5th Call for Proposals for PHRT Projects: Technology Translation Projects (TechTrans Project)

February 16, 2021

In its strategic plan for the ETH Domain, the ETH Board defined "Personalized Health and Related Technologies" (PHRT) as one of its Strategic Focus Areas (SFA). PHRT is focused on core contributions by the ETH Domain institutions in the field of personalized health and personalized health technologies that are complementary to the efforts undertaken by other initiatives within the ETH Domain such as the SFA Swiss Data Science Center (SDSC) and programs outside the ETH Domain such as the Swiss Personalized Health Network (SPHN). An important goal of PHRT is to put ETH Domain institutions in a position to most fruitfully collaborate with clinical (research) partners, including those from SPHN and from leading international programs. In addition, the PHRT aims to develop synergies with the SFA SDSC, e.g. through the development of computing infrastructure for managing and analyzing the large amounts of data required in personalized health, or by the development of high-performance computing/data science technologies focused on health-related problems. The Overview document is an integral part of this call for proposals.

All faculty members and senior scientists employed at an institution of the ETH Domain, i.e., at Empa, EPFL, ETHZ, PSI, Eawag or WSL, are eligible for PHRT funding. He/she will act as principal investigator (PI) and coordinate the consortium (if there is one).

Collaboration with "non-ETH Domain" research groups from universities and university hospitals is highly recommended and desired. However, the ETH Board has ruled that PHRT funds can only be received from researchers of the ETH Domain and must be **spent within ETH domain research institutions** with a few, well defined exceptions. For each exception, a contract must set up to regulate the service. Therefore, as a rule, with these proposals a full cost budget must be submitted indicating which parts (research groups and activities) are planned to be funded from various funding sources (PHRT - ETH Domain, SPHN - universities, university hospitals, own contributions, IICT of the SNSF etc.). In particular cases, access to omics or clinical data can be organized as a **service** via the cost category "consumables/miscellaneous" in the PHRT budget. Applicants are encouraged to submit project proposals that collaborate with the Swiss Data Science Center (SDSC).

PHRT intends to close the patient-research-patient cycle and show how ETH technologies/algorithms can be leveraged to support clinical decision-making. Therefore, the PHRT EC and international reviewing committee will put emphasis in the decision-making process for project

funding on project plans, which go beyond the publication of the research results. Please describe in detail how your research plan and expected results can be leveraged together with clinicians at the interface to the clinic and patients. In case the project is designed and not yet at the level of making the transition to the clinic, the clear path towards clinical implementation including clinical partners for implementation must be described.

Furthermore, the generated data must follow the FAIR principle, e.g., the data must be findable, accessible, interoperable, and re-usable with none or minimal human intervention. Here, PHRT expects an effort beyond the typical requirements of publication. Data lineage tracking, using community accepted data exchange formats and the inclusion of meta-information for export/import into PHRT/SPHN data centers are expected. Please visit the PHRT website and/or contact the PHRT office for further information and guidance.

Typically, PH/PM research projects require various approvals (e.g., ethics) and/or **agreements** (e.g. Data Transfer and Use Agreement (DTUA)). In order to successfully continue the projects and receive continued funding from PHRT, all necessary documents **must be available and signed three months after project start and a copy must be submitted to the PHRT office**. In the case of missing permissions/documents the project will be put on hold. An overview and templates for various agreements can be found of the SPHN-DCC website. Please do not hesitate to contact the PHRT office for further guidance and clarifications.

1 Description of TechTrans Projects

Personalized medicine is evolving rapidly and depends heavily on technological developments. Research within the institutions of the ETH Domain presents a rich and diverse source of technological innovation with potential applications for personalized health. The application of emerging **technologies to support clinical decision-making, better diagnosis or other means of advancing the translation of PM to the clinic** presents substantial hurdles in terms of robustness, performance benchmarking, scalability, validation in independent sample cohorts and more. Frequently, emerging technologies show great potential for personalized health/medicine research but their performance is not sufficiently tested or documented to allow application in a clinical setting. To harvest the richness of technological innovation in the ETH Domain institutions and to accelerate the development of selected technologies towards and into clinical utility in the field of personalized health, PHRT is issuing a call for Technology Translation Projects (TechTrans Projects). In this context the term “technology” is used in a broad sense and is not limited to specific laboratory techniques or instruments. Examples include technical advances for the collection of quantitative phenotypic, clinical or lifestyle data from populations or clinical cohorts; computational technologies for the integration of diverse data types; or technologies for the preservation of clinical samples for experimentation in the laboratory (iPS cells, organoids, etc.) – as long as their direct relevance for personalized medicine is demonstrated.

