SZEM

SZTE UNIVERSITY OF SZEGED SZEGED UNIVERSITY MAGAZINE | 2018 | 1 |

CHANGING OF THE GUARDS

Their Compass is the SZTE's Interest

INVESTMENTS DETERMINING THE FUTURE

SUNNY RESULTS

that a thousand times thinner layer is sufficient"

OPENED DOOR TO THE WORLD

IMPRESSUM: Our brochure is supported by the European Union and co-funded by the European Social Fund. ▪ Call identifier: **EFOP-3.6.1-16-2016-00008** *„Development of intelligent life science technologies, methodologies, applications and advancement of innovative processes and services based on the knowledge base of Szeged"* ▪ Produced by **University of Szeged Directorate for Foreign Affairs and Public Relations.** ▪ Published by **Gábor Szabó Rector**. ▪ ISSN: **0230-791X**. ▪ Printed by: **HTS-ART Printing House Ltd.** (Budapest)

SZÉCHENYI 2020

HUNGARIAN GOVERNMENT

European Union
European Social Fund

INVESTING IN YOUR FUTURE

Changing of the Guards

Ilona ÚJSZÁSZI
Anna BOBKÓ

"There is no revolution." "The changing of the guards is seamless." This is the message conveyed the resigning and prospective rectors of the University of Szeged have both participated at cabinet and senate meetings since the beginning of 2018, and that they appear together, as they did, for example, at the spring job fair and similar events, and that they jointly spoke to the Chinese delegation. So it is only natural that the two professors, Gábor Szabó, who is performing the last weeks of his rector's assignment, and László Rovó, who is preparing for taking over the SZTE's governorship, were asked for a joint interview by the University of Szeged Magazine, to account for the past and to look into the future before the turn on the 1st of July 2018.

"'The budget of the University of Szeged is much larger than that of the city of Szeged. At the same time, management conditions have 'wavered' in the last 8 years. Working under these changing conditions, which results are proud of?"

Prof. Gábor Szabó: "We have gone through some difficult periods that have inspired us to be modest about our goals. Thus, I consider it a success that the university community remained intact; the institute did not fall apart into a set of bickering faculties. Instead, there is an obvious sense of internal solidarity – at least in comparison with a good many partner institutions. It is another success that

6.

Their Compass is the University's Interest'

If you do what you love, then you never work… Both László Rovó, professor at the Department of Otorhinolaryngology and Gábor Szabó, academic laser physicist find this statement, attributed to Confucius, to be true. But what do their families think about the 10-12 hour-long work days? How does a professor, who is ready to re-charge their batteries? What is it that provides a compass in this forest of duties, tasks and hobbies?

"In my case the family's little ones have already flown the nest. Even the youngest of them has just turned 30 the other day. I thanked my wife even at my academic inauguration for maintaining the appearance with our children that they have a father for 25 years… I think if you want to reach something – it makes no difference whether you are a laser physicist or an oto-rhino-laryngologist – then you have to commit more to your work than an 8-hour working day," opines Gábor Szabó. In my case re-charging my batteries when I am performing my duties as rector means spending time with Physics sometimes – with great pleasure, for this is my true calling as well as my hobby.

"So far I have tried to direct my career so that nobody in the family feels a sense of absence. I have gotten used to the fact that working in science, research, management of clinics, surgery, and post-graduate education means a 10-12 hour business day," recalls László Rovó. I used to spend a lot of my spare time with reading. Nowadays, I try to think things over and recharge with active work out - for example, skiing or cross-country running. I know I have to give up my current schedule, I have to put my career in the background, as did all previous rectors who took on the job with the SZTE's best interest at heart.

The SZTE is the kind of giant ship that can and should be steered, and it is also capable of making turns, so it should not be driven like a speedboat struggling among the waves.

Prof. Gábor Szabó

scientific cooperation between faculties has grown, multidisciplinary projects have been created that coincide with the goals of maintainers and with these antecedents we could join the New National Excellence Program. It was one of my main goals to keep the university's current financial problems from being felt by patients and students. This has not been easy, but we have succeeded. I find it important that our university's senate remained unified even in critical situations, so we could make those compromises that were necessary to reach today."

"What indicators do you assign for measuring your success in reaching your goals during the period starting in the summer of 2018?"

Prof. László Rovó: "I think that the most important indicator is to balance the university budget. Institutional management is based on a normative rate set by the state, paid according to the number of students, and the tuition fees paid by students. It is important that faculties develop their own strategic plans and designate resources, for example, in order to increase their student numbers by 10 percent in the near future. The key issue for state-funded universities is the degree of government support, so we must also take into consideration the fulfilment of indicators assigned to the achievement of the maintainer's goals. This is because government support is a resource for which we are competing with other universities. The rector needs to play a more active role, in order for every internal unit to feel that they work to balance the diversity of and develop the university, while demonstrating to the government that the goal of the SZTE is to develop from a regionally significant university into a leading European institution."

"The introduction of the chancellery system has brought about a significant change in the operation of Hungarian higher education institutions. In your opinion what are the difficulties and benefits of this change?"

7.

Service University - for Students

The first universities in the Middle Ages were a community of teachers and students. How can a rector of a modern universitas rely on students and on the Students' Union, which represents this community?

"As we were taken to court, it would be strange to say that our cooperation has been smooth, but I remember only the nice things," looks back Gábor Szabó. "A modern university provides services –for the students as well. My own students can attest that we have changed our curricula based on their feedback. . . So I have a good relationship with students, I'm happy to work with them, and I consider them colleagues from their first semester. Passing on knowledge at university level is not a one-way process: the high-quality SZTE degree is the result of joint work by both student and professor. Talent management is a key issue, because that itself will attract students who have a thirst for knowledge and are ready to learn, in other words, the elite of this age group."

"As I explained to the Students' Union when I spoke to them as a rector candidate, one of the reasons the university exists is the students themselves," László Rovó says, referring to his start. "Students' opinions and well-being are of utmost importance. Their memories of those 3-5-9 years spent here may have an impact on the future of the university too. We have to take into account the opinions of the student union when making decisions in areas of university operation that area student-oriented, while in other fields it is the interests of all that count.

I sincerely hope that if students also notice that they live in better dormitories, get better educational conditions, have higher scholarships and more sport facilities, then their union will turn away from its current politicization in a direction that focuses on the universitas."

21 000
UNIVERSITY STUDENTS

15% **FOREIGN STUDENTS**

Prof. Gábor Szabó: "The arrival of the chancellors was darkened by the fact that they decidedly came from the outside, so the university's public and academic community watched their activities with suspicion. Maintaining this function is perfectly alright as long as the institutions are involved in the candidate's appointment, as for example – as we have seen in the last period – the delegates of the Rectors' Conference were. This creates the conditions for cooperation. We have a balanced cooperation with the second Chancellor of the SZTE: we share all necessary information with each other; we often argue, but we always reach a compromise on matters important to the university. It is crucial to emphasize that in our case, a full chancellery was not formed; the directorates of the SZTE have become professional organizations, which respond to the requests of both the Chancellor and the Rector, and support their decisions with their professional work."

