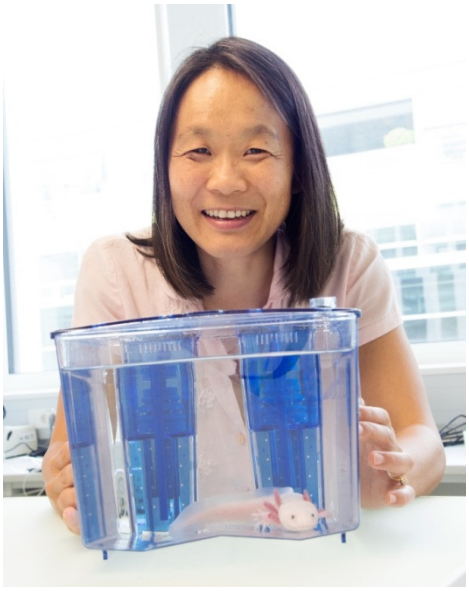
Press Release, September 6, 2017

How Can a Salamander Regrow a Lost Leg?

Ernst Schering Foundation honors biochemist Elly Tanaka for her outstanding research in the field of regeneration biology with the Ernst Schering Prize 2017



Prof. Dr. Elly Tanaka is a senior scientist at the Research Institute of Molecular Pathology (IMP) in Vienna, Austria, and the leading specialist in the field of regeneration biology. With the aid of innovative molecular biological and microscopic techniques, she was able to identify the stem cells that induce the regeneration of limbs and spinal cord in salamanders. Combining regeneration and stem cell research, her work delivers long-sought answers regarding the molecular and cellular fundamentals of regeneration.

For her outstanding research Prof. Dr. Elly Tanaka is awarded with this year's **Ernst Schering Prize**. The 50,000-euro prize is one of the most prestigious German science awards. Given annually by the Ernst Schering Foundation, Berlin, it honors scientists worldwide whose pioneering basic research has yielded new, inspiring models or led to fundamental shifts in biomedical knowledge.

Professor Tanaka was nominated for the Ernst Schering Prize 2017 by **Dr. Jan-Michael Peters**, Managing Director of Science at the IMP. *"I am utterly delighted that Elly Tanaka's research achievements are honored with the prestigious Ernst Schering Prize, for like few others, she perfectly fits the criteria for the prize.Her insights, which are the result of her creative and persistent research, are truly pioneering and will define the field of regeneration biology also for the future scientists she is training, among other places, at the IMP," says* Peters.

Prof. Dr. Maria Leptin, mentor of Professor Tanaka and director of the EMBO in Heidelberg, who will give the presentation speech at the award ceremony, says about Professor Tanaka: *"Elly Tanaka is a uniquely creative and independent-minded scientist. Thanks to her, we have groundbreaking insights into the regeneration capacity of organs and tissues, which were facilitated through her original application of cutting-edge analytical methods using a classic test animal, the axolotl."*

Award Ceremony Ernst Schering Prize

September 25, 2017, 6:30 p.m.
Leibnizsaal at the Berlin-Brandenburg Academy of Sciences and Humanities
Markgrafenstr. 38 | 10117 Berlin

