Strategic Focus Area
Personalized Health and Related Technologies

7th Call for Proposals for PHRT Projects: Personalized Medicine Imaging Projects (PM Imaging Project)

January 28, 2022

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).

Applicants are encouraged to submit project proposals that collaborate with the Swiss Data Science Center (SDSC). 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. A contract must be set up to regulate the service for each exception. Therefore, as a rule, with these proposals, a total 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, clinical, or imaging data can be organized as a **service** via the cost category "consumables/miscellaneous" in the PHRT budget. Note: clinical services should be maximal 20% of the total PHRT budget. If they exceed 20%, a sound justification must be given.

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 emphasize implementing the research results to patients 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. Implementing the research results into the clinic by the end of the projects or soon afterward is essential.

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 is 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)). To successfully continue the projects and receive continued funding from PHRT, all necessary documents **must be available and signed three months after the project start, and a copy must be submitted to the PHRT office**. If missing permissions/documents, the project will be put on hold. An overview and templates for various agreements can be found on the SPHN-DCC website. Please do not hesitate to contact the PHRT office for further guidance and clarifications.

1 Description of PM Imaging 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 wealth of technological innovation in medical imaging research within the ETH Domain institutions and accelerate their clinical implementation, PHRT is issuing a call for Personalized Medicine Imaging Projects (PM Imaging Projects). In this context, the term “imaging” is used broadly. It covers steps from medical image acquisition, medical imaging data management, storage, analysis, utilization and interpretation relevant to personalized medicine.

This call for proposals for PHRT PM Imaging Projects is, therefore, aimed at bringing imaging technologies developed in the institutions of the ETH Domain in the field of personalized medicine imaging to a clinical implementation within the duration of the project duration. The development of fundamentally new technologies is out of scope for this project category; the project must be in line with technologies already in place and possibly already supported by previous PHRT calls. Successful projects will need to demonstrate that the translated technology can generate research results that have the properties (robustness, scalability, reproducibility) that make them directly relevant for clinical applications and provide innovative clinical information, performance, or solution with a focus on personalized medicine.

It is expected that after 2 years successful PM Imaging Projects will have shown sufficient evidence that the technology and the resulting data could impact clinical decision-making/practice, which, in turn, may be tested in a clinical trial. In this respect, ETH Zurich just launched a new technology platform for clinical trials (dTip).

Technicalities:

Project duration	24 months
PHRT funding (max.)	CHF 600'000 for personnel, equipment, consumables. Exceptional projects may request additional funding providing a particular justification.
Principal investigator (PI)	Faculty members and senior scientists employed at an ETH Domain institution
Consortium	The participation of two ETH Domain institutions is highly recommended. The involvement of a clinical partner (hospital, clinic, medical practice, etc.) is mandatory.
Number of approved projects with this call	approx. 4
Letters of intent:	statements from clinicians and/or future customers (in the broader sense) are to be added

2 Documentation to be submitted

The PM Imaging 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 earlier: please explain the relation of the proposal to approved projects if there are any.

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

Submission Deadline

The deadline for the submission of PHRT PM Imaging Project proposals in PDF format is **April 17, 2022**.

3 Selection criteria

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

- Basic, translational or clinical medical research in imaging sciences and technology, and integration or application of these imaging discoveries and developments to the understanding of biology and to the clinical management of diseases and/or analytical methodologies to foster the clinical use of data
- Strong links with clinical partners and the implementation of the project to the clinical setting is essential in the short term (by the end of projects) to ensure the interest and continuity in the collaboration with the hospitals and clinics
- Collaborations between two ETH Domain institutions are strongly encouraged
- It will further support the development and launch of a future multicenter Clinical Imaging Competence Hub across the ETH Domain institutions.

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