Prof. László Rovó: "The cooperation between the Rector and the current Chancellor of the SZTE can be regarded as extremely good, even at a national level. As a result, many overlaps disappeared, and significant development resources came to the university. Personally, I would like to pursue this direction. The University of Szeged is a complexly connected and complicated network system, which has to be led harmoniously by the Rector and the Chancellor. This also means that we should, for example, be able to support the plans of the academic sphere with economic calculations."

"Success-oriented leaders are often heard to say 'A team is needed!'"

Prof. Gábor Szabó: "I'm proud of both my teams. I would like to thank the vice-rectors of both cycles for their work: they performed well, while they were also progressing professionally. I am also proud of the fact that women have been given opportunities like nowhere else at Hungarian universities."

Prof. László Rovó: "I believe that the main condition of effective rectorship is setting up an effective cabinet with strong members, but the conciliation process may take until the end

9.

Dr. Gábor Szabó (1954)

Master's Degree in Physics (JATE, Szeged)

Academic Degree: **member of the Academy** (2010)

Work place: **University of Szeged, Department of Optics and Quantum Electronics**

Post: **Lecturer, rector** *(1st July, 2010 – 30th June 2018)*

Scientific interests, main research areas: photoacoustic spectroscopy and its practical uses, ultra-fast laser spectroscopy, production of femtosecond pulses, nonlinear optics, medical uses of lasers. Head of the MTA-SZTE Photoacoustic Research Group.

Publications: in international journals: **270**; international conferences: **165**; Hungarian publications: **61**; referrals (without referring self): **2089**; patents: **14** in Hungary, **5** in the USA, **3** in Germany.

Their device to measure sulphur dioxide in natural gas is in operation on several sea drilling platforms 24 hours a day. Their equipment capable of measuring atmospheric water vapour may be of help in modelling climate.

He is chairman of the Hungarian Association for Innovation since 2007.

Dr. László Rovó (1965)

general practitioner (University of Szeged, Department of Medicine), **Oto-Rhino-Laryngologist, audiologist, phoniatrician**

Academic Degree: **PhD** (2004), **habilitation** (2009)

Work Place: **University of Szeged, Department of Oto-Rhino- Laryngology, Head-Neck Surgery**

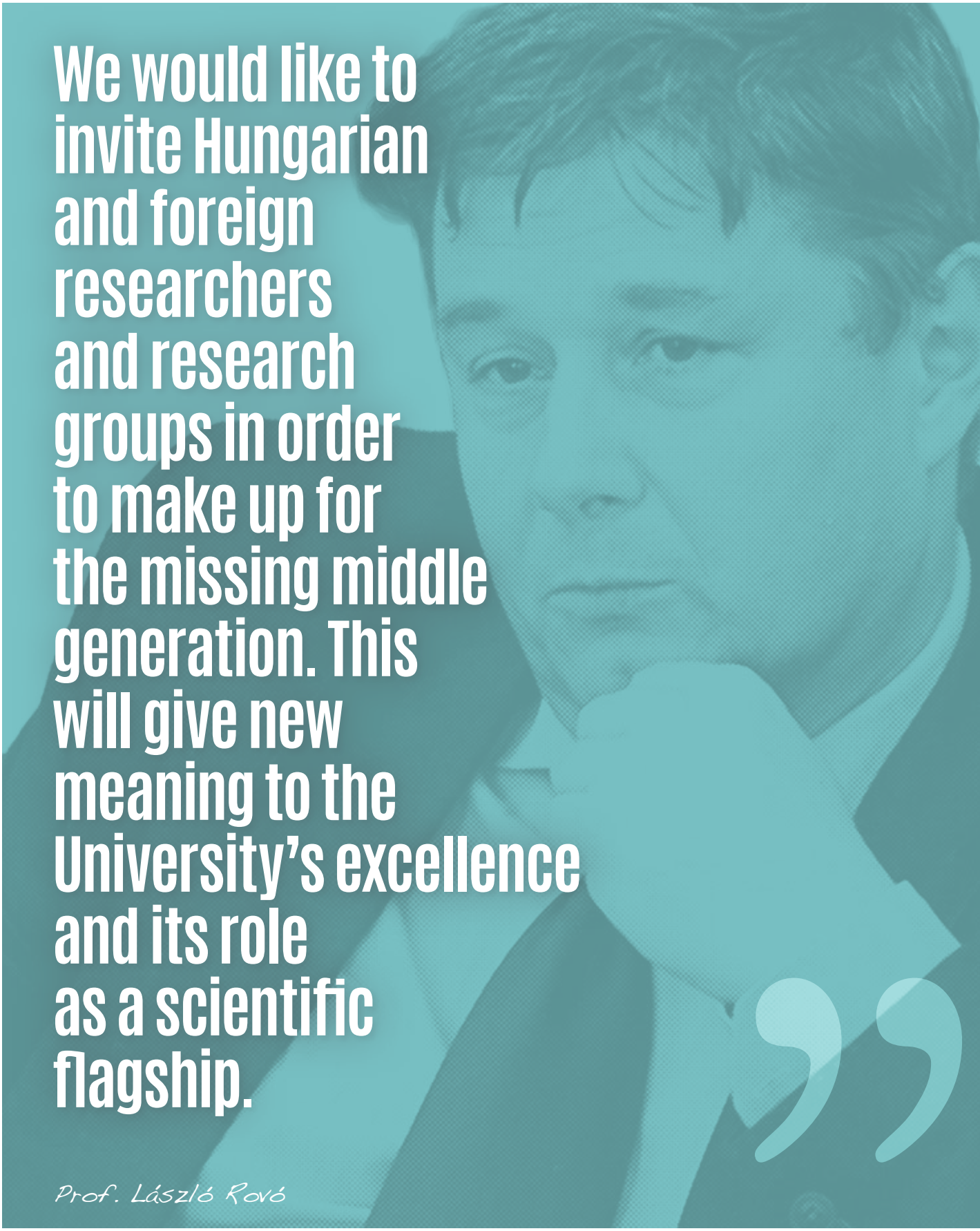
Post: **Lecturer** *(2012-)*, **clinic director** *(2012-)*, **rector** *(1st July, 2018-)*

Scientific interests, main research areas: Oto-Rhino- Laryngology, head & neck surgical oncology, surgery of Laryngeal constriction, cochlearis implantatio, clinical picture of Oto-Rhino- Laryngology and Neurology. Successful operations during his practice: more than 12 thousand.

Publications: Number of all scientific and higher education publications: **213**; new instruments described in scientific publications: **3**; new surgical procedures: **15**; independent referrals of his publications and creations: **234**; combined impact factor: **51.229**; patents: **2** Hungarian, **1** international.

Participation in research projects: participation in surgical procedures first introduced in Hungary: **3**.

He is among Haszon Magazin's TOP100 physicians (2016).