Registration is possible until September 17 at anmeldung@scheringstiftung.de

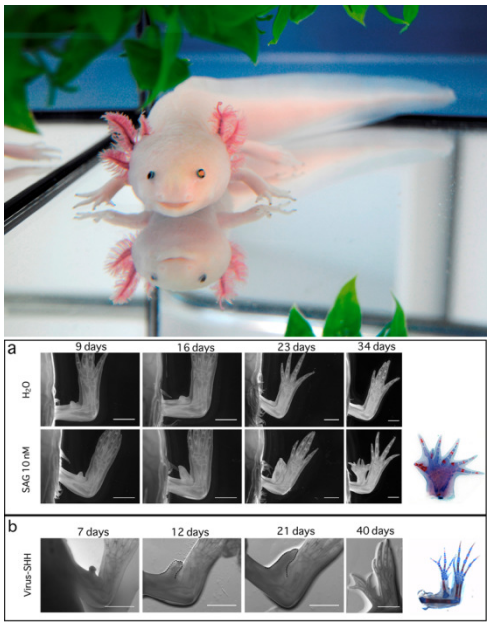
The award ceremony features a musical performance by the STEGREIF.orchester. It is the only improvised symphony orchestra worldwide, consisting of 24 young musicians who want to revolutionize classical music. Breaking away from strict conventions, they use neither sheet music nor a conductor. The resulting freedom facilitates spontaneity, improvisation, and movement. Each production is based on a classical symphony which is combined with different musical styles such as jazz, folk or techno. The STEGREIF.orchester thus creates a completely new sound experience, which is supported by an expressive choreography. www.stegreif-orchester.de

Lectures by Elly Tanaka

September 26, 2017
Lecture to high school students: How do animals regenerate their body parts?
Schulfarm Insel Scharfenberg, Berlin-Tegel (not open to the public)

September 26, 2017, 4 p.m.
Public scientific lecture: Deciphering molecules and cells for limb and spinal cord regeneration
Berlin-Brandenburg Center for Regenerative Therapies
Charité Campus Virchow-Klinikum | Föhrer Str. 15 | 13353 Berlin
The lecture is aimed at scientists and students and will be in English. | Registration is not required.

Background Information



In nature some animals show remarkable capabilities to regenerate while other animals show limited capabilities. Elly Tanaka has been unravelling the mysteries of how the salamander can regenerate complex body parts such as the entire limb and the spinal cord. She has been able to find the stem cells that are responsible for regenerating the limb and the spinal cord and could uncover how the cells move, grow and divide to make the new structures. She has examined how the different tissues such as muscle and bone interact in order to successfully regenerate a functional limb. She has also used many methods in molecular biology to uncover several signals that are produced after wounding that start the regeneration process. For example, she has found how the process of blood clotting is linked to starting regeneration. In her current research Professor Tanaka examines how regeneration is limited in other animals like frogs or mice as a prelude to understanding why humans have limited regeneration capabilities. In the future, Professor Tanaka's research findings could help pave the way for the production of complex tissues from mammalian stem cells.

Elly Tanaka was born in 1965 in Boston, MA (USA). She majored in biochemistry at Harvard College from 1983 to 1987. She pursued her doctoral studies in biochemistry at the University of California, San Francisco with Prof. Marc Kirschner. In 1994 she went, as a Muscular Dystrophy and Helen Hay Whitney Fellow, to the laboratory of Jeremy Brockes in London where she started her studies on salamander limb regeneration. In 1999 she became an independent junior group leader at the newly established Max Planck Institute for Molecular Cell Biology and Genetics in Dresden. In 2008 she became full professor at the DFG Research Center for Regenerative Therapies, Technische Universität Dresden, where she served as director from 2014-2016. In 2016 she became senior scientist at the Research Institute for Molecular Pathology in Vienna, Austria.

More Information

More information, images and videos are available for download at www.scheringstiftung.de under "Press."

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Illustration: The Tanaka lab has identified the conditions that allow researchers to make a whole new limb in an ectopic place by expressing one molecule called sonic hedgehog. Upper panels: If the researchers bring nerve endings to the surface in the upper arm, a small bump of regenerating tissue forms but does not grow further. Middle panels: This nerve treatment combined with treating the animals for a drug that activates a signaling pathway in cells called the sonic hedgehog pathway causes an entire limb to form. Bottom panels: The Tanaka lab developed a viral delivery system to produce sonic hedgehog in the limb tissue, so they can perform the nerve treatment plus infection of the limb with sonic hedgehog-expressing virus to induce a whole limb to form. (Nacu et al. 2016, Nature, © Elly Tanaka)