very few talented students in our region, below the national average. Is the situation different today (thanks to GoHigher)?
Definitely. I don't have the latest data, but at the very least, we helped the region set up rules for reporting gifted pupils with the 1st level of support, which help to identify gifted pupils directly at school in cooperation with the school counselling centre.

In the first year after the new rules were introduced, the number of pupils reported increased. The question is whether all schools still report these pupils in this way. As far as GoHigher is concerned, we should bear in mind that the community is just getting started and this is only a pilot project. However, many schools say that participating in GoHigher has helped them to more easily identify gifted students with potential for science and research.



Nevertheless, there is still room for improvement. So far, we have only detected a small proportion of active pupils with an interest in natural and technical sciences. We are completely missing out on those interested in the humanities, and we must not forget that there are many talented individuals who are not involved in the community, some of whom, for various reasons, do not feel the need to meet others and will probably never join the community. However, this does not mean that they do not exist.

How will the talent support continue?
Together with the Pilsen Region, we are working to ensure that the community of talented secondary school pupils interested in R&D&I continues to develop under the GoHigher brand and offers most of the activities that proved successful in the pilot testing. I am an optimist and believe in its successful continuation in the coming years! I don't even want to think about what would happen if the region's support ended now. It would certainly be a great disappointment for everyone involved and those potentially willing to join the community, and I think it would do more harm than we might imagine. It would certainly not add to keeping these young minds in the region, quite the opposite, and nobody wants that.

Do you have any area, project, or idea in mind that you'd like to make happen?
I have lots of ideas, but as I've said, all activities are carried out for active pupils with active pupils, so we wait for new ideas which we collect from them on an ongoing basis, and then look for ways to bring them to life. I would definitely like to be able to offer the participants visits to scientific institutions abroad so that they can gain international experience in R&D&I. I also consider it very important to maintain and further develop the network of GoHigher pupil ambassadors and teachers who look after gifted pupils at schools, so that more and more experts from the field get involved and initiate ideas for programmes for our community themselves. ●

Eva Rojíková has been engaged in talent support and education for the 21st century since 2013, in cooperation with the University of West Bohemia. Before becoming manager of the pilot activity *"Building a Community of Talent for Research, Development, and Innovation"* under the GoHigher brand in the Smart Accelerator of the Pilsen Region III project (2023–2025), she was a member of the team conducting the survey *"Assessment of the Situation and Needs of Methodological Support for Comprehensive Work with Gifted Pupils Interested in Research and Development Activities in the Pilsen Region"* (2021). In 2022, she developed the Strategy for Supporting Talent in the Pilsen Region. Prior to that, she worked at the Institute of Physiology at the Faculty of Medicine, Charles University. For almost 18 years, she had worked as a science teacher at a secondary school, where she designed a range of educational materials for secondary school pupils and implemented school projects developing students' skills in chemistry using IT with an overlap into the environmental field. She continued to prepare education-related projects in her position as the chief project manager at the Regional Office of the Pilsen Region. At present, she is preparing educational infrastructure project plans within the Regional Agency of the Pilsen Region. Her original field of expertise is fermentation chemistry and bioengineering. In her free time, she pursues fine arts, especially sculpture.

In Science, Breakthroughs Often Come Only After Many Dead Ends

Where and how to obtain a scholarship? A lecture on this topic brought students from Rokycany Grammar School and Vocational School to the local library one Monday afternoon in April. They were probably all the more interested because it was given by their peers Šimon Vlach and Anna Drhovská, who are currently studying at the prestigious University College London. Šimon is also a graduate of the Rokycany Grammar School, and his journey to studying molecular biology was aided in part by the GoHigher programme. More than enough reasons to interview Šimon!

Šimon, you have been a student at University College London (UCL) since the autumn. You are preparing for exams to become a molecular biologist one day. You have probably been asked many times what a molecular biologist actually does, so I won't catch you off guard, you probably have a rehearsed answer ready.
I often like to say that biology as such studies the most complex systems we know in this universe, and those are living beings. And I actually like that molecular biology tries to describe these living beings at the level of the molecules themselves, which interact with each other. It tries to see the basic structure of cells and describe more complex things, such as diseases.

In your presentation, you both mentioned the essays you had to write when applying for scholarships at UCL. One of the assignments was a question about whether you think your field can change the world in the future. I am eager to hear your answer.
I think biology as such has enormous potential; it's not just about molecular biology, which intersects with other fields such as cell biology, pharmacology, and others. For example, I'm interested in the biology of aging. The idea that one day it might be possible to avert or completely eliminate diseases associated with aging is wonderful. In old age, the negative effects of wear and tear on the body accumulate, gradually disrupting the body's balance, and we could get rid of these effects and extend our health span, which is the length of our life when we are healthy, or even our lifespan, which is the age we live to. It is one of the topics I find fascinating, and one that has not yet been thoroughly researched, with no groundbreaking findings to date and plenty left to discover.

For example?
This could be studying Alzheimer's or Parkinson's disease, osteoporosis, or aging in terms of cell wear and tear and genetic information. Advanced age is also associated with a higher risk of cancer, which is another disease a unified protocol for treatment would be great to have. In addition to these disease-related issues, molecular biology can also provide a wealth of other information which can change the world. It may be possible to create genetically modified bacteria that will break down plastic. Discoveries in molecular biology are, of course, linked to biotechnology, which can have a major impact in areas such as climate change, pollution, and biodiversity loss.

So we will need a lot of biologists; in fact, we already need them. But let's now look at your path to this field of study. In your presentation, you said that it all had started with your love of animals. And then I saw two strong impulses. The first was your participation in Olympiads in science and chemistry, I assume.
In lower secondary school, I took part in just about every competition there was: biology, chemistry, mathematics, physics, but biology was always my favourite. I also went to various biology camps. At secondary school, I qualified for the higher A category of the Biology Olympiad, made it to the national round, and there I met people I hadn't known before, who sparked my interest in molecular biology. I went to the Běstvina camp, which I recommend to everyone, as it has plenty of expert lectures on various topics. That same year, I also qualified for the first time for the European Olympiad of Experimental Science, an international event held in Hradec Králové that year. Our team, consisting of one chemist, one physicist, and one biologist, which was me, ranked in the so-called silver band. This motivated me to try the International Biology Olympiad, for which I qualified through the national round and after an intensive training camp at the Faculty of Science in Prague. The Olympiad was held in the United Arab Emirates, with almost 300 participants from around the world, four of us from the Czech Republic. I came in the silver band again, which was the top 30% of participants.

The other key point was probably the internship at the Biomedical Center in Pilsen in your final year of secondary school, right? There, you actually became a member of a research team.
It wasn't exactly molecular biology, but rather tissue engineering, because the research group I worked with was involved in the subject of recellularization. It is a notion that you can take an organ, for example from a pig, in our case the liver, dissolve the cells in it, and try to replace them with human cells to create a functional organ suitable for transplantation, for example. My project focused on whether recellularization can be aided by exposure to ultrasound, which is known to increase the migration and adhesion abilities of cells.

And can it?
We didn't find out much, but that's often the nature of science. One often gropes in the dark for a long time, fine-tuning the methodology step by step, and a breakthrough sometimes comes only after a series of dead ends.

During this internship, you applied for a scholarship to study abroad. In addition to the UK, you also considered the US. What drew you into the world? Can't you study molecular biology here?
Of course you can, but I think experience abroad is very important. There are scientific groups that are at the forefront of global research, and it would be amazing to be part of such a community. You also gain different experience abroad, and if it is common for us to go abroad as part of doctoral programmes, for example, why not for the bachelor's and gain experience a little earlier?

But you are not just a graduate of the Rokycany Grammar School, you were also involved in the GoHigher programme, which builds a community of gifted young people in the Pilsen Region. Did that have an influence on you?
Of course, participating in camps helped me a lot, but those were under the auspices of the Pilsen Region; GoHigher didn't exist at the time. In my senior year, thanks to GoHigher, I attended the Consider Science! conference, where I gave a lecture on the International Olympiad, and it was definitely a great experience in public speaking and lecturing on a topic. The event was great, and it was also designed to motivate students not to be afraid of science.

Do you think communities of people with similar interests and mindsets are important? Do young people actually need help here, or would they find a community on their own, only it might take them longer?
In many cases, you find a community on your own, but it's much harder than when there's a programme to help you. Such programmes are extremely important because people with similar interests can inspire each other, develop joint projects, and even realize what they enjoy the most. That's what happened to me at the Molecular Biology Olympiad.

In the case UCL, the community is probably the entire school, but you mentioned that there are also various student societies…
They operate within the student union, which is really large at UCL, and include societies such as the Genetics Society and the Biotechnology Society.

But you are also in more "ordinary" clubs, like singing, dancing, and theatre.
Yes, it is about students developing not only academically, but also in other areas they enjoy.

Finally, let's look to the future and imagine an ideal situation where your studies and everything else go smoothly. What awaits you in the coming years?
I am currently finishing my first year of the four-year Integrated Masters programme in Biological Sciences. After that, I should obtain a Master of Science degree and probably continue on to a PhD programme, either at another university in the UK or maybe in the US.

Do you want to return to the Czech Republic and work here, or settle elsewhere in the world? The Bakala Foundation, which supported you, no longer requires you to return to the Czech Republic, whereas e.g. the Kellner Family Foundation does.
It's not an explicit precondition, but of course they are happy if people return to the Czech Republic and work here. But as the director of the organization told us, one can represent the Czech Republic just as well in Prague as in, say, Boston. So, there is the possibility of working in laboratories abroad, but I would not object to returning home if an opportunity arose to work for a biotechnology start-up or something similar, where I could work on the problems that the world is currently facing. ●



Šimon Vlach was born on 10th June 2005. He attended primary School in Blovice and grammar school in Blovice (lower secondary school), and Rokycany (upper secondary school). He is currently studying Biological Sciences at University College London in the UK. He is keen on playing the piano, fencing, hiking, and scuba diving.

