



Annual Report 2021

Competence Centre for
Rehabilitation Engineering and Science



Content

Welcome	3
2021 in review	4
Strategy	6
Network	8
New strategic partner: Suva	10
New chair: Professor Carlo Menon, Biomedical and Mobile Health Technology, ETH Zurich	11
New chair: Professor Catherine Jutzeler, Biomedical Data Science, Schulthess Klinik, ETH Zurich	12
New research lab: Dr Diego Paez, SCAI lab, Swiss Paraplegic Centre, ETH Zurich	13
Research	14
Education	15
Outreach	16
Outlook	17
Annex	18

Welcome

Human health and medicine is one of ETH Zurich's major strategic areas for research, education and transfer, with its many facets from preventive medicine to technology-driven therapies towards chronic disease management and inclusion. The Competence Centre for Rehabilitation Engineering and Science (RESC), which evolved through the ETH Rehab Initiative, fills many gaps along the continuum-of-care by hosting and further developing a strong network in the vast field of rehabilitation and inclusion. RESC has a holistic understanding of rehabilitation, where many aspects complement the core fields of technology and medicine such as economics, environment, legislation, organisation and society.

We look back on RESC's second year, where we focused on expanding the network, developing a core strategy and ensuring strong partnerships. 2021 highlights are the establishment of core chairs, research labs, funding programmes, the joint development of strategic focus areas and goals, and the on-boarding of promising partners for our mission. The future looks exciting as we will further facilitate world-class research and educational activities by launching new professorships, funding programmes and contemporary educational formats towards rehabilitation and inclusion.

All activities are only possible thanks to a shared vision of many people, strong partnerships with the private sector and a tremendous personal and financial support. We would like to thank all involved persons, organisations and companies for their outstanding commitment.

Together towards the rehabilitation of the future for everyone.



Dr Oliver Stoller
Executive Director

Prof. Robert Riener
Chair

Prof. Roger Gassert
Vice Chair
(on medical leave)

Dr Serge Altmann
Chair of the
Advisory Board

Dr Donald Tillman
Managing Director
ETH Foundation

Michael Domeisen
Partnerships,
Member of the
Management Board
ETH Foundation

2021 in review

New strategic partner

Swiss Paraplegic Foundation, the umbrella organisation of the Swiss Paraplegic Group, comprises an integral network of services for the comprehensive rehabilitation of people with a spinal cord injury.



RESC Steering Committee Meeting



Research call 1
Changing behaviours awarded to "Hackster: User-led innovation in online communities"



RESC strategic development



January February March April May June July



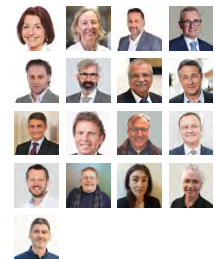
New chair
Prof. Carlo Menon,
Biomedical and
Mobile Health
Technology



1st RESC annual report published



1st RESC Roundtable "inclusion"



RESC Advisory Board Meeting

ETH Industry Day



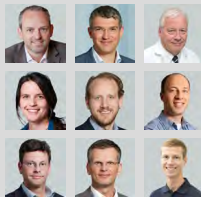
Scientifica



Swiss Medtech Day



RESC Steering Committee Meeting



New strategic partner

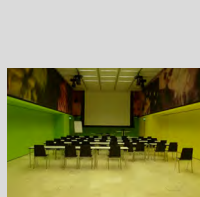
Suva, the Swiss National Accident Insurance Fund, is an important part of Switzerland's social security system. Suva insures employees at work and at leisure.



RESC VIP Dinner



RESC General Assembly



New chair

Prof. Catherine Jutzeler, Biomedical Data Science, Schulthess Klinik, ETH Zurich



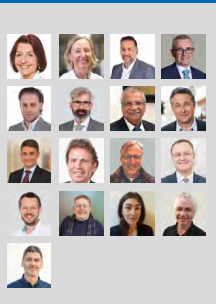
New research lab

Dr Diego Paez, SCAI (Spinal Cord Injury Artificial Intelligence lab) at the Swiss Paraplegic Centre, ETH Zurich



Regy ent

July August September October November December January 2022



RESC strategy development with Advisory Board



Hackathon Zurich



Onboarding Desiree Beck, Education Manager

Strategy

Together with all our members and advisors, RESC developed a core strategy in the second half year 2021. We evaluated the challenges of stakeholders and processes, identified the biggest levers to reach our vision, focused on key activities to provide value to stakeholders, and defined activities with the greatest benefit for society. The detailed strategy plan has been approved by the General Assembly and will serve as a basis to match the activities to the budget plan and implement a rolling strategy process including continuous monitoring.

