“SciLifeLab is like a Mecca for Swedish research”

SciLifeLab, Science for Life Laboratory, is a Swedish national center for molecular biosciences. To further strengthen the research environment, the institution regularly recruits young, talented research leaders to become SciLifeLab fellows.

Each fellow is recruited by one of the center’s host universities and also receives funding from them. One of the 22 fellows currently enrolled in the program is Claudia Kutter, who was recruited from CRUK, Cambridge, by Karolinska Institutet/SciLifeLab in 2016.

Photo: John Senett

Claudia Kutter

“I was actively looking for research institutions where I would be embedded in a vivid and international scientific setting with an active young faculty”, says Claudia Kutter.

“Each of us brings a unique line of research and expertise to the center. I appreciate the continuous exchange of experience, the interdisciplinary research approaches that can come together in a synergistic manner, and the formation of interest groups on special research topics.”

Potential for future cancer treatment

Her research focuses on genome, chromatin and RNA biology in the context of human disease.

“I am intrigued by the fact that we have one genome that gives rise to different transcriptomes, which then generate functionally diverse cell types”, she says.

In particular, her group wants to understand the cellular and molecular defects underlying noncoding RNAs by using a combination of computational and experimental methods. Many of these noncoding RNA molecules have been disregarded as transcriptional noise or by-products but, in fact, harbour tremendous regulatory potential since they can interact with DNA, other RNA molecules and proteins.

“In a sense, a noncoding RNA is like a molecular Swiss army knife with various tools all stowed inside one unit”, she says. “Besides contributing to novel insights, our long-term goal is to incorporate noncoding RNAs in biomedical research and therapeutics.”

Using genome-engineering methods, Claudia Kutter and her colleauges remove regulatory sequences from DNA entirely, decrease or enhance the expression levels and assess the phenotypical consequences. For example, they enhanced the expression of a noncoding RNA, which stopped cancer cells from proliferating whereas normal cells remained unchanged.

“Noncoding RNAs might become essential for future therapeutic development since we would only target cancer cells and not healthy cells. This could lead to more refined treatments and prevent many of the systemic effects of classical treatment strategies”, she explains.

For the future, she wants to ensure that the conditions for her group remain optimal and constructive to allow innovations and embark on interdisciplinary research projects.

“SciLifeLab truly offers an attractive research environment, has state-of-the-art instrumentation and core facilities, and is continuously increasing the research activities - it is like a Swedish Mecca for research. It is beneficial to be in a place without institutional boundaries.”

Advancing life sciences

SciLifeLab is both a research institution and a national resource for Swedish researchers with the mission to develop, use and provide advanced scientific technologies and expertise. The center is a joint effort by Karolinska Institutet, KTH Royal Institute of Technology, Stockholm University and Uppsala University. Founded in 2010, SciLifeLab today encompasses more than 60 research groups and 40 infrastructure units across the country.

SciLifeLab

www.scilifelab.se

Professor Lixin Wu

The world's oceans hold essential and important reserves of natural resources, critical for the continued and sustainable survival of humanity. These oceans are now confronted with serious environmental challenges due to human activity and global climate change, potentially leading to significant socioeconomic consequences. The international community continues to call for the creation of innovation partnerships to explore effective solutions for the conservation and sustainable use of the oceans and their resources. The field of marine science offers a vitally important foundation for the implementation of these goals, but suffers from an imbalance in global capacity building. In an effort to bring together marine research institutes from around the world to tackle the challenges confronting marine science, the Pilot National Laboratory for Marine Science and Technology (Qingdao) (QNLM) launched the Global Ocean Summit (GOS).

The first GOS was held in Qingdao in September 2016, with the primary purpose of providing a forum for leaders from marine research institutes, universities, and other international organizations to share their ideas and experiences related to ocean science and technology strategies, and to promote collaborative innovation. The director of QNLM, Lixin Wu, as chair of the local organizing committee, put forward a declaration that called for enhancing marine science and technology innovation and creating a shared community of concerned scientists who can assess and address the impact of ocean changes. The GOS 2018 participants believe that these discussions are critical to ensure a secure and sustainable future for the peoples of the world.

