In search of the origins of life

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ETH Zurich is opening a new research and teaching centre with a focus on exploring the origin and prevalence of life on Earth and beyond. Under the leadership of Noble Laureate, Didier Queloz, more than 40 research groups from five departments will address the big questions posed by humankind.

How did life on Earth begin? How did it develop and proliferate? And is there life on other planets? Major advances have been made in recent years across multiple disciplines in search of the answers to these questions. For example, we have already identified more than 5,000 exoplanets – the first of which were discovered by Nobel Laureates Michel Mayor and Didier Queloz some 30 years ago. The James Webb Telescope gives us an unprecedented insight into our universe's past, while important findings have also been made in the field of molecular biology and in other life sciences. Despite having diverse scientific perspectives, researchers agree that to get to the bottom of life's greatest mysteries, they need to build bridges between disciplines.

"That is precisely our goal," stresses Didier Queloz, who will head up the new "Centre for Origin and Prevalence of Life" that opened its doors at ETH Zurich today. More than 40 research groups from five departments will work together with their counterparts across the world to investigate the mysteries of the origins of life on and beyond

the Earth.

Four main research areas

The Centre will focus on four main research areas: 1. Which chemical and physical processes made the formation of living organisms possible? 2. Which other planets may host life? 3. How do planetary environmental conditions develop that are hospitable to life? And how does this life change a planet's characteristics? 4. What other forms of life could exist?

Biologists, chemists, earth scientists, physicists and environmental systems scientists will be investigating these questions in interdisciplinary projects. "When I visited various ETH departments after taking up my post four years ago, I realised that many research groups have one thing in common: the great desire to get to the bottom of the origins of life. "I am really pleased that our new centre will now make this possible," comments ETH Zurich President Joël Mesot.

New professorships, teaching and fellowship programmes

Numerous research collaborations with international institutions and new teaching programmes are to be established, as well as up to six new professorships at ETH Zurich. These professors will join the existing faculty and will primarily focus on research topics relevant for the Centre.

"But first we will start with the launch of an innovative fellowship programme," says Queloz. The NOMIS Foundation–ETH Fellowship Program is designed to give young scientists the opportunity to conduct research on the origin of life in this unique environment. "To answer humankind's fundamental questions, interdisciplinary and collaborative approaches, and outside-the-box thinking are essential. But this can be risky or even impossible, especially for early-career researchers. Through the new NOMIS-ETH Fellowship Program, we hope to enable these young scientists to make connections, to take risks and to build bridges across the boundaries of disciplines," explains Markus Reinhard, managing director of the NOMIS Foundation.

Beginning in October 2022, talented young individuals from around the world can apply for a NOMIS–ETH fellowship by submitting research project proposals that are in keeping with the Center's fields of research. To foster interdisciplinarity, fellows will have the opportunity to be hosted simultaneously in two research groups. To this end, the NOMIS Fellowships will be rolled out over the next six years and will support nine fellows. The fellowship program is being enabled by the NOMIS Foundation through a 3.24 million Swiss francs collaboration and grant agreement with ETH Zurich.

Organisation and financing

The Centre will also be financed by funds from the Executive Board, participating departments, and research groups. A scientific collaboration has been established with the Paul Scherrer Institute, which is also contributing to the Centre. The budget for the first six years is 9 million Swiss francs. Further financial support from foundations, the business community, and private individuals is important in order to unfold the Centre's full potential.

The Centre will be located both on ETH Zurich's campus in the city-centre and on the nearby Hönggerberg campus. In addition to Didier Queloz, the Centre will be co-directed by ETH Zurich professors Cara Magnabosco, Sascha Quanz, and Roland Riek. A Science Steering Committee, composed of professors from the participating departments, will be responsible to define and implement the Centre's research strategy and advise the management team. An administrative unit will oversee the new Centre's finances and communication.

about the new Centre

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