Vision

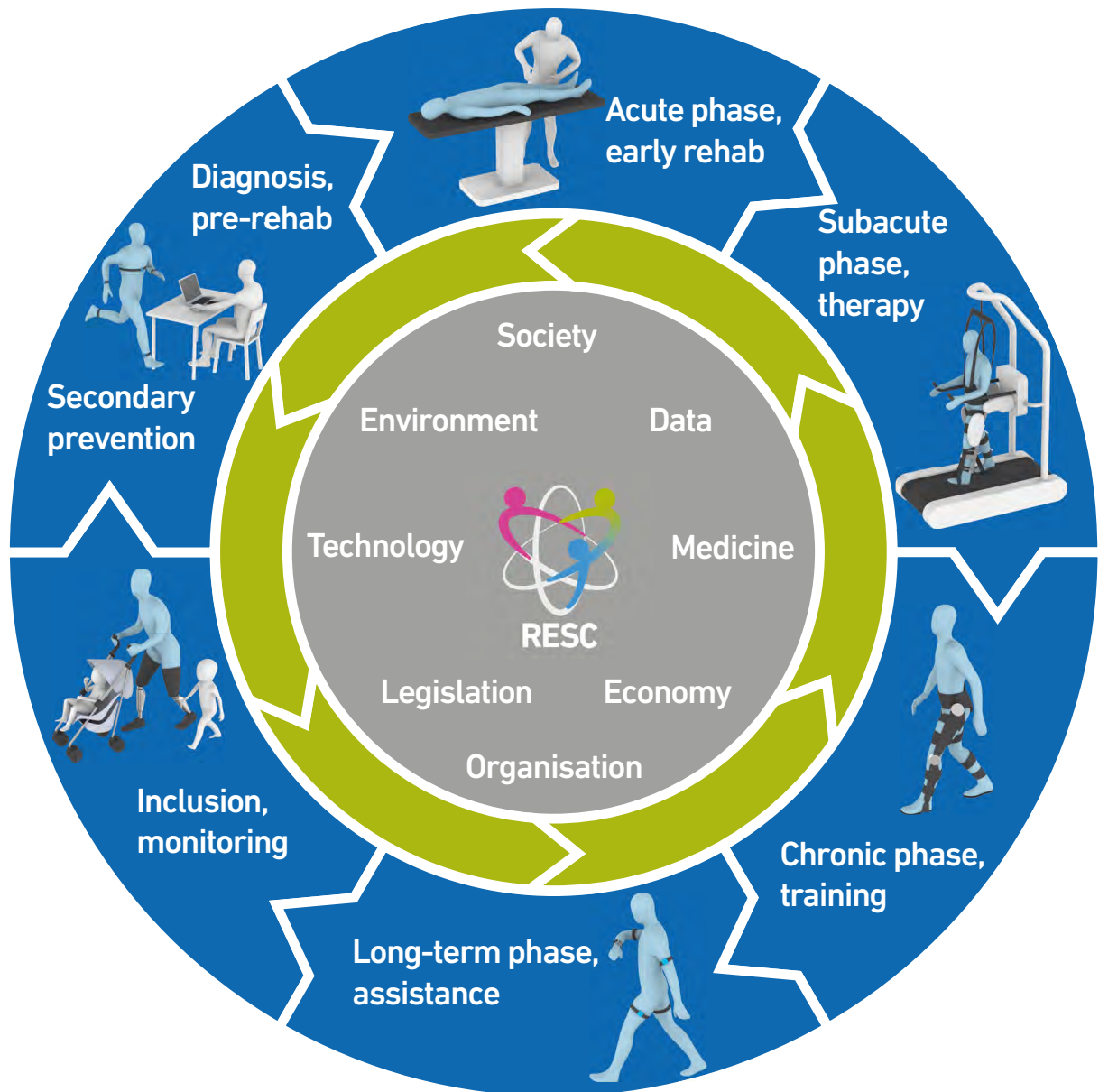
Our vision is to restore and maintain independence, productivity, and quality of life for people with physical disabilities and to contribute towards an inclusive society.

Mission

We promote the establishment of a holistic rehabilitation approach to better meet the needs of people with physical disabilities by facilitating research and transfer, fostering an interdisciplinary network, and raising awareness along the continuum-of-care.

Strategic focus areas

	Innovation and translation	Involve and unite stakeholders	Create awareness
Goals	Facilitate the transfer of research results into practice	Promote a strong network (platform) for transdisciplinary, interprofessional and international exchange on rehabilitation, engineering and science	Strong knowledge transfer: inform stakeholders and interested parties about trends, new products, services, success stories, etc., in rehabilitation
	Provide modular education programmes on the technology-based, holistic rehabilitation approach	Involve affected people and relevant organisations (third sector) to build the bridge to inclusion	Communicate the benefits of a technology-based holistic rehabilitation approach (stronger visibility of rehabilitation)
	Support the further development of rehabilitation standards (efficacy, expediency, economic efficiency)	Involve stakeholders in research and development at an early stage to best meet their needs	Proactively inform and involve politics and associations



