

# SZEM

SZTE UNIVERSITY OF SZEGED

S Z E G E D U N I V E R S I T Y M A G A Z I N E | 2 0 2 0 | 1 1

## SZTE GIVES WORLD KEY TO COMBATTING PANDEMICS

Prior to the Covid-19 pandemic, mathematicians at the University of Szeged had already modelled the spread of malaria, the Zika and Ebola viruses, diphtheria, the flu, chicken pox, polio and pertussis. During the novel coronavirus outbreak, their work is assisted by the Hungarian Data Reporting Survey prepared by software developers at the University of Szeged.

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## EDINA MÓKUS SZIRTES:

„IT'S BETTER TO BE AUTHENTIC THAN WELL-LIKED”

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# SARS COV-2

The expressions 'novel coronavirus' and 'SARS-CoV-2' along with the graphic image of the disease agent appeared in Hungary when the pandemic reached it in 2020.

## NUMBER OF ACTIVE CASES



## NUMBER OF RECOVERED CASES



## NUMBER OF DEATHS



## PANDEMIC

The World Health Organization (WHO) announced the Covid-19 outbreak, first identified in Wuhan, China, as a pandemic on March 11, 2020.

## INFORMATION ABOUT THE COVID-19 PANDEMIC AT THE UNIVERSITY OF SZEGED:

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The amount of news related to the University of Szeged and the coronavirus was the largest in March 2020, when the pandemic appeared in Hungary. At this point, the amount of other news started to fall, and this was the month when the smallest number of SZTE-related articles were published with no connection to the coronavirus.

## SZTE AND THE CORONAVIRUS IN THE NEWS



## CORONAVIRUS SCREENING

SZTE prepared to conduct 3000 coronavirus tests as part of the national screening program. As of May 2, 2020, 1488 people (47% of those invited) took part in the testing from four counties (Bács-Kiskun, Békés, Csongrád, Jász-Nagykun-Szolnok) of the Southern Great Plain Region.

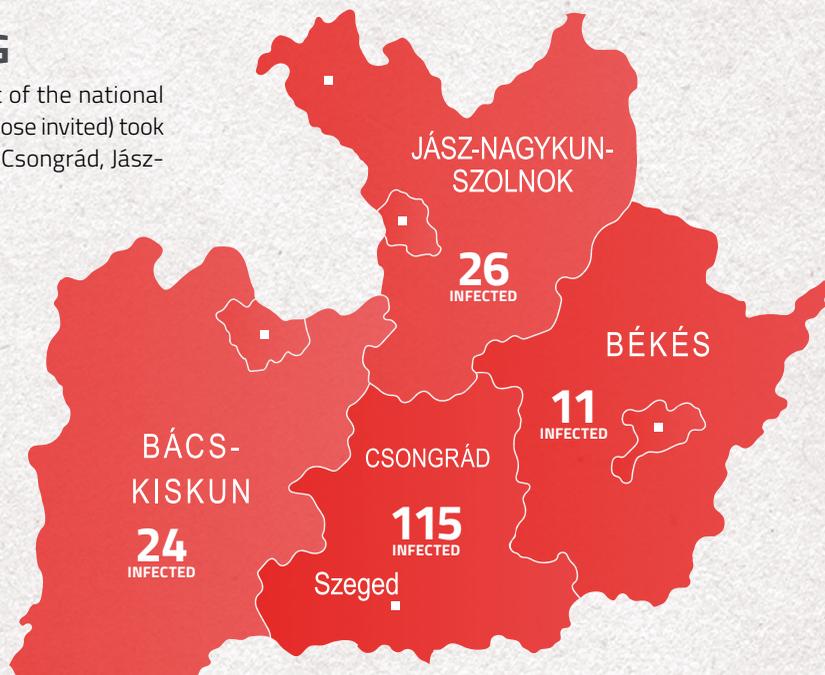
### IN HUNGARY:

**404**  
UNDERGOING TREATMENT

**11 525**  
IN HOME QUARANTINE

**174 011**  
NUMBER OF TESTS

SOURCE: National Public Health Centre (28.05.2020)



# COVID-19 TIMELINE AT THE UNIVERSITY OF SZEGED

**January 31, 2020:** SZTE introduced the first coronavirus-related measures.

**March 9:** SZTE's News Portal also published information related to the coronavirus and the pandemic.

**March 10:** A student health hotline was launched.

**March 11:** The Hungarian government declared a national state of emergency. An extraordinary educational break was announced for March 12–13 at the University of Szeged.

**March 12:** Students were informed that spring break would be moved up to between March 14 and 22. The University of Szeged implemented distance learning starting on March 23 until further notice. Hungarian students had to move out of SZTE dormitories until March 13. New regulations banned gatherings of over 100 people in a closed space and over 500 in an open space. At SZTE, measures related to travel abroad and hosting foreign guests were also introduced.

**March 15:** Patient care not requiring immediate attention was suspended at the SZTE Albert Szent-Györgyi Health Centre.

**March 17:** New measures were adopted concerning employment at SZTE.

**March 18:** A bilingual chatbot called Berci-bot was launched to provide information for students.

**March 20:** The University began setting up an Epidemiological Centre. It was finished on March 23.

**March 22:** The Hungarian Data Reporting Survey operated by University of Szeged staff was launched. Researchers hoped to use the responses to make predictions about the expected spread of the coronavirus.

**March 26:** SZTE leadership held an online forum for staff and students.

**April 10:** A government decree was issued cancelling a certificate of language proficiency as a graduation requirement.

**April 28:** Hospital rooms were set up at the ELI Laser Centre with 118 beds.

**May 6:** High school matriculation exams started and finished at SZTE's secondary schools

**May 25:** SZTE announced that it would return to the working arrangements prior to the state of emergency starting on June 1, 2020.

**May 26:** The Parliamentary and Strategic State Secretary in the Office of the Prime Minister announced a plan to terminate the state of emergency for the coronavirus pandemic in mid-June.

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### SZTE GIVES WORLD KEY TO COMBATTING PANDEMICS

*Prior to the Covid-19 pandemic, mathematicians at the University of Szeged had already modelled the spread of malaria, the Zika and Ebola viruses, diphtheria, the flu, chicken pox, polio and pertussis.*

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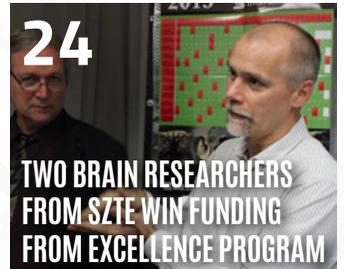
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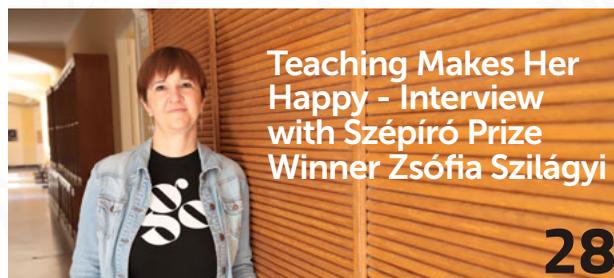
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# SZTE GIVES WORLD KNOWLEDGE TO COMBATTING PANDEMICS

Prior to the Covid-19 pandemic, mathematicians at the University of Szeged had already modelled the spread of malaria, the Zika and Ebola viruses, diphtheria, the flu, chicken pox, polio and pertussis. During the novel coronavirus outbreak, their work is assisted by the Hungarian Data Reporting Survey prepared by software developers at the University of Szeged. Its questions seek to determine how people react to different restrictions and announcements, and what impact government measures have.

The Szeged-based mathematical epidemiology school was founded by Dr. Gergely Röst. The epidemic modelling team has been in operation for ten years at the Department of Applied and Numerical Mathematics of SZTE's Bolyai Institute and has studied the spread of various infectious diseases.

## From the Idea to the Model

Starting at the beginning of 2020, the research team led by Dr. Röst has been focusing on modelling the coronavirus. The members of the team are Péter Boldog, Tamás Tekeli, Zsolt Vizi, Attila Dénes and Ferenc Bartha. The mathematicians analyse the number of infections, the appearance of the virus in countries outside China and the restrictions introduced to prevent the spread. Already in January 2020, they were studying the number of infections worldwide, examining travel data and the ways the infection was spreading outside China, for example, in Europe.

The research group received international attention in the field of science when, in the middle of February 2020, they published their article about the likelihood of Covid-19 outbreaks outside China. Their study also predicted that the first large cluster in Europe would form in Italy.

"The Chinese city of Wuhan was shut down on January 23. At that point, I was at home with flu symptoms, and my colleagues told me about the Chinese quarantine. Lying in my bed, I started to wonder how we could help stop the spread of the pandemic. The idea of modelling the phenomenon occurred to several other people. Ideas spread at least as quickly as the pandemic: over 500 mathematical models have been made so far," said Gergely Röst, who immediately started working on the model with his team.

▶ ▶ 6.

## THREE-PHASE MODEL

The Szeged-based researchers have come up with a three-phase model. First, they estimated the expected total number of Chinese cases with a system of differential equations using the data available concerning the reproduction number (that is, the expected number of new infections generated by one case) and other parameters of the disease (the average length of the incubation and contagious periods). In the second part of the model, this number was applied to a global mobility network in order to estimate, based on international air traffic data and taking the travel restrictions into consideration, the number of infected travellers arriving at destinations outside China. The third phase of the model is a so-called branching stochastic process, through which it is possible to describe the spread of the disease in the target country in the initial period and calculate the likelihood of an outbreak.

COVID-19 CASES RUN THE WORLD (28.05.2020)

COVID 19 INFECTED  
5 690 182

COVID 19 RECOVERED  
2 349 598

COVID 19 DEATHS  
355 575

## GERGELY RÖST AWARDED BY THE ACADEMY

The Qualitative Production Gépipari és Kereskedelmi Zrt. company and the Hungarian Academy of Sciences presented a QP Academic Excellence Award to Gergely Röst, among others, in 2020. The researcher received the prestigious award for his outstanding achievements in the field of Mathematics, for establishing the school of mathematical epidemiology in Szeged, for his innovative mathematical methodology to model the spread of epidemics and defence strategies and for developing the field of applied and industrial mathematics in Hungary.



Gergely Röst and his research team – Szeged-based mathematical epidemiology and the Hungarian Data Reporting Survey aid in defence against the pandemic



## The Most Widely Read Mathematical Article of All Time

In just a few months since the beginning of 2020, the Szeged-based researchers' publication has become the most widely read article in the Journal of Clinical Medicine.

The mathematical epidemic modelling methodology used by the Szeged-based research team helps make risk assessments that take into consideration the extent to which different factors impact the outbreak of the disease in a given country.

Knowing which measure decreases the risk of an outbreak to the greatest extent in a given area makes all the difference in the fight against the spread of the virus.

