Faculty of Medicine of the Charles University at the BIOCEV, who also works as a clinical haematologist at the 1st Department **SCi**Tidbits **NICR Summer School:** Future scientists in action! 4 excellent labs, 5 days, and 6 talented secondary school students, who on the 25-29 August immersed themselves in the world of scientific research thanks to the very first NICR Summer School for selected third-year students from gymnasia or specialised secondary schools.

Learn more

During the first two days, the secondary-school students worked in the laboratories of the Institute of Biochemistry and Experimental Oncology of the First Faculty of Medicine of the CU under the guidance of Martin Sztach and Petr Výmola. Their goal was to find out how hypoxic environment influences the invasiveness of glioblastoma and osteosarcoma cells.

The third day was spent at the Institute of Organic Chemistry and Biochemistry of the Czech

and analysed the acquired data using bioinformatic approaches.

Secondary Medical School in Beroun!

You can get a taste of the fantastic atmosphere of NICR Summer School in this video!

react to treatment in different ways. Especially

residual illness in childhood leukaemia all the way

to visualisation of glioblastomas during surgery. Research teams involved in the NICR contribute not only to a better understanding of the molecular

basis of cancer but also to practical solutions for

patients. Jan Trka, joint head of RP1 with Aleksi

and we believe that this cooperation will continue

further. Aside from ongoing projects, another 24

new joint applications have been submitted. The

across teams and partners clearly attests to the

increasing trend in successful collaborative efforts

establishment of a consolidated national institute,

which corresponds to the conditions spelled out in

the EXCELES programme – and, above all, to plain

Šedo, presents concrete results.

Learn more

good sense. ©

Insidious cancer: How are new treatments

developed and when is cancer going to be

'Research leading to new treatments in oncology but also in medicine in general follows basically two distinct paths. One takes the form of

improvements on the existing "weaponry" and a search for "new roles for old friends". The other is more revolutionary, based on new findings: it aims at new targets, which we look for not just in individual cells but in a wider context',

New hope dawns for leukaemia patients. Czech

researchers are developing a new treatment that

Scientists from the Laboratory of cellular communication of the Faculty of Science of the Masaryk University, which is part of NICR, in collaboration with the Laboratory of organic synthesis and medicinal chemistry and the University Hospital Brno, have been developing and testing a new class of substances for the treatment of resistant acute myeloid leukaemia and other cancers. The newly discovered compounds successfully suppress the activity of casein kinase 1. This project takes place in close collaboration with the MU CasInvent

From the blood, we can tell cancer earlier. But there

will never be one universal treatment, says an

'For most metastatic tumours, targeted treatment or immunotherapy are nowadays part of recommended therapy. My role as a molecular biologist and geneticist rests mainly in advanced tumour diagnostics. Thanks to it, we can find in the tumour damaged genes, which can then be targeted by a treatment. The technological advances that took place in this area over the past decade

Fact Check: Vaccination is not the cause of higher

There is no trustworthy scientific research confirming any link between vaccines, including those that use mRNA technologies, and a higher

New blood biomarkers enable better decisions

about the treatment of metastatic prostate cancer

Platelets numbers, concentration of C-reactive protein, and chromogranin A levels are three indicators which are important but can easily be obtained from a blood sample. They indicate a failure of combined hormonal treatment of prostate cancers. The results of a study conducted by researchers from the Laboratory of molecular pathology at the Institute of Clinical and Molecular Pathology of the Faculty of Medicine of Palacký University, which is part of NICR, the Institute of Molecular and Translational Medicine of the Faculty of Medicine of Palacký University and the University Hospital Olomouc, and of the Oncology Department of the Faculty of Medicine of Palacký University and the University Hospital Olomouc, were published by the Journal of Molecular

Czech research had shown that cancer cells spread

In order to survive, cancer cells send each other messages. 'Cancer cells use extracellular vesicles to spread misinformation and create the so-called cancer micro-environment. In this way, they can suppress the immune response, create inflammatory lesions which support tumour growth, stimulate the formation of new veins, or share information about how to resist anti-tumour treatment,' explains Markéta Bocková from the Institute of Photonics and

On the research of chronic lymphocytic leukaemia

The team of Marek Mráz, head of the Microenvironment of Immune Cells at the CEITEC MU, which is part of NICR, had discovered how the most common type of leukaemia in adults can adapt to treatment. The researchers were the first in the world to describe a non-genetic mechanism which leukaemia cells use to open an alternative signalling pathway using the Fox01 protein. This enables them to continue in uncontrolled growth and division. Scientists in Brno had

How do nanotherapeutics overcome chemotherapy

also started to test a substance that could prevent this process.

Český rozhlas Radiožurnál, Magazín Experiment, 6 September 2025 How could we deliver an anti-tumour drug right into a cancer cell and then prevent that cell from becoming resistant to that therapy? Scientists from the Laboratory of tumour immunology of the Institute of Microbiology of the CAS and the department of Biomedical polymers of the Institute of Macromolecular Chemistry of the CAS, which are both members of the NICR, came up with new answers to these questions. Their new nanosystem not only helps to deliver a therapeutic substance into the tumour but also prevents the drug from being eliminated. Tests in cell cultures and animal models have shown that, when this system was used, therapy resistant cancer cells have accumulated

Unique research of Czech scientists: They are

testing a method that could stop cancer spread

'We were the first in the world to use magneto-genetics, that is, a combination of magnetic manipulation and molecular biology, to manipulate intracellular structures in a targeted manner', explains Jakub Gemperle, who works in the Institute of Molecular Genetics of the CAS and NICR. In this way, scientists can prevent cells from moving, proliferating, or even from metastasising. At the same time, it seems they should be able, in the future, to target and intercept

disinformation and thereby resist treatment

occurrence of cancers in the population in general or among younger people specifically. 'No serious scientific research has confirmed a link between

vaccination and an increased incidence of cancer or autism,' emphasises NICR Director Aleksi Šedo in his commentary. 'On the contrary, some vaccines, for

are incredible,' says, among other things, Ondřej Slabý.

cancer prevalence in the Czech Republic

instance against HPV or hepatitis B, protect against cancer.'