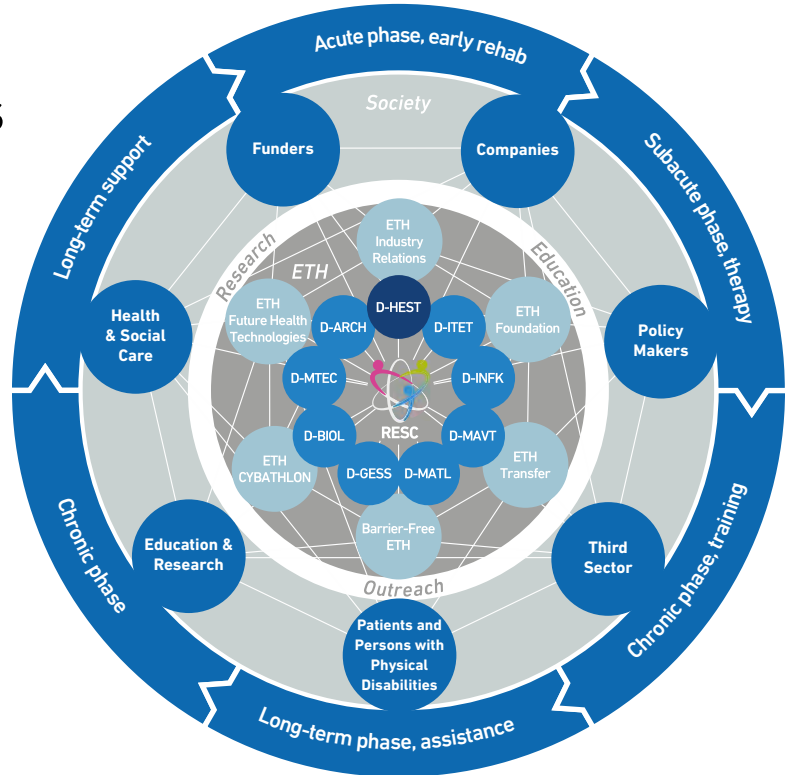
**“Before we colonise Mars,
we need to civilise our society
to be inclusive of everyone.”**

**Dr Serge Altmann
CEO ZÜRZACH Care
Chair of the RESC Advisory Board**

Network

RESC is a multidisciplinary network of academia, health and social providers, funders, industry, policy makers, patients and persons with physical disabilities, disability associations and other non-profit organisations.

Associated universities and clinics



Strategic partners

Our strategic partners are engaged with more than CHF 1 million each, which is provided via donations for professorships, research labs, funding and fellowship programmes, and/or via sponsoring for contract research, events and memberships. The RESC Partnership Council unites the strategic partners annually to discuss current and future challenges that guide the strategic alignment.



Knowledge partners

Our knowledge partners are engaged with contributions such as expertise/consulting, ambassador activities, and network access.



Startup partners

Our startup partners provide solutions for the future and are also engaged with contributions such as access to innovation, expertise/consulting, and network access.



New ordinary members



Prof. Gudela Grote, Professor of Work and Organizational Psychology, ETH Zurich

“RESC is the perfect community to contribute our expertise on interprofessional collaboration, leadership and coordination in healthcare teams, and impact of technology on work in healthcare, while learning about the advances and challenges in engineering and science related to rehabilitation.”



Dr Zina-Mary Manjaly, ETH Zurich, Neurology Consultant at Schulthess Klinik

“As a neurologist and clinical scientist, rehabilitation is a central topic. The RESC is a unique concept for bringing together expertise and developing innovative solutions towards the future of rehabilitation.”



Prof. René M. Rossi, ETH Zurich, Empa

“Our laboratory works in the field of wearables, digital health, and human-materials interfaces. We develop smart fibres and textiles for applications in body monitoring or posture stabilization. We have several ongoing collaborations with different ETH groups and hospitals. RESC is a perfect platform to expand our research network and find new partners to generate innovations in the rehabilitation field.”

Prof. Carlo Menon, Biomedical and Mobile Health Technology, ETH Zurich [see portrait on page 11](#)

Prof. Catherine Jutzeler, Biomedical Data Science, Schulthess Klinik, ETH Zurich [see portrait on page 12](#)

Dr Diego Paez, Spinal Cord Injury Artificial Intelligence (SCAI) lab, Swiss Paraplegic Centre, ETH Zurich [see portrait on page 13](#)

New associate members



Prof. Jürgen Pannek, Swiss Paraplegic Centre Nottwil, Chief Physician of Neurology, University of Bern

“The Swiss Paraplegic Centre conducts clinical research to improve the life of persons with spinal cord injury. Thus, RESC is an extremely important partner for us, as it develops need-driven and human-centred solutions to improve the life of people with a disability.”



