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Press release

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Marcel Benoist and Latsis foundations jointly award 2020 Swiss science prizes

Bern. 21 September 2020 – For the first time, the winners of the two prestigious Swiss science prizes, the Marcel Benoist Swiss Science Prize and the Latsis Prize, are being announced at the same time. In this anniversary year, the Marcel Benoist Swiss Science Prize, often referred to as the Swiss Nobel Prize, goes to Rudolf Aebersold (ETH Zurich/University of Zurich) for his pioneering work in the field of systems biology. The National Latsis Prize, awarded to young researchers under the age of 40, goes to Maryna Viazovska (EPF Lausanne) for her ground-breaking mathematical problem solving. The Swiss science prizes will be presented by Federal Councillor Guy Parmelin at an awards ceremony in Bern on 4 November.

The president of the Marcel Benoist Foundation, Federal Councillor Guy Parmelin, said: *"We are delighted by the cooperation with the Fondation Latsis and the first joint awarding of the two prizes. In doing so, we are enhancing Switzerland's standing as a location for scientific research*." The scientific selection process was conducted by the Swiss National Science Foundation on behalf of both foundations.

Co-founder of proteomics and pioneer of translational medicine

In its anniversary year, the Marcel Benoist Foundation is awarding its 100th prize to Rudolf Aebersold, professor of Systems Biology at the ETH Zurich and at the University of Zurich. The Prize is worth CHF 250,000. The foundation has recognised outstanding research of relevance to human life since 1920.

Rudolf Aebersold was one of the founding fathers of proteomics, which emerged in the mid-1990s. This area of research examines the entire set of proteins that are present in a cell. It investigates their properties and interactions in cell metabolism, and how cells react to changes in their environment, such as in the early detection of cancer with biomarkers on proteins

In a human cell, hundreds of biochemical processes run simultaneously; these are carried out and controlled by tens of thousands of different types of proteins. Aebersold revolutionised how this is observed by using new mass spectrometry measurement methods.

His paradigm shift towards quantitative measurement and systemic observation has not only altered the understanding of organisms and biology. It also influences translational medicine and is an important cornerstone for the personalised medicine of the future. *"It is a huge honour for me and my great team to be awarded the Marcel Benoist Swiss Science Prize. It also serves as recognition of the importance of international cooperation between researchers and of the open exchange of measurement data – both are fundamental to the success of proteomics,"* said a delighted Aebersold.

Solver of a centuries-old mathematical problem

The 2020 National Latsis Prize with an award sum of CHF 100,000 goes to Maryna Viazovska. The young EPFL mathematics professor from Ukraine achieved a scientific breakthrough in solving the sphere-packing problem in 2016. "*I am delighted that the Latsis Prize will boost the outstanding reputation of my Institute and all its staff. Naturally, I also hope that the prize will help to inspire young girls to go into mathematics"*, said Viazovska.

The mathematical derivation of the densest possible arrangement of spheres in a given space goes back to a problem posed by the explorer Sir Walter Raleigh in the 16th century. He raised the question of how cannonballs should be stacked in the densest possible way on a ship. For centuries, luminaries of mathematics made assumptions about the sphere-packing problem in multidimensional space, which could only be proven three-dimensionally in 1998 through huge computer calculations.

Viazovska caused a sensation in the world of modern mathematics with her original and amazingly simple calculation of the densest sphere packing in the much more complex 8th and 24th dimensions - the latter in cooperation with a research group. Research results on sphere packing in high-dimensional spaces also have practical applications in everyday technology. For example, in the analysis of crystal structures or in troubleshooting signal transmission of mobile phones, space probes or internet connections. While work on these two dimensions had previously been based on hypotheses, Maryna Viazovska's exploit delivered the mathematical proof and is already being used in efforts to solve fundamental problems in applied mathematics.

The Swiss science prizes will be presented by the Marcel Benoist Foundation and the Fondation Latsis at an awards ceremony to be held in Bern Town Hall on 4 November.

Marcel Benoist Swiss Science Prize

Laureate 2020: Rudolf Aebersold

Rudolf Aebersold was born in Switzerland in 1954 and obtained a doctorate in cell biology from Basel University in 1983. His research and teaching career has taken him to the USA and Canada: as a post-doctoral student at California Institute of Technology, as an assistant professor at the University of British Columbia in Vancouver, and as associate professor at the University of Washington in Seattle. He is the co-founder of the Institute for Systems Biology in Seattle in 2000, a world first. Aebersold holds dual professorships at the ETH Zurich and at the University of Zurich. He has been conducting research at the Institute for Biotechnology since 2004, and at the Institute for Molecular Systems Biology (IMSB) at the ETH Zurich since 2005. Aebersold is the holder of numerous prestigious awards, including the Human Proteome Organization Achievement Award (2005), the Otto Nägeli Prize (2010), the European Proteomics Association Pioneer Award (2012) and Paracelsus Prize of the Swiss Chemical Society (2018). He has been emeritus Professor at the IMSB since 2020. He will head the Tumour Profiling Project at the ETH Zurich until the end of 2023.

The Marcel Benoist Foundation

Excellence since 1920: The Marcel Benoist Swiss Science Prize will be awarded for the hundredth time this year. Each year, the Marcel Benoist Foundation recognises outstanding independent research across all Swiss higher education institutions, of relevance to human life. As such, it recognises researchers who embody Switzerland's excellence as a location for research. To date eleven prize winners have gone on to win the Nobel Prize. The nomination and evaluation process is conducted by the Swiss National Science Foundation (SNSF) on behalf of the Marcel Benoist Foundation. This year's Prize was awarded in the fields of biology and medicine.

Information on the Marcel Benoist Swiss Science Prize and the selection procedure can be found at: www.marcel-benoist.ch

The National Latsis Prize

Laureate 2020: Maryna Viazovska

Maryna Viazovska was born in Ukraine in 1984. In 2002 she won the International Mathematics Competition at the age of 17; three years later she triumphed again. She completed her BSc in Mathematics as the holder of the Ostrogradsky Research Fellowship from Kyiv National Taras Shevchenko University. After obtaining her Master's degree from the University of Kaiserslautern, she moved to the Max Planck Institute at the University of Bonn in 2007 to take her PhD, and to Humboldt University in Berlin to pursue her career as a post-doctoral researcher in 2014. She has been a professor at the EPF Lausanne since 2017 and is Chair of Number Theory. Viazovska holds numerous academic awards, including the Clay Research Award (2017), and the New Horizons in Mathematics Prize (2018), which was founded by Mark Zuckerberg and Juri Milner.

The Fondation Latsis

Since 1983 the National Latsis Prize has been awarded annually by the SNSF on behalf of the Fondation Latsis, which was founded in Geneva in 1975. The Prize recognises talented young researchers under the age of 40, working within the Swiss higher education system. Prize winners are selected through a process conducted by the Swiss National Science Foundation. In 2020, the Prize was awarded in the field of mathematics, science and engineering.

Information on the National Latsis Prize can be found at www.fondationlatsis.org