How Successful Has GoHigher Been?

We asked… people in the field

The aim of the GoHigher project was to create an attractive and inspiring environment for the development of talent, particularly in the natural sciences and technical fields to secure and develop intellectual potential at universities, research centres and companies in the Pilsen Region. We believe that it has achieved much more than that. The GoHigher project has formed a respectful and friendly environment for active secondary school pupils to meet and share their experience. They were introduced to leading workplaces and companies, particularly in the region's areas of specialization, through excursions and project days. Pupils from different schools got involved in creating and developing the community, networking with each other across the region and across disciplines. They had the opportunity to collaborate with experts and scientists from research organizations. In addition, they were (and still are) offered a comprehensive range of events. How do people in the field and collaborators evaluate the project, which will continue after the pilot testing as part of the Smart Accelerator of the Pilsen Region III project? We asked them.

1. **How do you view the support for talented individuals in the Pilsen Region?**
2. **How do you view the GoHigher project?**
3. **Can you think of where talent support in the region could be taken next? What else could be done in this area?**

doc. Mgr. Jiří Kohout, Ph.D.

Vice-Rector for Educational Planning and Student Affairs, University of West Bohemia in Pilsen

1. I think we are doing very well compared to the rest of the country. This topic has been given long-term attention and is being addressed systematically with the involvement of all relevant actors. Measurable outputs also show that this is bearing fruit. Of course, there is still room for improvement, especially in terms of the sustainability of these activities and their transferability between different levels of education.
2. I highly appreciate this project; I think it is unique in its systematic and meaningful approach to working with gifted pupils. It gives them the opportunity to take part in a range of valuable activities while also meeting peers with similar interests – the human aspect is very important. It is great that the GoHigher community of talent works in this way, and perhaps thanks to this, it is also possible to develop great projects led by the gifted pupils and students themselves, such as Consider Science!
3. I find it very important to give active secondary school students the opportunity to develop their talents even after starting university and to continue their existing activities there. This is what we are trying to do at the University of West Bohemia in Pilsen as part of building a community of talent. I consider the timely identification of talent to be a major challenge, which may not work as well everywhere as we would like. In my own experience from organizing the Physics Olympiad in the region, I know that there are many schools that do not participate in competitions of this type, and it can easily be that a truly talented student gets lost and does not get the impetus to develop further in an area where they may have enormous potential.

Bc. Eva Tischlerová

Director of the RADOVÁNEK Leisure Centre

1. The Pilsen Region is one of the few regions that strives to promote personal potential and provides teachers and educators with opportunities to actively work with gifted individuals in a stimulating environment, using their ideas and suggestions. Whenever possible, the Pilsen Region contributes not only with support and assistance, but also financially, which is beneficial for innovation in education and individual work with young people, supporting their projects, research, and participation in European and international competitions. For several years now, it has been organizing camps for gifted and talented pupils. This gives them an opportunity to meet experts and scientists as well as like-minded gifted peers.
2. This is a great way for secondary school pupils to raise their profile, participate and collaborate on projects and major research, and, as part of a team, share their knowledge, expand their potential, and develop their personal portfolio. To get to know themselves, be able to self-assess, be self-critical, consistent, and achieve planned goals that are important for life and career growth. Pupils feel safe in the GoHigher community, they appreciate the opportunity for self-presentation and hearing criticism or admiration for what they study, what they participate in, and what they are good at. Many of them excel in many fields and can help others with their drive, optimism, and willingness to guide them on the path to further development and realization of their personal potential. RADOVÁNEK cooperates with a group of pupils involved in GoHigher, many of whom are members of our clubs, or whom we know from the Pilsen Region Student Parliament. We also cooperate with them and support them in the Consider Science! and Researchers' Night projects. They are simply amazing, and although they are still very young, I admire their perseverance, flexibility, commitment, and above all, their incredible knowledge. I would like to thank everyone, especially the Regional Development Agency of the Pilsen Region and Eva Rojíková for their engagement and work with pupils in the GoHigher project and for creating a stimulating environment. Visit www.inovujtevpk.cz for more.

Mgr. Roman Mužík

Director of the Youth Centre in Stříbro

1. In my opinion, the Pilsen Region is making a systematic effort to support talented students. Collaboration with the University of West Bohemia and other educational institutions is important, as is supporting students' participation in competitions, exhibitions, and courses and the GoHigher! Project and others. Currently, there is a lack of comprehensive coordination between schools and leisure organizations, of cooperation with parents, of more thorough diagnosis of exceptionally gifted pupils and lack of awareness among teachers and educators in some areas of the region.
2. The project is an excellent example of talent promotion. I consider it beneficial mainly because it can inspire further talent development by creating a database of talented pupils and experts and by generating opportunities for them to meet and share their stories. To make the project more effective, I believe that greater awareness among pupils outside Pilsen is needed. In some areas of the region, there is a lack of active promotion, especially in schools.
3. It would be beneficial to have better, earlier, and more easily available diagnosis of gifted individuals, better cooperation of schools throughout the Pilsen Region in developing a concept for working with gifted individuals, and better promotion of talent support in primary and secondary schools in all areas of the region and among parents and the public.

RNDr. Mgr. Zdeňka Chocholoušková, Ph.D.

Guarantor of Talent Support, National Pedagogical Institute of the Czech Republic (NPI)

1. I don't want to make any judgments, as I feel a bit like I'm part of it. I was involved in the initial assessment of the state of talent support in the Pilsen Region. I currently meet with students from the community during excursions, conferences, and also at informal gatherings, and I try to create opportunities and environments for such encounters. They are certainly an example of inspiring practice for other regions, and sharing this experience can generate similar activities elsewhere. I am proud that in the Pilsen Region we have managed to connect various talent support activities into a functional system, truly focused on supporting young talents. It is not common to achieve such synergy among so many actors who may primarily be focused on their own growth and business development, yet still find the time, energy, and motivation to support the potential of young people and to give them at least a small glimpse into the world of research, innovation, and everything related to it. The Smart Accelerator, NPI, the Pedagogical Centre, the Educational-Psychological Counselling Centre, and many other institutions should take the initiative in fostering and maintaining these connections. The NPI has long been responsible for training the talent support team under the Smart Accelerator of the Pilsen Region.
2. The gifted working for the gifted – a simple phrase, but they are building a real community of mostly secondary school pupils who share their everyday joys and worries, support each other in their development activities, are able to negotiate time off from school for excursions and other things that help them develop, and at the same time fulfil their school duties just like their classmates. They are meeting at the GoHigher Café in the afternoon and coming up with ideas for what might be rewarding and interesting for like-minded peers, even in different fields, representing their country at competitions and Olympiads, travelling to CERN and Osaka, representing the Czech Republic, and stepping out of their comfort zone – all this was sparked and sustained by Eva Rojíková, who brought together schools, universities, research organizations, and innovative companies, and through her constant explanations to politicians as well as to the gifted themselves, built trust in this project and created a safe environment – thanks to her passion for the cause and her ability to advocate for the interests of gifted individuals, often at the expense of her own free time. It might be difficult for the gifted to stay on the same wavelength and not lose their direction, even though the teams that have been formed here organize conferences, communicate in Parliament, or do painstaking, extremely important, and often invisible work in their schools as ambassadors working with other talented students. GoHigher provides a comprehensive range of activities for gifted individuals across the region and beyond. An important component is also a database of experts willing to work with them and, last but not least, psychological support on the talent support project portal www.podporatalentu.cz, which can also be used by teachers and parents. Visit www.inovujtevpk.cz for more.

Mgr. Ludmila Novotná

Department of Education, Youth and Sports, Pilsen Region

1. Support for talented individuals in the Pilsen Region has improved significantly in recent years, mainly thanks to the activities of the Regional Authority, regional institutions, schools, and non-profit organizations. Technical summer camps, now in their 15th year, are continuing. The range of activities offered has expanded. Specialized activities for gifted children are being developed, technical and artistic fields are being supported, and there is growing interest in extracurricular activities that foster creativity and skills in young people. Supporting gifted students is an important investment in the future of the region.
2. I see it as a very positive thing. Thanks to the GoHigher project, secondary school pupils have the opportunity to take part in internships, consultations, excursions, project days, and shadowing experts. This helps them better understand their possibilities and motivates them to purposefully develop their potential. The project establishes a solid foundation for systematic work with talented individuals throughout the region. The revamped website www.podporatalentu.cz provides a clear overview of opportunities for gifted and active students, teachers, and parents – from competitions, workshops, and field trips to internships and educational and developmental opportunities. The website emphasizes practicality and accessibility – it offers an up-to-date listing of events and experts, newsletters tailored to the interests of subscribers, a photo gallery of events, and downloadable materials. Expanding the website was a step in the right direction. Thanks to this, it is becoming a platform

that connects active students, schools, experts, and those interested in talent development in the region. As such, it can significantly contribute to raising awareness of opportunities and to effective networking among individual actors in the field of education.
3. I see room for improvement particularly in the area of talent identification and in the equal access to support. Outside larger cities such as Pilsen, opportunities for the development of gifted children are often limited. Overall, however, the trend is positive and the region has the potential to become an example of efficient care for talented individuals.