In the spirit of the GOS 2016 Declaration, QNLM worked with the Department of Science and Technology of Shandong Province and Science/AAAS to organize the second GOS, which took place in July 2018, also in Qingdao. Participating in the GOS 2018 conference were 152 leaders and representatives from 101 marine research institutes and universities in 24 countries, as well as five international organizations involved in ocean research. The theme of the conference was "Enhancing Partnerships on Ocean Observation and Research," and it included in-depth conversations and vigorous discussions covering many challenging issues related to ocean research. The summit drew much interest and attention from global institutions involved in marine-related research and policy, particularly the discussion around topics such as enhancing global collaboration in ocean observation and prediction, polar-seas research, deep-sea research, and ocean sustainability. The summit released the GOS 2018 Recommendations (see facing page), which advocated strengthening cooperation in capacity building; promoting activities such as ocean monitoring, exploration, sustainable utilization, protection, event forecasting, and management; and tackling the challenges presented by global climate change.

The next GOS is scheduled for 2020. In the interim, it is expected that the previous two GOS gatherings will encourage long-term, stable dialogue among the leaders of global marine-related institutions and organizations, and promote the development of new international programs in ocean research.

PHOTOS: QNLM

GOS

GLOBAL OCEAN SUMMIT 2018

Enhancing Partnerships on Ocean Observation and Reseach

Qingdao • China 3-5 July, 2018

GOS 2018 participants

PHOTO: QNLM

Recommendations from the Global Ocean Summit 2018

Global environmental changes resulting from human activity pose unprecedented challenges to the Earth's ecological systems and, most importantly, to the sustainable development of the world's oceans. In response, we, as GOS 2018 participants, firmly believe that it is the responsibility of the world's marine institutions and universities to deepen our systematic understanding of the oceans in order to tackle these global challenges.

Jointly, we make the following recommendations:

1. We propose to adhere to the spirit of the "Global Ocean Summit 2016 Declaration" and strive for "Enhancing Partnerships on Ocean Observation and Research," to implement United Nations (UN) Sustainable Development Goals, and to support initiatives announced at the UN Ocean Conference 2017. We will do this by establishing a joint global network for sharing knowledge and experience. The network will encourage society's rights and equal access to marine knowledge, develop marine research capacity through sharing of observational and educational resources, and promote the efficient use of megafacilities and infrastructure. The network will actively encourage participation by intergovernmental and nongovernmental organizations.

2. We will collaborate to advance ocean research for the benefit of humanity.

2.1. We are committed to supporting international ocean observation through the sharing of open-access data from international ocean observation programs; boosting research and development of new technologies for ocean observation; ensuring data quality control and assurance; and facilitating the calibration and standardization of key ocean parameter measurements while also forging collaborations to create a sustainable, vertically integrated observation system, encompassing the ocean floor, ocean, and space.

2.2. We will encourage deeper integration of the observation system with high-resolution models to improve ocean environment forecasting and the development of early warning systems to combat extreme weather events and marine ecological disasters.

2.3. We will strengthen research collaboration in polar research, focusing on sea-ice changes and permafrost melting, global sea-level change, and ocean acidification, to improve our understanding of polar climate change and its impact on the oceans.

2.4. We will promote interdisciplinary research of the deep ocean to improve our understanding of ocean temperature and carbon uptake as well as the deep-ocean ecological environment, through the development of deep-ocean, onsite, remote-controlled monitoring technologies.

3. We will encourage our governments to support international ocean observation. We will promote engagement with policy-makers, shareholders, students, and the general public to involve every individual in the development of ocean science for the well-being of humanity.