Prof. Peter S. Sandor, Zurzach Care/University of Zurich, Medical Director Neurology, Member of the Executive Board

“RESC provides excellent possibilities to contribute towards improving the evidence base for modern rehabilitation as a clinical partner - for efficiency and quality of patient care at the same time. The integration of the currently fragmented patient journey is necessary but challenging and needs to be based on technology. It becomes realistic within innovative collaborations such as RESC. For me as a clinician and neuroscientist in rehabilitation medicine the interprofessional exchange with other scientists within the RESC network is very much worthwhile on a personal level.”

New strategic partner: Suva



Mr Weber, Suva has been supporting the Rehab Initiative since autumn 2021 and will do so for the next five years. What do you hope to achieve with this commitment?

The themes of the ETH Rehab Initiative – prevention, rehabilitation, assistance, inclusion and health economics – relate precisely to Suva's core areas. Research, particularly into rehabilitation after accidents and occupational illness, is of the greatest interest to Suva. In this respect, we hope for fruitful cooperation and important insights. It is particularly important to us that research findings are able to find their way into clinical practice, so that they can benefit our policyholders and patients.

What are the three biggest future challenges for Suva, and how can solutions to these challenges be advanced as part of the Rehab Initiative?

The trend in rehabilitation is "outpatient before inpatient". To ensure this, inpatient rehabilitation must, where possible, be replaced by outpatient services in the clinic or integration into the workplace or home. This also encourages participation in social and economic life. At present, however, rehabilitation close to home is difficult to organise, as interdisciplinary and multimodal therapy is usually not possible. Our hope is that the ETH Rehab Initiative will suggest concrete solutions.



Marc Epelbaum, Suva's Secretary General (left) and Detlef Günther, Vice President for Research ETH Zurich (right), at the signing of the partnership contract

We also expect valuable input on the development and application of technical aids. These aids can enable the early detection and, ideally, the prevention of dangers such as an increased tendency to fall in acute rehabilitation, or overexertion during training in later rehab phases and occupational integration.

Suva is a member of the Partnership Council of the Rehab Initiative and is invited to events organised by the Rehab Initiative and RESC. Have you experienced these opportunities for exchange yet, and how would you assess their benefit for you?

As a member of the Partnership Council of the Rehab Initiative, we have already been able to participate in events, and we appreciate the formal and informal exchange between partners and the additional information about the Rehab Initiative.

Our contact with the RESC office has also been constructive. We have had a positive initial experience with the joint preparation of the next project tender. We are now awaiting the project submissions with interest and look forward to further collaboration.

The Swiss National Accident Insurance Fund, Suva, is an important part of the Swiss social security system and Switzerland's largest accident insurance provider. As an independent company under public law, Suva insures people at work and in their free time. The Suva model combines prevention, insurance and rehabilitation. It enables people who have had an accident or become ill to receive optimal care and helps them get back to work as quickly as possible. In addition to its insurance branch, Suva runs two rehabilitation clinics as an additional business.

Felix Weber has been Chairman of Suva's Board of Management since 2016.

New chair: Professor Carlo Menon, Biomedical and Mobile Health Technology, ETH Zurich



Professor Menon, what do you do?

In a nutshell: we develop novel technologies that are wearable and mobile. Our research starts with close interactions with end users and stakeholders to ensure we come up with technologies that meet the needs of the person using them yet are relevant for the healthcare professional evaluating the data, so they have a market.

What brought you here?

ETH Zurich has a unique culture that is ideal for bringing together the multidisciplinary team I need to do my work: we are materials scientists who design new sensing materials, engineers who invent and develop innovative technologies, and data scientists who interpret and visualise information.

How has your first year been?

It has been a learning curve as steep as a Swiss ski slope.

How could RESC members and partners contribute to your success?

We are still relatively new to Switzerland. We are looking for collaboration and partnerships with end users, healthcare providers, industry and investors.

The ETH Zurich Board appointed Carlo Menon full professor as of 2021, aiming to strengthen research in the areas of medical and rehabilitation technology.

The chair for Biomedical and Mobile Health Technology is part of several new appointments within the ETH Rehab Initiative.

New chair: Professor Catherine Jutzeler, Biomedical Data Science, Schulthess Klinik, ETH Zurich



Professor Jutzeler, you took up the professorship in Biomedical Data Science at the Department of Health Sciences and Technology on 1 January 2022. Can you briefly describe the focus of your research?

In short, I analyse data from patients mainly with spinal cord injuries and compare it with the clinical progress of their recovery. The data collected varies widely and includes blood work, imaging findings, type, location and severity of injury, age, pre-existing conditions and drug treatment.

Since this data is not collected in a uniform way, much of our work consists first in processing the information. For the analysis, we use statistical methods and also machine learning. The aim is to recognise certain patterns from the correlation of the data with the clinical condition of the patients. This allows us to obtain more precise information on recovery, impending complications and the benefit of therapies or drugs for future patients based on the available parameters.

How will patients be able to benefit from your research?

