5th Call for Proposals for PHRT Projects: Edu: Doctoral and Postdoctoral Fellowships

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 scientists with a doctoral degree (postdocs only for TPdF Projects) employed at an institution of the ETH Domain, i.e., faculty members and senior researchers employed 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 be set up to regulate the service. 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).

It is expected that after successful completion, each project 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). 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 platforms in order to ensure the further development and sustainability of the technologies.

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.

This call is for applications for interdisciplinary doctoral and postdoctoral transition fellowships aimed at training the next generation scientists in the field of personalized medicine. PHRT intends to fund up to ten doctoral and about five postdoctoral fellowships with this call.

1 Interdisciplinary Doctoral Student Projects (iDoc) bridging science / engineering and medicine

1.1 Description

To support interdisciplinary research and education for the next generation of scientists in the field of personalized health, PHRT will support doctoral student positions for students pursuing research projects in this field. Students will be matriculated at an ETH Domain institution and will be enrolled in one of the established doctoral student programs. Student projects are expected to bridge the gap between science/engineering and medicine, and the student will have two mentors, one from each field of research (i.e science/engineering and medicine).

Only **one (1)** doctoral student can be employed per project. iDoc Projects are limited to 36 months (three (3) years as a rule) and may be extended to 48 months upon documentation of sufficient progress. PHRT plans to fund up to ten (10) doctoral students with this call. For PHRT students, attendance to educational events organized by PHRT will be mandatory.

PHRT will grant the following to each iDoc Project: salary and social charges of the doctoral student according rules of the employing ETH Domain institution, plus on request, a yearly amount for consumables (up to CHF 10’000 per year).

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.

Technicalities iDoc:

Project duration:	36 months
PHRT funding (max.):	Salary of doctoral student according rules of the employing ETH Domain institution plus up to CHF 10'000 per year for consumables/misc.
Dual mentor supervision:	The two mentors (supervisors) need to be from different fields of research, one of which must be medicine. The main mentor must be a faculty member of an ETH Domain institution
Project scope:	Projects need to demonstrate direct clinical relevance
Number of approved projects with this call:	approx. 10

1.2 Documentation to be submitted

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

Part 1: **General** information

Part 2: **Scientific** information

a) Abstract (1 page)

b) International standing of both applicants (supervisors) in their field of research (1 page)

c) Research plan: state of the art, questions, methods, milestones and expected outcome(s) (6-8 pages)

d) Description of the tasks the doctoral student will carry out during the project (1/2 page)

e) Overview of the training program that the PhD student will go through and how it contributes to the knowledge base in personalized medicine/health (taking into account the environment in which he/she will be working and the interdisciplinary character of the project) including name of the PhD program the student will enroll (1/2 page)

- Attachments:
  - CV and publication list for the past 5 years of the two supervisors
  - Potential reviewer (positive and negative list)
  - Link to SPHN or PHRT projects of the first phase (2017-2020): please explain the relation of the proposal to approved projects if there is any.

Part 3: **Budget**

Submission Deadline

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

1.3 Selection criteria iDoc

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

- Contribution to the progress of personalized medicine including interoperability of generated data and clinical relevance;
- Added technological and scientific value due to the interdisciplinarity of the proposal;
- Complementarity of dual mentors' research programs;
- Joint research projects between clinics and ETH Domain will be prioritized for funding;
- Potential to learn new skills and methods for the doctoral student.

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

- Feasibility of technology and pertinence 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
- Suitability of the technology
- Clinical implementation and/or path towards clinical studies
- Data integration plan
- Project must make a difference in personalized medicine/health
- Cooperation with clinics/patients

2 Transition Postdoc Fellowships (TPdF)

2.1 Description

Postdoctoral fellowships are intended to facilitate the transition of young scientists into the interdisciplinary research culture of personalized health research. Project proposals are accepted from PhD and/or MD scientists within a maximum period of five (5) years since receiving their highest degree (the relevant dates are the application deadline and the date the degree was awarded). The fellowships will be awarded for 24 months (two (2) years). Research projects must show direct clinical relevance within the field of personalized health and clearly demonstrate a significant extension or transfer of the applicant's research background. Only projects that show a link between basic science/engineering and clinical applications will be considered.

Applicants require the commitment of one host research group located at one of the ETH institutions working in a field that is complementary to the field of research that led to the highest degree of the applicant. The successful applicants will be responsible for their project including management, equipment and consumables. The host lab is required to employ the postdoc and to grant the awardee access to all infrastructure and resources in the respective group.

PHRT will fund the postdoc salary according rules of the employing ETH Domain institution and on request with support for consumables of up to CHF 10'000 per year.

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.

Technicalities TPdF:

Project duration	24 months
PHRT funding (max.)	Salary of the postdoc according rules of the employing ETH Domain institution plus up to CHF 10'000 per year for consumables on request
Number of approved projects with this call	approx. 5
Roles	The applying postdoc acts as the principal investigator (PI), the head of the hosting research group as co-PI. The co-PI must be employed at an ETH Domain institution.

Project scope	Projects need to demonstrate direct clinical relevance

2.2 Documentation to be submitted

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

Part 1: **General** information

Part 2: **Scientific and technical** information

a) Abstract (1 page)

b) International standing of both the applicant and the proposed host group in their field of research (1 page)

c) Research plan: state of the art, key questions, methods, cooperation with clinics, milestones and expected outcome(s) (10 pages)

d) Data management (integration / implementation) plan (max 3 pages)

- Attachments:
  - CV and publication list for the past 5 years of the applicant and proposed host group leader
  - Letter(s) of support stating that the postdoc is welcome and integrated in the research group
  - Potential reviewer (positive and negative list)
  - Link to SPHN or PHRT projects of the first phase (2017-2020): please explain the relation of the proposal to approved projects if there is any.

Part 3: **Budget**

Submission Deadline

The PHRT TPdF proposals are to be submitted in PDF format by **May 15, 2021**.

2.3 Selection criteria

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

The decision will be primarily based on the quality of the candidate and scientific criteria, and on the project's potential added value to personalized medicine/health.

- Contribution to the progress of personalized medicine including interoperability of generated data;
- Added technological and scientific value due to the interdisciplinarity of the proposal;
- Significance of extension/transfer of research profile of the applicant compared to previous research that led to highest degree.
- It is expected that candidates will follow appropriate training during their program to improve their knowledge and skills in the field of personalized health/medicine.

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

- Scientific relevance of the proposal
- Originality of the proposal and clearly defined personalized medicine/health questions
- Does the proposal describe an integrated, interdisciplinary and clinically relevant project?
- Does the proposal generate new data and knowledge that could not be obtained by traditionally-structured projects? What is the added value?
- Adequacy of the methodology
- Scientific track record of the applicants
- Expertise of the applicants concerning the proposal
- Feasibility of the proposal
- Clinical implementation, notably path to clinical studies
- Is the chosen research group suitable for hosting the candidate?
- Can the hosting research group adequately support the candidate?
- Co-operation with clinics/patients