## The Software Developers' Survey

Dr. Gergely Röst's research team works closely with software developers at the University of Szeged. An important element of their project is the Hungarian Data Reporting Survey, which over 350 000 people have filled in since March 22, 2020 on the covid.sed.

hu website. It is also available as a mobile application. The university software team is led by Prof. Dr. Tibor Gyimóthy. Their task is to continuously develop and perform maintenance on the survey. The questions seek to determine how people react to different restrictions and announcements.

"When stay-at-home restrictions are loosened, we can quickly study what impact this may have on daily contacts and teleworking, and see how many people spend how much time outside their homes. This data helps us conclude if we should expect the pandemic to strengthen or weaken," said Prof. Dr. Gyimóthy.

The team reacts to the spread of the disease by changing and updating the questions in the survey. There are standard questions (age, hometown, qualifications and telework), and new ones are added constantly. Having a large number of respondents greatly facilitates the work of the researchers, because they can only make accurate predictions about the Covid-19 pandemic if they can work with a lot of data.

**COVID-19 CASES  
IN HUNGARY**

**3 816 1996**

**INFECTED**

**RECOVERED**

**509**

**DEATHS**

28.05.2020 DATA

# RESEARCH PROJECTS AT SZTE TO FIGHT THE CORONAVIRUS

Over 30 coronavirus-related medical and life science projects have been initiated at the University of Szeged. SZTE participates in preparing the clinical study of a promising antiviral agent as well as improving mass screening methodologies, and has launched a comprehensive genetic research project.

“At the University of Szeged, with a leading role in medical and life science research development projects, we have been focusing on studies concerning the prevention, screening, diagnostics, therapy and rehabilitation of the coronavirus since it appeared in Europe. This means that we have developments for each component of the healthcare value chain,” highlights Prof. Dr. László Rovó, Rector of the University of Szeged.

SZTE is a stronghold of interdisciplinary research. Thanks to its profile, there is ongoing research in every field, including developments in medicine, biology, methodology and materials science.

“All the background and infrastructure necessary for the successful implementation of the research projects is readily available,” says Dr. Judit Fendler, Chancellor of the University of Szeged. “The large number of projects serve as proof that our university not only stands out in national and international rankings, but it has a leading role in international research, too,” she adds.

## The Most Significant Developments

“One of the most significant research projects is the preparation and coordination of the clinical study of Favipiravir, a promising antiviral agent aimed to help avoid a grave or critical stage. As part of the HECRIN consortium, the Hungarian clinical research network, SZTE experts are also involved in this work,” says Dr. Balázs Bende, manager of the Office of Clinical Research Coordination at the university.

Also funded by HECRIN, researchers at the universities in Szeged and Pécs are conducting genetic analysis on samples from 1000 infected patients. These results and the genetic markers can help them to better understand the individual or other disease-related differences between patients and determine which ones are especially endangered. The most important developments in the field of translational research occur in cooperation with the Szeged Biological Research Centre. Diagnostic developments allow about fifty times more samples to be examined during the same period of time and with the same costs. Apart from this, researchers at the two institutions are also working on developing and introducing a mass screening method to identify persons who have been infected without symptoms.

▶▶ 8.



*“the university in Szeged  
is a stronghold of  
interdisciplinary research”*  
Prof. Dr. László Rovó, Rector

### Basic Research

Szeged-based researchers have identified a special cell-surface structure, which might have a role in getting the virus into the cell. What is more, this protein could probably be used as a circulating “magnet” to collect the viruses.

Another basic research project at the University of Szeged has the objective of developing a special, instant active agent identification method, which would make the study of already known active agents a hundred times quicker.

*“SZTE has a leading  
role in international  
research, too”*

Dr. Judit Fendler, Chancellor

### Treating Severe and Milder Cases

The studies on the treatment of severe cases started at the Intensive Care Unit of the Albert Szent-Györgyi Health Centre are unique in Hungary. The research in Szeged targets the use of medication: drugs that have already been on the market are to be used to treat patients in critical condition.

There is ongoing research related to the treatment of milder cases, too, including remote medical solutions to follow up on patients recovering at home or identifying potential new medicines to prevent the aggravation of the disease.

### Special Disinfectant Appliances Help Prevention

To prevent the spread of the disease, the University of Szeged takes part in the improvement of a special appliance suitable for quickly, safely and effectively disinfecting interior spaces and especially the surface of furniture and objects there. The cooperation involves the globally recognized SZTE research teams in the field of materials science.

Additional research has been initiated in order to protect dentists, where potential solutions are explored for protection during dental procedures using a turbine.



The University of Szeged sampling point was visited by Prof. Dr. László Palkovics, Hungary's Innovation and Technology Minister, Dr. Judit Fendler, the University of Szeged Chancellor, Prof. Dr. László Rovó, the University of Szeged Rector, and Prof. Dr. Csaba Lengyel, the President of the Albert Szent-Györgyi Health Centre, among others.



## HECRIN

There are over 500 clinical investigations worldwide related to the treatment of Covid-19 with medicines. The majority of these investigations were initiated by researchers. They are organized and funded not by large pharmaceutical companies, but by universities and research institutes. The international European Clinical Research Infrastructure Network (ECRIN), with Hungary as a member, was established to support these investigations. Its national centre is HECRIN (Hungarian European Clinical Research Infrastructure Network), a nationwide research network to sponsor academically initiated clinical investigations. It involves the joint research of thirty-six scientists from three universities, SZTE being one, in nine thematic research projects.

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## SZTE, A TESTING VENUE

PCR and serological testing of the samples collected during the nationwide representative screening program were carried out in the laboratories of the Institute of Clinical Microbiology at the SZTE Albert Szent-Györgyi Health Centre. The PCR, that is, polymerase chain reaction test, detects whether the virus is present in the nose and throat swabs of the person giving the sample. Meanwhile, the serological test indicates the response of the immune system, that is, if the person has ever contracted the disease.

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## PARTICIPATION IN THE NATIONAL SCREENING PROGRAM

The University of Szeged was also part of the nationwide screening program, which involved tens of thousands of people using a representative sample in May 2020. Selected with the help of the Hungarian Central Statistical Office, 17,778 people from each age group above 14 were invited to take part in the nationwide screening. 16.4 per cent of the samples were collected by University of Szeged staff from four counties, Bács-Kiskun, Békés, Csongrád and Jász-Nagykun-Szolnok, with the aim of obtaining an accurate picture of the spread of the disease, the actual number of people infected and the extent to which the novel coronavirus was transmitted. The screening took 14 days involving fifteen teams of doctors, nurses, assistants and residents from SZTE.

# SZTE, THE EXAMINATION SITE

The novel coronavirus, that is, SARS-CoV-2, pandemic reached Hungary in 2020. We asked Dr. Katalin Burián, Head of the SZTE Institute of Clinical Microbiology, which took part in the national screening program on a regional level, about the diagnostic PCR and serological tests needed to identify a coronavirus infection

As part of the national representative screening program to provide a more precise picture of the overall spread of the infection in the population, the PCR and serological testing of the samples collected by University of Szeged staff from the region (Bács-Kiskun, Békés, Csongrád and Jász-Nagykun-Szolnok counties) are carried out in the Institute of Clinical Microbiology of the SZTE Albert Szent-Györgyi Health Centre. Dr. Katalin Burián told us that the PCR (polymerase chain reaction) test detects the presence of the virus in the mucus sample taken from the nose or throat. With this method, they greatly amplify the viral genetic material, that is, the nucleic acid, which then is easier to examine. This technology detects a part of the viral RNA if it is present in the mucus samples

of the upper respiratory tract. If the test is positive, it means that the virus is present in the respiratory tract and the person might potentially infect others. These people are required to stay in home quarantine if their symptoms are not serious. Patients with severe symptoms need hospital care and can only return to their communities if they are no longer infectious. This can be verified with two or three successive tests with a negative result. The other test is a blood test, which looks for antibodies to the coronavirus. These are used to identify earlier or current infections, because they detect the response of the immune system to the infection. "After the infection, the body needs an incubation period of 5 to 7 days to produce so-called IgM antibodies," said the Head of the Institute. She explained that if such an antibody is present in someone's body, that is usually a sign of an acute infection.



## WHAT ARE ANTIBODIES GOOD FOR?

"If the serological test detects antibodies, it means that the person has had the coronavirus infection. Based on the information we currently have, it does not prove, however, that this antibody would defend the body in case of a repeated infection," highlighted Dr. Katalin Burián. "Medical information is continuously shaped and updated in Hungary and worldwide."

DEVELOPMENT OF NURSING EQUIPMENT

**FT445 MILLION**

**116**

TRAUMATOLOGY BEDS

**400**

HOSPITAL BEDS

**400**

NIGHTSTANDS

**600**

MATTRESSES

# INDUSTRIAL RAW MATERIAL FOR ANTIVIRAL PHOTOCATALYTIC COATING DEVELOPED AT SZTE

Materials science research using self-cleaning surfaces and harnessing solar energy is one of the most important fields in terms of innovation for the Colloids and Nanostructured Materials Research Group of the Department of Physical Chemistry and Materials Science at the SZTE Faculty of Science and Informatics.



The biological application of reactive hybrid nanocomposite surfaces is the most recent achievement by the research group that has been led, for decades, by Member of the Academy and Professor Emeritus at the Department of Medical Chemistry at SZTE Faculty of Medicine and the Department of Physical Chemistry and Materials Science at the SZTE Faculty of Science and Informatics, Prof. Dr. Imre Dékány. They have produced self-cleaning and reactive intelligent coatings and paint additives, on which germs are unable to reproduce due to photocatalytic activity. The surfaces treated with reactive nanoparticles showed new features: the nanoparticle composites also destroyed bacteria and viruses adhering to the surface.

As for the operating mechanism of the procedure, Prof. Dr. Dékány told us that their small size allows the titanium dioxide nanoparticles, doped with nanometals that work as photocatalysts under the influence of sunlight or LED light, to connect with the microorganisms, bind to the cell wall and, on the cell membrane, destroy the germs with oxidative decomposition. Reactive photocatalysts themselves

do not damage the environment. Their antibacterial disinfecting activity only occurs in the presence of light of different wavelengths (or sunlight). With light present, the strong oxidation effect of the photocatalyst decomposes the microorganisms into their basic elements, carbon dioxide and water. This cycle continues until light is cast on the reactive surface.

This chemical-free technology may revolutionize defence against infections. The method can also be used to deactivate microorganisms or allergens on surfaces and in the air.

Under a contract with a Hungarian company, the product of this innovation at the University of Szeged has become the industrial raw material of a domestically produced surfactant coating. The nanostructured, ultrathin and colourless layer can be used on any surface in itself or added to paint and ensures its antibacterial effect for at least two years. This innovative method may revolutionize defence against infections not only in hospitals and health centres but in other public spaces, including schools, spas, hotels, restaurants or public transport vehicles.

# SZTE PREPARED TO FIGHT SARS-COV-2

Gizella LÉVAY  
Anna BOBKÓ



By significantly increasing its capacity, considerably re-structuring the existing system of healthcare and utilizing modern hand and air sanitizing technologies, the Albert Szent-Györgyi Health Centre of the University of Szeged is prepared to fight SARS-CoV-2, the novel coronavirus and the necessary inpatient and intensive care.

