

InnoMeter

REPORT 2022

Publications

Patents

R&D Projects

Education

People



InnoMeter 2022

Dear community members,

We proudly present the first InnoMeter results, measuring the innovation power of the entire sitem-insel community. With the metrics accepted by governmental authorities, we are able to present our collective innovation performance in a concise, visually attractive form to our partners, stakeholders, and society at large. Achieving this strategic aim would not have been possible without your valuable support.

Since the opening of the sitem-insel building in 2019, the spirit of collaboration and innovation has grown in sitem-insel. By continuously sharing your innovation performance in terms of publications, R&D projects, patents, people (staff growth), and education (diplomas) within the InnoMeter, we are able to evaluate and present our shared innovation output at an aggregate level, on an annual basis.

As you will see on subsequent pages, the aggregate result is displayed using five “buttons” representing the indicators “publications”, “R&D projects”, “patents”, “people”, and “education”. In addition to concisely showing the sitem-insel community’s collective innovation performance, individual success stories can be accessed by selecting each of the respective buttons. This interactive feature allows for the communication of selected success stories in a more detailed way to the common benefit of our whole community.

Thanks to our community’s collaboration in providing data, we were able to fulfill our contractual obligation related to innovation performance towards the federal and cantonal authorities. Finally, we will be able to provide each individual community member with an excerpt of their innovation-related data upon request.

The purpose of this brochure is to disseminate the results of the first annual InnoMeter survey (2022) and inform our community on how the InnoMeter was conceptualized. Finally, and most importantly, we would like to take this opportunity to thank our entire community for the seamless collaboration. Please continue to feed the InnoMeter—pushing innovation together.

With sincere thanks and warm regards,

Julie Risse, Sabrina Ilgenstein and Christian Rosser

Growing Together

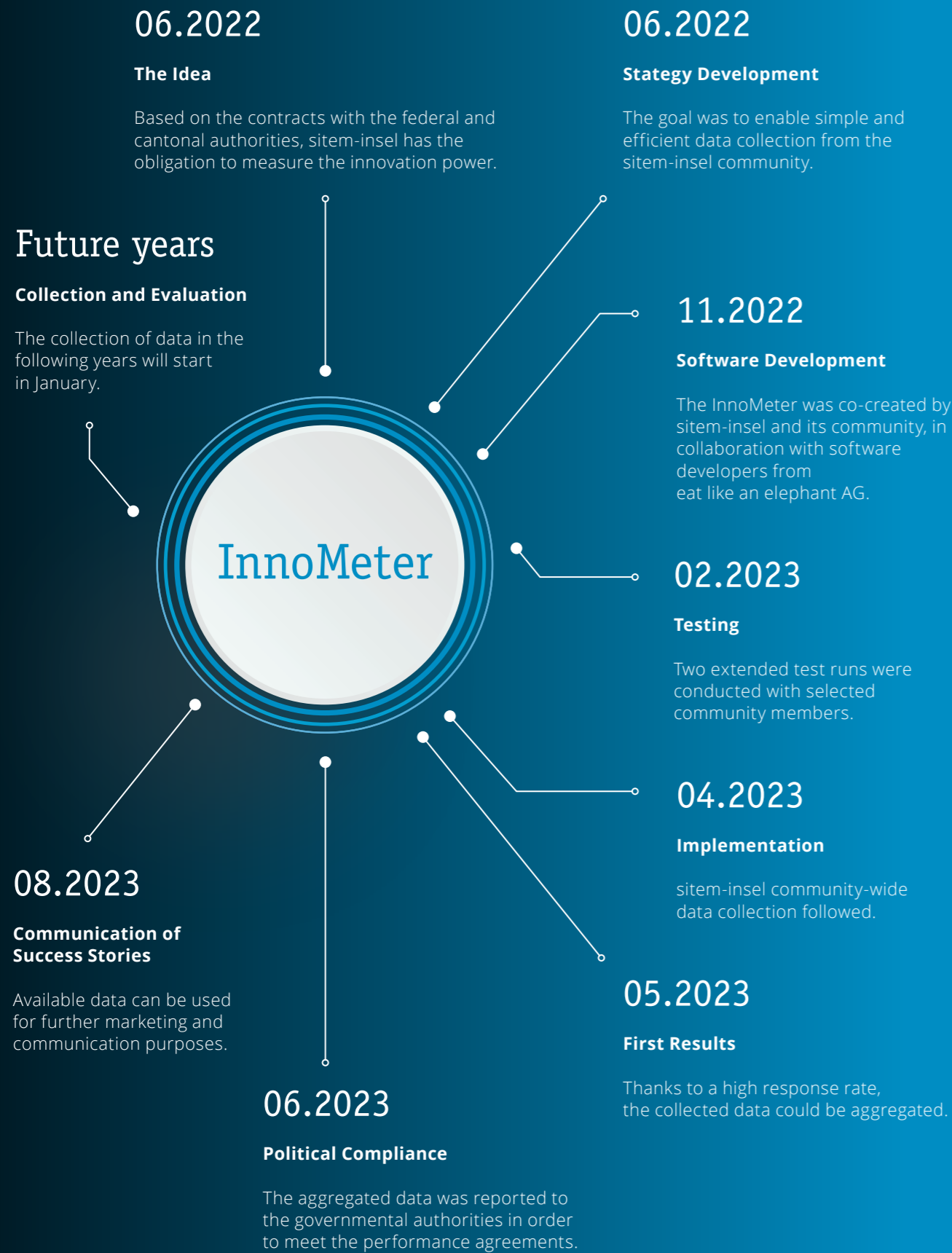
In collaboration with the sitem-insel community, we have developed the InnoMeter as a tool to measure and visualize our global innovation performance. By assessing key factors such as publications, R&D projects, patents, and organizational indicators, the InnoMeter measures our network’s dynamic innovation landscape.