Our research helps to ensure that future patients can receive more precise and thus better treatment. Until now, medical professionals have mainly relied on their experience to predict the progress of a disease, but we can provide the necessary facts to support and substantiate these assessments. However, there is still a long way to go for personalised treatment on an individual level.

Your professorship is part of the Rehab Initiative. In your opinion, what is the greatest advantage of such a network, and what experience have you had with it?

The advantage for me is that researchers who have the same mindset come together here and we can learn from each other, even if we have a different focus. The body with its different functions remains the same, regardless of whether you specialise in research on multiple sclerosis, brain stroke or spinal cord injuries. I very much look forward to this exchange. For the coming year, I would therefore like not only to initiate some important research projects, but also to expand my network and become an active member of this one.

The Wilhelm Schulthess Foundation sponsors the Schulthess Klinik for Orthopaedic Surgery, Neurology, Rheumatology and Sports Medicine. The Schulthess Klinik and the Department of Health Sciences and Technology (D-HEST) at ETH Zurich have been working together successfully for many years in the field of medical technology, particularly in biomechanics.

The Wilhelm Schulthess Foundation supports the establishment of a tenure-track assistant professorship in biomedical data science.

New research lab: Dr Diego Paez, SCAI lab, Swiss Paraplegic Centre, ETH Zurich

Dr Paez, the long-term goal of your research group is to improve the treatment of people with spinal cord injury. Can you describe in more detail how you intend to achieve this?

The aim of the research group, known as the Spinal Cord Artificial Intelligence lab SCAI is to detect various common functional disorders and secondary diseases of patients with spinal cord injuries - e.g. pressure ulcers, cardiovascular conditions, infections or thromboses - at an early stage through automated and intelligent analysis of patient data. In doing so, we want to learn more about the causes of these secondary diseases, define suitable biomarkers and model the progress of a condition. Examples of biomarkers are increased pulse or increased sweating, which could indicate an infection.

Since we not only have patients in the Swiss Paraplegic Centre in mind, but also those who have already returned home, we are also working on monitoring their state of health with the help of so-called wearables – i.e. portable sensors that are integrated into bracelets, clothes or attached to the skin. These data should allow a better understanding of the conditions, subsequently, allowing us to create AI systems for the user and the attending physicians to monitor their health status as continuously and automatically as possible, so that, any changes can be recognised immediately.

What are the biggest challenges you face?

Dealing with such large amounts of data is not trivial. Data protection and ethical factors must also be considered. In addition, older data often cannot be compared with newer data, so we must process it accordingly. Currently, however, I am mainly busy recruiting committed doctoral and master's students.



You and your team are at home in the Swiss Paraplegic Centre. This means that you are close to the patients. For contact with the rest of ETH, especially the other research groups within the framework of the Rehab Initiative, the way is somewhat longer. How is the exchange ensured?

The exchange with the other research groups at ETH is very important. I plan to spend at least one day a week at ETH in Zurich. The Rehab Initiative is highly relevant in that it covers so many aspects of our lives; almost anyone could be affected by an accident or illness at some point in their lives, resulting in a prolonged period of illness and recovery and appropriate therapies. The fact that so many people from different disciplines come together in the Rehab Initiative to promote rehabilitation is great.

The Swiss Paraplegic Foundation supports the establishment and operation of the ETH research group "Spinal Cord Injury Artificial Intelligence (SCAI) lab" for ten years. The research group is based at the Swiss Paraplegic Centre, the specialist clinic for spinal cord, back and respiratory medicine in Nottwil.

The group's long-term goal is to improve the diagnosis and treatment of people with spinal paralysis. Established in January 2022 and led by Dr Diego Paez, the SCAI lab is affiliated to the group of Professor Robert Riener, Sensory-Motor Systems Lab.

Research

Research portfolio development, fundraising and funding is one of RESC's top priority activities that belong to the strategic focus area "Facilitate the transfer of research results into practice". We are constantly in contact with donors and the ETH Foundation to acquire third party funds.

RESC actively facilitates exchange towards transdisciplinary collaborations in research, development and transfer, and supports internal collaborative research through competitive grants, financed via our partners and other sources. Our goal is to fill existing research gaps and link research themes with the existing competences at ETH Zurich and external stakeholders to overcome the challenges in rehabilitation and inclusion.

In 2021, we awarded the Hackster project, supported by funds from the ETH Foundation's Uplift fundraising campaign (see financial report on page 23), to become the first RESC-supported research project (see box on the right). We secured about CHF 1 million from the Swiss Paraplegic Foundation to establish a research programme for personalised health care for spinal cord injury, and CHF 1 million from Suva to launch a research programme on prevention, rehab, assistance and inclusion. Both programmes began operating in early 2022.

RESC started to facilitate the formation of consortia and larger research and development projects with various stakeholders. Furthermore, we promote internal discussions to align our vision and mission, and to shape the research portfolio towards future challenges.



