Strategic Focus Area 2017–2020

Personalized Health and Related Technologies

Life science research currently undergoes a drastic revolution. Today's medicine is being ultimately transformed into "individualized medicine": in essence, a person's unique biological makeup will guide decisions on how to maintain and restore his or her health. The Strategic Focus Area Personalized Health and Related Technologies (PHRT) aims at contributing cutting-edge research to this worldwide endeavor. To this end, the ETH Domain initiative is being coordinated with universities, hospitals and other initiatives in Switzerland, notably the Swiss Personalized Health Network (SPHN).

What's new?

Advances in life sciences and information technology (IT) allow the collection and analysis of large amounts of health-related data: clinical data, genomics data, data from biobanks and health data collected by individuals themselves. Making use of such data to optimize the medical care of each individual is the ultimate objective of personalized medicine. But while personalized medicine focuses on individual patients, personalized health aims to use the analyzed data for the benefit of the population at large by identifying and tackling health risks at early stages and applying appropriate preventive and therapeutic measures.

Aims of Personalized Health and Related Technologies

The initiative is concerned with technical applications, including information technology, biotech and monitoring instruments, if they intend to:

1) improve the quality of healthcare delivered through earlier and better diagnosis, less invasive treatment options and reductions in hospital stays / rehabilitation times in patients;
2) select therapeutic strategies for individual patients based on genetic, biomarker or other patient-related factors.

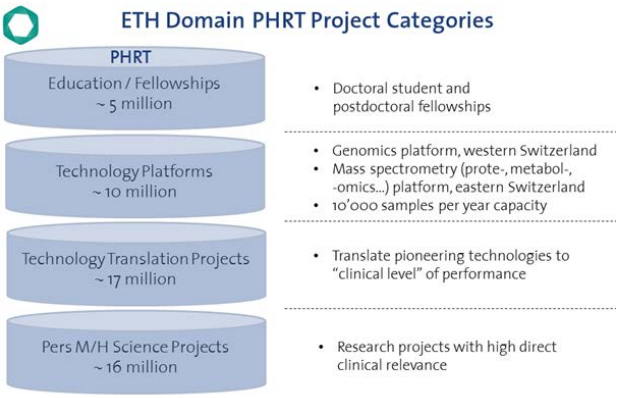
The outcome of this initiative provides significant value for patients and clinicians and fosters a healthy society.

Project types

To meet the stated goals, close collaboration between science, engineering and medicine is essential. This will be achieved by establishing programs that are complementary to the efforts undertaken by other initiatives, such as the Swiss Personalized Health Network (SPHN). Specifically, the four program areas described below are implemented in coordination with SPHN and the Swiss Data Science Center (SDSC):

1) Technology platforms to generate high quality, high volume individualized molecular profiling data from patients and clinical cohorts. The generated data should fulfill standards and are intended to directly inform clinical decisions. Second-generation techno logy platforms will primarily arise from ETH technologies developed in the first phase.
2) A translational technology program that intends to advance innovative technologies pioneered in the ETH Domain for clinical application. It is intended that some of these technologies could form the basis for second-generation platforms.
3) Personalized health related research projects with direct relevance for the patient. These projects will be carried out in collaboration with and jointly funded by complementary programs such as SPHN.
4) A program on the PhD and postdoc level to train the next generation of scientists in personalized health research.

Eligible for PHRT funding are all scientists of the ETH Domain. However, collaboration with external researcher groups is highly recommended and desired.



Joining forces with other players and benefit from synergies

On a national level, the Swiss Academy of Medical Sciences was mandated by the State Secretariat for Education, Research and Innovation SERI to develop a Swiss Personalized Health Network. There, priority is given to the development of a nationally coordinated data infrastructure ensuring data interoperability in local and regional information systems with special emphasis on clinical data management systems enabling effective exchange of patient data (e.g. disease phenotypes). Efforts and activities of PHRT and SPHN are complementary. They are, therefore, coordinated to generate a higher impact and implement a coherent national data infrastructure of health data for the benefit of personalized health related research. As an example, for "Driver Projects" the two initiatives publish the calls together and contribute both to these projects.

Governance and Organization

PHRT has a small administrative structure. Funded projects are selected on a competitive basis according to a) their ranking by peer review and b) whether they comply with the aims and scope of the calls for proposals. The responsibility to achieve the stated goals, manage funds, recruit and manage personnel, as well as the duty to report progress is delegated to the respective project leaders. This allows the effective allocation of financial resources.

Issues pertaining to intellectual property will need to be carefully addressed. This is implemented by the researchers institutions in collaboration with the SDSC, as well as the SPHN.

PHRT Governance

The Strategic Committee is the highest governing body and is responsible for the overall strategy. It includes representatives from all involved institutions. The Executive Committee is responsible for the strategic and operational decisions within the SFA. The members of the Executive Committee represent the involved institutions of the ETH Domain. The executive director of the Swiss Data Science Center is a full member of the Executive Committee to ensure close collaboration. In addition, one member is also on a SPHN committee to guarantee the sharing of information and knowledge transfer.

For further information on the composition of the two committees, see www.sfa-phrt.ch/governance-and-organization.

PHRT Office

The PHRT office is hosted by ETH Zurich. It supports the Executive Committee and is in charge of the administrative and daily operation of the SFA such as preparation of meetings, controlling, budgeting and reporting.

Key role of the ETH Domain

The institutions of the ETH Domain play a key role in (bio)medical research and medical technology in the Swiss university system. As an important aspect, they have a leading role regarding the development of novel technologies relevant for personalized health, the development and operation of large and highly specialized research infrastructures which are intensively used in relation with personalized health, the development of medical technology devices, as well as with technology platforms, particularly in the field of translational medical research.

Link to further information

www.sfa-phrt.ch

Published by
ETH Board
Dr Fritz Schiesser, President
www.ethrat.ch

Zurich and Berne, August 2017

Enquiries
Dr Daniel Vonder Mühll,
Executive Director PHRT
vondermuehll@ethz.ch