Ing. Jiří Královec
CEO, Techmania Science Center

1. Talent support in the Pilsen Region has made significant progress in recent years. Thanks to the networking of gifted children, it has been possible to cultivate an environment where they can develop their abilities and discover new opportunities. I particularly appreciate the emphasis on connecting education with leisure activities.
2. I see the GoHigher! project as an inspiring platform that connects talented people, experts, and the wider community. Its contribution lies not only in supporting individuals, but also in building a culture that appreciates ideas and innovation. This is very valuable for our region.
3. Talent support should start as early as possible. Brain capacity (i.e., the ability to learn, think, and remember) is formed from birth. However, this capacity peaks at the age of twelve. This means that the more stimuli children receive, the more their brain capacity grows. That is why we have come up with a comprehensive system called Techmania Talent, which has been working with smart children since around the age of two. An example of our work with preschool and younger school children is our "*Playrooms for the Curious*", which, since January 2025, has been offering an interesting programme for children once a month, while also helping parents to understand the issue of giftedness. ●

We asked… talents from the GoHigher community

1. What comes to your mind when you hear GoHigher?
2. How would you evaluate the GoHigher project?
3. What has involvement in the community brought you?
4. Which GoHigher activity has resonated with you the most?
5. If you were to recommend participation in the community to your peers, what would you say to them?

David Krajči
graduate of the Secondary Technical School of Mechanical Engineering and Prof. Švejcar Secondary School, Pilsen
„With GoHigher, I visited several engineering companies. That's why I'm happy to answer your questions."

1. It is an agency that gives me the opportunity to improve in what I am interested in. It also organizes excursions to places I couldn't otherwise visit.
2. I have only positive things to say about GoHigher.
3. Participating has brought me new experiences and introduced me to people of my age who also seek knowledge.
4. I found the excursion to ATC Space the most interesting.
5. It's not for those who just want to "*coast through*" school, but if you want to get deeper insight into the field you're studying, definitely sign up. It's non-binding, and you'll gain lots of new experience – it all depends on how much you want it.

Filip Hrůša
Grammar School and Secondary Vocational School Rokycany

1. It's a group of enthusiasts, people who constantly want to learn new things all the time. It's also an opportunity to visit different places and try things we would otherwise never get to experience. And last but not least, it's a safe environment for children who stand out in their class because of their curiosity and passion and might feel left out. In GoHigher, they can find not only inspiration but also understanding.
2. It sets big goals and always wants to improve. But all that progress depends on students' ideas, so it grows in a natural direction. That flexibility is one of the most typical features of the project.
3. First and foremost, it offers practical experience and insight into fields outside the classroom. Then there are a number of valuable contacts and opportunities for self-realization – I feel great support from the project when I decide to do something.
4. I can't choose only one specific thing.
5. Until you try it, you'll never know what you've been missing out on.

Jan Honner
Secondary School of Information Technologies and Financial Services, Pilsen

1. I picture an amazing community of kind people where everyone can find their place.
2. I'd rate it 10/10. I think the project is really well done, and I personally like it a lot.
3. The project brings lots of opportunities for growth – not just personal, but also social.
4. The GoHigher Café is a place where most of the community meets regularly and where really interesting and inspiring talks take place.
5. Come join an awesome community of people who'll help you become a better version of yourself – and where you'll find yourself!

Daniel Jokl
Masaryk Grammar School, Pilsen

1. Opportunity
2. If it weren't for GoHigher, I probably wouldn't have developed such a positive relationship with science at such an early age. And, I wouldn't have made such great friends from different schools, both my own and others, whom I had the honour of meeting thanks to the project, mainly because we share a common interest in doing interesting and unusual things.
3. Opportunities and friendships.
4. With each new one, my favourite changes – that's an exaggeration, of course, as some activities were certainly more beneficial to me, but they were primarily those activities related to my field of interest.
5. If proactive pupils from the Pilsen region are looking for a place for their work, I can't imagine them not being part of GoHigher.

Jaroslav Kudrna
Masaryk Grammar School, Pilsen

1. I imagine an amazing community of people who are not afraid to present their interesting scientific projects and leisure activities to everyone.
2. I assess the project very positively. Most of the people I met have remained my good friends, and that is the main reason why the project was designed – to bring people together.
3. Being involved in the community constantly broadens my horizons thanks to various excursions and project days. I would say that thanks to GH, I have got a great insight into various fields, which helped me, for example, when choosing a university.
4. All events are worthwhile for me, and I enjoy going to every one, but I enjoyed the two-day excursions the most.
5. I would say don't be afraid to come to any event that appeals to you. I can guarantee that you won't regret it and will come back again.

Ema Žánová
Mikulášské náměstí Grammar School, Pilsen

1. I imagine a community of people who support each other and develop together.
2. I see the project as very successful. It has created a welcoming community/environment where students can feel safe.
3. The project had a huge impact on my career path. I got a lot of interesting opportunities. Beyond the professional/academic sphere, the project has also affected my personal life. I have found amazing friends in the community.
4. The first GoHigher event I participated in really resonated with me. It was a multidisciplinary excursion on AI in medicine, which helped me figure out what I would like to do in the future.
5. I would tell them they will be able to try out the things they read about, which is not so easy in today's online world. Confronting what real practice in the field looks like can influence an individual's future direction.

Karolína Stinglová
Secondary Medical School and the College of Higher Medical Education in Pilsen

1. I always remember our very first two-day excursion to the Šumava Mountains in September 2023 with nostalgia. Not only did I meet lots of new, really inspiring peers who are on the same wavelength, but I also unexpectedly got a birthday present – my birthday happened to be during the trip. I received socks made of a special material produced in collaboration with Faculty of Electrical Engineering, UWB. Every time I see them in my drawer, I feel that it all makes sense.
2. GoHigher targets a wide range of fields, so I dare say it has a lot to offer. Personally, it gave me a lot, and I honestly don't regret a single second.
3. It made me realize that there is nothing else I could do except medicine. It would be great if the same thing happened to at least some of the people involved in GoHigher.
4. The very first event, the two-day trip to Šumava, still resonates with me the most. It was slightly outside my field, but I still remember thinking how great it was that there was finally someone organizing an event related to education outside of school. At that moment, it was no longer just theory, but we were able to freely explore and see things with our own eyes. In my opinion, that is priceless. I also remember a debate with the Charles University president Milena Králíčková, a project day at the Institute of Biology of the Faculty of Medicine, Charles University in Pilsen, an excursion focused on biomedicine and technology in healthcare, a project day on archaeobotany and paleoecology at the Faculty of Science at the University of South Bohemia, etc.
5. Personally, I do this quite often. I have even managed to get a few of them hooked and involved. I motivate them by telling them that we are open to many possibilities. It may happen that you express a wish out loud and it comes true thanks to the vision of one of the organizers. I had a vision (and I wasn't alone) of medicine, biomedicine, and clinical sciences getting more space within GoHigher… and my wish (and that of many others) was actually granted. At the same time, there are countless wonderful, very smart people in our community. Not only can new participants gain contacts, but also invaluable experience that will be useful not only at university or graduate education (or on any other educational level) but also in their own lives.

Michal Fišer
Training College and Secondary School of Electrical Engineering

1. When I hear GoHigher, I mainly remember the field trips and other events I participated in.
2. In my opinion, the project is based on a really interesting idea which has been successfully brought to life.
3. Being part of the GoHigher community has brought me new friends with similar interests and lots of new experiences.
4. Definitely the excursion to CERN. For me, CERN is a symbol of science advancement, and the excursion itself was super interesting.
5. I'd tell them that here they have the chance to meet awesome people and go on great trips. ●

The Pilsen Region. A Region for the Future of Young Talent.

Innovation belongs to the Pilsen Region just as much as the 102.26-meter-high tower of St. Bartholomew's Cathedral, the Šumava Mountains, Santini's Baroque architecture, beer, and the Chodsko area folk costume. It is an integral part of the region, and not just in the 21st century!

More than 500 years ago, the Trojan Chronicle, one of the first books printed in the Czech language, emerged from a printing workshop in Pilsen. Another innovation was the Pilsner-type light beer, which was first drunk in 1842. Another world-famous brand with roots in western Bohemia is Škoda, founded here in 1866. Thanks to František Křižík, a native of Plánice in our region, the first electric tram was launched in Prague in 1891, but as early as 1881, his electric arc lamp was already competing with Edison's light bulb. At a time when Křižík was waiting for his greatest successes, Ludvík Očenášek, later known as the *"Czech rocket and aviation pioneer,"* was born in the village of Kříše, according to the New Mexico Museum of Space History in the USA. He entered the hall of fame with his daring experiments in rocket construction, which he undertook between the world wars.

Today, the Pilsen Region is home to over one hundred scientific, research, and development teams working across a wide range of fields and topics. These teams operate within companies, research centers, and the facilities of the University of West Bohemia and the Faculty of Medicine of Charles University, both based in Pilsen. This unique innovative ecosystem – built by the previous generations – remains active and continues to grow, fueled by their ideas and collaboration.

The inspiring personalities introduced to you through the exhibition of the Smart Accelerator of the Pilsen Region II project are living proof of this. Meet the respected experts and promising talents. Learn about their achievements and potential. See for yourself that the Pilsen Region truly is a region for the future.

"Chemistry helps us navigate the world around us"

Andrea Slívová ● *Researcher, Institute of Organic Chemistry and Biochemistry of the Czech Academy of Sciences*

Nagelamide Q – what might seem to most people like a random cluster of letters – is a holy grail for Andrea Slívová from the Ullrich Jahn Research Group at the IOCB. To be more specific, it's a natural compound belonging to a group of alkaloids isolated from marine sponges, with significant antibacterial and antifungal properties. Unlocking its full potential requires a functional approach for its total synthesis. Simply put, scientists need to figure out how to assemble it from simple, commercially available starting materials – much like building a LEGO kit.

"Ever since I was a little girl, I've been fascinated by the world around me. I tried to understand how and why it works, and chemistry became a powerful tool to help me answer those questions," the young researcher says, describing the beginnings of her fascination with flasks and pipettes. She began working on the project that deals with the synthesis of nagelamide Q while still in high school, and she continues to pursue it today as a student at the University of Chemistry and Technology in Prague.

Andrea finds her major – organic chemistry – especially enchanting because of its practical nature. She's always enjoyed manual tasks in the lab. But, as she points out, experiments often – or rather usually – don't go according to plan. In those moments, staying motivated and patient is essential. She describes the experience of finally holding a flask containing a product obtained through a long and trying process as an incredible feeling.

