Interview: Jiří Drahoš – President, The Czech Academy of Sciences

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The president of the Czech Academy of Sciences highlights the responsibility of leading scientists to consider the real life application of their academic results in addition to promoting the Czech sciences in world leading publications.

Could you please briefly elaborate the history and background of the Czech Academy of Sciences?

The history of the Czech Academy of Sciences indeed dates back into the end of the 19th century. On 23rd January 1890 the Emperor Franz Joseph approved the foundation of the Czech Academy for Sciences, Literature and Arts, and put the new institution under his auspices. After the foundation of the independent Czechoslovak Republic in 1918, other scientific institutions were established, such as the Masaryk Academy of Labour and autonomous state institutes such as the Slavonic, Oriental and Archaeological Institutes. Robust international relationships of Czech research institutions culminated in their affiliation with the International Union of Academies and the International Research Council. After the totalitarian regime came to power in Czechoslovakia in 1948, all hitherto main scientific non-university institutions and learned societies were dissolved and instead the Czechoslovak Academy of Sciences was founded (1953-1992), comprising both a complex of research institutes and a learned society. As such, it existed until 1992 when we split with the Slovaks – they founded their own academy, nonetheless, we maintain very good

connections.

What are some of the main distinguishing aspects of the academy in comparison with the other research institutions in the Czech Republic?

One of the main advantages of the academy is that our scientists are longstanding associates within the academy which allows them to engage in significant long-term research carried out in a very systematic way. We're the dominant research institution in the Czech Republic and—considering impact and top platforms of journal publications in life sciences, like Nature Index —produce as much academic output as all other research institutions and universities in this country combined. We have three different divisions consisting of life sciences, technical sciences, and humanities and social sciences under which all of our institutes fall. Currently we employ about 8500 people including over 2000 PhD students; the latter are doing their research in our institutes whilst being matriculated in the universities we're cooperating with.

Why do you think it's so important with work young people and students?

Without young people interested in sciences we would cease to exist. As university, academy and society it is of utmost significant to have top PhD and post doctorates for our studies. To enhance our reach within these top academics, we cooperate with many universities, having over 50 joint laboratories and many joint research projects where the different entities participate with human and financial resources. Obviously we are also competitors on some levels, in the application for EU funding for instance, nonetheless, the cooperation's are excellent and published results are typically of highest standard. Together with some of our partners, we established scientific research infrastructures, strategically located just outside of Prague in order to tap into EU funding whilst having geographic proximity to the city itself. These big facilities, like Extreme Light Infrastructure (ELI), bring together many international teams and we have to advertise them in order to attract even more young bright minds!

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The academy is a non-university public research institution that boasts a high calibre of interdisciplinary research. How do you stimulate the research quality?

One of the most important tasks of the leadership of the CAS and its institutes is a permanent emphasis on increasing the quality of the scientific and professional activities. To meet this task, the academy organises regular evaluations of its institutes since the foundation of the CAS in 1993. The basic conception adopted for the last international evaluation was based on the following

principles: informed peer review evaluation of individual teams, evaluation by individual fields, evaluation in two subsequent phases, and transparency of evaluations. In the first phase, the foreign experts assessed almost 6,000 outputs, of which about 4,500 were articles in impacted journals. This phase was similar to British methodology. Of the evaluated outputs, 16 percent were assigned the level of “world leading” and 42 percent were assigned the level of “internationally excellent”, which is a reasonably good result. In phase II, the commissions in 13 fields evaluated individual teams. The results of this phase, which included on-site visits of the commissions in the institutes, were the final reports, in which the commissions in a verbal way evaluated the teams with respect to several different criteria. The evaluation showed that although there are still things to improve, the CAS is the leading scientific institution in the Czech Republic.

What are the key milestones of the Academy over its long history?

I would like to highlight that for the Czech Academy of Sciences I can’t speak of milestones, as the milestones lie within the individual achievements of our over 50 different institutes which can’t be easily compared with one another. For example, in the field of humanities, some institutes can’t be fully compared on an international level, like the Institute of Czech Literature. In other disciplines, however, we try to make the direct comparison with other internationally renowned institutions. Each institute is completely autonomous and responsible for its scientific development as well as the strategy they use to be among the best in the world. What’s important for me is that the value and ambition to be among the best should always be supported. Obviously you will have teams with excellent scientists and teams with good scientists but the effort should always be to achieve world class recognition!