In the first phase of the defence, an Epidemiological Care Centre was opened to provide pandemic-related inpatient and intensive care for coronavirus patients from the Southern Great Plain region. This required a significant re-structuring of the healthcare system at the SZTE Albert Szent-Györgyi Health Centre. The so-called second Independent Emergency Department specialized in suspected infections was opened at the original location of the Department of Infectious Diseases at Kálvária sgt. 57. The department now has a whole building with 99 beds, where suspected coronavirus patients can be treated separately from patients with a confirmed infection who are also separated based on their condition. In the building of the former "Hospital II", in order to increase intensive care capacities, a part of the operating block was also converted into an intensive care unit. In addition, two operating rooms are reserved for surgery on virus-infected

patients. CAT scans along with other equipment and technical infrastructure necessary for intensive therapy are also available in the building.

In the second phase of implementing the epidemiological plan of the University of Szeged, another 118 beds were placed on the premises of the ELI-ALPS Laser Research Centre. Prof. Dr. Gábor Szabó, head of the laser centre, offered two large halls of the institute in case the epidemiological situation required care for infected patients in the future. Due to the ELI's basic profile and strict safety requirements, 1400 sq m room is particularly suitable for infected patient care. With its special filtration apparatus, negative pressure rooms can be created to ensure that their air is not recirculated into other areas. In addition, each bed has access to oxygen. Only patients in critical condition would be treated in these rooms as long as they need intensive mechanical ventilation.

The university was among the first institutions in the country to receive 65 Steripower automatic hand sanitizer dispensers and nine air purifier machines, worth one million forints each, from the EFOP-1.8.21-18-2019-00001 grant titled "Practical implementation of infection control activities in the institutions providing inpatient care at the University of Szeged".

The modern, EU-compatible hand sanitizer dispensers are unique in that, contrary to the manual types mainly used in Hungarian patient care, they are touchless and do not dribble, but spray the alcohol-based hand sanitizer on the hand. In order to protect the health of patients, their relatives and healthcare workers, these battery-operated devices have been installed in halls with high turnover, hospital rooms, corridors, intensive care units, operating rooms and their entrances in every hospital of the Health Centre in Szeged and, in largest number, in the Epidemiological Care Centre. The air purifier machines also represent the latest

technology and take advantage of the well-known germicidal properties of UV light. As a result of a technological improvement, by now they operate in a wavelength range safe for constant human presence, too, without hazardous emissions. The majority of these mobile appliances that constantly purify the air are located in the healthcare workers' rest and dining areas within the Health Centre's Epidemiological Care Centre. In these areas, germs may enter the air when workers take off their protective gear and there is a higher risk of infections as they are not wearing masks either. It is crucial, therefore, to keep purifying the air to protect the health of doctors and nurses.

## PROTECTIVE GEAR AND EQUIPMENT SZTE INSTITUTIONS RECEIVED

### STATE AID:



**57 000**  
FACIAL MASKS



**5 000**  
PROTECTIVE GOWNS, SUITS,  
GOGGLES AND RAPID TESTS

### DONATION FROM CHINA: 5 PALLETS:



**1 000**  
SINGLE-USE PROTECTIVE SUITS



**1 000**  
FACIAL MASKS



**200**  
GOGGLES



**OVER  
35 000**  
SURGICAL MASKS



**500**  
KN95 MASKS

### EQUIPMENT WORTH

**840 MILLION**  
FORINTS

To support defence against the pandemic, the SZTE Albert Szent-Györgyi Health Centre's epidemiological units and the pandemic hospital on the premises of the ELI-ALPS Laser Research Centre received ultrasound machines and endoscopes, among other equipment.

### MOBILE CT SCAN RENTALS WORTH

**57 MILLION**  
FORINTS

### AUTOMATIC, VACUUM-DRIVEN NUCLEIC ACID ISOLATION EQUIPMENT WORTH

**34 MILLION**  
FORINTS

### ANESTHESIA MACHINES WORTH

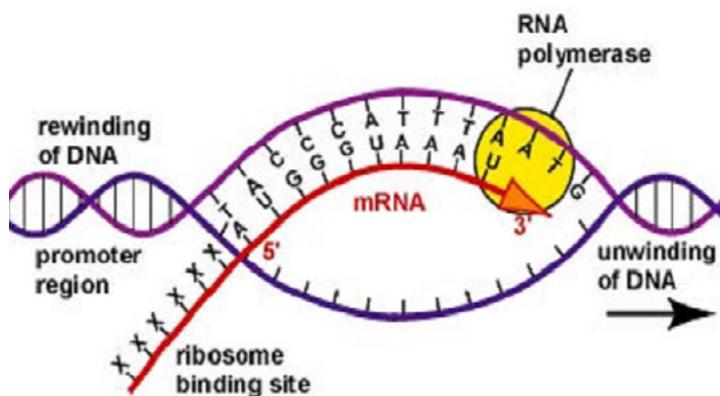
**275 MILLION**  
FORINTS

## PREPARED FOR THE WORST

With considerable internal capacity rearrangements and developments, the University of Szeged established an Epidemiological Care Centre with 240 beds with mechanical ventilators inside Hospital II at Kálvária sugárút at the end of March 2020.

SZTE, the primary and highest-level patient care centre in Southern Hungary, also prepared with 118 beds with mechanical ventilators to treat patients in critical condition in the specially filtrated halls of the ELI-ALPS Laser Research Centre.

# SZTE ALUMNA KATALIN KARIKÓ HAS INITIATED THE MOST PROMISING VACCINE DEVELOPMENT AGAINST THE CORONAVIRUS



The messenger RNA (mRNA)-based new methodology is the most promising among vaccine developments against the coronavirus. We asked Katalin Karikó, SZTE alumna and former researcher at the Szeged Biological Research Centre (SZBK), about the technology she established, which is exceptional because of its speed.

– I came across the news browsing the digitized issues of the student magazine of the University of Szeged, *Szegedi Egyetem* from 1975, 1976 and 1977: Katalin Karikó won the most important national student grant, the Study Grant of the People's Republic. From the University of Szeged, you went on to work at the Szeged Biological Research Centre with an academic scholarship until 1985, when you were 30. What did you do?

– I started working at the Nucleotide Chemistry Lab of the Institute of Biophysics at the SZBK under the leadership of organic chemist Jenő Tomasz in 1978. At that time, we were only able to chemically synthesize very short RNA pieces of 3-4 nucleotides. I was studying them under antiviral impact. The mRNA, which codes proteins, is much longer, with hundreds or a thousand nucleotides. At that time, we could not produce mRNA because the RNA polymerase enzyme that we are currently using was not

available.

– What is the current significance of your work at the lab led by Tomasz in Szeged?

– That is where I started to work with viruses and first used a modified nucleoside, cordycepin.

– The coronavirus and the influenza virus are often mentioned together. What is the main difference between the two from a biological perspective?

– The genome of the coronavirus is a long mRNA, while the RNA of the influenza consists of eight smaller pieces, which can be exchanged with other animals' influenza viruses.

## RESEARCHERS' CREATIVITY

According to information from the WHO on April 4, 2020, researchers were working on sixty-two different vaccines against the coronavirus. Two of them, including BioNTech's vaccine candidate, were already in the 1st stage of the clinical phase, which means that, in spring 2020, they were already being tested on healthy volunteers. At least eleven of the twenty-one companies developing the potential vaccine are working with nucleic acid-based technologies. In these cases, the DNA or mRNA form of the gene that codes a protein of the virus is delivered with the help of a plasmid, that is, a non-nucleic genetic material. "The benefit of these vaccines is that, in theory, they generate a stable immune response, do not cause infections and are simple and easy to produce," writes the mta.hu website about the technology developed by Katalin Karikó and her colleagues. Among the sixty pre-clinical vaccine developments, we can also find one where plants are used to produce the antidote. In the article on mta.hu, immunologist and academic András Falus describes holistic vaccine development methodologies as promising. These are based on information technology and artificial intelligence. News about vaccine development against the coronavirus prove that the pandemic has inspired researchers' creativity.

– Researchers are racing against the clock to develop an antidote to the virus causing the Covid-19 pandemic. What are the main differences between the potential vaccine developments against the coronavirus?

– In most vaccines, the protein critical from the point of view of the immune response is either coded by the mRNA, the plasmid DNA or a gene fragment built in a harmless virus. Some researchers, however, are trying to use the coded protein or the weakened or destroyed virus as a vaccine. These vaccines take much longer to produce than with the technology we recommend.

– Why is the vaccine development technology associated with you considered one of the most promising?

– Our mRNA-based vaccine can be produced very quickly. It doesn't contain the entire genome of the virus, so it's not infectious, it's safe. The press has also covered how, in the case of the vaccine developed by the Boston-based company Moderna, only sixty-two days passed between learning the sequence of the coronavirus and the first human injection of the mRNA vaccine.

– How does synthesized mRNA activate the immune cells?

– The mRNA produced with a modified nucleoside, namely 1-methyl pseudouridine, is not immunogenic, that is, the lipid nanoparticle (LNP) covering the mRNA does the activation. Another function of this LNP is to protect the mRNA from ribonucleases that degrade ribonucleic acid.

– You said in an interview that you are very pleased, because researchers rarely get the chance to follow the path of their discovery from the lab desk to patient care. When will the development of the vaccine be complete and when will it reach pharmacies?

– If everything goes as planned, Moderna's mRNA vaccine will be available to everyone by the beginning of 2021.

– You started your research career in Szeged, but it reached its peak in the United States. Which colleagues have you collaborated with successfully?

– The immune effects of modified mRNA in the field of antiviral vaccines were proven by my colleague Norbert Pardi, a researcher at the University of Pennsylvania in Philadelphia, who also graduated from the University of Szeged in 2004. I worked with Drew Weissmann on the vaccine development technology. He's another researcher at the University of Pennsylvania. Its patent also belongs to the two of us.

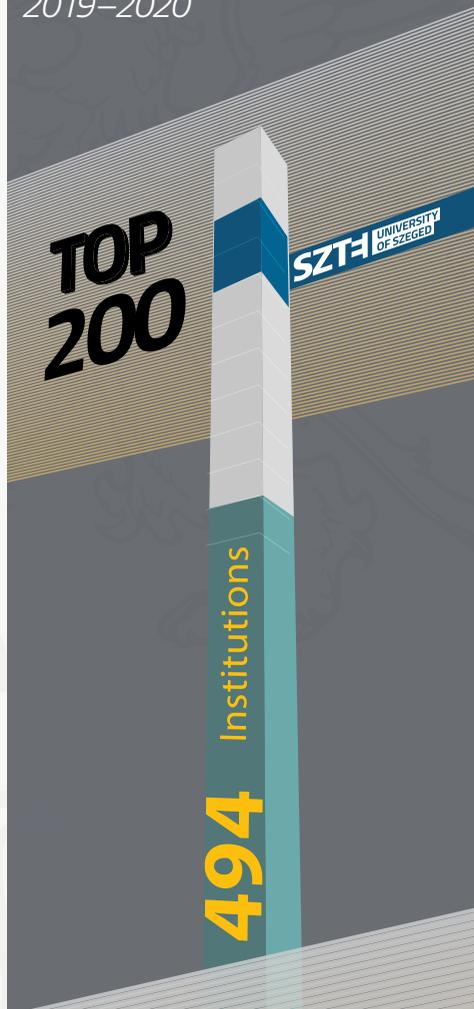
– At the moment, you are working in Germany for the BioNTech company, which has revolutionized cancer medicine development. What areas do you study these days?