"I want to present science as one big show"

Jan Herzig ● *Main organizer of the Zvaž vědu! (Consider Science!) project, member of the GoHigher community, collaborator of the Astronomical Institute of the Czech Academy of Sciences*

At just 16 years old, the student from J. Š. Baar High School in Domažlice has already won the International Olympiad on Astronomy and Astrophysics, travelled to California to witness a rocket launch, and developed a science popularization project called Consider Science!.

His fascination with astronomy began when he was 11 years old. Not long after that, he decided to share this passion for science with others. As the main organizer of the Consider Science! project – which focuses on the popularization of natural sciences and support of talented high school students – he is now showing young people that science ≠ boring theory.

"I'm trying to show students that subjects like physics, math, chemistry, biology, and technology don't deserve to be seen as a necessary evil. I want to present science as one big show and also show society that in the Czech Republic, there are really cool students who aren't afraiad to aim high, despite their young age," he says enthusiastically.

According to Jan, social media plays a key role in attracting new science enthusiasts. It allows us to reach a wide audience with updates on scientific advances and upcoming events. In some situations, he also turns to artificial intelligence. AI helps scientists process massive amounts of astronomical data, allowing them to focus on more sophisticated tasks. He personally uses language models that help him write highly specific codes required for astronomy.

"Sky is not the limit"

Anna Krebsová ● *Member of the LASAR student aerospace team*

It started with a group of five friends who shared a passion for aerospace. And 16 months later, a Falcon 9 rocket carried their own satellite into space. Currently, the LASAR student team, of which Anna Krebsová is a founding member, is trying to find a solution to deal with the growing amount of space debris.

Hundreds of millions of various objects, such as malfunctioning satellites, rocket upper stages, tiny fragments, or even lost screwdrivers, orbit the Earth at approximately 28,000 kph. Thus, space debris represents a risk to functioning satellites as well as to astronauts.

"In cooperation with the Czech Laser Centre HiLASE, we're working on a laser system to test the power and accuracy of the laser when it passes through the atmosphere. The tests will show us how we can use lasers for space junk deorbiting. Laser radiation can decelerate space debris, making it descend into the lower layers of the atmosphere where it burns up due to friction," Anna Krebsová says, explaining the principle of the assumption.

The young scientists' idea which captivated the judges of the Conrad Challenge, a world-wide innovation competition, will be validated no earlier than within several years. The team originally planned to focus on using lasers to restart satellites that had stopped communicating. The first successes have already attracted many new enthusiasts to join the LASAR team. But being in charge of thirty people on a team, whose members could be counted on the fingers of one hand until recently, is not an easy task.

"Apart from acquiring further knowledge of cosmonautics, we're also learning how to raise funds from sponsors, keep accounts, communicate with each other, and present our research to the media and the public. Entering the adult world while still studying high school gives us valuable experience that will be useful in the future," she adds.

Even though her extracurricular activities take her to the sky, her heart stays in Pilsen. Pilsen itself repays her affection – for the LASAR project, Anna Krebsová received the Award of the City of Pilsen. In her free time, you can usually see her attending an event organized by the Czech Journey to Space project, where she popularizes the space industry as a cadet who has experienced ZeroG parabolic flight.

"Science≠ boring theory."

Matyáš Matta ● *Founder and organiser of the Zvaž vědu! (Consider Science!) project, researcher of thin layers cooperating with the Faculty of Applied Sciences and the New Technologies – Research Centre of the University of West Bohemia in Pilsen.*

Matta began working in the field of science communication and outreach in 2022. Together with his classmates, he formed a partnership with the Faculty of Applied Sciences, which provided them with facilities they continue to use to this day – whether it is for follow-up projects within the successful AstroPi Challenge or for organizing the aforementioned event.

"I believe that through the Consider Science! project, we're showing students something engaging that might – at a time when they're making big career decisions – encourage them to give science a chance. Even if they ultimately choose a different path, they'll be better informed while making up their mind," says Matyáš Matta, a student at the Masaryk Grammar School in Pilsen, explaining the purpose of the event.

The second edition of the Consider Science! event attracted over 300 students from 17 schools across the Pilsen Region. And what's more, the idea inspired like-minded young people in Brno, where they organized their own showcase of science projects. But the reach of the event doesn't stop there. After a meeting with the President of the Senate of the Czech Republic, a Prague edition of the event was formed as well. Matyáš, however, left that to others, saying: *"My priority is to keep the quality high here in Pilsen – since I obviously have a strong bond with it."*

"I want to bridge the information gap between experts and laymen."

Michal Forgó ● *Student at the Secondary School of Information Technology and Financial Services in Pilsen*

Michal Forgó is a student with an unusual hobby. His fascination with natural sciences brought him to one of the most dynamic fields we know today – quantum information science. Now he's eager to share his passion with others. Quantum information science is a field at the intersection of several research domains. This cross-disciplinarity is what attracted Michal Forgó: *"I like the combination of mathematics, information science, physics, and philosophy that coalesce into quantum information science. But I'm well aware that the field might be difficult to grasp. That's why I'd like to reduce the information gap between experts and laymen."*

As part of a special project, he is raising public awareness about this often misunderstood field of study. He believes that this can help accelerate innovations which can have a significant impact on science, industry, and everyday life. Michal hasn't met many enthusiasts who would be on the same page with him, which makes the task of finding new colleagues willing to collaborate particularly difficult.

"I like doing difficult things. Quantum information science is one of them – and I don't mean just doing the science itself. Even if you find someone who wants to cooperate, you might be confronted with obtaining high-quality and accessible information. What was true yesterday may not be true today," he says, explaining the obstacles he must face.

He now wishes to take his project from school clubs and start collaborating with the Faculty of Applied Sciences, where he'd like to focus on quantum information science research and applications. He's set himself a clear goal – to study at the Massachusetts Institute of Technology and become a world-renowned expert in quantum information science.

"Science is not only for the chosen ones."

Eduard Plic ● *Student at the Masaryk Grammar School in Pilsen*

Stars, black holes, red giants, and sunspots. Eduard Plic has been delving into the realms of astronomy for more than 6 years. However, he is not the only person who likes looking through a telescope. He spreads the passion for science among his peers with the Consider Science! initiative, which he co-founded in 2023.

"I was introduced to astronomy by our wonderful physics teacher. On his recommendation, I participated in the Astronomy Olympiad, and the rest is history," Eduard says, describing his first encounter with astronomy, which fully developed during the COVID break.

Today, he exerts a similar formative influence on other young people himself.

Several years ago, he and his like-minded enthusiastic friends founded the Consider Science! popularizing initiative that inspires high school students to consider research activities as their future career.

"*The first event, held in December 2023 at the Faculty of Applied Sciences of the University of West Bohemia in Pilsen, was attended by nearly 300 high school students. Since then, we've expanded to Brno and Prague, which allows us to address students across the Czech Republic,*" he says, listing the achievements so far.

In addition to student initiatives, he is fully involved in the Students' Professional Activities contest. He is the author of a unique study in which he analyzed more than 7,000 hand-drawn pictures of the Sun from 1971 to 2023.

He developed and trained a convolutional neural network, capable of classifying active regions on the Sun, demonstrating the enormous potential of machine learning in solar physics.

"One day I want to help people."

Karolína Stinglová ● *Student at the Secondary Medical School and the College of Higher Medical Education in Pilsen*

Karolína Stinglová has been involved in personalized medicine research projects at the Biomedical Center of the Faculty of Medicine in Pilsen, Charles University.

The most ambitious project she has been involved in so far is titled "*The Use of Decellularized Allogeneic Bile Duct Grafts for the Reconstruction of Extra-Hepatic Bile Duct Injuries.*" In plain language, the team is investigating whether a decellularized graft of the biliary tree, harvested from a donor, can serve as a functional "*duct replacement*" for patients whose own extra-hepatic bile ducts have been damaged.

Karolína's path to research was anything but straightforward. After an early setback failing to advance beyond the local round of the Students' Professional Activities contest with her first project in a completely different field, she found herself with an unexpected amount of free time.

Where many would have stayed idle, Karolína seized the opportunity to develop a stronger proposal. This initiative led her to join a genuine research team, spend time in the operating room, and assist with experiments at the Biomedical Center of the Faculty of Medicine in Pilsen.

Although she is still only a student, Karolína exhibits a focus and determination that many senior colleagues might envy. She envisions a future in medicine whether as a clinician or in a supporting role and she is driven by a clear purpose: "*I want to be a source of comfort for patients, offering them hope that everything will turn out all right. For those whose treatment is no longer possible, I wish to ensure they can pass away with dignity.*"

"It's amazing how life on our planet is both homogeneous and heterogeneous."

Adéla Šefrhansová ● *Student at the Church Grammar School in Pilsen*

Adéla Šefrhansová's story proves that sometimes even a tiny spark is enough to ignite a passion. During the first year of her studies at the Mikulášské Grammar School in Pilsen, she qualified for the Běstvinka expert training camp. Her later transition to the Church Grammar School and the support she received there only reinforced her passion for biology. Even though she is still a high school student, she is fully involved in the FishEvo project at the Faculty of Science, Charles University. Her task is to sequence samples of deep-sea fish that cannot be morphologically identified, which helps determine the genetic classification of the species.

"*I got captivated by deep-sea fish because of how bizarre they are – their ability to adapt to various conditions and to live in an unfavourable environment with very little food and under enormous pressure. All those big teeth, expandable stomachs, luminescent organs, and large eyes are simply fascinating,*" the young researcher says enthusiastically. She views her field as one microcosmos where everything is interconnected: "*It's amazing how life on our planet is both homogeneous and heterogeneous. While cellular life and viruses share an identical 'programming language', there are countless different organisms.*"

Although Adéla is just entering the adult life, she has already accomplished several tangible achievements. In addition to getting excellent results in biology olympiads, she was part of a nearly 3-week field expedition to the faraway Morocco.