Learn more

promising are new diagnostic markers and therapeutic goals: from precise monitoring of

Academy of Sciences, where Michal Tichý and his team showed the students the work of medicinal chemists and the development of new medicinal substances. Participants tried out a synthesis of acetylsalicylic acid and subsequent analysis of the product.

Thursday was dedicated to polymer chemistry. In the labs of the Institute of Macromolecular Chemistry of the Czech Academy of Sciences, under the guidance of Tomáš Etrych and his colleagues, the students prepared polymers that can serve as carriers of pharmaceuticals and investigated their properties from the perspective of physical chemistry.

On Friday, the secondary-school students moved to the Institute of Molecular Genetics of the Czech Academy of Sciences, where they investigated, under the guidance of Michal Kolář and his team, genetic changes in tumour cells. They isolated DNA, prepared a sequencing library,

We want to express our heartfelt thanks to all partner institutions, lectors, and students who participated in the programme with such enthusiasm and positive energy! © We also should not forget their excellent teachers from the Jiří Orten Gymnasium in Kutná Hora, Prague gymnasiums of Christian Doppler, Professor Jan Patočka, and Nad Štolou, and last but not least from the **SCi**Programme **VP1: Advances in** understanding the molecular basis of tumours In the past two years, the results of Czech research indicate a departure from universal therapies and endorsement of a personalised approach. A better understanding of mitochondrial

biology, mechanisms of cell death, and genetic factors helps us explain why different tumours

Since 2022, research teams involved in the NICR

defeated?

Instinkt, 5 June 2025

says NICR Director Aleksi Šedo.

could help also others

CNN Prima News, 22 June 2025

Pharma spin-off company.

Seznam Zprávy, 4 July 2025

Lead Stories, 14 July 2025

Medical Tribune, 6 August 2025

Diagnostics.

DOTYK, 12 August 2025

Electronics of the CAS.

resistance?

Český rozhlas, Věda Plus, 12 August 2025

multiple times more drug than controls.

metastasising cells that move in the blood stream.

studies can change cancer treatments.

transcending national borders

substances form the basis of modern drugs.

In-Amongst the Cells: How large research

The current issue of the podcast about science against cancer searchers with Roman Hrstka (BBMRI.cz) and Regina Demlová (CZECRIN) - for answers to how biological samples are processed, what does preparation of clinical studies amount to, and how connections between data from biobanks and

In-Amongst the Cells: Connecting minds: Science

This special issue was made at the summer school in Nové Hrady. Several important scientists who work in NICR teams - Viktor Umansky, Luca

In-Amongst the Cells: Alternative medicine in

Why do cancer patients so often seek alternative methods and what does it mean for their treatment? The oncologist Professor Luboš Petruželka and biophysicist Professor Vojtěch Mornstein explain the myths and risks linked to alternative medicine, why the placebo effect is not enough, and what natural

Vannucci, and Aleksi Šedo – reflect upon their journey, talk about challenges of international cooperation, and describe their vision of borderless science.

infrastructures shape future treatments

TV Nova, 7 September 2025

10 June 2025

29 July 2025

oncology

26 August 2025

expert

Indicators are not only publications

**SCi**Indicators

have already implemented 53 unique joint projects financed from various national and international sources (most were financed by the Czech Health Research Council and the Czech Science Foundation). Data show that collaboration among partners functions well and reinforces the position of NICR as the key national authority in cancer research. The number of joint projects among teams has been gradually increasing **SCi**Media

**SCi**Calendar ONKO Pacient 2025 23 October 2025 Old Town Hall, Prague The 3rd annual patient conference focused on the latest developments in cancer research, prevention, diagnosis, and treatment will this year address the issue of HPV-associated tumors. Baking for the Fund Krtek 24 October 2025 **OC Campus Square Brno** Sweeten up your penultimate Friday morning in October and come taste what the team of Zdeněk Andrysík from the Faculty of Medicine, Masaryk University, together with colleagues from NÚVR, has baked for you. The proceeds from this charity bake sale will be donated to the Fund Krtek. Week of the Czech Academy of Sciences 6 November 2025 Faustus House - Academic Club, Karlovo Sq. 40, Prague 2 NICR joints the popularisation Week of the Czech Academy of Sciences! This time, František Sedlák, who runs a joint laboratory of IOCB CAS and the First Faculty of Medicine, Charles University, has prepared a lecture on the topic "Blood cancers and DNA: from the first mutations to targeted therapy." **Emerging Analytical Methods and Cancer Research** 11 November 2025 Institute of Photonics and Electronics of the CAS The workshop is primarily intended for early-career researchers and Ph.D. students, offering them an opportunity to engage with leading specialists and to gain insights into current challenges and future directions in analytical sciences and oncology. NICR Edu workshop

24 November 2025

**Hotel NH Collection Olomouc Congress** 

individual hands-on workshops.

Funded by the European Union NextGenerationEU

NICR NATIONAL INSTITUTE FOR CANCER RESEARCH

For registered participants of this year's Czech Annual Cancer Research Meeting, a workshop focused on technology transfer and commercialization will be held prior to the start of the main program. As in previous years, the program will also feature a lecture on communication skills and

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