Czech genetic expert, Mr. Jan Svoboda, recently entered the prestigious US National Academy of Sciences. Do you believe this will set a precedent of greater visibility for Czech scientists on the international stage?

I am sure it will enhance the recognition of Czech sciences. However, I would like to highlight in this specific example, that professor Svoboda belongs to the category of scientist who were very close to the Nobel Prize. I am convinced that the only reason he doesn’t have it is because he worked in communist Czechoslovakia! If he had been born in the US, UK or West Germany he would certainly have a chance to receive the Nobel Prize.

What are some of the incentives for putting Czech sciences on the map?

Frankly speaking, the best way is to have top researchers who produce top research; and we’re doing exactly that. Even among our younger academics at the beginning of their career, I am proud

to say that these are often already associated among the group of world leading scientists! We support these top people financially and with our network in order to find the right scientific partnerships for the benefit of their scientific endeavour. In a nutshell: the best way to advertise our academy is to support the right scientists!

Could you elaborate some of the programs of your Strategy AV21 you run in the academy within the strategic framework of enhancing academic output and visibility of Czech research?

The motto of the Strategy, “Top research in the public interest”, suggest its direction towards research reflecting topical needs of society. One of the fifteen programs formulated so far within the Strategy is called ‘Foods for the future’. Everyone knows that securing enough food for the growing human population is one of the biggest challenges for the near future. A majority of food originates from plants and plants are also used to feed farm animals. The topics of this research programme are for example plant genomics and biotechnology for precise breeding, molecular technologies for breeding farm animals, or health safety of new and alternative raw food materials. Another example of an interdisciplinary research programme is “Wellbeing in health and disease” which aims at the research on the most important needs of contemporary healthcare. It covers a variety of topics, from disorder of the nervous system during development and aging, towards ethical, legal and social impacts of diseases. We were successful in convincing our scientists that, when engaging in the Strategy, to think about how the results will be applicable in society!

Could this lead the way to a more integrated partnership with large pharmaceutical companies for clinical trials?

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It definitely can! As a matter of fact, we’ve discussed this part quite vividly in recent past; introducing preclinical trials in our biomedical institutes has already been decided and we’ve started the dialogue with the Ministry of Health, relevant colleagues and other universities to explore pathways of implementation. Clinical trials are of utmost significance to society, however, are quite specific, complex and costly. Nonetheless, some of our institutes, the Institute of Organic Chemistry and Biochemistry for instance, has the capacity to discover very interesting molecules which we could out license. From a business point of view, however, it is logical to conduct at least the pre-clinical trials first in order to sell our out licensee these with added value and thus more monetary benefits for the academy.

We've decided to establish preclinical laboratories and seek possible partnerships for instance with the Masaryk Oncology Institute in Brno, because we recognize the significant problem of cancer in society and therefore focus on research about anticancer treatments on protein basis and those novel anti-cancer agents will be subject to preclinical and possibly also clinical trials. We anticipate the creation of the right environment for such endeavours, however, the expenses are quite high and we currently navigate through these costs in an effort to achieve the former within our future strategy; part of this is seeking connections with the pharmaceutical industry.

What is your vision in 2020 vision for life sciences, research and science in general in the Czech Republic?

My personal vision can be briefly summarized in two different aspects. The first is improving the quality of basic research in our institutes. This can be measured by the amount and quality of the papers and books published within the peer review evaluation procedure mentioned above.

The second part is, as mentioned above, that we have to realize that we're partially paid by taxpayers' money and that it is therefore our responsibility to contribute to the development of the society we live in by addressing real world issue's with our research. We've already started engaging in this in various aspects via the research programmes in our Strategy AV21! In the frame of the Strategy, we also organize seminars for politicians in the senate and parliament to educate them of the science behind laws they are supposed to amend or reject. This also includes humanity sciences which, for example, cover the issues and questions surrounding migration; many of our politicians aren't aware of all of the perspectives that should be taken into account when deciding about that. Similar seminars have been held on other problems, such as vaccination of children. This is a topic publicly discussed within all sorts of information sources with sometimes simply wrong perspectives and believes—at least from the scientific and fact perspective.

What are your future plans after your mandate in the Czech Academy of Sciences ends?

I might consider retirement, however, I am unsure as of now. I do have some offers for further activities in the science management, where I have quite a lot of experience. On the other hand, I'm quite certain that I will not continue to be a research professor simply because sciences are advancing so rapidly nowadays and after twelve years of my service in the top management of the CAS I can hardly have ambitions to carry out the research of highest quality.

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