"Recellularization could be a game changer for transplantation as we know it."

Šimon Vlach ● *Biology student at the University College London*

Recreating a new organ from one's own cells to avoid waiting for a suitable donor? For some, this might seem like a sci-fi novel, for Šimon Vlach, student at University College London, it is his daily work routine. But the beginnings of his fascination with biology were much humbler.

"*It was my father who drew my attention to biology. He helped me prepare for contests and brought me to field ecological surveys and wildlife monitoring trips. Thanks to biology olympiads and people I met there I eventually discovered what I liked the most,*" the young researcher says, describing how he found his way to the field of study.

Later he replaced Wellington boots with a lab coat and fieldwork with molecular and cell biology, which he finds so captivating that he can't stop working even during vacation. Being on summer break at the University College London, he is currently working at the Biomedical Center in Pilsen on recellularization. During this process, specific cells are selected and removed from organs and replaced with healthy ones. The process can be facilitated by taking advantage of the similarities between humans and animals.

"*If it was possible to repopulate a decellularized pig organ with human cells from the recipient to facilitate transplantation, a functional transplant provoking minimum immune response could be created. Human cells would subsequently restructure the transplant to make it as similar to natural human tissue as possible,*" Šimon says, describing the possible advantages of recellularization.

While the experiments themselves bring suspenseful moments, what Šimon likes the most about his job is the preliminary brainstorming sessions during which he designs the experiments. On the contrary, cleaning laboratory equipment is something he would leave to others if he could. But as he quickly adds, a tidy laboratory helps the work go smoothly. ●


Andrea Slívová


Jan Herzig


Anna Krebsová


Matyáš Matta


Michal Forgó


Eduard Plic


Karolína Stinglová


Adéla Šefrhansová


Šimon Vlach

GoHigher Project Participants Thrilled by Visit to CERN

The ATLAS Control Room, the antimatter factory, and even the very first particle accelerator. Talented young people from the Pilsen region visited the famous research complex, which they had, until now, only known from lectures.

Twenty-two students from the Pilsen region, members of the GoHigher talent community, had the opportunity to see places that even many scientists dream about. The European Organization for Nuclear Research, known by the acronym CERN, is the Mecca of science. In the laboratories on the French-Swiss border, the Internet was born in the past, and their present and future are closely linked to experiments and the study of particles smaller than atoms.

The GoHigher expedition did not choose CERN as a destination by chance. Particle physics is one of the most attractive scientific fields, and young gifted people want to learn as much about it as possible. For example, Jiří Dolejší from the Institute of Particle and Nuclear Physics at Charles University gave them a lecture on the topic one January afternoon as part of the GoHigher Inspiration series.

The excursion took place from 7th to 10th May 2025. Before visiting CERN, the talented pupils from Pilsen stopped in Winterthur, Switzerland, home to the Technorama Science Center. "*During a few hours, we tried out all kinds of exhibits covering various fields of physics, from mechanics and optics to electrodynamics,*" described one of the participants.

Friday, 9th May, was the main day. This year, CERN is celebrating its 70th anniversary, and GoHigher welcomed the students with a packed programme. They were thrilled by the ATLAS Control Room, which operates at the Large Hadron Collider (LHC). However, they had learned a lot of interesting information already during the journey:

"*Our guide, Lukáš Kovanda, explained to us how the cascade of particle accelerators works, as well as the process of detecting the resulting collisions. Simply put, in quantum physics, completely illogical things happen: high-speed collisions can produce particles that didn't exist in the original elements at all. It's as if a collision between two cars could create an aircraft carrier! We also learned that the vast majority of accelerated particles are protons, which come from an ordinary pressurized hydrogen cylinder. The hydrogen is thermally ionized, the protons are separated from the electrons, and that's it. An interesting fact was that if the cylinders and pipelines were perfectly sealed, CERN would only need a single ordinary hydrogen cylinder for 100,000 years!*"

Right in the ATLAS building, the secondary school pupils first watched a short educational film and then headed to the exhibition, from where they took a look directly into the control room itself. The structure of the detector, the storage of experiment results, the smart automatic system that can spot more interesting collisions inside the accelerator are some of the topics that their guide talked about, too.

The tour continued to the Synchro-Cyclotron, the very first particle accelerator built by CERN in 1957, and the next stop was the so-called antimatter factory. The following paragraph shows how impressed GoHigher was by the factory:

"*We learned about the origin of antimatter when our guide introduced matter and antimatter as two analytical solutions to a mathematical equation, just like two roots of a quadratic equation, which was theoretically predicted by Dirac long before it was actually produced. He explained to us that antimatter, or more precisely antihydrogen, is created by combining an antiproton and a positron, whereby positrons can be obtained by simple beta plus decay and antiprotons by a rare nuclear reaction that occurs in only one of half a million cases, in which an iridium plate is bombarded with ordinary protons, i.e., hydrogen cations. Then all that remains is to combine the antiproton and positron into a pair, and suddenly we have antihydrogen. At CERN, they are studying the properties of antimatter, especially its behaviour in a gravitational field. It is not surprising that in recent years it has been proven that antimatter falls down in a gravitational field just like ordinary matter. They are even planning to export antimatter to a related experiment at DESY in Germany, so it is possible that in the future we will see trucks literally transporting antimatter on German highways. All that is needed is an electromagnetic field to prevent annihilation with matter, and otherwise antihydrogen is stable.*"

The excursion concluded with an interactive workshop, during which GoHigher members first assembled a cloud chamber and then analysed the tracks of various particles, learning to distinguish their types based on shape and track length. Before leaving for Pilsen, they spent an afternoon visiting Geneva.

One Summer Day with Interns at the NTC, an Experience for Weeks

During the summer months, we can relax and recharge our batteries for the rest of the year, or educate ourselves and set out in a direction that we might not dare to take during the year because it requires more time and concentration.

The University of West Bohemia in Pilsen offers a great opportunity for this, with a wide range of events. Since 1990, it has been organizing the popular International Summer School of Languages, where, in addition to English, German, French, Russian, Italian, and Spanish, Portuguese has also been taught since 2006. Another option is the ArtCamp International Summer School of Arts for (future) students and the general public. And that's not all the UWB summer programmes offer. Dozens of talented secondary school pupils wanted to experience summer with science at the New Technologies Research Centre (NTC) and try out what it is like to be part of a scientific team. One hot Friday morning, we went to visit three of them and saw for ourselves that there was no better way to spend their summer. To begin with, internships where active secondary school pupils from the region can research nanomaterials, infrared radiation, or computer models of the human body are not held for the first time this year. They were first organized several years ago by the founder of the NTC and former president of the University of West Bohemia in Pilsen, Doc. Dr. RNDr. Miroslav Holeček, currently the Deputy Director for Development at the NTC. Last year, after a break of several years, the internships were held again, this time in cooperation with the Pilsen Region's GoHigher project. These internships also function as part-time jobs, and students are paid for their work, not that this seems to matter much to them. They apply for the internships by sending cover letters that are so impressive that the author of this article doubts she would ever get in herself despite being a university graduate. More than forty secondary school pupils who have expressed an interest in the programme not only successfully participate in science Olympiads and other competitions, but are also involved in a range of noble activities and are active within the GoHigher community of gifted students. How did they do in their internship at the NTC?

We went to check on them! First, we set out to see the infrared technology team. "*Our colleagues have long been involved in research on IR technologies for industry – for example, for testing and identifying material properties or monitoring thermal processes. Since the pandemic, however, their work has expanded to include thermal diagnostics of people, machines, and the environment, so it also overlaps with healthcare and safety. They are also engaged in teaching and popularizing thermography,*" revealed Dita Sládková, the NTC's Deputy Director for External Relations, and she led us to the first intern with the words: "*Jaroslav is a really active person. He and his friends have even set up their own start-up to produce prototypes and parts using 3D printing, but he'll tell you about that himself.*"

The task of Jaroslav Kudrna, a third-year pupil at Masaryk Grammar School, was, simply put, to simulate errors in 3D printing, measure them with a thermal camera, and then look for patterns: "*During 3D printing using FDM technology, which is one of the most widely used methods of 3D printing, we record thermograms. These are then computer-evaluated, which was actually the main part of my work. I simulated errors in printing, recorded the temperature curve (thermograms) with a thermal camera, and then used a software to try to find the specific section in the thermograms where the error occurred. I tried to determine the parameters by which this could be identified. Now, for example, we are printing samples for tensile tests. Here you can see two thermal cameras that use this computer to record the temperature curve over time. This figure shows the average,*" Jaroslav described his role during his summer internship at NTC, which he learned about through the GoHigher community, of which he has been a member for about two years. He also learned about the offer on social media and at a workshop directly at the NTC – so I guess it was meant to be! He applied mainly because he is passionate about 3D printing. "*I've been working in this field for seven years now, so I feel confident in it. A bonus is that I get to work with thermal cameras here. I really enjoy it,*" said Jaroslav, who also learned something new during his internship. "*I learned how to work with software that processes data from the aforementioned thermal cameras, and I also had a go at programming, which was new to me,*" said the secondary school pupil, who will be starting his final year after the summer holidays. After graduating, he will probably head to the UWB and its Faculty of Mechanical Engineering, or to the Czech Technical University. He wants to continue studying technology, mechanical engineering, and engineering.

Šimon Lintimer, a third-year student at the Sports Grammar School Pilsen, joined the Infrared Technology team this summer, too. His primary interests are physics, materials physics, and electrical

engineering. He has been to the summer camps held by the Faculty of Applied Sciences, UWB (Arduino, Lampone, and Nanocamp), he can boast second place in the Technical Olympiad (magnetron sputtering), and he has also taken part in the international ROBO competition. During his summer internship at NTC, he is analysing the temperatures generated during laser micro-machining under the supervision of doc. Ing. Jiří Martan, Ph.D.