To our shared benefit, the continuous collection of data will track the growth and development of our community’s innovation activities.

The InnoMeter is the embodiment of the sitem-insel innovation spirit where each individual unit of our community contributes to our collective innovation power.

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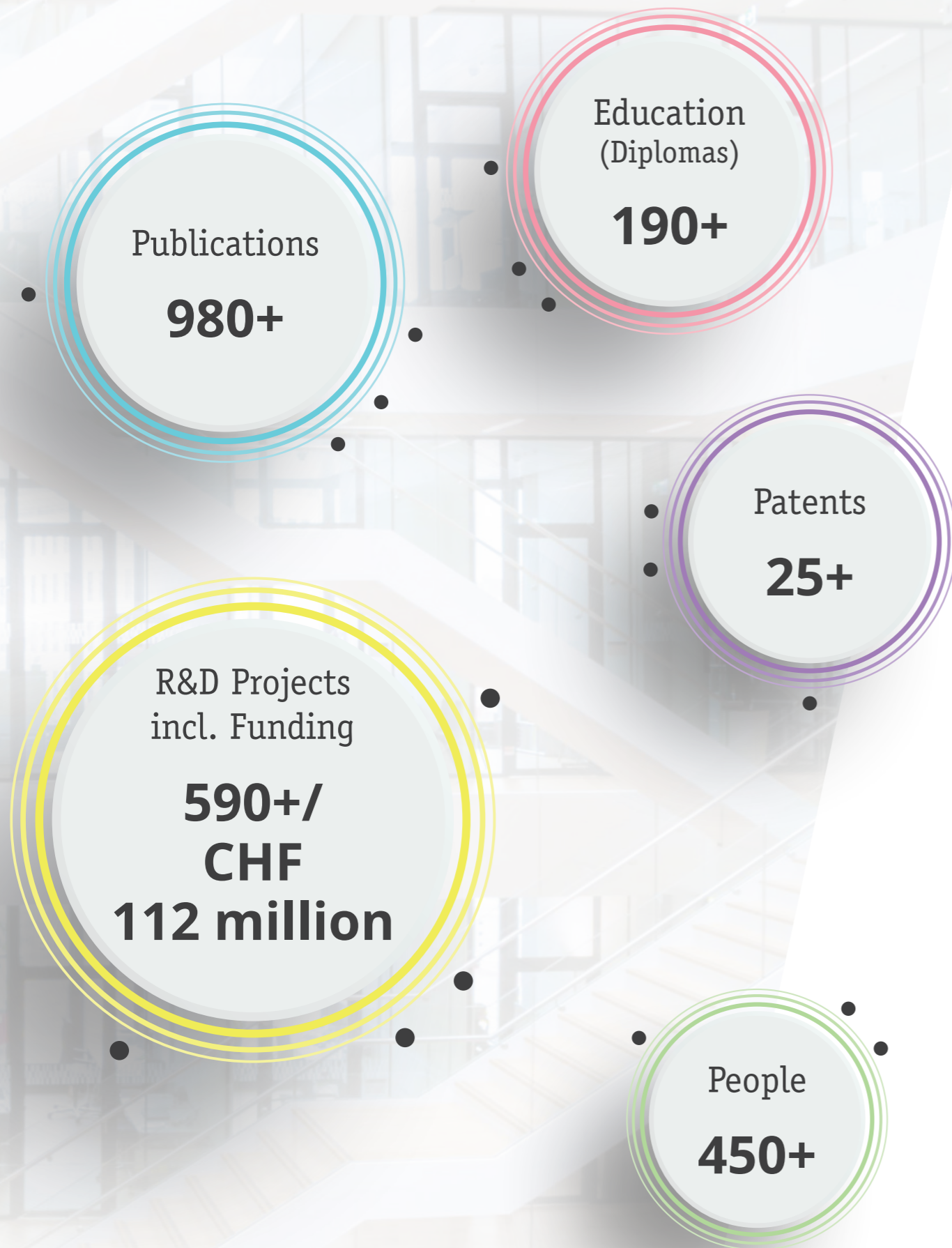


Project Report

Innovation is organic—the whole is greater than the sum of its parts. The first InnoMeter survey demonstrates that the sitem-insel community makes a significant contribution to Translational Medicine in Bern and Switzerland (see “Aggregated Results”). Thanks to the InnoMeter, we are now able to present the positive economic and societal impact of sitem-insel and its community in a nutshell.

The InnoMeter is intuitive and easy to navigate. It was developed with a wide range of addressees in mind. It had to meet the reporting requirements stated by governmental authorities while at the same time being accessible to society in general. The InnoMeter was therefore co-created by members of the sitem-insel community and sitem-insel, assisted by a team of software developers from eatlikeanelephant.ch. The project was completed on time, thanks to the fast iterative feedback we received from members of the sitem-insel community who acted as a testing group.

The project's collaborative approach can serve as an example for future endeavors. We extend our gratitude and appreciation to the entire sitem-insel community for supporting us and being an integral part of the InnoMeter development journey. For more detailed information about the project and its outcome, please do not hesitate to reach out to us. We look forward to sharing more InnoMeter-based success stories in the future.



Aggregated Results

The period of enquiry spanned between 2019, the year sitem-insel opened, to 2022. We achieved a response rate of 88.2%: 30 out of 34 contacted units of the sitem-insel community provided their data.

Among the 984 publications (co-)authored by sitem-insel community members are publications in top journals such as *Nature* and *The Lancet Neurology*.

28 patents have been filed since 2019 by sitem-insel community members.

The number of research and development projects carried out within the sitem-insel community amounts to 593, with a total of CHF 112 million in funding acquired. The total of competitive third-party funding raised by the sitem-insel Promoting Services, for instance, reached approximately CHF 1.8 million in 2022. In addition, ten units report to have acquired industry funding totaling over CHF 26 million. Finally, the aggregated InnoMeter data illustrates that collaboration within community projects has taken place with 517 partners since 2019.

