

## ETH ORD Programm

### Establish call - deadline 28th July 2022

Number of pre-proposals submitted : 7 / Number of full proposals: 5 / Number of projects financed : 2 / 29% success rate

Project title	Abstract	Applicant	Institutes	Amount CHF
Open and Reproducible Materials Science Research	PREMISE aims to establish, promote and facilitate the adoption of FAIR ORD practices in Materials Science, focusing on enabling the treatment, at the same level, of experimental and simulation data. We will first develop metadata standards for machine-actionable interoperability between electronic lab notebooks (ELNs)/lab information management systems (LIMSs) and workflow management systems (WFMSs), and apply these standards to Materials Science ontologies. We will then collect, design and disseminate best practices for generating ORD as a natural part of the research process, rather than as an additional duty for researchers. Our deliverables will be demonstrated with concrete pilot use cases, chosen to be applicable to the broad field of Materials Science, and generalisable to other disciplines. We will leverage two robust open platforms, developed and maintained within the ETH domain, compliant by design with FAIR requirements for experiments (openBIS) and simulations (AiiDA+AiiDALab). We will bring them "to the next level" by implementing our novel set of ORD practices and demonstrating how an ELN/LIMS and a WFMS can be made seamlessly interoperable. We expect our deliverables to be essential components of the emerging field of autonomous laboratories, where automated simulations and robotic experiments are combined via artificial intelligence in closed feedback loops, ultimately accelerating materials discovery and characterisation.	<b>Pizzi Giovanni</b> Pignedoli Carlo Antonio Battaglia Corsin Rinn Bernd	PSI EMPA EMPA ETH Zürich	1'292'100
Open EM Data Network	This Open EM Data Network will establish ORD practice for Electron Microscopy (EM) in Switzerland. In the life sciences, cryo-EM experienced a resolution revolution enabling to the atomic-resolution determination of protein structures. In materials sciences, EM equally experienced a dramatic expansion of possibilities and multidisciplinary approaches, e.g., 4D STEM data collection. This led to unparalleled increase in data volumes and need for computational resources. This Open EM Data Network (OPEM) will build on the PSI's existing data annotation (SciCat) and data handling and storage technology (Data Catalog), which will be expanded to cover EM data and to establish Swiss-wide access. It will standardize the collection of data and metadata, streamline data and metadata handling, assist in data transfer and sharing, and automate and support deposition into existing international ORD repositories. It will provide user training in ORD practices and establish a sustainable structure to be maintained after closure of this project. The Open EM Data Network is complementing a Swiss-wide effort to push the boundaries in EM technology with the "EM frontiers" initiative. It will establish ORD practice throughout the ETH-Domain EM sites and will be expanded to all Swiss University EM sites through a parallel application to SwissUniversities.	<b>Stahlberg Henning</b> Schertler Gebhard Coperet Christoph Erni Rolf Bliven Spencer Korkhov Volodymyr	EPFL PSI ETH Zürich EMPA PSI ETH Zürich	1'500'000