Status of Research call 1 "Changing behaviours"

Hackster field study at HackaHealth Hackathon in Geneva and Zurich

Compared to online communities, in which user-innovation can be observed a posteriori, the Hackathon allowed the research team to broaden their understanding of user-led innovation in real time during the prototyping of rehabilitation technology. They gathered field and interview data on team dynamics, knowledge exchange and idea generation to capture the role of users in the innovation process.

Nina Geilinger of the Hackster research project group says: "Due to the large gap between demand and supply of affordable assistive technologies, many users and caregivers develop their own assistive technologies. Increasingly, they make their solutions freely available to other users by sharing them in online communities. In our study, we explore the conditions under which online communities can help effectively develop and diffuse these user-developed solutions to normally underserved groups. We are proud to work with RESC to promote these inclusive practices that truly put users at the centre of the innovation process."

"RESC promotes the often missing connection of all phases and areas of rehabilitation and inclusion. This approach can also contribute to solving one of the main challenges in the field of assistive technologies: finding scalable and sustainable concepts to effectively and efficiently meet individual needs and perform easy adaptations to the end-users."

Dr Roland Sigrist
Head of CYBATHLON
Member of the RESC Steering Committee

Education

The understanding of future rehabilitation that was gained from the semi-structured interviews with experts in 2020 enabled us to further specify the educational field in "Rehabilitation and Inclusion" in 2021. Relevant topics for rehabilitation and inclusion that emerged during the interviews were clustered into three main impact areas: "Rehabilitation Technology", "Rehabilitation Medicine" and "Inclusion (society, environment, economy, legislation, organisation etc.)".



Consecutively, workshops with experts from the three impact areas were conducted to more precisely define and extend the list of relevant topics that need to be taught to enable a new generation of experts to contribute towards a holistic rehabilitation approach and an inclusive society. The following list gives examples of the topics in each impact area:

Rehabilitation Technology: biomedical engineering, rehabilitation engineering, tissue engineering, assistive technologies, robotics, human robot interaction, machine learning, artificial intelligence, digital health, wearable technology, tele-rehabilitation, etc.

Rehabilitation Medicine: understanding of clinical processes and rehabilitation specialisation, clinical quality management, interprofessional collaboration, personalised rehabilitation, multimorbidity, healthy ageing, pain, pathophysiology, etc.

Inclusion: theories of inclusion and disability, enabling environment, health literacy, disability studies, disability ethics, diversity, bioethics, data ethics, health economics, health policy, etc.

Based on this solid framework of relevant topics, different regular and continuous education programmes are being evaluated (e.g. market analysis, target setting) and conceptualised, and will be consecutively implemented after approval (Figure below).

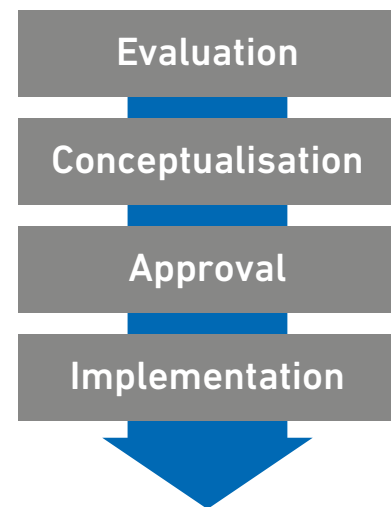


Figure: development process for education programmes

It is our aim for 2022 to get the approval of the ETH executive office for a new major in "Rehabilitation and Inclusion" within the Master's programme "Health Sciences and Technology" as well as for a new CAS "Rehabilitation and Inclusion" which shall become part of the already existing MAS "Digital Clinical Research (MAS diCR)" at ETH Zurich. Both education programmes are planned to start in autumn 2023.

To optimally prepare the Bachelor's students in Health Sciences and Technology for the new major, a new core elective "Rehabilitation and Inclusion" will be implemented from Autumn Semester 2022. Furthermore, we are planning to start a lecture series with keynote speakers from the broad area of "Rehabilitation and Inclusion" starting in autumn 2022 to promote knowledge transfer and create awareness.

"I am keen on establishing and pushing forward contemporary, inclusive, interprofessional, patient- and practice-oriented education programmes at ETH in the field of rehabilitation and inclusion and thereby supporting the digital transformation in medicine."

Desiree Beck,
Education Manager RESC

Outreach

With its outreach activities, the Competence Centre aims to bring awareness about its work to the interested public, opinion leaders in public government, industry, and other relevant stakeholders. RESC seeks to play an active role in the public discourse about the opportunities and challenges in rehabilitation. By continuously expanding its network and creating platforms for collaboration, it contributes towards finding solutions for a more inclusive society. We are committed to increasing the visibility and impact of the research, potential and expertise of members and partners within our network. RESC works closely with the ETH CYBATHLON and the Barrier-Free at ETH Zurich programme. As a member of the Sounding Board of Barrier-Free at ETH Zurich, Professor Robert Riener advises the programme with valuable expertise. The joint panel discussion at Scientifica in 2021 organised by RESC drew attention to the issue of barriers and hurdles and their removal.