We would like to invite Hungarian and foreign researchers and research groups in order to make up for the missing middle generation. This will give new meaning to the University's excellence and its role as a scientific flagship.

Prof. László Rovó

of June. It is possible that I will ask someone to coordinate development tasks. We have started assessing the potential and structure of education, the teaching load and the competitiveness of faculties; I would like to investigate the research network to see which nodes are strong and which need to be strengthened."

"What do you think are the three most important challenges the SZTE had to and will have to deal with during your rectorship?"

Prof. Gábor Szabó: "The biggest challenge, the difficulties of management, appeared at least three times during my two rector cycles. At the launch of the Széll Kálmán Plan, it unexpectedly withdrew funds from us; we had to protect ourselves from redundancy, which would have disrupted the operation of the institution. The negative balance in health financing was a protracted problem. We tried to eliminate the internal reasons for this, but we had no control over the external issues. In the meantime, we had to prepare for the 'pleasant troubles' of the past two years: to execute our successful applications."

Prof. László Rovó: "The solutions to previous problems have put the University of Szeged at a competitive disadvantage. The most urgent task is the economic consolidation of our single greatest expenditure, the clinical centre, because without solving that issue, the university's economy remains unstable. Considering the research and development potential of the SZTE, with clinical developments, the development of the Science Park around the ELI-ALPS research centre and the modernization of the faculty of Humanities and Arts, we have a good chance of meeting the 21th century's challenges of university education, research and support of artistic activity."

2210

ACADEMIC AND RESEARCH STAFF

The inheritance of the new Rector of the SZTE accompanied by its scholars is to give the right answers to the question: How should the current resources be used in order to create a solid base for the possibility to support research even after 2020?

INVESTMENTS DETERMINING THE FUTURE OF THE UNIVERSITY

Erzsébet GAJZER
Anna BOBKÓ

The year 2017 was all about applications for grants, and in the next 3-4 years implementation will require special attention, dedication and capacity from the staff of the University of Szeged (SZTE). In addition to the launch of these grants, SZTE has won government funding. All of these fit the development plan of the university. We asked the Chancellor of SZTE, Dr. Judit Fendler to give us a summary.

"One of the elements of infrastructure and device development is the long-awaited renewal and expansion of the SZTE Faculty of Music, including a smaller concert hall with outstanding acoustics," says Dr. Judit Fendler. The Chancellor of the SZTE added: "The need for expansion and renovation at the Department of Oto-Rhino- Laryngology is evident for those who – through their child's or their own illness – have experienced the crowded and unworthy conditions, in which clinic workers perform their heroic tasks. Both developments primarily serve the needs of the city as well as the whole region." It is of utmost importance for health care that the SZTE will now be able to completely renew its diagnostic imaging equipment, which means that – beyond benefits for health care – opportunities for research projects and paid medical care will

13.

Széchenyi 2020 programes

(Status 15. May, 2018)

Objectives

Development in Health Sector:	***13.7 million EUR***
Development in Education:	***48.3 million EUR***
R&D&I:	***99.1 million EUR***
Sum of tenders won by the SZTE:	***161.2 million EUR***

30 EFOP HUMAN RESOURCES DEVELOPMENT OPERATIONAL PROGRAMME

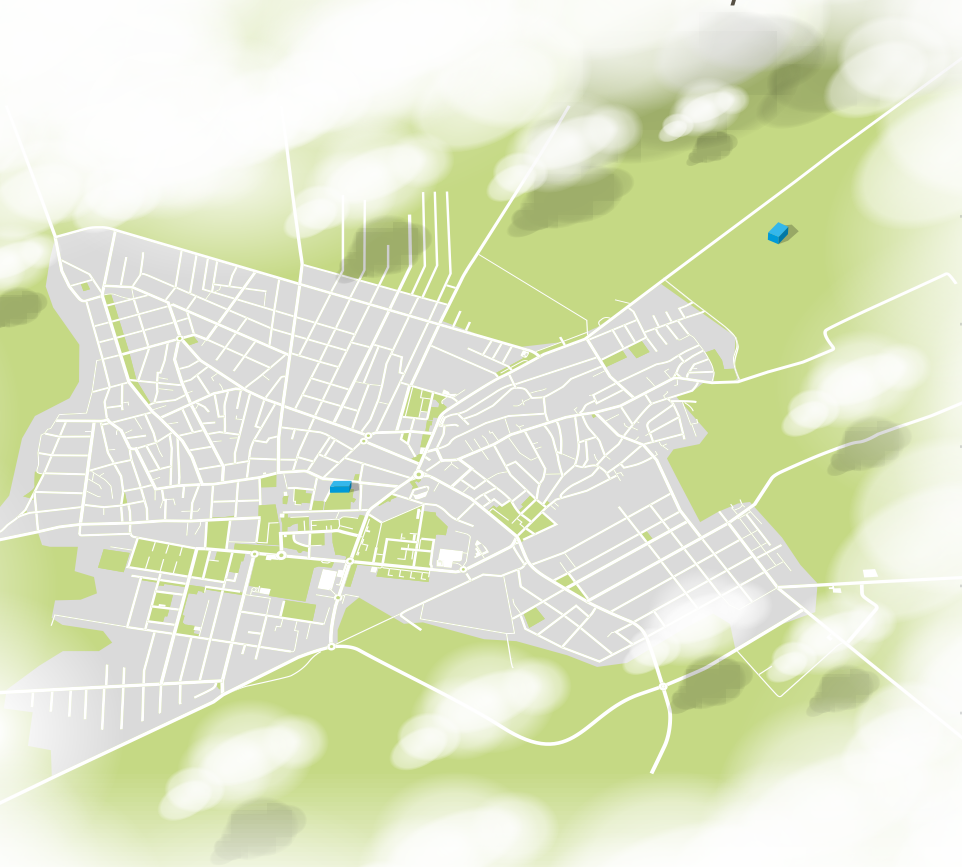
60 GINOP ECONOMIC DEVELOPMENT AND INNOVATION OPERATIONAL PROGRAMME

1 KEHOP OTHER RESEARCH OPERATIONAL PROGRAMME


Gap-filling investments can commence in 2018, which may determine the development and future of the university
Dr. Judit Fendler
Chancellor

SZTE Szeged *University: city in the town*

SZTE Hódmezővásárhely



AREA OF RAPID GROWTH

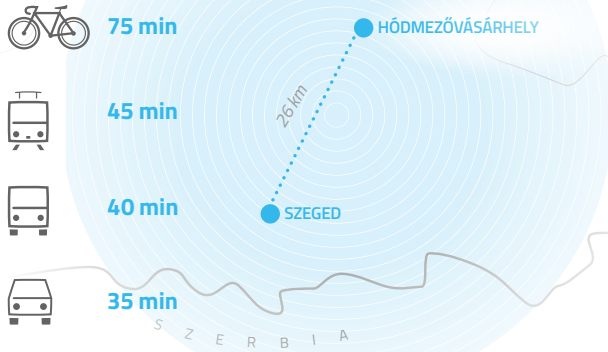
Szeged-Hódmezővásárhely

Szeged	Hódmezővásárhely
A.D. 1183	15th Century.
city: A.D. 1246	rank of 'country town': A.D. 1437
281 km²	483 km²
3. highest population	2. largest
166 000	46 000

also increase. Building the Head Centre next to the Brand New Clinic (VUK) – in addition to creating a prominent professional centre on a European level, where head-care professions, diagnostics and oncological treatments take place – enables the rationalization of clinical care, an improved efficiency of patient pathways and thus the improvement of the quality and patient-friendliness of medical care.