"We are researching laser surface texturing, i.e., micro-machining, creating surface structures with particular properties, for example, to improve the typology of bearings, light absorption, or wettability, so that surfaces can clean themselves, to be self-cleaning or antibacterial. In short, we are developing surface structures that would enable better properties. We do temperature measurements, so we set up the laser, take measurements, and then evaluate the results, which is what our intern Šimon is working on," said Martan. *"I was recently in France to measure structuring, where LIPS structures are created, i.e., laser-induced periodic structures. My colleague will evaluate each process to see if there is heat accumulation, if there is any melting, i.e., if there is any solidification visible in the signal. We have a lot of gigabytes of data which Šimon will now evaluate. We need to find a physical paradox in them. It's only Šimon's second day here, he's still settling in,"* added Martan. *"My job is to process data from thermal cameras that monitor lasers. I go through all the data and write a code that can evaluate when interesting things are happening. There is a really large amount of data and it isn't possible to go through it manually, so it's necessary to write a code,"* said Šimon, describing his task. He signed up for the NTC summer programme because it is an interesting opportunity for him to gain experience and, in his words, good training for the future. He would like to study something similar at university.

Third, we visited Daniel Jokl, a pre-final-year student of the Masaryk Grammar School in Pilsen, with a lot of interesting experience – he has already attended Charles University Junior programme, shadowed an expert, attended neuroscience conferences, and studied in Germany for a year. Daniel, who gives the impression that the secret of his last summer is his second board certification, aims to study general medicine and specialize in neurosurgery. During his summer internship at the NTC, he is working on calculations and image data processing in the field of biomechanics under the guidance of Ing. Vít Nováček, Ph.D., who welcomed us by saying that he was glad to see so many women visitors as one of the topics they address here is women's health, specifically pelvic and pelvic floor health. They are working on simulations of childbirth and pelvic floor dysfunction. *"Daniel is helping us with one of the techniques of personalizing models so that each woman has a general model tailored to her anatomy, mechanical properties, and so on,"* said Nováček, member of the Human Body Biomechanical Models team, which develops advanced computer simulations of the human body. These simulations help doctors and engineers alike – from preventing birth injuries to improving transport safety in Africa, thanks to two Horizon Europe projects. The research will find applications in medicine, transport, and sports.

Among other things, Daniel also enjoys drawing, and he would certainly be welcomed with open arms at the Ladislav Sutnar Faculty of Design and Art at the UWB. However, he is considering medicine or engineering, which he was drawn to by his recent internship at the NTC. What did it involve? *"So far, we have been working on aligning two images on top of each other so that one transforms into the other, which is a technique that can then be used to adapt a general reference model for a specific patient based on the MRI scan,"* Daniel began to explain.

"This technique, which we are now researching, is commonly used on parts of the body other than the pelvis, so as far as the pelvic area is concerned, this image registration is uncharted territory and is one of the possibilities that could enable us to personalize models, as mentioned earlier, so that we don't have to manually build a model for each person, but can start with one that we adapt using some smart techniques, saving a lot of time in the development of personalized models," added Nováček.

Daniel showed us how he tried to *"fit"* two images of two patients so that one matched the other. *"This process requires a lot of work because to achieve the best possible result, the resonances must be as similar as possible. This means that preparing two matching images to ensure the best possible result is a relatively complex task, but the results exceeded our expectations,"* said Daniel, dressed all in white, like an experienced scientist, who informed those present that we were not looking at an X-ray image, but at an image taken by MRI, *"where you can see the internal organs very well, which would not be possible on an X-ray image. This is affected by the technique itself, which an X-ray uses compared to MRI, as ionizing radiation is best detected on bone tissue due to the materials found there. If you imagine a classic X-ray image, it is most often used for bone fractures or implants that replace parts of bones, such as hip endoprostheses. At the same time, it is not a CT scan, as it also uses more radiation, which helps to better visualize the bones. If you take a look, the bones are less distinguishable from the surrounding structures in terms of colour. If it were a CT scan or X-ray, they would be bright white."*

"Unfortunately, I probably won't have the chance to be part of the team for the duration of the development, simply because I basically jumped in midway and will have to 'jump out' again at the end of this internship, which is a great pity, but I believe that the project will be successful as far as the mechanism is concerned, because the impact it can have on patient treatment is dramatic," said Daniel, who spent the next few minutes very professionally describing, specifying, and outlining to everyone present what else awaits him during the summer at the NTC: *"Of course, it is also necessary to know anatomy. Everything we see in these images corresponds to organs that relate to each other in the body, so I would say it is crucial to have at least a basic understanding of anatomical structures so that we can, for example, identify those structures that we then use as landmarks, whether they are landmarks on bones or a general understanding of the female body in the area of the large and small pelvis."* What made him apply? *"I was motivated by a lecture that the NTC representatives gave at our school."*

"There were plenty of options, but somehow biomechanics just captivated me. I applied, and I can't complain," he said. After graduating, he would like to study medicine. *"However, this internship did make me reconsider working in this kind of research. Still, science and research have always been very close to my heart, and I will definitely continue to pursue them,"* added Daniel, who speaks English and German fluently.

We said goodbye to the third intern, excited that such (multi)talented people exist, slightly shocked that we are not as gifted, and interested in what this summer has brought to the NTC and what the organizers are planning next. *"In order to promote quantum technologies more among young people, this year for the first time we have decided to introduce the so-called quantum five, where a carefully selected group of five secondary school students will basically prepare programmes for a quantum computer, which is quite complicated, and we will also use this in the classes we are starting in this area. Of course, these students can then also get engaged in research projects. So, we're counting on a long-term collaboration, and we're looking forward to them maybe joining our physics department and continuing to work with us,"* said Miroslav Holeček.

"Last autumn, we organized a successful event in cooperation with GoHigher, where students who had completed our summer internship presented what they had learned to their colleagues and participants on the GoHigher platform. The event was also attended by their research supervisors, representatives of the Pilsen Region, and heads and teachers from their schools. It was a really good discussion, so we would like to repeat it this year," Sládková told us enthusiastically.

"I would like to add one more thing. It is highly motivating for students that they are doing real work – whether programming or grinding samples – for which they receive some kind of reward, so it has all the attributes of, say, a part-time job, and during their internship they learn that they are part of something bigger, such as preparing samples for research on a car catalyst for Škoda Auto. They were really intrigued by the fact that they were contributing to improving a car. Naturally, they shared this at home, which was very motivating. They also learned about quantum technologies here and knew that they were doing something really important for the future," said Holeček.

"Girls are also applying for internships. Nikola Birnerová, a third-year student at the Grammar School in Blovice, was part of the Chemical Processes and Biomaterials team this year, which focuses on basic research and participates in projects within the Operational Programme Johannes Amos Comenius: SENDISO (sensors and detectors for the information society of the future) and MEBioSys (biologically inspired engineering systems). There, she learned how to prepare bioactive nanocomposites, produce bioglass, and measure parameters as a basis for her future scientific papers. Her supervisor, Ing. Tomáš Kovářík, Ph.D., plans to use the measured parameters to conduct a larger study in about two years, so as Mr. Holeček has already mentioned, work in science is long-term in nature and requires patience. She is gaining valuable experience with scientific work," Dita Sládková concluded at the Friday excursion among the interns at NTC. ●



Being Immersed in the Virtual World Allows Children to Relax, in a Way



Industrial engineer Marek Bárdy, CEO of VR Training, combines modern technology with a practical educational approach (the VR School project) and, thanks to the VR Rescue project, contributes significantly to improving first aid skills among the population. *"Virtual reality is a welcome and effective addition to traditional classroom teaching. Attractive settings can engage even students who are not interested in or unable to concentrate on traditional presentations. At the same time, VR also works as an individual form of teaching that fully respects the different paces and needs of students,"* we read on the project website. In our interview, Marek Bárdy, who is, in his own words, *"perhaps the biggest opponent of VR in the end...,"* confirms this. You can read the full interview on inovujtevpk.cz.

Marek, I've tried VR Rescue. Even though the virtual environment isn't perfect and you know it's not real, it works very well. At least I felt like the things were really happening and every step I took mattered, that I had to do everything right...
We have a new and an old part of the brain. The new part of the brain tells you that it's a virtual environment, that it's okay. The old part of the brain, which operates on emotions, reflexes, and instincts, doesn't know that and doesn't distinguish this graphic perception, so when you experience it and it has depth – it doesn't work on a computer in 2D, where it's perceived as an image – so at that moment of what you're experiencing, you can tell yourself it's nonsense, and it doesn't exist, but you feel the emotion. In extreme cases, such as when you play a shooting game in VR and kill people there, you develop emotional resistance. Emotional resistance also develops with an element of long-term memorability, because you've experienced it. It's like normal life. When you were at the seaside for the first time, it was one thing, but by the tenth time it was different, and that's what we are creating. This is exactly what VR does, and it doesn't matter that it's painted. After a while, it all blends together and only the emotions remain. I advise parents in schools not to show their children videos of landscapes or the sea, because when they get there, the children won't get much out of it.