– One of our tasks is to find a treatment for different genetic deficiency diseases using mRNA. These are deficiency diseases where the treatment is successful if the mRNA coding the missing protein can be delivered to the liver. Another important field of research is the therapeutic application of mRNA that codes antidotes. I have been studying the literature on neurodegenerative diseases for decades. I would love to understand the reasons why they are formed and develop a therapy for them.

– If we look at the future, what are the main consequences and conclusions of the coronavirus pandemic?

– I'm hoping that decision-makers, businessmen and politicians all over the world come to realize that a much larger part of the budget has to be spent on education, science and healthcare. That teachers, who educate future generations, researchers, who constantly search for solutions to the problems that keep coming up, and doctors and nurses, who risk their lives to save us, deserve respect and adequate remuneration. This way, when a new virus sweeps the globe, we will be much more prepared and ready to fight it.

## THE UNIVERSITY OF SZEGED IS AMONG THE WORLD'S BEST 200 UNIVERSITIES 2019–2020



The University of Szeged is among the world's best 200 universities, according to the Times Higher Education ranking, which assesses the economic and social impact and responsibility of higher education institutions. In the ranking compiled based on the 17 Sustainable Development Goals of the UN, the University of Szeged is between positions 101 and 200, which makes it the best institution in Hungary. This means that it is among the top 13% of the 767 universities on the list.

In the Industry, Innovation and Infrastructure Ranking which measures research and innovation, number of spin-off companies and research income from industry at the listed universities, the University of Szeged is between positions 101 and 200, out of 494 institutions. This result also means it is the best Hungarian institution.

# Transplant Surgeon Competes at Ironman Florida Triathlon Race

## Transplant Surgeon from SZTE Department of Surgery



A surgeon with the strong will and physical condition of an Ironman is quite unique in the world. A transplant surgeon at the Department of Surgery of the Albert Szent-Györgyi Health Centre at the University of Szeged, Dr. Richárd Rokszin, however, competes in at least four global races every year. How are running and patient care connected? We asked him this question, too.

– *Why did you take up running?*

– Competing regularly motivates me to constantly outperform myself. Trainings make up a major part of my life. One of my biggest dreams is to compete at the triathlon race in Florida. I will not give up. When the pandemic is over, I am definitely going to register for this race overseas.

– *You were forced to call off your participation in a Half Ironman triathlon race in Florida, two Austrian marathons in Salzburg and Graz and an Italian Ironman triathlon race because of the coronavirus pandemic starting out from China. From what starting point did you get this far?*

– Although I've been doing sports since I was a child, I started working out with more intensity as a fifth-year medical student and continued for four or five years. At a certain point, however, my performance didn't improve any more, so I decided to stop the whole thing. Then, I got bored with all kinds of exercise for a while. Two years later, in the summer of 2012, when I realized that almost everyone around me had started to run, I did the same, though I had never been a fan of that form of exercise.

– *What stages of running have you been through?*

– Getting started was terribly difficult. I ran twenty-two kilometres in two weeks at walking speed, in in a low-quality outfit and sneakers and with no refreshment, heart rate monitor or watch. But I managed to do it, which encouraged me to go on. After three weeks, still without good running gear or a coach, I registered for the half marathon in Vienna. I completed the 21-km distance in 2 hours 35 minutes. Afterwards, I felt I was going to die, but I managed to finish it. The professional training plan of a Budapest-based coach worked wonders for me. I managed to shave 45 minutes off my 2 hours 35 minutes for a half marathon during the course of six to eight races. My new record is 1 hour 44 minutes. One race led to another, and I've won twenty-five medals at that distance. Though I haven't run a half marathon for a while now, because I finish too soon. However strange that may sound.

– *So you looked for new challenges, right?*

– I went on to do marathons of forty-two kilometres. My goal was to go under four and a half hours, which I managed to achieve last time at a race in Ibiza last year. I have run ten marathons so far. A few years ago, I started to save up for a bicycle and told myself it was time for the triathlon. This happened in 2015, when I first competed at medium distance. At a race in Budapest, I managed to complete the half-distance within six hours even though I had just learnt to swim freestyle.

▶ ▶ 18.



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IRONMAN TRIATHLON



**3900 METERS**  
SWIMMING



**180 KILOMETERS**  
CYCLING



**42 KILOMETERS**  
RUNNING

HALF IRONMAN



**1900 METERS**  
SWIMMING



**90 KILOMETERS**  
CYCLING



**21 KILOMETERS**  
RUNNING

– Which of your athletic achievements are you most proud of?

– The first thing to come to mind is a half marathon in Siófok, where I finished in 1 hour 44 minutes despite the harsh weather, pouring rain and strong winds. The second was a special experience. The marathon started in Badacsony, which I completed in 3 hours 59 minutes only because, 2 kilometres before the finish line, ultramarathonist and dentist Szilvia Lubics ran past me. I had the idea of taking a selfie with Szilvia after the finish line so I pushed very hard in the end to catch up with her. The third race I am most proud of is my first Ironman, because, a year before the race and one and a half months before my wedding, I broke my collarbone, so I had to train hard after a long break. I think I was at my peak as an athlete in 2017, when I trained 15 to 20 hours a week. I started biking at five in the morning and running at nine, so I used all 24 hours of a day to the maximum, while I had a lot of surgeries, too.

– What does your job and research entail?

– As surgeons, we cure the body, but, during long hospital stays, it's our task to maintain the patients' mental health, too. After a transplant surgery, the relationship between doctor and patient is more personal than in general. It's not enough to just implant a kidney. You have to follow up with the patient for a lifetime and ensure that the new organ works well as long as possible. I'm

almost in day-to-day contact with all my transplant patients, in a lot of cases not only as a doctor, but in private life, too. That's why I've never regretted making transplantation the most important task in my life.

– How do you connect your work with your hobby?

– I'm a goodwill running ambassador advocating kidney transplantation. I've really enjoyed supporting this noble cause for a few years. In this role, I've participated in several races. Some years ago, I did a fundraising campaign for athletes preparing for the World Transplant Games and the little patients at Bóky Children's Clinic. It's important to emphasize that doing sports is very beneficial for transplant patients, as the implanted kidney has no innervation. Light exercise, however, increases the heart rate so the kidney also receives more blood. These days, online platforms, the television and commercials cover a lot of topics. Yet, the information that circulates about health issues and prevention is far from enough. I wish public attention would keep focusing on healthcare even after the coronavirus pandemic so people would realize that health is a huge gift. It does not come for free, though, and regular exercise, depending on one's condition and capabilities, is an excellent way to maintain it.

# TWO BRAIN RESEARCHERS

## FROM SZTE WIN FUNDING FROM EXCELLENCE PROGRAM

The National Research, Development and Innovation Office's (NKFIH) "Élvonal" – Researcher Excellence Program provides support for exploratory research for the 10-15 best researchers in Hungary. In 2020, two researchers at the University of Szeged submitted their applications and both won. The two SZTE brain scientists, Dr. Antal Berényi (SZTE Faculty of Medicine) and Prof. Dr. Gábor Tamás (SZTE Faculty of Science and Informatics), both received funding of 300 million forints for their projects for five years from the "Élvonal" Program.

✂ Ilona Újszászi 📷 Anna Bobkó

### A STOP TO EPILEPTIC SEIZURES

The use of electrotherapy in the treatment of epilepsy is what Dr. Antal Berényi, Assistant Professor at the SZTE Faculty of Medicine, and his team have been studying for years.

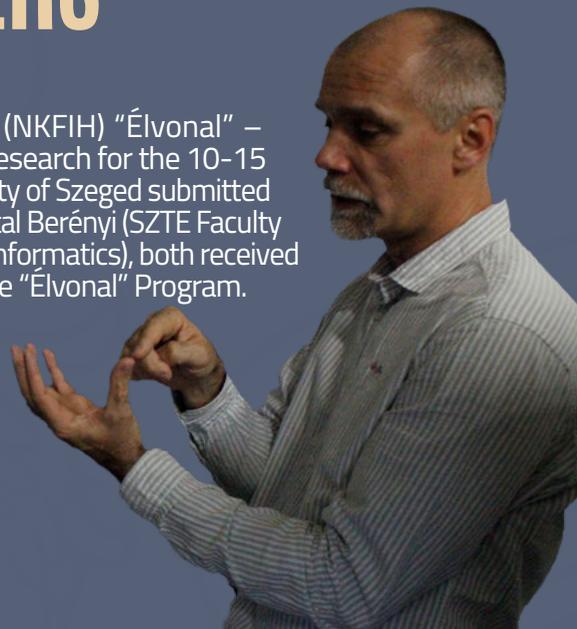
"Until now, our research focused on trying to intervene right when an epileptic seizure is starting in order to stop this damaging process in the brain. The project that has just received funding from the NKFIH's "Élvonal" Program, however, will let us take a step forward. Our goal is to anticipate an epileptic seizure so we could manipulate the brain before it actually occurs," explained the physician-scientist.

The SZTE physician-scientist's projects, funded nationally or by the EU, are closely related to each other thematically, but have distinct conceptual approaches.

"We are working on basic research projects. We hope this work will bring scientific results and new methodologies," said the brain scientist. "In addition, we need to think ahead when it comes to equipment development, too.

If this methodology works, the new device will be electronically suitable for implementation, that is, to predict epilepsy. Our method is that we observe the operation of the brain through numerous electrodes, then process the data statistically. The question is whether we will be able to notice those tiny signs within the complex activities of the brain that refer to future changes, for instance, the coming of an epileptic seizure."

If the Szeged-based brain scientist and his team manage to define the targets that signal at what point it is possible to stop the development of depression and certain anxiety disorders, then, in theory, there is a chance that the same methodology can be applied in the treatment of symptomatic nervous system disorders such as epilepsy therapy.



✂ Ilona Újszászi 📷 Anna Bobkó

### PROMISING STUDIES ON THE BRAIN ACTIVITIES OF THE BEHAVING PERSON

**SZTE biologist professor and member of the Academy Dr. Gábor Tamás studies the relationship between the network operation of human neurons and behavioural and higher-level intelligence.**

Apart from the causes of dementia and the manifestation of diabetes in the brain, they would also like to learn what processes lead to controlless cortical functions, for example, epilepsy.