In 2021, RESC hosted its first roundtable on the topic of inclusion, kicking off a series of panel discussions that are to be continued in 2022 and beyond. To showcase the research of its members and partners, RESC was present at the ETH Industry Day, ETH/University of Zurich Scientifica, and the Swiss Medtech Day, where our startup partner and ETH spin-off Scewo won the Swiss Medtech Award.

At the core of everything we do at RESC are the individuals living with physical disabilities. With the “faces of inclusion” portrait series (see front cover and annex), we give a voice to them and learn about the challenges they face due to their disabilities, and their vision of an inclusive society. Faces of inclusion will continue in 2022.

“The ‘Barrier-Free at ETH Zurich’ programme appreciates the communicative collaboration and exchange of content with RESC.

Continuing to advocate for barrier-free life, whether through adapting our environment or advancements in technology, will remain our shared goal for the future.”

Dr Romila Storjohann
Head of Programme: Barrier-Free at ETH Zurich



Outlook

RESC, in collaboration with the ETH Foundation, will further strongly invest in research portfolio development by conducting fundraising for new chairs and research programmes. Planned are professorships in health economics (D-MTEC), architecture & care (D-ARCH), and disability and inclusion (D-GESS), and further research programmes along the continuum-of-care.

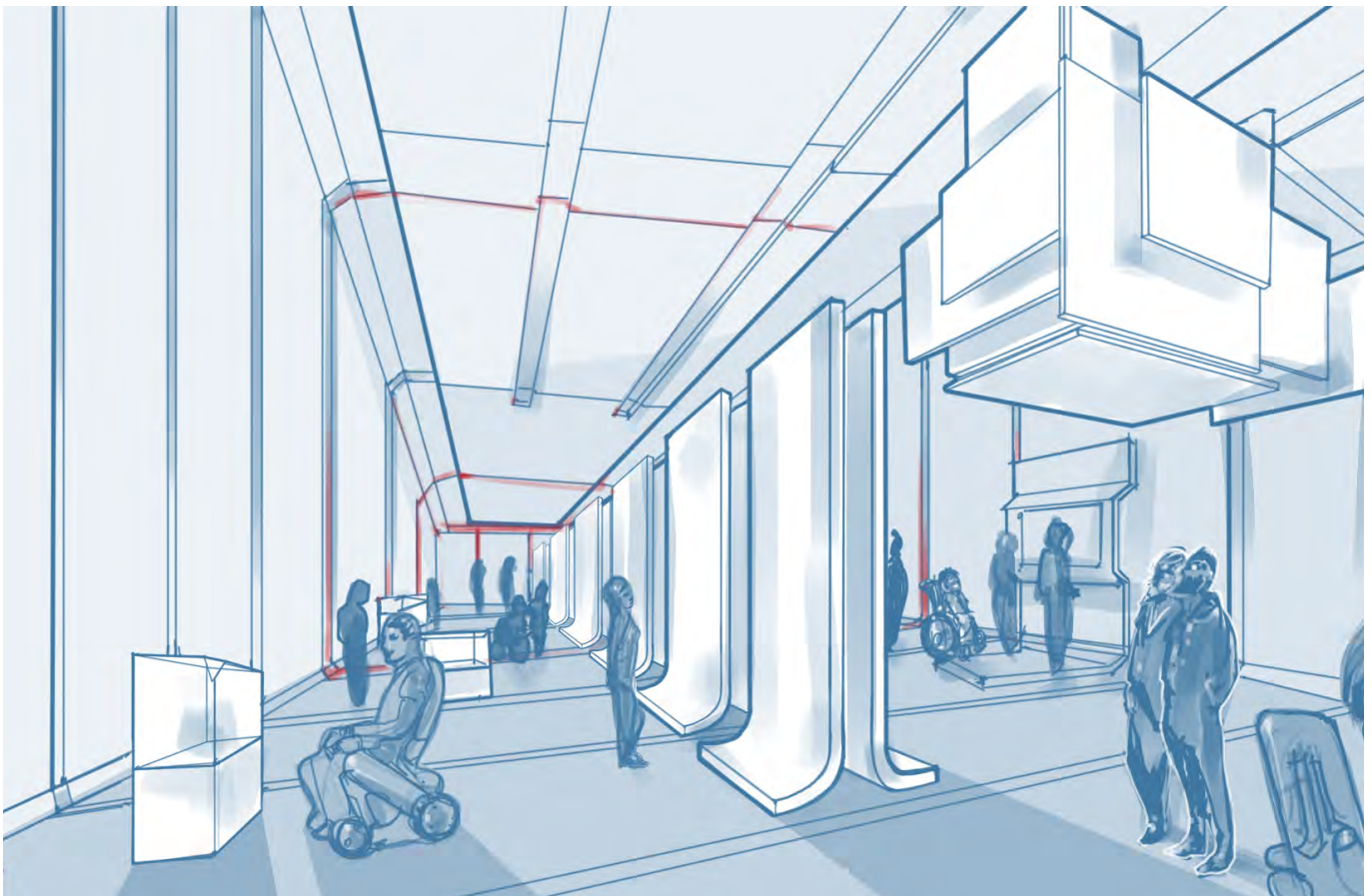
We defined the 2022 focus topic as "Innovation in contrast to funding and reimbursement models". To explore the subject further and expand its network of relevant stakeholders, RESC will continue its roundtable panel discussion series in 2022 and beyond.