This brings us to the VR School project. How do you see education using augmented reality, and what kind of feedback have you got from kids or teachers?
In general, in what we do, I'm probably the biggest opponent of virtual reality, but at the same time, I don't want to be part of the crowd. I had a problem with this even at school. I used to ask my teachers why we were learning certain things. In primary school, I found it totally bizarre that I was actually learning something different from what I was writing in a test. I was learning a skill, but was tested on knowledge. These are simply two different concepts that are often completely unrelated. If I understand mathematics, or can solve a problem, if I know a date by heart, or actually understand history in a way that I can take something away from it... these are simply completely different disciplines. So, even though I'm not a fan of virtual reality, it's a technology that provides solutions precisely for this kind of 'bizarre' situation that's happening. We sit in training sessions that our employers don't want to pay for, the instructors are bored, and I don't listen to what they say, but because that's how it's done, we just do it too, like sheep. As for schools, we only do things in VR that don't make sense in the real world – economically, organizationally, or for safety reasons. In primary schools, it's natural sciences: stuff that's abstract and expensive to test, or experiments that are safety-heavy, like chemical ones. There are around 150–170 licenses out there for schools, and it's good that they are used a lot. In half of the Pilsen schools. We know how to use it. I didn't really have much faith in it, and we did the project because one day we'll have kids in school too, and we want those schools to be different. They're always the same – nothing really changes there. But they use it! The hardest part was that the kids want it – but they're hard to control – and the teachers definitely don't want it because it's new technology. And generally, due to approval processes, schools always end up with the worst technological junk. It's not like the commercial sector, where you can choose. It just ends up there somehow. They always get the worst junk, and teachers don't understand it, and don't know how to use it. We've somehow managed to get through this, and it's now a great starting point for first aid, because we've already adapted the education system. We've put the energy into it, and VR is no longer science fiction for them. They know how to use it, and, it works. We've created a seedbed, and now they are not afraid anymore and can start with the VR first aid training.

After trying VR Rescue, I believe that augmented reality can provide a completely different experience than traditional teaching. It can combine a whole range of subjects, which is great!
There is a trend toward inquiry-based learning. At the same time, primary schools are inclusive, with students of different levels in the same classes. Not all of them can keep up with the lessons, some have assistants. Children feel the imbalance, and some of them are under extreme pressure. VR technology, and this is not my opinion but that of teachers, solves this problem. When children are closed off in the virtual world, they actually get to relax. They allow themselves to make mistakes because they are not under pressure, standing in front of the class with everyone watching them. They relax and can focus on the subject matter in peace. In addition, the programmes are adapted so that even the slowest learners can keep up. Everyone moves at their own pace, and the best ones get something extra. The session is designed to last 15 minutes, for example, 15 minutes for everyone. The good ones have access to exercises that have no end. Then they all take it off and no one knows what activities the others have done.

I realize that some children simply don't have access to technology, and the gap keeps widening. Can this way even give less privileged kids higher goals?
In the VR environment, all the children are equal. VR isn't so common that kids would have it at home – it's not like video games. Some parents simply won't buy it for their children. Children are not so crazy about it either, as it is difficult to access, so it hasn't really taken off. When schools offer virtual reality, they bring them total hi-tech. Even the content is more hi-tech than the games they have at home. At school, they no longer show them a stuffed fox. In the eyes of children, school grows in stature because it provides them with something they would otherwise never have the chance to experience. I would add that VR technology is simply a computer, and we teach schools not to work only with our applications, but to use it to teach computer literacy in general. They can teach geography using beautiful Google maps. In short, they should work with it as a tool; that's what it's open for.

At the VR Rescue 1,000 project conference, you said that you don't want to change people's character. Can you elaborate on that?
I see people as a black box. To be honest, and I'm saying this out loud, so far, I couldn't care less if they take a first aid course



because it's trendy and they post it on Facebook, or because it makes them feel good. I just want them to do it. If it means we need a fancy website with a picture of an influencer taking the course… fine with me. I look at it purely statistically, I don't judge. I am focused on the goal. People run a lot because of smartwatches that are connected to social media. They run, great, they're doing something.

I like that you don't have any illusions – you work with what's actually there.
When you're in opposition to something – anything, even in politics – the moment you just comment on things, you're not actually doing anything; you're in opposition. Nobody cares. I could build a career out of being a loudmouth, but the real result would be zero. If I try to change people's nature and keep saying that social media are bad, people will agree with me – but that's all.

You also said that you don't understand technology or healthcare, and that's why you don't see many of the obstacles – which, if I understand correctly, actually makes you a successful product creator or project manager?
Exactly. Recently, a hospital director visited us and said he had an idea – we could do this and that. He is very smart, a doctor, but having worked as a hospital director for a long time, he thinks more out of the box and has the necessary perspective. I look at a person – a patient – from the outside. I'm not interested in how things work inside the body, because then you get too focused on physiology, medication, and all that. We try not to get bogged down. When experts start explaining how something in the body works, we don't want to hear it. For instance, Professor Beneš – the best doctor I know – is truly excellent. He understands that someone else may not understand his field. Few people who are really good at what they do can do that. He explained to us how the brain works. And he told me that he could see the blank look on my face and that we'd have to approach it differently. Then he explained it to me in a very simple way – so that I could really understand it.

Many people don't know how to pass on their knowledge or give clear instructions – it's not easy…
Or they're afraid to admit that they don't understand something… that's quite common too.

You explained to me how the brain works. You mentioned the example with glasses. Many people see glasses as half empty, you seem to see them as half full, am I right?
Definitely – otherwise it wouldn't be possible. The nature of this work… and I guess this is true for every boss… I have to convince customers, partners, investors, whoever, about something I believe in, even though deep down I know it's incredibly difficult. And then I also have to tell my team that everything's totally fine. So, if it weren't based on a positive foundation, it wouldn't be possible to pull it off. Our job is about constantly coming up with new ideas and pushing boundaries. Fortunately, it's been working and we have something to fall back on. When people don't believe it can be done, you can rely on the fact that it's already worked several times before. ●



A pioneer of innovative education through VR, Ing. Marek Bárdy, Ph.D., CEO and managing partner of VR Training, completed his PhD at the Faculty of Mechanical Engineering of the UWB in Pilsen, where he took an active interest in implementing new technologies in education already during his studies. His company is behind the VR Rescue project, which, in collaboration with the University Hospital in Pilsen, the Czech Red Cross, the City of Pilsen, and technology partners, brings a revolutionary first aid training programme. It features "*virtual trainer*" capable of teaching users the basic steps of first aid in about 15 minutes – including assessing the situation, checking for breathing, and performing resuscitation.

VR Training / VR School
VR is a great educational tool. It allows pupils and students to experience situations that would otherwise be dangerous, expensive, or impossible in real life – from chemical experiments and trips to space to walking through Africa or exploring a 3D model of the heart, etc. The possibilities for using VR in schools are limitless. As a result, it can be applied effectively in primary schools, secondary schools, and grammar schools alike. Virtual reality reliably captures students' interest, engages them, and, through direct experience, conveys the desired information to a larger number of learners. This makes it an ideal complement to traditional classroom teaching.

Introducing: PINE Pilsen INnovation Ecosystem



"Pilsen Supports Innovation at Every Step Through PINE"

The unique Pilsen Innovation Ecosystem (PINE) connects education, innovative entrepreneurship, and research for the benefit of the region. Its participants help children discover technology, improve the quality of education, retain talent in the region, inspire students to start businesses, motivate and support young entrepreneurs, and help innovative companies expand. PINE connects schools, startups, researchers, companies, and the city so that ideas don't just remain on paper. We support technologies that make life better and the people behind them.

"We develop, inspire, and support innovators through all stages of life, from kindergarten to international expansion," **said Tomáš Cholinský, director of SIT Port Pilsen, describing how they work.** ***"PINE exists to attract more innovators, entrepreneurs, and investors. All this is in the interest of the city's future prosperity. The more talent and ideas, the more successful companies, the better we will live in Pilsen,"*** **added Cholinský. Businesses with higher added value, local investment in R&D, greater control over the product and sales chain, establishing headquarters and management of internationally successful companies employing well-paid experts – these are the goals of the Pilsen INovation Ecosystem,, which is why the City of Pilsen has been paying so much attention to them in the long term. Within PINE, we introduce children to technology and teach secondary school pupils to collaborate across disciplines. We provide start-ups with facilities, community inspiration, and expert mentoring. We secure funding for innovation in companies and help them expand abroad," Cholinský explained further.**

For each stage in the development of an innovative citizen of Pilsen, the city has four key holders of knowledge and tools at its disposal. ***"At first, our children are taken care of by the Centre of Robotics with its clubs and events for boys and girls. Experimenting teenagers are taken over by SIT Port, which turns many of them into innovators and start-up entrepreneurs for whom nothing is impossible,"*** **said Cholinský. Those who want to start a real business move on to the Business and Innovation Centre BIC Pilsen, which follows up on the start-up stage with a greater emphasis on entrepreneurial skills and knowledge. BIC also supports existing companies, cooperates in funding innovative projects and in their international expansion.**

Centre of Robotics, Modern Leisure Centre

The Centre of Robotics provides comprehensive support for technical education to talented young people aged 6 to 15, showing that technology can be fun. It guides children and teenagers along the entire journey – from inspiring classroom games and engaging hobby clubs, through secondary and university studies, to participation in innovative projects and even support in founding their own startups. The Centre of Robotics works with cutting-edge technologies, often not found even in commercial companies, and serves as a platform offering space, equipment, and topics for technical education.
More on www.centrumrobotiky.eu

SIT Port – a Port for Young Tech Enthusiasts

SIT Port works with young people aged 15 and over, building on the work of the Centre of Robotics. It fosters a technical community and offers an ideal environment for developing and launching start-ups. It serves as a harbour for tech enthusiasts looking for a place to anchor, as well as for aspiring entrepreneurs drawn to the waters of business. SIT Port creates a platform where technology fans meet professional mentors and various industry experts at engaging events and workshops, and it regularly organizes hackathons. Members of the community can use the SIT Port Garage facilities with cutting-edge technologies free of charge. Since 2023, SIT Port Cowork has been part of TechTower.
More on www.sitport.cz

TechTower, Modern Technology Park

TechTower is one of the most advanced technology parks in the Czech Republic. It offers facilities and offices for innovative companies, technology enthusiasts, programmers, and aspiring entrepreneurs, as well as coworking spaces and a multifunctional hall. Located in the former Světovar Brewery, TechTower now features a unique testing water tank, the SeedUp Space with a café and stunning views, and a prototype workshop where ideas come to life. TechTower serves as a hub that hosts traditional festivals, a wide range of conferences, professional workshops, IoT academies, and hackathons.
More on www.techtower.cz

BIC Pilsen (Business and Innovation Centre Pilsen)

The Business and Innovation Centre Pilsen has been supporting the establishment and development of innovative entrepreneurship in the region since 1992. It operates within networks that promote business and innovation and cooperates with many other partners at the regional, national, and international levels. Start-up founders and innovators who enter the world of business gradually gain entrepreneurial knowledge and valuable feedback for their business plans here under the guidance of experienced consultants. BIC Pilsen organizes incubation programmes for start-ups and companies seeking growth from across the region, offering them a year of individual assistance with personalized consultations and grants of up to one million Czech crowns for purchasing services.