Finally, the InnoMeter shows that in 2022, the sitem-insel community consisted of 456 employees, equivalent to 352.9 full-time equivalents. Since 2019, the community has recorded 193 educational degrees, including habilitations, PhDs and doctorates, master's and bachelor's degrees, MAS, DAS, and CAS degrees as well as apprenticeship diplomas and Advanced Federal Diplomas of Higher Education.

Success Stories

Publications
980+

Researchers from the Institute of Infectious Diseases of the University of Bern (IFIK) published a study in *Nature Communications* 2022 on the surveillance and characterization of the SARS-CoV-2 variant Omicron-BA.1, which has become prevalent worldwide. The authors provide a comparative analysis of the virus variant, demonstrating that Omicron-BA.1 exhibits a remarkable evolutionary and phenotypic leap, affecting virus replication, host and tissue tropism, pathogenicity, and immune evasion. The authors emphasize that the spike gene is a key determinant for these phenotypic changes.¹

In *Nature Digital Medicine* 2022, a team including researchers from NeuroTec, introduce a comprehensive set of digital measures—what they call digital exhaust—for long-term remote health-monitoring in the older adult demographic. The digital exhaust consists of 1268 digital measures derived from 94 hypothesis-driven base measures, covering large parts of a person's daily activity, behavior, and physiology. All incorporated digital measures are derived from a small set of interaction-free, contactless sensing devices applied in numerous ageing-related, long-term, remote-monitoring projects around the world. By combining age-relevant digital clinical outcome assessments with state-of-the-art machine learning, the study introduces a powerful and promising approach to discovering new digital biomarkers. Such studies contribute to the transition from a more reactive to a proactive (precision) medicine, which is becoming increasingly important in the context of a rapidly aging population.²

Researchers from sitem-insel AG and the University of Bern's KPM Center for Public Management have focused on organizational challenges and opportunities of Swiss Public Private Partnerships (PPP). As a result, *The Sweet Spot of Legitimacy: A Manager's Guide* was published by Springer Nature in 2022. With this practice-oriented book, looking at the *Swiss Institute for Translational and Entrepreneurial Medicine* as empirical case, the authors not only contribute to a deeper understanding on how translational medicine and entrepreneurship may be promoted politically in Switzerland. The book also provides insights into how future national and international PPP projects may be organized effectively and efficiently.³

¹ Barut, G.T., Halwe, N.J., Taddeo, A. et al. The spike gene is a major determinant for the SARS-CoV-2 Omicron-BA.1 phenotype. *Nat Commun* 13, 5929 (2022). <https://doi.org/10.1038/s41467-022-33632-y>

² Schütz, N., Knobel, S.E.J., Botros, A. et al. A systems approach towards remote health-monitoring in older adults: Introducing a zero-interaction digital exhaust. *npj Digit. Med.* 5, 116 (2022). <https://doi.org/10.1038/s41746-022-00657-y>

³ Rosser, C., & Pfaff, C. (2022). *The Sweet Spot of Legitimacy: A Manager's Guide*. Springer Nature. <https://doi.org/10.1007/978-3-031-15171-2>

Projects
590+

Campus SLB Lindenhof AG

Supported in part by Campus Stiftung Lindenhof Bern (SLB), a diverse team of 24 researchers embarked on a journey to empower radiologists with cutting-edge artificial intelligence (AI) tools. More specifically, the research group aimed to develop AI-based multi-omics models that could improve the identification of patients requiring specialized care during the acute phase and predict chronicity in long COVID-19 patients through radiological markers. The research project included collaborations with the Yale School of Medicine as well as the University Hospital of Parma.

The study introduces a novel approach involving multi-class lesion segmentation combined with WHO-standardized severity scaling and radiological characterization. This research represents a crucial step towards the development of a widely applicable clinical decision support system for hospitals, not only during the COVID-19 pandemic but also for similar future challenges.