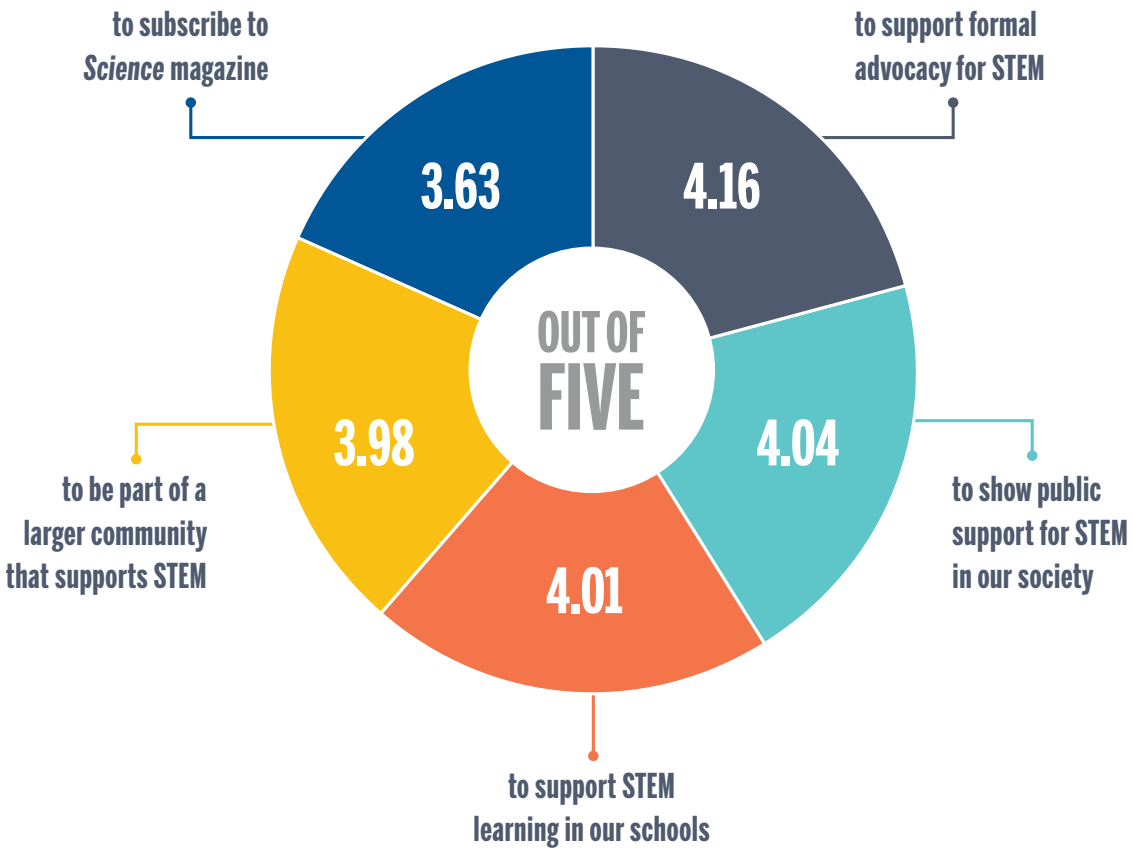
4. In future Global Ocean Summits, we will explore means to enhance international cooperation in other areas of marine research and monitoring of importance to humanity, including but not limited to coastal development, environmental research on regional seas, and the sustainable utilization of ocean resources (also known as the "blue economy").

We stand by the mantra: "One earth, one ocean." We commit to contributing our knowledge and wisdom for the continued vitality and abundance of the world's oceans and the maintenance of a sustainable marine environment for all of humanity.

青岛海洋科学与技术试点国家实验室
Pilot National Laboratory for Marine Science and Technology (Qingdao)

AAAS IS THE FORCE FOR SCIENCE

According to the 2017 Member Survey, you joined AAAS ...