"In the program we have just launched, we are going to explore the functioning of the 'rosehip neuron' and other human-specific cells. We are curious to know how those human cell types, newly formed during evolution, enrich the operation of the human nervous system compared to that of animals," explained the brain biologist. "The project has two directions. On the one hand, we are studying evolutionarily conservative cell types, which

can be done in animals, too. Compared to these experiments, we are hoping to apply a different, moderately invasive methodology on the other front, where we are going to study humans."

Dr. Gábor Tamás and his team have started two patent procedures. On their own, they have managed to develop methods that might also result in new equipment. These will help them collect new data not only about animals that serve as healthy disease models, but about people who suffer from certain nervous system disorders. They have already received ethical permissions to carry out these types of experiments.

### "THE MANHATTAN PROJECT OF MODERN BIOLOGY"

The Szeged-based "Tamas Lab" has been invited to participate in the currently most far-reaching program in the field of biology. The president of the American National Institutes of Health (NIH) said about their organization's gigantic program that it is "the Manhattan Project of Modern Biology". Besides the U.S.-based institutes, a handful of external experts also received an invitation to the consortium just like in the case of the Manhattan Project during World War II. Apart from SZTE's "Tamas Lab", the Karolinska Institute, the University of Amsterdam and the Hebrew University of Jerusalem can join the research, the objective of which is to learn about and study the functions of each neuron type in the human brain. The majority of the molecular research is taking place in the United States of America. In the meantime, the "Tamas Lab" at the University of Szeged is doing pioneering work on several aspects of the functional studies.

# A NEW PATHWAY IN PHARMACEUTICAL DEVELOPMENT

The latest achievement by researchers at the University of Szeged may literally open up new pathways in drug development. They designed a special cargo molecule that is capable of delivering biological therapeutic agents to cells.



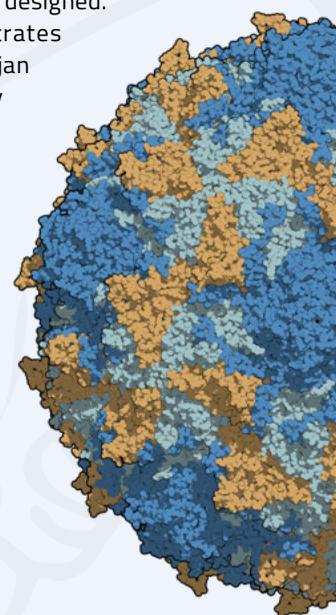
treatment of diseases yet unresolved, where the aim is to directly influence intracellular processes with biological agents.

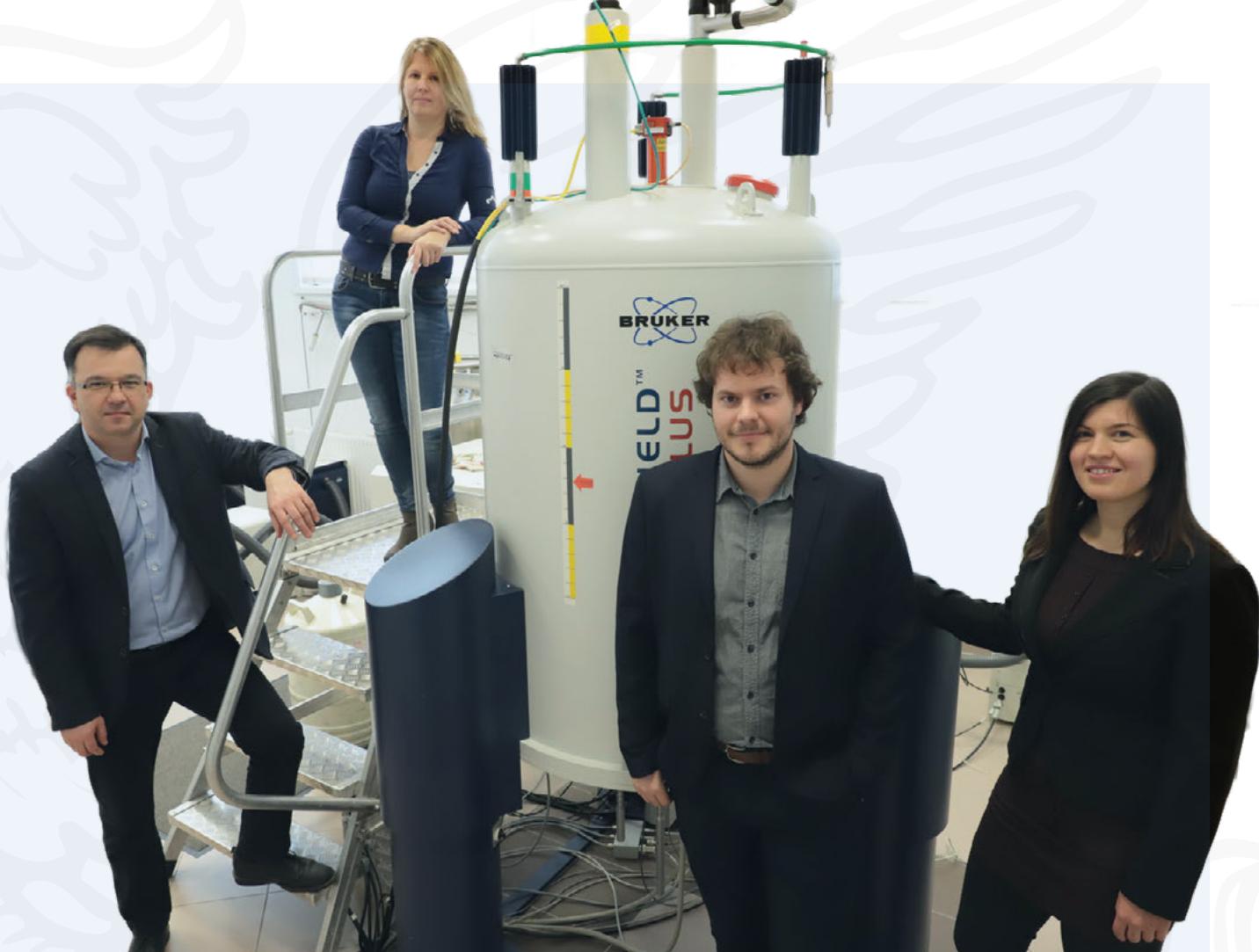
Our immune system identifies and marks foreign substances such as bacteria and viruses with antibodies. With the help of these large biomolecules acting as drugs, abnormally functioning protein connections can also be manipulated. However, one of the biggest problems with antibodies and protein-based medicines in general is that they can only reach extracellular targets. In the meantime, there are several, currently unexploited, intracellular drug targets, and accessing these would aid in the development of therapy for new, significant diseases.

“For the past few years, we have been working on the delivery of relatively large proteins into the cell with the help of a cargo molecule that we designed. The “bait” molecule penetrates the cell membrane as a Trojan horse through a pathway

The prestigious journal *Advanced Science* features the latest scientific results of researchers at the University of Szeged on its cover page. The scientists of the Department of Medical Chemistry at the SZTE Faculty of Medicine in cooperation with their colleagues at the Szeged Biological Research Centre have developed a special molecule that is capable of translocating molecules bound to biological agents into cells with the help of a Trojan horse mechanism. This method, which can be adapted with current pharmaceutical technologies, may provide new solutions in the

that, for instance, the cholera and tetanus toxins or certain viruses, like the one responsible for the polio epidemic, use. The antibody is made to enter the cell with a biomimetic method. This means that we open the already existing entrance by mimicking the biological systems of bacterial toxins and viruses,” explained Dr. Norbert Imre, a member of the research group





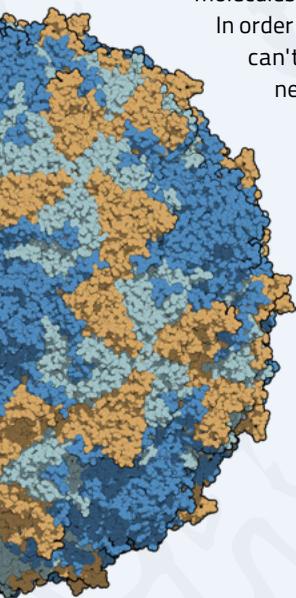
and first author of the scientific article.

"The cavities of the cell membrane translocate molecules into the cell through different pathways.

In order for the antibody to keep functioning, we can't let the cell break it down. That is, we needed to find a pathway for the antibody to enter through that takes it right into the cell's internal, secure transport system. The entrances to this pathway are coded by certain sugar molecules. The special molecule we study recognizes these entrances so we can translocate the antibody into the cell such that it isn't broken down," said Prof. Dr. Tamás Martinek, Head of the Department of Medical Chemistry at the SZTE Faculty

of Medicine, giving us more details about the research. "We had to find an agent that draws the antibody to the appropriate cell entrance. This is a short peptide, it is one hundredth of the size of the molecules used so far. It's so tiny that it doesn't affect the functioning of the antibody significantly. Apart from that, it's not toxic and its production costs are low. Another advantage of the molecule is that it can be attached to any protein-based drug," he added.

The researchers at the Department of Medical Chemistry at the SZTE Faculty of Medicine have been working on this subject together with their colleagues at the Szeged Biological Research Centre (SZBK) since 2016. Their scientific achievement has resulted in a patent application filed by the University of Szeged and SZBK.





Éva ANTAL

Anna BOBKÓ

# THIS SZÉCHENYI PRIZE IS A RECOGNITION

A researcher at Wigner Research Centre and a professor at his alma mater, the University of Szeged, Prof. Dr. Ferenc Iglói was awarded the Széchenyi Prize, the most prestigious scientific honour. We asked the professor about the evolution of his research field, statistical physics, too.

– *Statistical physics is also applied in making predictions about the spread of the coronavirus. How did this field of study come into being?*

– I'm a theoretical physicist focusing on statistical physics. Statistical physics studies the properties of systems that are made up of a lot of tiny components. To illustrate this with an example: earlier, when examining a steam engine, we had to observe the movement of the small particles in the gases, which we already know are molecules and atoms. The statistical analysis of these forms of movement allowed us to respond to larger questions that we were interested in concerning, for example, the efficiency of the steam engine. In the 19th century, during the Industrial Revolution, these were the questions that brought the field of thermodynamics into being. Statistical physics started out answering these types of questions. Later, the field expanded and now, in physics, we can apply this method to gases, liquids and solids, that is, systems of larger components. At the same time, the method of statistical description was applied in fields outside physics, such as biology and sociology, and these days even in the world of finance. The essence of statistical physics is that there is a lower level, the world of components or microscopic elements and an upper level with problems that we can study. The evolution of the field is continuous and, its applications often lead us to areas beyond physics. It's interdisciplinary and quite modern.