MRM - Magnetic Resonance Methodology and Translational Imaging Center

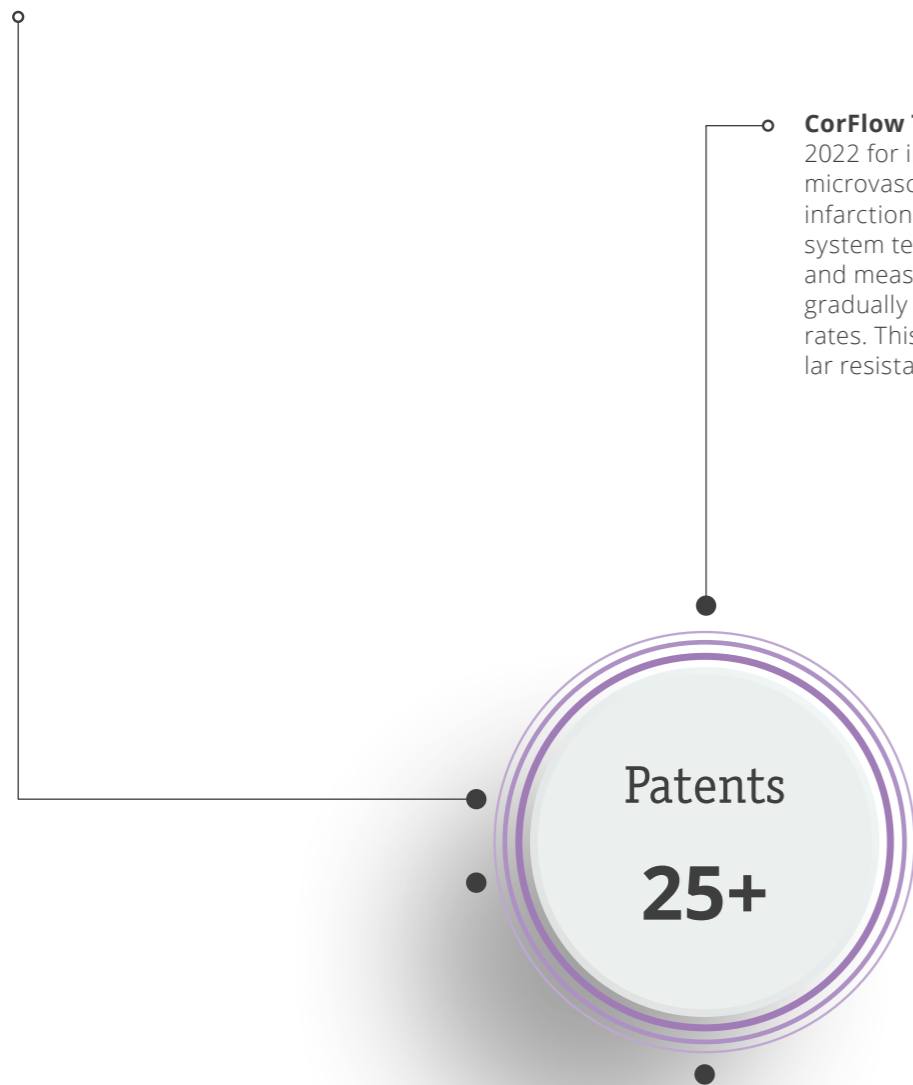
A research group of AMSM and the Translational Imaging Center have conducted a pilot project with the overarching objective of finding a non-invasive and spatially resolved assessment of intracellular potassium concentration by 39K-MR methods of skeletal muscle and liver.

Potassium and sodium play vital roles in numerous cellular processes, with potassium being classified as a nutrient of public health concern by the FDA because of under-consumption. Low potassium intake associates with cardiovascular disease and mortality, while beneficial effects of higher potassium intake have been demonstrated. Since serum or urine potassium levels correlate poorly with tissue potassium, its determination in different organs would be valuable. However, localized non-invasive in vivo determination of 39K was not possible until recently. In fact, existing methods are invasive, associated with radiation exposure and lack spatial resolution.