The development of the Science Park next to the ELI Laser Centre stands out among the scientific investments. "The first step of the investment is to make the area suitable for investors who are remarkable in research and development to move into the Park, and at the same time to implement the University's similar plans" says Dr. Judit Fendler. The government subsidy allows the area to be freed from ammunition, archaeologically explored and prepared of the investment. These investments prominent at both national and European levels, also serve the University's internationalization goals. The developments can increase the international visibility of the SZTE, and the number of foreign students and researchers may increase.

Szeged–Hódmezővásárhely



Tram–Train
(Szeged–Hódmezővásárhely)

25 min
(Between the two city centres)
(Expected Launch *2019*)

Rektor's Office | Faculty buildings | ELI ALPS | Developments | Parks

Realistic romanticism

Anna BOBKÓ

During their working hours they teach university students, seek out remedies for incurable diseases, think up innovative inventions or explore the secrets of the universe. What do they change into after taking off the white coat at the end of their shift? How do the professors and researchers of the University of Szeged spend their free time? In our "Scientific hobbies" section we have asked Zsolt Datki, a neurobiologist at the Psychiatric Clinic of the Medical Faculty of the University of Szeged.

Zsolt Datki has been in love with western movies since he was a child. The neurobiologist at the Psychiatric Clinic of the Medical Faculty of the University of Szeged revives the Wild West atmosphere in his spare time, being a member of the Shooting Club in Tótkomlós. In his professional life his task is to explore, understand and model the biochemical background of Alzheimer's disease.

It is battle and fighting that embodies honour...

– How long have you been pursuing your hobby?

– I've been drawn to the adventurous, romantic and yet dog-eat-dog world of the Wild West ever since I can remember. From the age of two my father took me to the cinema to see old, classic western films. Back then there was no window to the world in Transylvania other than the one movie on the screen every month. By now, the dream has become reality: I am a member of the Shooting Club in Tótkomlós, and my fellows and I revive the Wild West atmosphere at a festival every year.

– Why do you like it, what kind of reward does it add to your life?

– In my opinion – perhaps due to my székely (eastern Transylvanian ethnic Hungarian people) origins – it is battle and fighting, that embodies honour. Of course, I mean it in a good sense: I appreciate fellow humans and I never run away from challenges. To me, the history, symbols and mystic of the Wild West expresses exactly this.

–What is your most memorable experience related to your hobby?

– It was an indelible moment when my dad announced that my favourite western actor had not died in reality, and that the movie is just a game. It has remained a game for a lifetime.

– What is your research area?

– My research area is exploring, understanding and modelling the biochemical background of Alzheimer's disease. Every day I am surrounded by colleagues, cells, microscopes, the hustle and bustle of the lab, sometimes contemplation. All in all, I would call it a kind of romantic realism. At present, I am measuring gastrointestinal motility in neuropsychiatric disorders, with particular interest in anxiety symptoms. We look for causal relationships and/or parallels between mental illnesses and the electrical activity of the digestive system. We are convinced that somatic abnormalities can affect the emotional and mental mood of individuals, and the measurement of these parameters can become of diagnostic significance.

– Is there a relationship between your work and your hobby?

– There is no direct relationship between them, but it is better this way, as they are two separate worlds and I can wander between them to my liking. Unlike research, my hobby is realistic romanticism.

PERSEVERANCE AND WILL

Boglárka Kósa

Anita Márton has won the first Hungarian gold medal in the world indoor championships of athletics. The leading sportswoman, who graduated as a special education teacher at the University of Szeged (SZTE), won the female shot put with the best international result this year and with a national record at the World Indoor Championships in Birmingham. We have asked the world champion about her university years and the key to success.

The graduate from the University of Szeged has been the member of the sporting elite for years: she is the winner of several European indoor championships, as well as being silver medallist of the world championship in Portland in 2016. In 2018 she has become the champion of female shot put at the World Indoor Championships Birmingham, with a national record of 19.62 m.

• You were ill at the time of the Birmingham World Championships, where you won the first gold medal for Hungary in athletics. How did you find the strength to go through with it even in that state?

– Luckily it was not so bad. During the week of the world championships I caught a slight cold. During the contest I felt quite alright, it was after that it got worse, as I had pushed myself to the limits, I had put all my energy into the contest. I knew that I had been working for this since grounding, so a little cold could not stop me.

• You are said to be an excellent type of competitor because you usually throw your best in sharp situations, especially in the final round.

– It had not worked like that for me in the past but a sport psychologist helped me to learn how I could give my best during competitions, what I should do if I am nervous. Even though we sort of expect at least one of the three shots to go grand, it is not a conscious decision to throw the third shot furthest. Perhaps this is subconscious, because it is at this point that I feel I have no more chances.

• After the world championship you left for the next competition in Portugal nearly instantly. Is there no stop? Have you got time for some rest?

– In this case, I considered travelling as resting, and I also had a free weekend in Birmingham after the world championship. But after Portugal there is indeed no stop, we start preparing for the summer season, we go on a training camp.

• What does your average day look like?

– Breakfast, training, running errands, lunch, rest, training, dinner, sleep. I run my own household, I have two dogs, so I have things to do between trainings too. I'm usually not bored, I walk around a lot."

• What do you think the key to success is?

– Perseverance and will. Perhaps these two things are the most important.

• You graduated from the University of Szeged as a Special Education Teacher. How do you look back on those years?

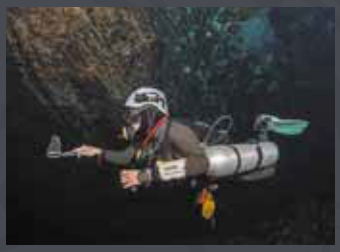
– I look back on those years with great joy. I definitely want to work with children in the future, either as a trainer or a special education teacher – I'm not yet sure which. Time and opportunities will decide this. But it is certain that I'll be able to make good use of the things I learned at university.

NEW SPECIES DISCOVERED BY SZTE ALUMNA

Boglárka Kósa

Dorottya Angyal, zoologist researches invertebrates living in underwater caves in Yucatán State, Mexico. The alumna of the University of Szeged (SZTE) and her research group have recently found a new amphipod species.