– *Summing up your scientific career, what gave you momentum and what challenges did you have to face?*

– I had several reasons for choosing to become a physicist. One is that I'm from Szeged, and I specialized in Mathematics and Physics at Radnóti High School. I was part of a strong class with excellent teachers. This was where I became interested in physics. Thanks to

my teachers, as a senior, I became a member of the Hungarian team travelling to the International Physics Olympiad in Sofia, and I won a bronze medal. After that, it was obvious that I would go on studying physics. I graduated from the University of Szeged, and then I started to work at probably the best think tank of the time, the Central Physics Research Centre in Budapest. I wrote my doctoral dissertation there, and defended it at the University of Szeged. I graduated in 1981 with a Sub Auspiciis Rei Publicae Popularis distinction. I continued working at the Centre, which was a close community. I finished my other dissertation there, then worked abroad for seven years. In 1992, I returned home and, thanks to my background, I was invited to teach at the Department of Theoretical Physics at the University of Szeged. I have taught at the university ever since. I have one course per semester and a special lecture each year. Szeged is important to me because teaching allows me to be directly in touch with the younger generations. Most of the doctoral candidates whose work I supervised were from the University of Szeged.

– *It's the scientists from the field who nominate their colleagues for the Széchenyi Prize. How did you feel when you learnt you had won?*

– The nominators included several of my colleagues who had already received the Széchenyi Prize themselves. They invited a lot of people, but selected only a few of them. Not all nominees receive the award. So when I was notified that my name is among the awardees, I was very delighted. The fact that I had managed to achieve this is obviously due to the gigantic support I had received. Excellent mentors, colleagues and, later, great students helped me receive this honor. In addition, I see this award as recognition for the whole field and the school I represent.

# ON OF STATISTICAL PHYSICS



## INTERDISCIPLINARY

"The essence of statistical physics is that there is a lower level, the world of components or microscopic elements and an upper level with problems that we can study. The evolution of the field is continuous and its applications often lead us to areas beyond physics. It is interdisciplinary and quite modern."

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## RECOGNIZING EXEMPLARY ACHIEVEMENTS

The highest ranking scientific honor from the Hungarian state, the Széchenyi Prize, is traditionally awarded by the President of the Republic during a ceremony on March 15. With the prize, they acknowledge the work of scholars "who have exceptionally high-level, exemplary and internationally recognized achievements in the field of sciences, technology, research, technical development, curative healthcare and education". A committee established with this aim nominates candidates and makes recommendations, and the government makes the final decision. In 2020, twelve scholars received the prestigious award.

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## EXCELLENT GRADES

"Ferenc Iglói graduated from elementary and high school in Szeged with excellent grades. As a high school student, he took part in several subject-specific competitions with success. He won third prize at the 8th International Physics Olympiad, among other awards. This resulted in his admission to the Department of Physics, Faculty of Sciences, at József Attila University without being required to take an entrance exam. During his university studies, all his grades were excellent. His excellent skills and diligence made him an outstanding student. For three consecutive years, he received the Scholarship of the People's Republic. He finished his university studies with a Red Diploma in 1977. ...". This is how the magazine Szegedi Egyetem introduced the talented young man on June 11, 1981.

# ANNIVERSARIES:

## The Case of a University in Szeged on the Front Page



Ilona ÚJSZÁSZI

ARCHIVE PHOTO: SZTE KLEBELSBERG LIBRARY



2020 is a year of several anniversaries related to dreams and disputes around the foundation of a university in Szeged. The idea of bringing higher education to Szeged is 230 years old. 110 years ago, Kálmán Mikszáth placed the case of a Szeged university on the front page. 100 years ago, when a delegation from the university in Kolozsvár (Cluj-Napoca in Romania) visited the town, Szeged made a generous offer to accommodate their institution according to newspapers from the period and SZTE's university history publications.

**230** years ago, in 1790, the county assembly took the decision to establish a school of philosophy to lay the foundations of a "higher education" in Szeged.

### Steps Taken by the City

The city's "ambitions included the foundation of an academy of law": in 1802 and 1827, they petitioned the king to relocate the academy of law in Pozsony (Bratislava in Slovakia) to Szeged and permit the start of a course of study in the law according to Dr. János Martonyi's article titled The History of the University of Szeged, which was published on December 8, 1967 in the Szeged Egyetem magazine.

The digitized articles available at the Contenta Repositories in the SZTE Klebelsberg Library and local history research show that Szeged submitted a request for a university 140 years ago in 1880, during the reconstructions after the 1879 flood of the Tisza, then in 1882, 1893 and 1906, among other years.

### Who Should Get the Third?

The second university in the country and the first one outside the capital was the Royal Hungarian Franz Joseph University in Kolozsvár founded in 1872. The establishment of a "third

university" was a matter of great public interest. Apart from Szeged, competing cities included Debrecen, Kassa (Košice in Slovakia), Pozsony (Bratislava in Slovakia) and Selmecbánya (Banská Štiavnica in Slovakia).

110 years ago, the very first issue of the local newspaper Délmagyarország published an article by author Kálmán Mikszáth, highlighting the case of the university in Szeged: "If there was justice, the university would be in Szeged instead of Budapest. Then, scholarship would have a better standing here ...". This article titled The Third University was on the front page of the paper on May 24, 1910.

The Parliament concluded the debate in 1912 by establishing the Royal Hungarian University of Debrecen, which started its operations in the so-called "civic city" in 1914.

### The Consequence of the Takeover

"The eventual beginning of higher education in Szeged was the consequence of the defeat in World War I and the Romanian takeover of Transylvania. On May 12, 1919, the Romanian governing council formed in Transylvania took control of the university, bearing the name of Franz Joseph I since 1881. On February 1, 1920, a Romanian university, named after their King Ferdinand I, opened in its buildings. The majority of the former professors of the Hungarian university worked in temporary venues in Budapest between 1919 and 1921, while a few of them stayed in Kolozsvár," writes Dr. Martonyi in his article.

**100** years ago, on January 13, 1920, a journalist at Délmagyarország celebrated the news that a university committee had arrived in Szeged "to gather information about the possibilities of relocating the university ...". This visit started the process of moving the Royal Hungarian Franz Joseph University, the successor of the universitas founded by István Báthory in 1581, which had been expelled from Kolozsvár, to Szeged.

# POETRY AND SHORT STORIES INSIDE AND OUTSIDE THE UNIVERSITY'S WALLS

 Anett ZOMBOR

At the events during the Festive Book Week, the University of Szeged always appears with new publications. Because of the novel coronavirus pandemic, in summer 2020, Book Week was forced to go virtual. We interviewed two creative writers from SZTE, Dóra Vöröskéry, a Social Work major at the Faculty of Health Sciences and Social Studies and author of a collection of short stories titled *Röpképtelen madarak* (Flightless Birds), and Barbara Fodor, a Visual Design major at the Juhász Gyula Faculty of Education and co-author of the book *Sors-cserepek* (Fortune Tiles).

## WING BEATS

Insane chocolate store owners, vindictive mermaids and talking animals populate Dóra Vöröskéry's world.

"I loved coming up with stories as early as in elementary school," recalled the SZTE ETSZK student. "I was bored, so I read, listened to and wrote tales."

*Flightless Birds* is a collection of short stories, which barges in on the reader like a thousand laughing crows. The author tells us about people living beside each other, incredible adventures and unfathomable actions.

"It felt fantastic to first hold my book in my hands," admitted the author. "I'm proud of the pieces that turned out good one by one. I cherry-pick the constructive feedback from the reviews and do pay attention to them."

Most of her short stories would look very different now. The young author has noticed the mistakes she did not see before the publication of the collection. Still, she thinks these texts are like old photographs, which will always remain as relics.

"Do I celebrate triumph after finishing each short story? I do, but it doesn't mean that I keep patting myself on the back. Instead, I foster the internal enthusiasm and fire that aid the creative process and the joy that comes with finishing a piece," emphasized the student author. "I cannot imagine doing this half-heartedly."



### AN AUTHOR'S ASCENT

*Dóra Vöröskéry was born in Békéscsaba, graduated from high school in Mezőberény and studied Environmental Protection Engineering at the University of West Hungary in Sopron. She was an exchange student in Germany for two semesters. Now, she is studying Social Work at the SZTE Faculty of Health Sciences and Social Studies and is a member of the Eötvös Loránd Kollégium. She was 23 when her book Flightless Birds was published.*



FODOR BARBARA

**Sors-cserepek**  
VERSEK ÉRŐSZÖLÉS HANAUSSZORÉ

### AN AUTHOR'S FORTUNE

Barbara Fodor specialized in Economics in high school. In Szeged, she applied for a Graphic Design course, where she got a glimpse into the world of Fine Arts. She decided she would dedicate her life to it. She studied Visual Design at the SZTE Juhász Gyula Faculty of Education, while she was continuously writing, too. The book *Fortune Tiles*, which she co-authored with Tibor Szabó, has recently been published.

### FROM EROS TO THE CANVAS

She showed interest in the arts at an early age. Barbara Fodor's writings were published, in the journal *Kalligram*, the arts journal *Spanyolnátha*, the "independent, free, creative online journal DRÓT" and the journal of the social sciences and culture *Zempléni Múzsza*, among others. In 2019, she received an award in the category of Arts from the Szeged Regional Committee of the Hungarian Academy of Sciences. Her illustrations were published in the February 2018 issue of the journal *Alföld* and on the *Új Bekezdés* and *Irodalmi Jelen* websites. She regularly exhibits her work, too.

"Art has helped me overcome my fears so that I can pass on to people what is in me and make my message more perceptible," said the student, who collected her work from the past two years in this book.

The volume, the co-author of which is Prof. Dr. Tibor Szabó, can be started from both ends, as the two authors have their separate parts. The student included both poetry and graphic art in hers.

"The visuals in the book are based on line drawings. The texts are about male-female relationships. Fortune is in the background as a force that interweaves and drives everything. It is there, hidden or visible, in love and erotica, too," explained the young artist. "This is why we gave the book its title *Fortune Tiles*."





*Cycling to and fro (Berlin, 2011) Photo: Anna Fenyvesi*



Gréta ÚJVÁRI

## THE TEACHINGS OF GURUS

In 2018, Dr. Anna Fenyvesi achieved Guru status at GuruShots.com, an online photo challenge. The head of the Institute of English and American Studies at the SZTE Faculty of Humanities and Social Sciences regularly shares her photos of bikes and spirals on social media. We asked photo artist Béla Dusha, head of the Photography Working Group at the MTA Regional Committee in Szeged, about the artist and her photographs.

"Anna Fenyvesi's images are not pieces of 'work', but the results of an endless jam session for the mere joy of music, adapted to the language of photography. She is able to make images sound like music. This endless melody is what we can discover in her photographs," said Dusha.

Extraordinary buildings, enthralling staircases, several Fibonacci miracles and lots of bicycles. They are recurring motifs in Dr. Fenyvesi's pictures, which are special because of their framing.



*Blue staircase, looking up (Pozsonyi u. 38, Budapest, 2019) Photo: Anna Fenyvesi*

"When you stand in front of a photo, I suggest you play the following scenario in your head," said Dusha introducing the exhibition to a beginner. "I look at the picture and listen to myself and the emotions the image triggers. Is it harmony, for example? Or disharmony? Is it unsettling at all? Let the photo have an effect on you. When you've found that connection, that's when you start to understand the artist and the exhibition."