This call for proposals for PHRT TechTrans Projects is, therefore, aimed at bringing technologies developed in the institutions of the ETH Domain in the field of personalized health to direct clinical utility within the duration of the project period. It is expected that such "translation projects" build on substantial prior work, including proof-of-principle for the technological base of the project. The development of fundamentally new technologies is out of scope for this project category. Successful projects will need to demonstrate that the translated technology is capable of generating research results that have the properties (robustness, scalability, reproducibility) that make them directly relevant for clinical applications, that they provide clinical information, performance or solution previously not attainable and that they are conceived to operate in the personalized medicine domain.

It is expected that after 3-4 years successful Technology Translation Projects will have shown sufficient evidence that the technology and the resulting data could have an impact on clinical decision-making which, in turn, could trigger the decision to evaluate the technology/data within a formal clinical trial. In this respect, the ETH Zurich just launched a new technology platform for clinical trials (dTip). Technology Translation Projects, which do not reach this maturity within the project duration, should evaluate to merge or contribute to ETH domain technology platforms, including the PHRT technology platforms in order to ensure the further development and sustainability of the technologies.

Technicalities:

Project duration	24 months
PHRT funding (max.)	CHF 375'000 per year for personnel, equipment, consumables. Excellent projects can request additional funding providing a particular justification.
Principal investigator (PI)	Faculty members and senior scientists employed at an ETH Domain institution
Consortium	It is up to the PI to compose a consortium, its size and composition. However, participation of a clinical group is mandatory.
Number of approved projects with this call	approx. 5
Letters of intent:	statements from clinicians and/or future customers (in broader sense) are to be added

2 Documentation to be submitted

The TechTrans Project proposals are to be submitted using the official templates, which are available on the PHRT website, consisting of three parts:

Part 1: **General** information

Part 2: **Scientific and technical** information

a) Abstract (1 page)
b) International standing of applicants in their field of research (1 page)
c) Technology development plan: state of the art, description of prototype, key questions, methods, cooperation with clinics, and milestones (max 10 pages);
d) Data management (integration / implementation) plan, in particular explaining how to implement the FAIR principle (max 3 pages);
e) Clinical importance: explain the path to clinical implementation, intended use, possible hurdles, etc (max 2 pages)
f) Description of expected outcome (specifically how and when the technology will be applicable in a clinical setting and how this will be demonstrated)

- Attachments:

- CV and publication list for the past 5 years of the PI and all co-PIs
- Letter(s) of intent
- Potential reviewer (positive and negative list)
- Relation to SPHN or PHRT projects approved in the first phase 2017-2020: please explain the relation of the proposal to approved projects if there is any.

Part 3: **Full cost budget** (using the PHRT financial form)

Submission Deadline

The deadline for the submission of PHRT TechTrans Project proposals in PDF format is **May 15, 2021**.

3 Selection criteria

The review board will evaluate the proposals according to the following criteria:

- Contribution to the progress of personalized medicine including interoperability of generated data;
- Added technological and scientific value due to the interdisciplinarity of the proposal;
- Potential of the technology to be deployable in the clinic for the benefit of patients;
- Potential to learn new skills and methods for the postdoc fellow.

In addition to these criteria, the following standard scientific criteria will apply:

- Feasibility of technology for personalized health/medicine
- Scientific relevance of the proposal
- Originality of the questions
- Adequacy of the methodology
- Scientific and technological track record of the applicants
- Expertise of the applicants concerning the proposal
- Excellence in personalized health/medicine
- Suitability of the technology
- **Clinical implementation plan**
- Data integration plan
- **Cooperation with clinics/patients**
- Expected outcome