– During an expedition in 2016 I noticed a species of amphipod that I had neither seen, nor read about before. Later we found further specimens under depths of 20 m, in the dark cave zone. We examined the collected specimens with the help of a light microscope and a scanning electron microscope. Based on their DNA and in comparison with other amphipod families in Yucatán, we have found information about the species' genealogical connections. In the animal's name the segment 'troglomorpha' refers to the high level of adaption to hypogean environment: this 10 mm-long, fragile, blind, colourless animal has extremely elongated antennae and gressorial legs, and there are numerous sensory setae and papillae on their limbs, which enable it to detect mechanical and chemical stimuli in the lightless environment," says Dorottya Angyal about the discovery of the previously unknown amphipod species, Mayaweckelia troglomorpha.



SUNNY RESULTS

The perovskite family of materials holds out a hope for "dirt cheap" electricity. What does this mean? As a result of their cooperation with American partners, this question is answered by Csaba Janáky, assistant professor of the SZTE, and his student and doctoral candidate, Gergely Samu, in the 4 articles published in the technical journal of the American Chemical Society within 7 months' time.

CSABA JANÁKY

1229
CITATIONS

18h index

Ilona ÚJSZÁSZI
Anna BOBKÓ

That a thousand times thinner layer of perovskite is sufficient

The Academy-SZTE Momentum Photoelectrochemical Research Team contributes significantly to the process of solar cell research. Using methods in their profile, they have studied a previously ignored set of materials, the perovskites. The crystal compositions discovered by the Russian Lev Perovsky have been known since the 1940's, but researchers only discovered their optical activity around 2010.

– In ordinary solar cells the active material, silicon is a few hundred micrometres thick but in the case of perovskite this is only a few hundred nanometres. This means that a thousand times thinner layer of perovskite is sufficient to absorb the same amount of light as the materials previously used in silicon solar cells- the head of the research team explains the practical advantage of this newly discovered quality. Csaba Janáky, associate professor of the Department of Physical Chemistry and Materials Science at the Faculty of Natural Sciences and Informatics of the University of Szeged and his team are working on finding the answer to the question: "Why?".

– The common feature of perovskite compounds is that they consist of three elements and their crystal structure has the formula: "ABX3". Researchers in Szeged have studied four types of materials, including caesium-lead-bromide compounds. The photo-physical and electrochemical properties of these perovskites, as well as the various interfacing phenomena have been examined.

– One of our American partners, a University of Notre Dame researcher, Prashant V. Kamat, who visited Szeged in the spring of 2017, has been studying perovskite compounds since 2013-2014. We started a joint project with them and my doctoral candidate, Gergely Samu, who has a considerable knowledge of electrochemistry and photo-electrochemistry, travelled to America in curious pursuit of the practical knowledge gathered there.

After gaining exclusive insight into American research practices about perovskites, Gergely Samu worked on his experiments for 12-16

▸▸

hours a day, then master and student evaluated his results at home and decided on the best step to continue. In August 2017 Csaba Janáky visited the University of Notre Dame too, where he held an institute seminar. The research topic expanded as a result of inspirational discussions both at home and abroad. The interpretation of the large set of data obtained from persistent experimentation resulted in 4 articles within 7 months.

– There is great debate around the perovskites in the scientific community. These materials are very promising, they have very good absorbent properties and electrical qualities, but their stability is questionable. In many cases, we do not even understand the cause. This is why our research, which is trying to highlight elemental processes, is so important. We study what happens when the perovskites come into contact with light or water or oxygen. If we understand these, we will be able to control these processes," - Csaba Janáky explains the importance of their article published in the 2017 July issue of ACS Energy Letters.

– Methodical articles are rarely published in professional journals, although they would serve a broad community. It is for this reason, that their article published in the new journal "Chemistry of Materials", which describes the electrochemistry and spectro-electrochemistry of the perovskite layers in material science, is so special. The Journal of the American Chemical Society, also known as JACS, adopted their essay about the regulation of charging dynamics in perovskite films with electrochemical methods on the 13th November, 2017. In this JACS essay, they investigated how light affects electrons moving from the electron-hole pairs onto the electron conducting layer. In the fourth publication they discussed the other half-cycle of the migration of charge carriers and answered the question of how positive-charged holes migrate to the hole-conducting layer. The author team of these 4 articles about perovskites is the same: in addition to the two Szeged researchers, it includes an American professor, who is among the hundred most quoted chemists in the world, and his Ph.D. student. "The device suitable for ultrasonic examination of these easily decomposable materials can be found in Prashant V. Kamat's laboratory, but we do not yet have this laser technique," Csaba Janáky says. "However, in the laboratory of the ELI-ALPS research institute, new opportunities open up that enable Gergely Samu to continue his work previously started in the MTA-SZTE research team, also as a staff member of the "Szeged Super Laser Centre" in January 2018, focusing on the perovskites.

PILOT PROJECT

Research scientist Antal Berényi and chemist Csaba Janáky, two successful young scientists of the University of Szeged examine the possibilities for ultra-fast electrochemical detection of neuronal cell activity - moving on the boundary of nerve and material sciences. The research is part of the Human Resources Development Operational Programme-3.6.1 application.

CHAOS KEPT AT BAY IS ALSO ILL PEOPLE'S HOPE

_If dise_ase is chaos, the mathematical methods of resolving irregular processes within the body support the healing process. Two mathematicians of the Bolyai Institute, University of Szeged (SZTE) are able to tame chaos.

Gergely Röst works with Professor Ruth Baker at the Mathematical Institute, University of Oxford in 2018

– Some behaviours determined by simple rules, which nevertheless appear to be complex, irregular and random may occur in many areas, such as in the atmosphere, in the flow of liquids, but even in the movements of certain heavenly bodies as well as in our bodies: a behaviour that we call chaotic dynamics. A more thorough understanding of chaos has been the subject of intensive mathematical research since the second half of the last century, started his explanation Gergely Röst, mathematician.

Gergely Röst, an associate professor at the Bolyai Institute, Faculty of Science and Informatics, University of Szeged, who currently works at Oxford University, researches interdisciplinary life and health sciences based on mathematical methods. He published an article with Gábor Kiss, his colleague from Szeged, who returned from Bristol University in 2014, in an interdisciplinary journal Chaos in the beginning of 2018, which answers the question of how chaos can be kept at bay.

– The Mackey-Glass equation presented in 1977 is used for the mathematical description of physiological regulatory processes, which also reveals the chaotic behaviour behind various bodily abnormalities. Various variants of the equation have successfully been used for different purposes, among others to better understand and treat various types of abnormalities of the hematopoietic system, the cardiovascular system and the nervous system. This is one of the key elements of more complex models in several cases," explains Gergely Röst.