## FROM PORTRAYING LIFE TO SENDING TIMELESS MESSAGES

Photography was considered a profession, later a field of science and, from the 20th century, an art form. Professor at the SZTE Faculty of Engineering János Gyeviki has been taking photos since the 1970s and teaches photography, too, to his students. The information society has brought a turning point in visual culture.

“Everyone feels the urge to show the world what they have inside. I don't have drawing skills, and I love listening to music but I can't play. I found photography, however, which helps me express my feelings,” said Prof. Dr. Gyeviki, explaining why he has been taking photos for half a decade now.

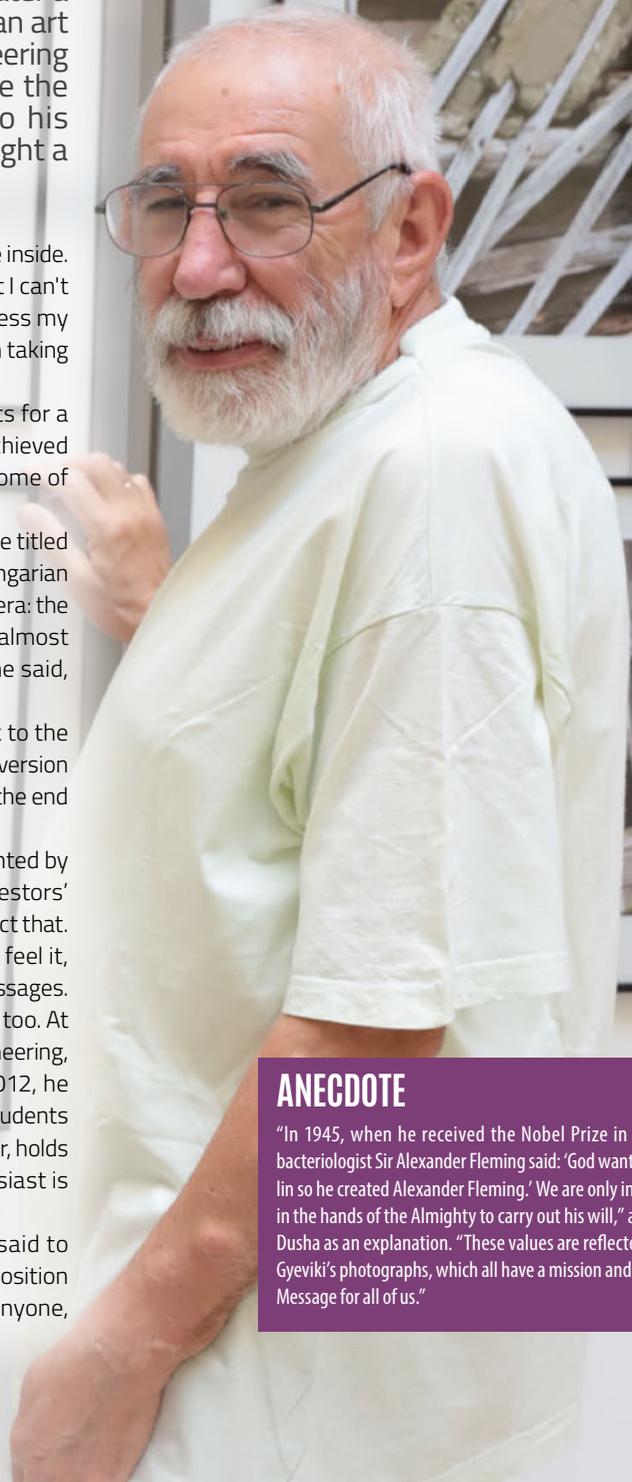
Family and people are the most readily available subjects for a beginner photographer. Prof. Dr. Gyeviki, however, has achieved success with his portraits at national exhibitions, too. Some of these are also on display at his jubilee exhibition.

“At the 9th exhibition of the Alföldi Photo Studio, my picture titled Allegory won my most valuable prize, a plaque from the Hungarian Institute for Culture. I took the photo with an analogue camera: the images of my little daughters, mounted over each other almost like a phase drawing, give a fairy tale-like impression,” he said, describing his awarded piece.

The blown-up details of objects and buildings also speak to the beauty of passing. You can also take a look at the electronic version of the printed catalogue of “LIFE / IMAGES GYEVIKI 70” at the end of the article about the artist at the SZTE News Portal.

“These days, I only take pictures of old objects. I'm enchanted by the world of farms. When I hold an old tool, I feel our ancestors' fingerprints. They send a message to our world, and I respect that. My goal is to capture that with my photos so others can feel it, too,” said the artist about his numbered series Timeless Messages. He has passed on his love of photography to his students, too. At the Lépcső Gallery in Building D of the SZTE Faculty of Engineering, an exhibition space formed at his initiative in January 2012, he organizes exhibitions for professors in the spring and for students in the fall. In addition, Szegedi Fotókör, where he is a member, holds photo review sessions, which every photography enthusiast is welcome to join.

“The technical part of photography can be learnt,” he said to reassure beginners. “But you have to rather feel the composition and the moment when the event or scene, available to anyone, becomes an IMAGE, a photograph.”



### ANECDOTE

“In 1945, when he received the Nobel Prize in Medicine, bacteriologist Sir Alexander Fleming said: ‘God wanted penicillin so he created Alexander Fleming.’ We are only instruments in the hands of the Almighty to carry out his will,” added Béla Dusha as an explanation. “These values are reflected in János Gyeviki's photographs, which all have a mission and a Timeless Message for all of us.”



# TEACHING MAKES HER HAPPY

## INTERVIEW WITH SZÉPÍRÓ PRIZE WINNER ZSÓFIA SZILÁGYI

The Society of Hungarian Authors gave a prestigious prize to literary historian Prof. Dr. Zsófia Szilágyi, Head of the Department of Hungarian Literature at SZTE Faculty of Humanities and Social Sciences for her work as a critic. We asked the recent awardee of the Szépíró Prize about her own attitude as a critic and the issues related to the critic's personality, taste and responsibility, among other things. We also wanted to know what's new with her Creative Writing course.

– *This time, you were awarded for your work as a critic, but you have also received prizes, the Péter Balassa Award and the Alföld Award, for instance, for your role as a literary historian focusing on academic publications and monographing the oeuvre of Zsigmond Móricz and Dezső Kosztolányi along with your activities as an editor and literary manager. Apart from these, you teach courses, too. In which of these roles do you feel the most comfortable and content?*

– There are different stages, when one or the other role moves to the foreground. While I was writing my book on Móricz, my teacher self had to take a back seat. Since I started working at the University of Szeged, however, teaching has become my number one priority. Still, I wouldn't sound authentic teaching editing, if I wasn't working as an editor. In the same way, it's only worth talking about the system of literary institutions, criticism or redaction 'from the inside'. There's no point in sharing knowledge only collected from books. The question of boundaries between texts is a bit different. In my case, these might be more subtle compared to other people's writings, but, of course, I also make a distinction between a critique of 4000 characters for the weekly paper and a chapter on the history of the reception of a given volume of the Kosztolányi Critical Editions. And what makes me happy? I love teaching. I feel that now I have significant experience to build up an entire lecture series, stay precisely on time, and from time to time I have courses where I feel we thoroughly enjoyed working together from

the beginning to the end. Recent examples include my course titled Móricz in Education with teacher trainees or a semester on detective fiction with my students specialized in Creative Writing.

– *Good criticism has very different definitions according to a range of schools from different time periods or based on the editorial policy, taste or theoretical orientation of certain journals. Who shaped your taste and approach? Who did you pick up the tricks of writing criticism from?*

– I learnt how to write criticism from the authors I loved reading the most. To mention a few names representing different approaches, I would say István Margócsy, Gergely Angyalosi, József Tamás Reményi or, from the generation older than me, József Takáts, István Csuhai and Csaba Károlyi. I'm also annoyed by the fact that I couldn't put one woman on the list, but at that time it seems that world was clearly masculine. Luckily, by now, the situation has changed, though not exactly radically. This shows that I didn't have a single mentor, not even in the field of criticism. So, it was easier to find my own voice, and no one's perspective or language had a pressing influence on me. At the same time, I did find points in several authors' critiques that I wanted to enter into dialogue with. Yet, I have to add that I think, in the beginning, I wasn't good at writing criticism at all. Even if my critiques somehow got published, they didn't judge or assess the subject, they were closer to analyses or interpretations where the focus was on close reading and a search for motifs.



### THE "CREATIVES"

A group of students specialized in Creative Writing, available for the second year now at the University of Szeged Faculty of Humanities and Social Sciences, publish entertaining or eerie crime stories every week on [kreativek.blog.hu](http://kreativek.blog.hu). The chapters of the detective novel are written by students. The editor is Zsófia Szilágyi. The story takes place in the building of the Faculty in Egyetem Street. Apart from writing, it is also very important for the students to cooperate: the members of the team work together, have to stay on time and be responsible. Otherwise, they endanger the work of the whole group.



# EDINA MÓKUS SZIRTES:

## “IT'S BETTER TO BE AUTHENTIC THAN WELL-LIKED”

Edina Mókus Szirtes is a violinist, singer, composer and alumna of the University of Szeged. A graduate of the SZTE Faculty of Music, she considers classical music to be her mother tongue while she improvises and blends different musical styles and genres. Concert rooms, jazz clubs and theatres are all familiar surroundings for her, while her music videos have more and more views on the largest video-sharing platform. We also asked the versatile artist what message she would send to today's university students in Szeged.



music and sing their lines. Although a poem and the music it's adapted to can exist separately, too, a musical setting of a poem is like when people hold hands. Because we exist separately, but if we hold hands, it's an inexpressible unity. So poetry is a gift from brilliant wordsmiths writing about the human story," she said. "Thank God there is literature. And it exists so it can express and lift the stories of our souls to a higher level for us. Music is the same, but it uses a different set of tools and no words. So it is universal."

Szirtes wrote her first piece of music at the age of seven, inspired by an excerpt from the By-Song part of Attila József's poem Óda (Ode): "(The train is taking me, I am going / perhaps I may even find you today. ...)"

"Compared to 'one', the essence of 'two' is that it is something extra. Encounters,

interwovenness. That means that music is enriched by literature and vice versa: poetry brings along its music. I don't force myself on the text, I wish to hear the poem's own music, because it does have it, just like music involves thought. If we keep on listening to a piece of music without lyrics, the thought it expresses without words becomes clearer and clearer. And the opposite is also true: a poem carries its music inside."

A classical violinist graduate of the University of Szeged, Szirtes plays several roles in various music groups, but her solo projects are also popular.

"Poetry forced me to express my emotions. I don't consider myself a singer. I think every musician, in fact, every human being is capable of singing with the vocal chords they have been given. Humans can sing just as easily as they walk or recite poetry."

Szeged audiences also had a chance to see her in various roles in 2019, for instance. In the spring, Mrozek's play *The Police* was staged with her music by the REÖK Studio Stage. In the summer, she performed her 'ethno-symphonic' piece *Vidróczki* with the Szeged Symphony Orchestra at the Open-Air Festival at Dóm Square.

