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Press release

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Swiss Science Prizes Marcel Benoist and Latsis go to pioneer in laser physics and innovative legal and medical scholar

Bern, 12 September 2022 – Physics professor Ursula Keller receives the Swiss Science Prize Marcel Benoist for her ground-breaking work in short-time laser physics. The Swiss Science Prize Latsis goes to the legal and medical scholar Kerstin Noëlle Vokinger for her outstanding interdisciplinary research.

The Swiss Science Prize Marcel Benoist is considered by researchers to be the Swiss equivalent of the Nobel Prize, with prizewinners awarded CHF 250,000 for their achievements. This year the prize goes to Ursula Keller, Professor of Experimental Physics at the Institute for Quantum Electronics at ETH Zurich. She has frequently pushed the boundaries of ultrafast laser physics with both theoretical models and experimental results.

“It is a huge honour for me to be awarded the Marcel Benoist Prize,” Ursula Keller announced. “It is recognition of the almost 30 years of applied and basic research at the ETH Zurich and the first science award I have received in Switzerland. I would like to thank my fantastic research group, all the postdocs, PhD students and external partners who have made this work possible.”

Ever since the laser was invented, researchers have sought to use it to transform materials. However, this was not possible with continuous laser beams because they were too inaccurate and heated up the materials too much. The solution was finally found in the use of pulsed laser light; however, this involved a complicated technique. Professor Keller solved the problem by using semiconductors and in 1991 invented the so-called SESAM technology (Semiconductor Saturable Absorber Mirror). This made it possible to produce light pulses lasting around a femtosecond – a millionth part of a billionth of a second – using solid-state lasers. In this short time span the movements of atoms or the mechanisms of chemical reactions can be studied.

Today, the SESAM principle is used in many practical applications, including material cutting, optical communication, computers and smartphone manufacture, and also in medical technology, where, for example, lasers are used as scalpels in eye operations. Furthermore, the ultra-fast laser technology can be used to develop high-precision measuring instruments. Ursula Keller

herself invented the world's most precise clock, the attoclock, which can measure attoseconds, i.e. the billionth parts of a billionth of a second. The attoclock is so accurate that it can be used to measure the fundamental processes of quantum mechanics.

Multi-talented young researcher awarded Latsis Prize

The CHF 100,000 Swiss Science Prize Latsis, which is awarded to young researchers up to the age of 40, goes this year to Kerstin Noëlle Vokinger. The assistant professor of public law and digitalisation at the University of Zurich is talented in many fields. She holds a doctorate in both law and medicine.

In her research activities in the fields of law, medicine and technology, Professor Vokinger has wide-ranging professional interaction and applies interdisciplinary methodological approaches that are currently unique in Switzerland. She combines traditional legal and medical analyses with empirical data evaluations and also draws on expertise in artificial intelligence and machine learning.

Kerstin Noëlle Vokinger has thus developed a distinctive research profile within a very short time. The topics she deals with are of considerable relevance to science and society, such as the pricing of medicines for cancer treatment, personalised medicine and the regulation of innovative technologies; the issues that Professor Vokinger addresses are of relevance to the public authorities, international organisations, industry and to legislation in the fields of medicine and technology. Vokinger is delighted to have been awarded the Latsis Prize: “The prize is an unexpected and great honour for me and my research team. I am very grateful to the Latsis Foundation and the SNSF for this award. It motivates us in our efforts to develop solutions that improve society’s access to medicine and innovative technologies.”

Joint award ceremony in Bern

The Swiss National Science Foundation (SNSF) was responsible for the scientific selection of the award winners on behalf of the Marcel Benoist and Latsis Foundations. The Swiss science prizes will be awarded at the Bern Town Hall on 3 November 2022. Federal Councillor Guy Parmelin, chair of the Marcel Benoist Foundation, and Professor Denis Duboule, chair of the Latsis Foundation, will present the awards. Federal Councillor Parmelin states: "We are extremely pleased that Ursula Keller and Kerstin Noëlle Vokinger are being awarded the 2022 Swiss science prizes. They are outstanding scientists and exemplify the excellence of Switzerland as a research location."

Swiss Science Prize Marcel Benoist

2022 prizewinner: Ursula Keller

Ursula Keller was born in Zug in 1959 and studied physics at ETH Zurich. She obtained a master's degree and PhD in applied physics at Stanford University. From 1989 she worked at AT&T Bell Labs in New Jersey. In 1993 she was elected associate professor and in 1997 full professor of experimental physics at ETH Zurich, making her the institution's first female physics professor. From 2010 to 2022 Ursula Keller was director of the NCCR MUST (Molecular Ultrafast Science and Technology) research programme initiated by the SNSF. In 2012 she also founded the ETH Women Professors Forum, which she chaired until 2016. Ursula Keller has been awarded numerous prizes for her research achievements and was the first woman to receive the prestigious European Inventor Award from the European Patent Office for her life's work. In 2021 she was admitted to the US Academy of Sciences.

The Marcel Benoist Foundation

Since 1920, the Marcel Benoist Foundation has annually recognised outstanding independent research that is of relevance to human life conducted at Swiss higher education institutions. It thus pays tribute to researchers who exemplify the level of excellence of research conducted in Switzerland. Eleven laureates have already gone on to receive the Nobel Prize. Since 2018, the nomination and selection process has been handled by the Swiss National Science Foundation (SNSF) on behalf of the Marcel Benoist Foundation. The 2022 prize is awarded in the field of mathematics, natural sciences and engineering. More information can be found at: www.marcel-benoist.ch

Swiss Science Prize Latsis

2022 prizewinner: Kerstin Noëlle Vokinger

Kerstin Noëlle Vokinger was born in Zurich in 1988 and studied law and human medicine in parallel at the University of Zurich (UZH). She then passed the bar exam of the Canton of Zurich and the medical state examination. In 2016, she completed her PhD in biomedical ethics and law at the UZH before obtaining a PhD in medicine from the University of Basel the following year. Vokinger also has an LL.M. from Harvard University Law School and has conducted research at Harvard Medical School. She wrote her habilitation thesis at the UZH Faculty of Medicine and since 2019 has been a professor in the UZH Faculty of Law. Vokinger is also an affiliated faculty member at Harvard Medical School. During her career, she has received research grants from Harvard Law School, Cancer Research Switzerland and the SNSF.

The Latsis Foundation

The Swiss Science Prize Latsis (previously the National Latsis Prize) has been awarded annually since 1983 by the SNSF on behalf of the Latsis Foundation, which was founded in 1975. The prize honours young researchers aged up to 40 at Swiss universities for outstanding work. The prizewinners are chosen in a selection procedure run by the SNSF. The 2022 prize is awarded in the field of humanities and social sciences. More information can be found at: www.fondationlatsis.org

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Images

Photos of each of the award winners are available for download via the following link:
https://www.swisstransfer.com/d/d8bf3b17-04dc-494d-b811-d418727b142e