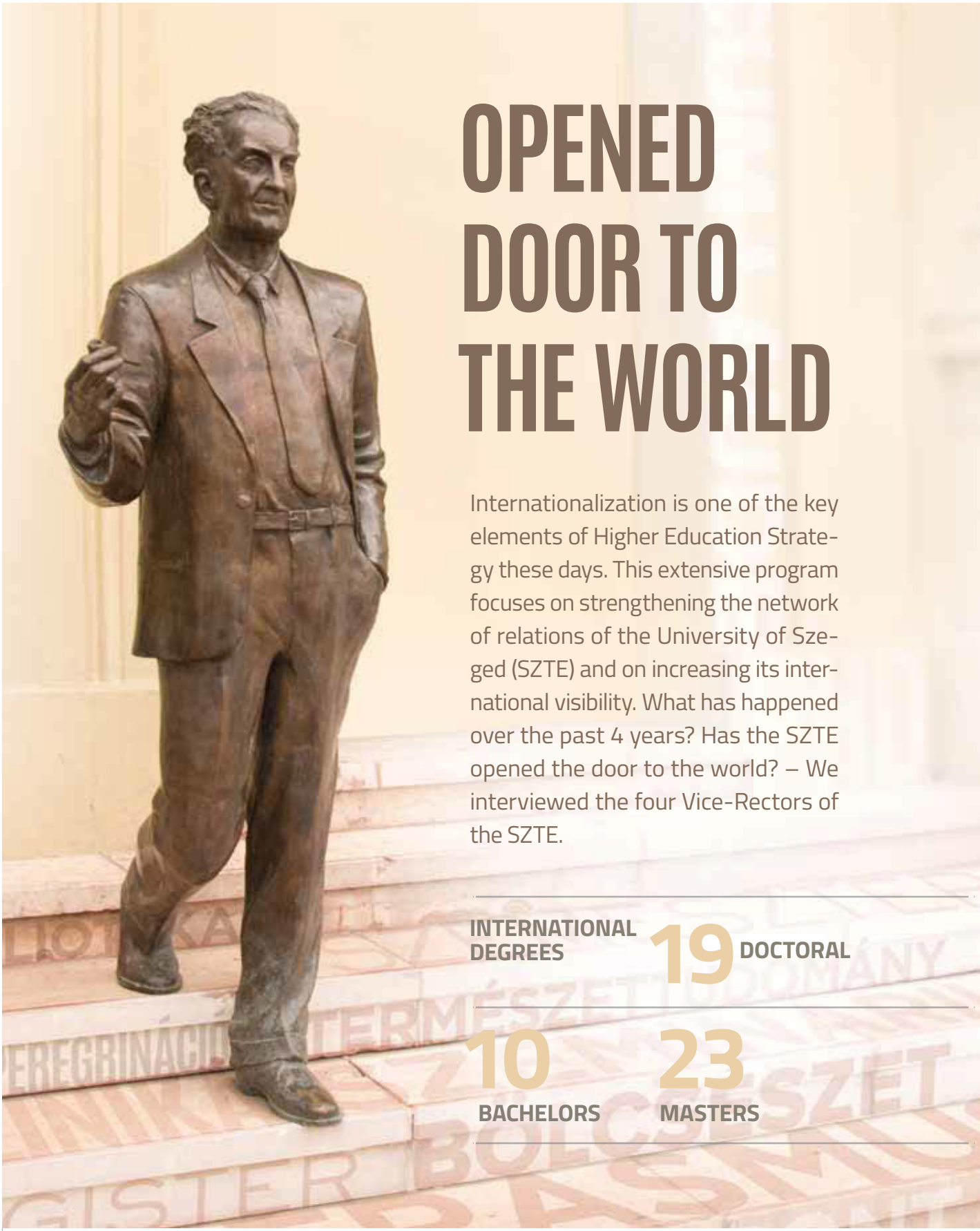
– In many cases, chaotic behaviour is undesirable, so it is important to understand ways to tame the chaos. The gist of the Röst-Kiss idea is to force all solutions into a special domain of the phase space where chaotic behaviour cannot occur. This way, they have succeeded in transforming chaotic behaviour into regular periodic motion or equilibrium with several different mechanisms.

– If the parameters that cause irregularities are changed in the right way, the whole system can be made regular. This can also help us understand and treat abnormal changes in the body," describes Gábor Kiss the practical importance of the mathematical method. ■

AWARDED STUDY TOUR TO CAMBRIDGE

Éva Antal

The SZTE (University of Szeged) Szent-Györgyi Student Competition, a prestigious student contest for secondary school students in the subjects of Chemistry, Biology, Physics as well as the life and work of Albert Szent-Györgyi salutes the University's Nobel-prize winning former Rector, and at the same time puts great emphasis on talent management. The team from the Baár Madas Grammar School of Budapest won the competition out of the 59 teams in December 2017. So it was them who could travel to Szeged's sister city with an accompanying teacher. The three students – Benjámin Uri, Mihály Makovsky, Imre Boldizsár – and Dávid Vetlényi, the teacher who prepared the winning team could spend four days in Cambridge where Albert Szent-Györgyi had also lived and worked as a young researcher. They visited the University of Cambridge, they were greeted by the Mayor of the city, they saw the original Vitamin C in Hopkins Building, looked around in the library of Trinity College, walked through the Mathematical Bridge – to mention only a few activities from the long list. This special trip was the grand prize of the 6th SZTE Szent-Györgyi Student Competition, which was provided by the Municipality of Szeged City, the Cambridge-Szeged Society and the OTP Travel Ltd.



OPENED DOOR TO THE WORLD

Internationalization is one of the key elements of Higher Education Strategy these days. This extensive program focuses on strengthening the network of relations of the University of Szeged (SZTE) and on increasing its international visibility. What has happened over the past 4 years? Has the SZTE opened the door to the world? – We interviewed the four Vice-Rectors of the SZTE.

INTERNATIONAL DEGREES

19 **DOCTORAL**

10 **BACHELORS**

23 **MASTERS**

PROF. DR. LAJOS KEMÉNY

Vice-Rector for Science

"It is the ELI-ALPS (Attosecond Light Pulse Source) research institute and the surrounding Science Park that make Szeged even more visible on the international map. The summer courses on laser applications in the medical and physiological fields offered by the SZTE from 2014 on, as well as the international conferences and workshops organized by its various institutions also promote the ELI-ALPS, which offers ultrashort pulsating laser radiation. The last one of these was a practice-oriented course held at the Department of Dermatology and Allergology at the SZTE, which attracted researchers from Canada through Switzerland to Italy. Researchers come to Szeged from all over the world through the wide network of relations of the laser physicists and colleagues working in the fields of material and medical sciences and their border areas. Molecular medicine has been put on the map of Europe, as the headquarters of the Hungarian Centre of Excellence for Molecular Medicine (HCEMM) is in Szeged. This opens up new possibilities for researchers specializing primarily in medical science, biology and pharmaceutics to form new research teams, and we hope that we can also tempt researchers working abroad to return to Hungary. There is intense international competition in science and the SZTE is taking part in this competition. The SZTE is one of the universities whose researchers were able to win scholarships and grants provided by the European Research Council or the Momentum Program of the Hungarian Academy of Sciences. The New National Excellence Program motivates those who are planning to return home from academic institutions abroad. With this support, cutting-edge research can be carried out in several subjects at the SZTE, which further enhances its reputation. We would greatly appreciate it, if at least one new research team could form in all disciplines with international leadership. All basic research has the potential for innovation. To invent, to apply something new – this is exploratory research, the first step of innovation. The main aim for researchers doing basic research is to publish, while they consider whether their findings include an element that can be used commercially, whether it is worth moving towards obtaining a patent or know-how. The SZTE helps its researchers in patenting: we are proud of a patent application filed in international cooperation."