"I got an invitation from music," said Szirtes, who received her nickname Mókus (Squirrel) as a young conservatory student and is building her career using that name. "Music is the only thing I can mention that has absorbed me since I was born and has kept my whole being busy. When I started to hear the sounds surrounding me, music was what helped me understand this world. Music is in here and out there, there are no limits. ... I respond to the reasons with my oeuvre and the things I do in life."

"I'd like the song of my soul to wake / the hearts of the sad, the world ...," said Szirtes, quoting the first two lines of Attila József's poem Mámor (Bliss), in answer to the question of what poetry means to her.

"Those lines mean the world to me. That's every musician's task, not more, not less. We musicians can't do more. We can't phrase things that perfectly, nor is it our job, but we can set poems to

Connecting with her alma mater again, she was a guest performer with the band Kaláka for their anniversary concert at the 16th University Spring Festival, while at the 24th University Autumn Cultural Festival, she gave a looper concert titled *Ki viszi át* (Who'll carry it forward) with János Jammal Fekete. She says she believes in multidisciplinary art.

"I can't choose between musical genres, but my musical mother tongue is classical music, for sure. I start speaking it, first maybe a bit awkwardly, then hopefully a bit more skilfully in the language of other genres, too. In the end, a concert or piece is born, the classical origins of which are quite obvious. Of course, it's possible to study and learn the features of other musical languages, too. If you use those, too, a new, interconnected genre comes into being, which is called 'crossover' or 'world music'. Though I myself don't believe in that, but in a unity where different genres can be explored. But all this doesn't matter, because the final piece represents a unity that rolls on by itself and we can only say: Wow!"

Professor at the University of Szeged and violinist Ferenc Szecsődi, the master, mentioned Szirtes first among his favourite students and called her "a little wild girl". As proof of her versatility, the former student is also a teacher now: she has written simple pieces for

music students and taught string chamber music and improvisation in summer camps. What message does she have for the students of SZTE, her alma mater?

"I noticed that what we treasure the most in our heart is our sense of dedication. As a tiny, emotional being, I can only suggest you never change your sense of dedication only to be liked better. Keep believing in what is important to you and never give up. Give all that is within you. I think music is the most superior unity," said SZTE alumna Szirtes. "It's better to be authentic than well-liked."

## A MULTIDISCIPLINARY COMPOSER

Edina Mókus Szirtes has composed pieces for popular musicians like Zséda, Mariann Falusi and Nox along with the jazz band Modern Art Orchestra.

She has written music, for the Szeged Acting Circle, the Szeged Contemporary Ballet, Kriszta Kováts's Theatre and the Baltazár Theatre, among others. Apart from the performances *Arnica*, the *Duck Princess* (*Szegény Dzsoni és Árnika*) at the Budapest Operetta Theatre and *Thorn Castle* (*Tüskevár*) at the Gergely Csiky Theatre in Kaposvár, she worked on the Roma musical *Somnakaj* and composed music for the August 20 fireworks in 2010. She composed the soundtrack of the film *Szeretföld*.

She also started improvisation at the request of the head of the Szeged Contemporary Ballet, Tamás Juronics, for *The Miraculous Mandarin*.

## JÓZSEF ATTILA: MÁMOR

*Szeretném felverni lelkem dalával  
A szomorúk szívét, a világot.  
Most megbocsátok annak is,  
Aki bántott.*

*Szeretném a keblemre ölelni az  
Életért küzdő, fájó rabot.  
Szeretném feltámasztani,  
Aki halott.*

*Szeretném, hogyha lassabban forogna  
És végre megállna a nagy kerék.  
De a legjobban szeretném,  
Ha szeretnék.*

*És szeretnék alkotni csodásat és  
Ezer gyönyörűt, szépet meg nagyot  
S aztán meghalni: Mert én a  
Mámor vagyok.  
(1921)*



# SZTE PERFORMS EXCELLENTLY IN D

The declared state of emergency and the measures taken due to the coronavirus epidemic resulted in higher education institutions facing numerous challenges. The implementation of distance education required the cooperation of all the University's staff and organizational units. SZTE performed very well during the semester.

The preparation time available to the University of Szeged between distance education being made compulsory and its actually launch was very short. The situation was made even more difficult due to the fact that the University had to provide the necessary IT support and tools for all of its departments. During the extraordinary period of distance education, the primary goal at SZTE was to enable more than twenty thousand students to successfully complete the semester. In order to achieve this goal, the twelve University faculties developed an action plan, instructors interactively supported students in acquiring the necessary knowledge, and education carried on with a number of online tools.

## DEVELOPMENT OF ONLINE TOOLS

In the new situation, it was a huge advantage for the University of Szeged to have already developed the framework for digitally supported education for some of its courses over a period of more than ten years. The CooSpace framework makes educational collaboration and the process of learning possible, while Modulo facilitates electronic administration. Due to the size and complexity of the task and the tight deadlines, the University of Szeged leadership, senior managers and operational managers responsible for education decided that SZTE could basically rely on existing IT foundations, systems and good practices during the online education period, thus making distance education possible in line with operational programs for IT development.

## ONLINE COMMUNICATION AND ONLINE EXAMS

The CooSpace platform makes it possible to arrange on-line consulting hours, which, like video chat, uses the system's internal resources and provides personal online communication. In addition to the time and duration of consulting hours, the number of potential applicants can be specified by the instructor. Students can consult the instructor via video chat in the order in which they register. This feature not only allows teachers to arrange consulting hours but also an online oral exam, as it makes it possible for candidates to queue up, manages the number of candidates for the exam and allows personal online communication between the candidate and the examiner.



**Digital education -  
in numbers**

**2 169 574**  
SETS OF STUDY  
MATERIALS

**366 623**  
COOSPACE LOGINS

**68 090**  
ASSIGNMENTS  
SUBMITTED

**121 068**  
UPLOADED  
DOCUMENTS

# DISTANCE EDUCATION



## Online tools in education

Recently, CooSpace was upgraded with multiple modules and functions to facilitate e-learning as well as online communications and everyday work. CooSpace users can freely initiate video calls with each other outside of courses. The integrated BBB (BigBlueButton) function aids lecturers in holding online seminars, where attendees can join the assigned platform at the same time as the lecturer. The entire seminar can be recorded, and YouTube services are even accessible via CooSpace for livestreaming. In this case, the CooSpace scene forwards the link to the event to each participant, and later the recorded video can be watched again on YouTube.

It is possible to link e-learning materials to accompany courses. In addition to text and image content, test questions and multimedia elements can also be inserted. The system can import PowerPoint presentations and even disseminate read-only versions. Instructors can add oral explanations to the written material or use the existing standard (SCORM) materials.

CooSpace converts uploaded videos and makes them available as video streams. Instructors can record lectures with their phones and upload them to the system. From then on, the recorded video is accessible and can be watched again any time without downloading.

The University of Szeged responded with these services and improvements to the challenges caused by the emergency. All experience and feedback received from staff and students during distance learning formed an important basis for upcoming developments in the coming years. Even after the pandemic, distance learning will still provide opportunities which will help to bolster the quality of education and extensive dissemination of knowledge.

## COOSPACE DEVELOPMENT: BIGBLUEBUTTON

The video conference rooms set up at the University of Szeged József Attila Study and Information Center proved a great help in completing the exam period, as well as in holding final exams.

In addition, CooSpace developers migrated the Big Blue Button (BBB) open source web conferencing system, which can run in a cloud system environment and supports multiple audio and video sharing. It also expands online presentations with whiteboard options, such as pointer, zoom and drawing. It is possible to present public and private conversations, share desktop content, and present PDF documents and Microsoft Office documents.

## UNIQUE OPPORTUNITY FOR MEMBERS OF THE UNIVERSITY OF SZEGED: COURSERA FOR SZTE

The University of Szeged was the first institution in the European region to take a major step towards online education. Through an agreement signed with Coursera, the world's largest online education platform, members of the university can take part in courses provided by the world's top institutions free of charge. More than four thousand online courses are available on the platform.

# CONSTRUCTION PROJECTS AT THE UNIVERSITY OF SZEGED

## CONSTRUCTION PROJECTS

IN THE MARS TÉR - KOSSUTH LAJOS SUGÁRÚT - VASAS SZENT PÉTER UTCA AREA

- A** NEW BUILDING OF SZTE FACULTY OF DENTISTRY IN VASAS SZENT PÉTER UTCA
- B** SZTE TRAINING CENTRE IN KOSSUTH LAJOS SGT.
- C** SZTE ADULT PSYCHIATRY CARE

SZTE ADULT PSYCHIATRY CARE CONSTRUCTION  
**245 000 000**  
 FORINTS

## CONSTRUCTION PROJECTS IN THE NORTHERN CLINICAL PARK

- A** HUNGARIAN CENTRE OF EXCELLENCE FOR MOLECULAR MEDICINE (HCEMM) CELLULAR RESEARCH LAB
- B** SZTE ONCOTHERAPY CENTRE
- C** ANIMAL HOUSE OF SZTE DEPARTMENT OF PHARMACOLOGY
- D** SZTE HEALTH SCIENCES TRAINING CENTRE
- E** SZTE ONCOTHERAPY CENTRE

## CONSTRUCTION PROJECTS IN THE SOUTHERN CLINICAL PARK

- A** SZTE 3D PRINTING CENTRE
- B** SZTE DEPARTMENT OF PEDIATRICS
- C** SZTE DEPARTMENT OF PEDIATRICS
- D** RENOVATION AND EXPANSION OF THE DEPARTMENT OF OTO-RHINO-LARYNGOLOGY AND HEAD-NECK SURGERY ENERGY BLOCKS
- E** SZTE GYNECOLOGY CLINIC
- G** SZTE GÁBOR PETRI CLINICAL BLOCK HYBRID SURGERY
- H** DEPARTMENT OF CHILD METABOLISM
- I** DEPARTMENT OF NUCLEAR MEDICINE
- J** EXPANSION OF THE JANCSÓ MIKLÓS COLLEGE
- K** LOCKER ROOM FOR HEALTHCARE STAFF
- L** DEPARTMENT OF INFECTIOUS DISEASES
- M** RENOVATION AND EXPANSION OF THE DEPARTMENT OF OTO-RHINO-LARYNGOLOGY AND HEAD-NECK SURGERY
- N** LIFE SCIENCES CENTRE

## CONSTRUCTION PROJECTS IN TEMESVÁRI KÖRÚT

- A** KIDS GENETICS LAB
- B** KIDS METABOLISM LAB

SZTE DEPARTMENT OF PEDIATRICS PEDIATRIC PSYCHIATRY:

**1 246 000 000**  
 FORINTS

SZTE DEPARTMENT OF PEDIATRICS INFRASTRUCTURE IMPROVEMENT OF PEDIATRIC EMERGENCY CARE AND TRAUMA CENTRE:

**1 934 000 000**  
 FORINTS

SZTE GYNECOLOGY CLINIC: FAMILY-FRIENDLY OB/GYN CARE:

**247 000 000**  
 FORINTS