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3RCC to fund six projects worth CHF 1.2 million to advance the replacement, reduction and refinement of animal experiments

The Swiss 3R Competence Centre (**3RCC**), a joint initiative from academia, industry, government agencies and an animal welfare group, will fund six projects that aim to replace, reduce and refine animal experiments at Swiss research institutions with CHF 1.2 million. The projects include novel approaches to improve cell cultures and *organoids* that replace animals used in experiments as well as new strategies for surgery training and breeding with the aim to improve animal welfare and reduce the number of living animals necessary. The goal of the application of the 3Rs principle is to replace, reduce and refine, i.e. improve animal welfare, while at the same time generating results that can be more reliable and reproducible and more relevant to humans.

Swiss 3RCC grant calls

The 3RCC received as many as 54 applications for its first call for projects, with total amount of funding requested of around CHF 15 million. Half of the projects focused on replacement, 30% on reduction, and 20% on refinement. The selection was conducted by the 3RCC Scientific Advisory Board with the help of international reviewers and approved by the 3RCC Strategic Board in May 2019. Six projects, covering each of the 3Rs were selected based on a set of criteria including their promise to have a large impact on the implementation of the 3Rs principle, while at the same time offering the highest quality of science and benefit over current methodologies. The next 3RCC call for projects will open in September 2019 with CHF 1.4 million available for funding.

"We were pleased to receive so many applications from researchers all over Switzerland. The selection was very competitive due to the high quality of the large majority of the proposals received, as indicated by our independent external review. We thank all applicants for the submission of their excellent projects. The large number of applications, the high amount of funding requests and the high quality of the projects submitted reflect the strong need for funding promising novel approaches to further advance the implementation and promotion of the 3Rs principle." said 3RCC Director Chantra Eskes.

Replacement

Three of the selected projects focus on replacement, where scientists make use approaches not entailing the use of living animals as for example the use of cultured cells, tissues or entire miniature organs in a dish. Kristin Schirmer from the Swiss Federal Institute of Aquatic Science and Technology (Eawag) plans to replace fetal calf serum – often used as a medium supplement to *in vitro* cultured cells and tissues

but raising ethical and reproducibility concerns – with an animal-free medium for routine fish cell line cultivation to support cell-based tests used to predict if chemicals are toxic to fish. Matthias Lütolf from the EPFL wants to produce animal-free matrix protein fragments, which researchers use to culture organoids, i.e. miniature organs grown from stem cells that have the potential to replace certain animal models. Patrick Tschopp from the University of Basel plans to develop a screening platform that integrates comparative functional genomics information and chicken embryos to define conserved cell type specification networks, while preventing the use of live rodents.

Reduction

In the area of reduction, the 3RCC will support two projects where scientists apply novel approaches to reduce the number of animals necessary in experimentation. Philippe Bugnon from the University of Zurich aims to develop a freely available software tool, which will allow researchers to optimise their breeding strategies. This is especially important when multiple traits are combined, and when the Mendelian laws lead to birth of surplus animals. The application of the software will reduce surplus animals to the essential minimum. Jean-Paul Vallée from the University of Geneva and University Hospital of Geneva plans to develop cost-effective 3D-printed heart disease models made of silicone to reduce the use of live animals used for training in cardiovascular surgery.

Refinement

Finally, the centre will finance a project in refinement, where researchers explore ways to improve animal care, welfare, and scientific quality. Based on a systematic review, Petra Seebeck from the University of Zurich and Stephan Zeiter from the AO Institute Davos plan to develop guidelines for minimum standards for surgery on rodents. The goal is to make sure surgery is fast, minimally invasive as well as with optimal care as to minimise animal suffering, improve recovery and contribute to the quality of scientific results obtained.

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References:

You can find a synopsis and more detailed information on the projects on the 3RCC website <https://swiss3rcc.org/2019/05/19/funded-projects/>.

3RCC_001_o2018: *Breeding management software for genetically modified rodents*, Philippe Bugnon, University of Zurich, CHF 94,940

3RCC_002_o2018: *Nutritional requirements of fish cell lines – development of a serum-free culture medium (L-15Plus)*, Kristin Schirmer, Swiss Federal Institute of Aquatic Science and Technology (Eawag), CHF 251,528

3RCC_003_o2018: *Rodents have a right to best surgical practice*, Petra Seebeck, University of Zurich, CHF 395,000

3RCC_004_o2018: *Recombinant laminin-like proteins for organoid cultures free of animal-derived basement membrane extract*, Matthias Lütolf, EPFL, CHF 120,000

3RCC_005_o2018: A CRISPR/Cas9-screening platform to decipher conserved cell fate specification networks in vivo, Patrick Tschopp, University of Basel, CHF263,472

3RCC_006_02018: 3D heart models for cardiac surgery training, Jean-Paul Vallée, University of Geneva and University Hospital of Geneva, CHF 30,000

About the 3RCC

The Swiss 3R Competence Centre was founded in March 2018 as a non-profit association including representatives from the major 11 universities and higher education institutions working in life sciences in Switzerland, the Swiss Federal Food Safety and Veterinary Office (FSVO), the Swiss association of the pharmaceutical industry, Interpharma, and the Swiss Animal Protection (SAP). The mission of the 3RCC is to promote the principles of 3R (reduction, refinement and replacement of animal experimentation) in Switzerland and to facilitate their implementation in life sciences, focusing on research, education and communication.

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