PROF. DR. KATALIN NAGY

Vice-Rector for International Affairs

"In order to increase the international visibility of the University of Szeged, we invited the ambassadors of the countries participating in different scholarship programs to our university with an aim to develop cooperative relationships in the fields of education and scientific research. As President of the Committee on International Affairs of the Hungarian Rectors' Conference I can also reveal that there is such a wide range of educational and research work done at the University of Szeged that it aroused special interest of the foreign delegations. On these occasions a number of written agreements were reached in the field of medicine and natural sciences, and from agriculture and music to humanities. These events were completed by the Ambassadors' lectures, so both students and trainers from the University of Szeged received first-hand information about a particular country. The increasing number of foreign students contributes to the study and socialization of Hungarian students in a multicultural community, as it enables them to practice foreign languages as well as to learn about the culture of other countries. It includes some outstanding events like the opening of the American Corner in Szeged and the organization of the traditional International Cultural Evening (ICE) for international students studying in Szeged, which was attended by the ambassadors of several countries.

Not only as a Vice-Rector, but also as the President of the Hungarian Dental Association I promote the internationalization of the university: I always propagate the University of Szeged at foreign conferences.

110 PHD PROGRAMMES

5 ERC RESEARCH TEAMS (STG, COG, ADG)

PROF. DR. KRISZTINA KARSAI

Vice-Rector for Education

"The student population of the University of Szeged shows high diversity, however, in legal and professional respects all students are equal, and therefore they are provided the same level of education and student services. In terms of internationalisation, one of our key priorities is increasing the choice of our foreign language study programmes. Four years ago we offered only a few of these programmes but by now all of our doctoral schools along with 32 other foreign language programmes are accredited. Currently, we offer complete study programmes in English, French and German and certain semesters in language training programmes are also available in the given language. Accordingly, the translation of the official documents necessary for students' lives, e.g. the Academic and Examination Regulations and the Student Hostels Regulations are also being translated. Aiming at more effective administration, we have organized language training courses both for the administrative staff and, where needed, also for lecturers. Classes with mixed nationality students require new didactic skills thus developing teachers' competences is also necessary. An important goal of the university is to join one of the international MOOC service platforms. We are prepared to launch online courses both in Hungarian and English, which will make us possible to appear on the international market. Distance learning courses, the early form of online courses, have been going on at the Department of Economics with success for many years. This programme will probably been launched in foreign languages in the future. The number of Hungarian distance learning programmes could also be increased. For example, there seems to be a great potential in informatics, certain engineering and tertiary vocational training. Student services, cultural and sports facilities are all available in foreign languages at the University. One of the most important of these is the English language mental health counselling provided by the Student Counselling Centre, which, among other things, helps students with learning difficulties. Hungarian or other languages can be learnt as well, thanks to the Foreign Language Centre. Talent management, scholarships and internal professional competitions are designed so that Hungarian students as well as foreign ones have the chance to apply and win support.

PROF. DR. TAMÁS MARTINEK

Vice-Rector for Public Relations

"The professional aspects of education and research can sometimes be meaningful on a national scale, but the performance and excellence of the SZTE are primarily measured globally. So our image inevitably develops in an international space where a few thousand universities struggle for visibility and recognition. Orientation is supported by university rankings, which take several parameters on performance and quality into consideration, but out of these, scientific performance and innovation are the most crucial. Our goal was to understand how rankings are compiled in order to map the weaknesses and potential strengths of the SZTE. I consider it an achievement that we have been able to measure the state of scientific accomplishment and excellence of the SZTE compared with our competitors. Based on this, among other things, a clear strategy has been established, focusing on improving the quality and quantity of our scientific capacity consciously, in a research team-centred approach.

During the previous rector's administration I participated in the management of several programs that tried hard to achieve these goals: the foundation and launch of Centres for Molecular Medicine Excellence and Interdisciplinary Excellence. Both projects are working on integrating Szeged into international research, attracting successful foreign research teams, talented researchers, and thus, improving excellence."

16 RESEARCH TEAMS SUPPORTED BY THE HUNGARIAN ACADEMY OF SCIENCE

52 INTERNATIONAL DEGREE PROGRAMMES

7 HUNGARIAN ACADEMY OF SCIENCE "LENDÜLET" RESEARCH TEAMS

HOW MUCH DOES UNIVERSITY LIFE COST? – **PRICES IN SZEGED**

TRANSPORT

Public transport monthly pass for students
13.00 Euro

Second-hand bicycle
65.00 Euro

ACCOMMODATION | LETTINGS

1 bedroom, large rented apartment
162.00 Euro/month *(bills not included)*

Rented room
97.00 Euro/month *(bills not included)*

Student hostel
33.00 Euro/month *(bills not included)*

RECREATION

concert ticket	Szeged Zoo ticket	spa ticket
8.00 Euro	*5.80 Euro*	*5.20 Euro*

SERVICES:

Hairdresser

male haircut	female haircut
8.00 Euro	*12.00 Euro*

FOOD & DRINK

espresso
0.80 Euro

1 kg bread
0.60 Euro

latte
1.30 Euro

1 l milk (2.8%)
0.70 Euro

1 pint of beer
1.20 Euro

1,5 l mineral water (sparkling)
0.20 Euro

0,75 dl wine
2.60 Euro

hamburger
1.00 Euro

hot dog
1.30 Euro

pizza *3.10 Euro*

lunch menu
2.50–3.50 Euro

The University Library Develops our Digital Literacy

Erzsébet GAJZER
Anna BOBKÓ

2297
VISITORS/DAY

10
REPOSITORIES

86
SCIENTIFIC PAPERS PUBLISHED WITH THE HELP OF APC

2,9
MILLION DIGITALIZED DOCUMENTS PAGES

In response to the challenges of our modern era, the university library supports scientific work with an expanded toolkit, such as online content services, archiving of e-learning materials, open access publishing and repository services, while it retains its core function: information gathering and service.

The university library plays a dual role these days: it continues to be an important learning space and meeting point, but with the technological advances of the 21st century and the information revolution, libraries have also become part of the network. As a result of networking, the library area was extended to the virtual space.

