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The 3Rs Young Investigator Award 2022 goes to Wei Wei (ETH Zürich)



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The 2022 3Rs Young Investigator Award has been awarded to Wei Wei from ETH Zürich for his work on creating a three-dimensional model of the brain's protective wall, the blood-brain-barrier, that allows for investigating what happens when the barrier is affected.

The model developed by Mr. Wei Wei's does not rely on the use of animals, but instead uses human brain cells - cerebral endothelial cells and human primary pericytes and astrocytes - to create a model that recapitulates the blood-brain-barrier (BBB). The human BBB is different from that of other species and the awarded in vitro model represents a significant advancement in replicating human physiological processes and offering an alternative to animal models.

Furthermore, the functionality of this BBB model can be monitored in real time through a special sensor system with transparent electrodes and high-resolution imaging that measures the integrity of the barrier. This is done without needing to use pumps and allows to run multiple experiments in parallel, speeding up the research process. With this system, it is possible to study how the BBB responds in the case of a reduced blood

flow, like for example in a stroke, with unprecedented sensitivity and resolution, and without the use of animals.

The Swiss 3R Awards

The Swiss 3RCC presents two 3R prizes for work conducted in Switzerland each year—the Swiss 3RCC's 3Rs Award and the Young 3Rs Investigator Award. The primary 3Rs Award of CHF 4.000.- is granted for outstanding work that significantly advances the 3Rs Principle—Replacement, Reduction, and Refinement of animal experimentation. The Young 3Rs Investigator Award, worth CHF 1000, is granted to researchers who have made significant contributions to the 3Rs principle in the early stages of their careers.

Applications are evaluated based on the quality of the contributions and on their impact on the 3Rs in either a scientific, regulatory, industrial, or educational context. In addition to the financial award, awardees are given the opportunity to have a short video made about his/her activities contributing to the implementation of the 3Rs and/or to present his/her work in a 3R-dedicated event organized by the 3RCC. With their research, the awardees not only help promote the 3Rs principle, which aims to replace, reduce and refine animal experiments, they communicated their projects in an exemplary manner to encourage other researchers to adopt these novel approaches in their work.

Each awardee application goes through various stages of evaluation, including internal screening and evaluation from 3 independent, international experts in the 3Rs.

References:

Wei, W., Cardes, F., Hierlemann, A., Modena, M. M., 3D In Vitro Blood-Brain-Barrier Model for Investigating Barrier Insults. *Adv. Sci.* 2023, 10, 2205752. <https://doi.org/10.1002/advs.202205752>

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