By using 39K MRI and MR spectroscopic imaging (MRSI) at ultra-high magnetic fields, a non-invasive and spatially resolved method for in vivo investigation of the important K⁺ ion homeostasis and of normal cell membrane function in humans has become feasible. Applying the 7T MR scanner of the Translational Imaging Center at sitem-insel, the method was proven to be feasible in initial investigations. In other words, the potential for non-invasive potassium homeostasis determination became possible in Bern.

AlveoliX has patented a cell culturing system and method. The system comprises a docking station, a handling unit, a culturing module, and an actuation layer. The culturing module has a culturing well and a culturing membrane, separating the culturing well in an apical culturing chamber and a basal culturing chamber. The handling unit has a seat for removably accommodating the culturing module and the actuation layer and a bottom with an actuation bore. When the culturing module is arranged in the seat, the actuation bore is associated to the culturing well and the bottom is separated from the culturing module by the actuation layer. The docking station has a coupling structure for removably holding the handling unit in a predefined position and an actuation feeding channel, wherein, when the handling unit is held by the coupling structure in the predefined position, a first end of the actuation feeding channel is connected to the actuation bore and a second end of the actuation feeding channel is connected to a connector.

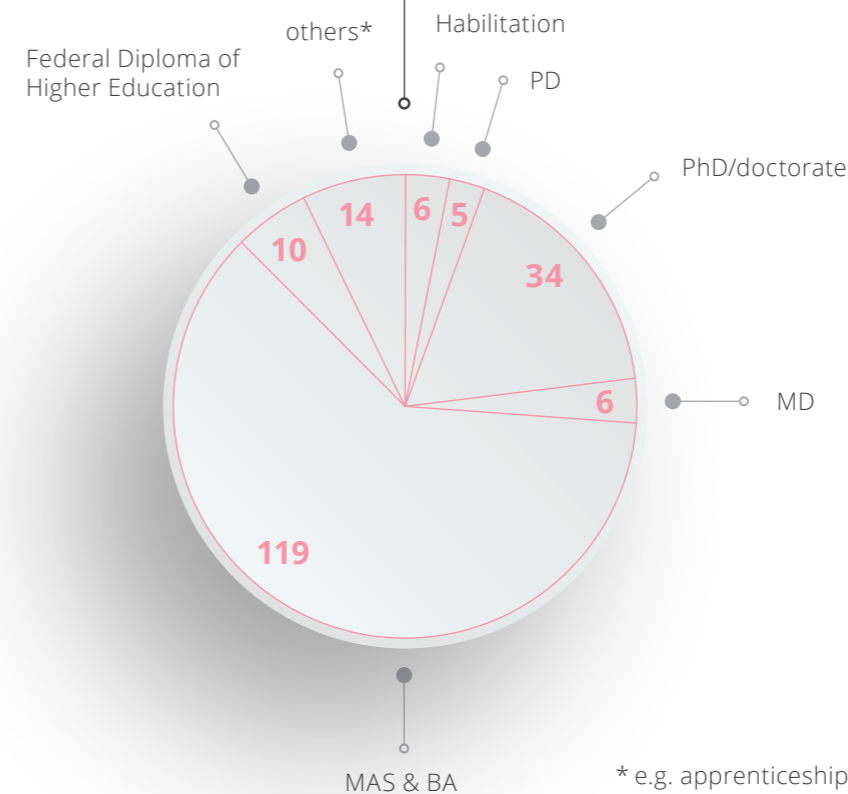
CorFlow Therapeutics has filed a patent in 2022 for intracoronary characterization of microvascular obstruction (MVO) and myocardial infarction. In the patented innovation, an infusion system temporarily blocks antegrade blood flow and measures vascular pressure response while gradually infusing an infusate at increasing flow rates. This enables insights into real-time vascular resistance to be obtained.⁴



⁴ <https://patents.justia.com/patent/20220378301> (1.6.2023).



The sitem-insele community has grown since 2019. In 2022, it consisted of 34 units with a total of 456 employees and 352 FTE.



* e.g. apprenticeship diploma, leadership transition program, study nurse course

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