– In the age of the Internet, information is easily accessible for everyone, but finding credible information in the vast mass of data is not easy. There is still a demand for books and reading but user habits have changed. The members of the Google generation are seeking targeted information, and they want to get instant, adequate answers to their short questions. It does not matter whether the answer is in a journal, a book or in a database at the other end of the world. This is a huge responsibility for the library, because authentic sources of information have to be found and a way to provide it. We need to add the kind of value to the content that helps users find relevant information and enables them to use it accurately, too. The university library primarily serves education and research and the resources and toolbox must be adapted to this. We do not store data in photocopies or notes these days but in various online documents or electronic records, – says Katalin Keveházi, director of Kunó Klebelsberg Library, University of Szeged (SZTE).

– A constant expansion takes place in the life of the library. New demands are being seen to, such as providing online content, collecting research publications together with their data and referrals, supporting the publishing

process and the dissemination of scientific results, transforming user training in accordance with the above tasks and for the sake of enhancing digital competencies. All the content created at the university is stored and provided by the library in repositories. These full-text databases contain, for example, doctoral dissertations, theses, publications by university authors, documents on the history of the university, scientific books, journals and curricula produced in the SZTE. The need for open access to scientific achievements is growing worldwide. The essence of this is that the user is not charged a subscription fee but the publishing costs are paid by the author or the research institute, the university, etc. instead. This is called Article Processing Charge, also known as APC. Within the scholarship system of the SZTE, a distinct amount is devoted to help researchers publish open access articles, and the library supports researchers in publication and in applications with the services of the „Author Toolkit". This type of support of publication is the more and more popular. In accordance with open access endeavours, the library has recently created a platform that provides an opportunity for academic journals published at the university. This is the Open Journal System (OJS), which covers the entire editorial work, and the journal itself can be published in this framework. We are in contact with more than 10 publishers, so that university journals will be included in this system," added the Head of the Library.

228 047
E-BOOKS

86 195
ONLINE JOURNALS

38
DATABASES

AMERICAN CORNER OPENS IN SZEGED

Éva Antal

The youngest member of the American Spaces network has come to life with the cooperation of the Embassy of the United States, the University of Szeged and the Municipality of Szeged City in Szent-Györgyi Albert Agóra.

The American Corner, the newest member of the American Spaces network, present in 169 countries of the world from Seoul to Subotica, has now opened in Szeged as well. After Budapest, Debrecen, Veszprém and Pécs, the residents of Szeged can also experience that the American Corner organizes presentations and events where participants can learn about American traditions and find information on higher education opportunities in America. Special emphasis is put on programmes promoting science and technology as well as courses where participants can improve their English and learn about American culture.

FROM FESTIVALS TO FESTIVALS IN THE SPIRIT OF CULTURE

The core activity of a higher education institution is education, scientific research and artistic work. The SZTE Cultural Office was set up to run university art groups and to encourage creative activities of the university citizens.

The task of the Cultural Office is to organize cultural life at the University of Szeged (SZTE), to coordinate the work of art groups, to cultivate cultural relations within the institution and between the SZTE and the city as well as organizing events. The activity of the office helps to develop the creative capacities of the university citizens.

The Autumn Cultural Festival and the University Spring are both special events of the SZTE.

In addition, the Cultural Office announces competitions and workshops for students and employees of the university (in the fields of music, photography, poetry, diary, and drama writing and others) in every semester to urge them to fulfil their creativity. These competitions are important because they make it possible for students to demonstrate their talents in different fields, and they can display skills that would not be revealed otherwise during their studies.

UNIVERSITAS SYMPHONIC ORCHESTRA 67 *members*

UNIVERSITY ORCHESTRA OF SZEGED 64 *members*

GROWTH RINGS OF THE SZEGED UNIVERSITAS

A time spiral links the cities of Szeged (Hungary), Cluj (Rumania) and Vilnius (Lithuania): the roots of institutions of higher education in these three cities go back to the 16th century. Humanist ruler István Báthory issued the memorandum of association for the Universitas of Vilnius in 1579 and the Universitas of Cluj in 1581. The Universitas of Cluj – forced to revive from time to time by the storms of history – was compelled to relocate to Szeged due to the Treaty of Trianon after the closing of the First World War. The town on the Great Hungarian Plain, where ambitions for founding a university had been growing since the 1700s, admitted the exiled university from Transylvania in 1921.

"We are two shoots from one root," said Albert Szent-Györgyi, rector of the University of Szeged, in 1940. He added, "no legal formulation can express the intimate relationship that binds us to the Franz Joseph University in Cluj." In his inaugural address, the rector stated that "the university has three main tasks: its most ancient vocation is to collect, spread, and increase human knowledge. Its second task is to educate a small number of future scientists, to whom we will pass this calling. The third and newest, though no less glorious, undertaking of the university is to educate for this country citizens equipped with the weapons of the spirit. Our university also has a special fourth assignment: to become the cultural centre of the Great Hungarian Plain." With the globalization of higher education, this mission takes on new meaning.

The Szeged Universitas shared its birth with the 21st century, uniting the Szeged teacher-training program that traces its roots back to 1840, the colleges of Hódmezővásárhely and Szeged which had been faculties of other universities, and the medical and science universities of Szeged. After its integration, it became the best-rated research university in the country. The twelve-faculty University of Szeged is competitive in the sphere of international higher education.

The Báthory University is reorganised by Queen of Hungary Maria Theresa.

István Báthory *(1533–1586)* – prince of Transylvania publishes the charter for the University of Cluj

1581

1774

Romanian authorities, having occupied Transylvania establish a Romanian university in its place.

1872

Construction works begin on the university in Szeged.

Education starts at the second university of Hungary, in Cluj.

1919

1921

Professor of the University of Szeged Albert Szent-Györgyi receives the Nobel Prize in Stockholm.

1926

The Franz Joseph University, temporarily relocated to Szeged, starts its first term by the river Tisza

1930

The students of the University of Szeged set up the first party-independent, non-political labour organization, the Association of Hungarian University and College Students (AHUCS)

Kuno Klebelsberg, Minister of Culture, dedicates the university buildings at Dóm Square

1937

1940

1956

SZTE

The higher education institutions in Hódmezővásárhely and Szeged fuse, under the name 'University of Szeged'

The University of Szeged splits into two: the Franz Joseph University returns to its original seat in Cluj. The inaugural speech of the newly-formed Horthy Miklós University of Szeged

1996

The institutions of the Association of the University of Szeged are: József Attila University, Szent-Györgyi Albert Medical University, Juhász Gyula Teacher Training College, Liszt Ferenc College of Music, Horticultural and Food Industry Engineering University's Faculty of Food Industry Engineering College (Szeged), Agricultural Science University of Debrecen's faculty of Agricultural College (Hódmezővásárhely), and, as joined members, the college of theology and MTA's Szeged Biological Research Centre.

2000

The Laser Research Centre of Szeged is opened. A Science Park is set up around the ELI-ALPS Research Centre, the largest scientific investment in the modern history of Hungary.

2004

The Study and Information Centre is opened, which houses the university library. (TIK)

2017

2021

Jubilees of the Szeged Universitas: the 440th anniversary of the founding of the University of Cluj, the 100th anniversary of its moving to the city by the river Tisza.