Collaborating Organizations

Techmania Science Center Pilsen
One of the most significant interactive science centres in the Czech Republic, Techmania, boasts more than 7,000 m² of exhibitions featuring dozens of interactive exhibits – from physics experiments, machines, and trams to biology and renewable energy sources. Located in the former Škoda Pilsen factory halls, Techmania also includes a 3D Planetarium with a Science On a Sphere interactive globe and regular screenings, as well as science shows presenting spectacular effects such as a Van de Graaff generator. Techmania also promotes informal education, offering science courses, camps, and workshops for schools and the general public.
More on www.techmania.cz

RADOVÁNEK Leisure Centre

It focuses on extracurricular education and out-of-school activities for children, youth, and adults, including teachers. It offers a wide range of clubs, courses, one-time events, and summer camps. The programmes cover sports, arts, technology, language education, and crafts. RADOVÁNEK is based in the former House of Pioneers and Youth, which opened for extracurricular education seventy-five years ago, and everyone can find an activity there. It also works with groups of talented and exceptionally gifted children and students, as well as those with special educational needs, minorities, and participants from socially and culturally disadvantaged backgrounds.
More on www.radovanek.cz

Nvias Organization – We Connect Ideas and Create Innovation!

The goal of the non-profit initiative nvias is to transform young people from mere consumers into active creators of innovation. Through programmes that have already been attended by more than 15,000 children, nvias focuses on developing skills for the future, such as AI, programming, IoT technology, sustainability and entrepreneurship (project management, design thinking), through practical activities: workshops, clubs, project days and longer-term programmes. The organization was founded by Pavel König, whose vision combines technological know-how with an educational approach to talent development.
More on www.nvias.org ●

The Autumn Round of the BIC Pilsen 2025 Incubation Programme Will Support Eight Projects

The autumn round of the Pilsen Innovation Centre (BIC Pilsen) incubation programme was launched early in September, attracting thirteen applications from innovative companies in the Pilsen Region. After initial consultations, which helped companies better define their needs and goals, eleven of the most promising projects were presented to the Programme Board. Based on the presentations, the Board selected eight of them to proceed to the next incubation phase.

APRONE s.r.o. was started this year by Jindřich Kodet, an experienced accountant, entrepreneur, and mentor who's been working in finance since 2007. In 2017, he co-founded the accounting firm Guru Accounting s.r.o., and since 2020, he has been a mentor for the SIT Port Pilsen, where he helps secondary school startups with bookkeeping and the basics of business. Thanks to his experience, he understands the actual problems of the non-profit sector and has decided to respond to them. APRONE was created to address the needs of small and medium-sized non-profit organizations that struggle with lack of time, money, and expertise on a daily basis. The APRONE platform unifies key processes – it generates contracts, invoices, and donation receipts, prepares documentation for tax returns, facilitates grant reporting, and provides basic human resources management. This gives non-profits the security of knowing their documents are processed correctly, saves them time and money, and allows them to focus on their real mission – caring for people, communities, or animals. The incubation goal is to develop APRONE into a reliable software tool that will make everyday work easier, save time, and become a long-term sustainable platform with a positive social and regional impact.

The social impact project **Ataka** was created for people living with mental illness who strive for recovery and greater financial stability, and was inspired by the founder's own experience with mental health challenges. Currently, the project's portfolio includes three main products, which are the focus during its incubation phase: Ataka Support Group – a peer-led support group focused on mutual encouragement and developing personal competencies. Ataka Medication – a comprehensive system for managing psychiatric medication, including an organizer, a web application, methodology, and practical tools. Ataka Marketplace – an online shop where people with chronic mental health difficulties can sell their products without unnecessary bureaucratic or logistical burden. The project has been running since 2023 and has already achieved its first results; however, it only became commercial this year. The project primarily needs support in human resources and financial management, which Ataka will focus on through consultations – with the aim of becoming a stable, reliable resource for people who truly need it.

Bohemian Cosmetics, a Czech family business, produces natural cosmetics from local ingredients. Its founders were motivated by their personal need for efficient and safe care for skin and the need to protect the planet. They built on the traditional use of animal lipids and discovered their potential in modern cosmetics. The lipids their formulas are based on are ethically sourced from Czech organic farms as a by-product. As a result, their products provide deep nourishment, support the microbiome, and encourage skin regeneration. Combined with organic herbal macerates, antioxidants, and CO_2 extracts, their cosmetics are effective, gentle, and in keeping with the Pure Cycle principle of zero waste. Bohemian Cosmetics pays close attention to quality – its products undergo not only dermatological and stability testing, but also microbiological testing for each batch. The packaging is made from an innovative biopolymer certified for home composting, which decomposes within 18 months and returns to nature without microplastics. The brand will enter the market in November 2025. As part of the incubation programme, the company's founders are preparing certifications and clinical tests that will provide scientifically based information on the benefits of the products, with which they have long-term positive experience. They believe this project is a key step in building customer trust and paving the way for expansion into European markets. *"Thanks to the incubator, we are gaining support to bring our products to you. We're not just focused on growing the business. We want to inspire mindful self-care and prove that nature really works – we've seen it firsthand,"* they explain.

Startup **Farmiture** is changing the way we think about living and growing food by combining furniture and smart technology to create hydroponic gardens designed specifically for apartments. *"Our smart garden isn't a plastic box – it's a genuine piece of furniture that fits into a modern interior while allowing you to grow fresh herbs and vegetables without much trouble and without soil. We want people in cities to have not only a beautiful interior at home, but also a source of healthy food – sustainably, conveniently, and with the feeling that even their apartment can become a small farm,"* say the founders of Farmiture. Within the incubator, they plan to make use of experienced mentors' support to turn their smart idea into a strong business. They need a strategy, a business plan, and the right partners to bring their concept into production and to market. At the same time, they aim to attract their first customers and demonstrate that the future of urban farming lies in furniture and technology.

Lumaya s.r.o. was founded by Lucie Fraňková, and inspired by her personal experience with anxiety in her family. The company aims to provide parents and children with tools that enable them not to hide from anxiety, but to understand it, reduce its impact, and gradually overcome it. Lumaya connects three key areas: education and support for parents, physical products as an anchor for children, and digital tools with augmented reality that bring solutions into everyday life. This way the startup answers questions that parents often ask themselves: What is my child experiencing? What is anxiety? How can I help them? Lumaya eliminates waiting times, guesswork, and the need to do psychology research at night. As part of the incubation programme, the startup will focus on concept validation, establishing technological partnerships and pilot testing in kindergartens and schools. It combines emotions, technology, and prevention into a single functional whole that changes families' lives. As part of the incubation programme, the startup will focus on concept validation, establishing technological partnerships and pilot testing in kindergartens and schools. The incubation programme will help complete an MVP and turn the idea into a tangible impact in order to achieve the fundamental vision: no child or parent should be left alone with their fears and without help.

Startup **MadCrypto** introduces PrivLex AI – a secure, on-premise AI assistant designed for companies working with sensitive data. The solution ensures data sovereignty, keeping all information and know-how fully under the customer's control. During the incubation programme, the team will focus on designing and validating their business plan. It is also expected to bring strategic acceleration and assistance with sales and marketing for the B2B segment and public administration. Last but not least, MadCrypto's founders are seeking networking opportunities and contacts with potential partners and investors to help them expand more quickly in the market and become a leader in private AI solutions.

The **PAVLIX** modular building system was developed by product designer Marek Pavlík, who has more than 26 years of experience in product design and structural solutions and has also won several prestigious international awards. His PAVLIX system addresses challenges associated with complex load-bearing structures for a wide range of projects, from garden structures to exhibition displays and street furniture to entire buildings and their furnishings. The key principles of the system are modularity, simplicity, and scalability, which save time, space, and money. The technical solution relies on a prefabricated aluminum structure with a universal joint, into which other materials such as wood, glass, stone, ceramics, or innovative composites can be integrated. The system does not contain any welded or glued joints – all parts are assembled and easily replaceable over time. Thanks to this, PAVLIX can flexibly adapt to any project need. In the incubation programme, the company will focus on developing areas outside its technical core, in particular defining its marketing and business strategy, finalising its business plan and objectives, creating modern online tools for promotion and sales, and on entering the Czech and European markets. The plans also involve establishing key partnerships in Pilsen and throughout the region.

The **TSB** (Training Sandbag) project was conceived by Marcel Kolena, who wanted to develop a training aid that would make it easier for people with limited time and space for exercise to improve their physical condition, health, and self-confidence. The result is a compact and versatile device that combines the functions of dumbbells, kettlebell, resistance bands, weight vests, and punching bags. With the TSB, users get a single tool that allows them to train their entire body – at home, outdoors, or in the gym. *"TSB is not just another piece of fitness equipment, but creates a foundation for a community of people who want to push their limits and support each other. The first training sessions and competitions have already taken place in Pilsen, and the positive response has confirmed the project's potential – TSB is not just a product, but a comprehensive system that supports an active lifestyle,"* said Marcel Kolena. His goal is to build TSB into a global brand and a symbol of healthy and active living. The vision involves engaging tens of thousands of users worldwide – from amateur athletes and professionals to children and seniors.





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