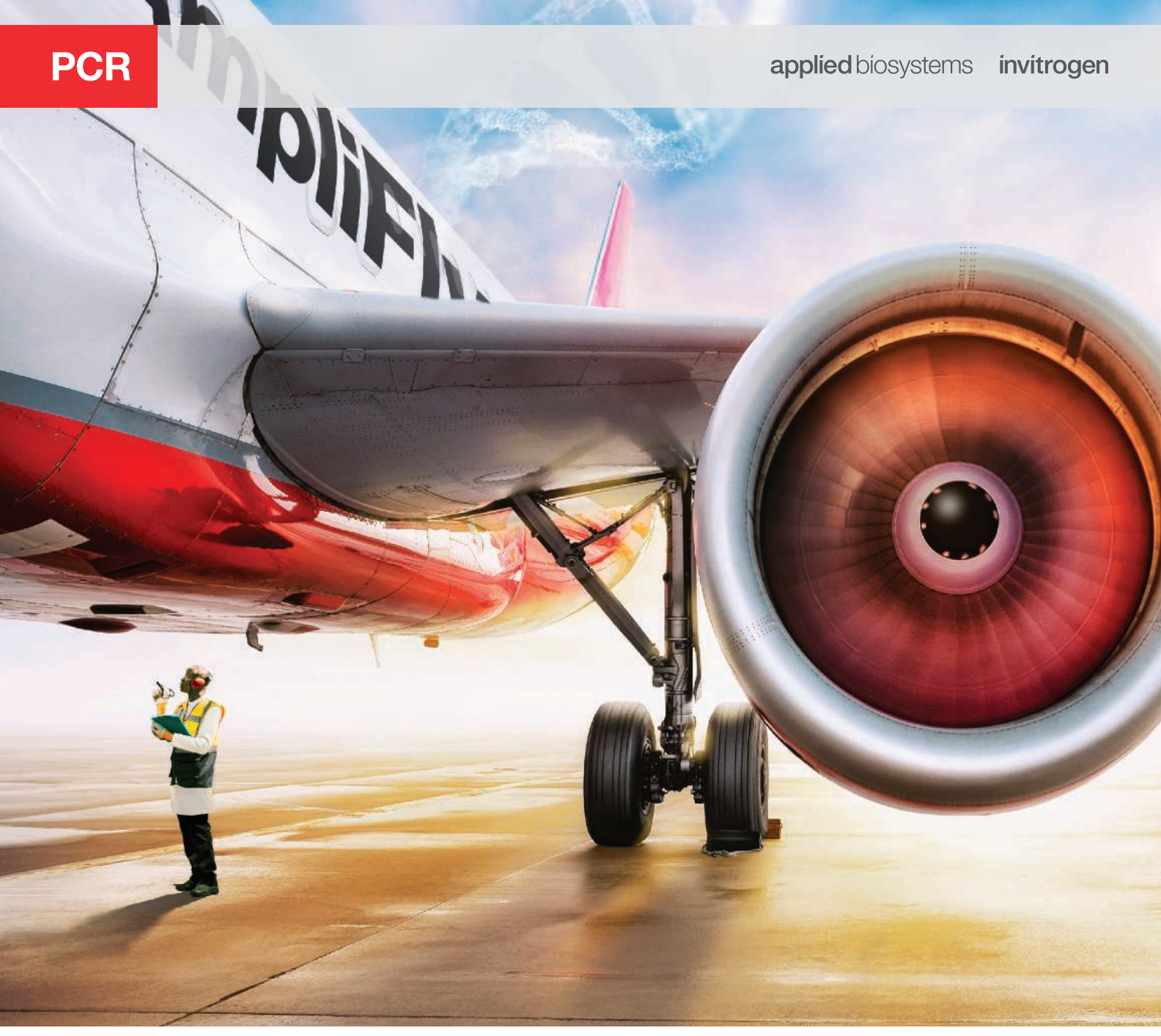
TELL US WHAT'S IMPORTANT TO YOU!

The 2018 Member Survey is launching in September. Look in your inbox for a link.

Your responses help us to better serve science, scientists, and the global community. Don't miss your chance to tell us what's most important to you!

PCR

applied biosystems invitrogen



A hot start to your PCR destination

Set up your experiment at your pace with Invitrogen™ Platinum™ hot-start DNA polymerases, enabling the highest specificity, yield, and throughput, with even your most challenging samples. When you can start hot, your PCR research destination is up to you.

Find out more at **thermofisher.com/pcrenzymes**

ThermoFisher SCIENTIFIC