Universität Basel

Research Project

NanoWrite start-up financing

Third-party funded project

Project title NanoWrite start-up financing
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Organisation / Research unit
Departement Biozentrum / Structural Biology (Stahlberg)
Department
Project start 01.11.2018
Probable end 30.06.2019
Status Completed

With the Nobel prize in 2017, cryogenic electron microscopy (cryo-EM) got much attention. However, sample preparation for cryo-EM did not evolve during the last 30 years and is seen as the major methodological bottleneck. The classical preparation methods need large volumes, lose 99.99 % of the sample, are di cult to control and pose harmful conditions to the biological material during the preparation process. During the last years, we developed strategies, which overcome these shortcomings of the current state-of-the-art methods. An innovative combination of microfluidic technologies enables us to prepare EM samples from nanoliter (nL) sized volumes. The technique works virtually lossless, the preparation conditions can be precisely controlled, and harmful processing steps are eliminated. These methods now allow us to perform experiments not possible before, e.g., we can use our instrument to 'pick' an individual cell and prepare its lysate for EM analysis. Additionally, we can directly couple EM sample preparation to a novel protein purification technology, which allows protein isolation from few μLs of cell lysate, direct cryo-EM grid preparation, and subsequent high-resolution structural analysis. This technology permits the development of a novel multiplexed protein detection platform for a wide spectrum of biomedical and diagnostic applications.

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