In March 2022, RESC hosted a panel discussion at the Assistive Technology Forum (ATF) at the Swiss Paraplegic Centre in Nottwil, Switzerland. The ATF conference brings together established suppliers in the assistive technology industry in Europe with the goal of boosting development, generating new insights and exchanging knowledge. RESC uses this platform to gain exposure on a European level.

In July 2022, RESC hosts another panel discussion at RehabWeek in Rotterdam, the Netherlands.

To further strengthen the network and create new opportunities for exchange and collaboration, the first RESC Symposium will be launched in September 2022. The symposium also hosts the RESC Partnership Council.

In the framework of the Rehab Initiative, RESC plans an interactive exhibition where the public will have the opportunity to experience innovative assistive technologies and learn about the challenges in rehabilitation and inclusion (see illustration below).



Annex

Official bodies Members of the General Assembly

Ordinary members (ETH internal)

Luca Benini	D- ITET	Biomedical Applications, Brain-Computer Interfaces, Machine Learning Accelerators
Katrien De Bock	D- HEST	Muscle Regeneration, Exercise, Metabolism
Eling D. de Bruin	D- HEST	Motor Control and Learning, Functional Anatomy, Virtual Reality-Driven Rehabilitation
Benjamin Dillenburger	D- ARCH	Housing Typologies, Computational Design, Digital Fabrication
Stephen Ferguson	D- HEST	Musculoskeletal Biomechanics, Regenerative Medicine, Medical Technology
Roger Gassert	D- HEST	Rehabilitation Robotics, Assistive Technology, Neural Control of Movement
Marie Glaser	D- ARCH	Social Sciences, Housing Studies, Sustainable Urban Development
Gudela Grote	D-MTEC	Leadership and Coordination in Healthcare Teams, Impact of Technology on Work in Healthcare
Isabel Günther	D- GESS	Social Impact Assessments of Technologies, Poverty and Inequality Analysis
Michael Hampe	D- GESS	Philosophy of the "Good Life", Critical Theory of Anthropological Essentialisms, Criticism of the "Nature-Culture-Divide"
Otmar Hilliges	D- INFK	Human-Computer Interaction, Computer Vision, Robotics
Christian Holz	D- INFK	Sensing Technologies Interface with End Users, Continuous Physiological Monitoring for Predictive Healthcare, Physical Computing and Computational Interaction
Marco Hutter	D- MAVT	Robotics, Control, Machine Learning
Marcello Ienca	D- HEST	Bioethics/Neuroethics and Health Policy, Disability Studies, Health Technology in Society
Michael Leunig	ETH/Schulthess Klinik	LIS Orthopedics, Surgery, Outcome Research
Taekwang Jang	D- ITET	Brain-Machine Interface, Implantable Sensors, Ultra-Low-Power Systems
Catherine Jutzeler	D-HEST	Biomedical Data Science, Data Mining, Translational Medicine
Marko Köthenbürger	D- MTEC	Public Economics of Digitization and AI, Health Expenditure Forecast, Innovation and Public Policy
Tobias Kowatsch	D- MTEC	Blended Digital Coaching with Conversational Agents (Chatbots), Just-In-Time Adaptive Interventions, Digital Biomarker Research
Olivier Lamercy	D- HEST	Rehabilitation Robotics, Technology-Based Assessments in Neurorehabilitation, Digital Biomarkers

Jörg Löffler	D- MATL	Materials Science, Biodegradable Implants, Metallic Biomaterials
Zina-Mary Manjaly	D-HEST	Neurophysiology and Neurology, Functional Neuroimaging, Mindfulness-Based Cognitive Interventions
Isabelle Mansuy	D- HEST	Neuroepigenetics, Psychiatry, Animal Models
Mirko Meboldt	D- MAVT	Usability, Human-Machine Interaction, Engineering Design
Carlo Menon	D- HEST	Innovation in Wearable Technologies, Sensorimotor Recovery, Neurorehabilitation
Ralph Müller	D- HEST	Bioimaging, Biomechanics, Mechanobiology
Diego Paez	D-HEST	User-in-the-loop Computational Modeling and Design, Continuous Sensing and System Integration, Applied ML in Assistive Robotics
Stanisa Raspopovic	D- HEST	Engineering, Technology Transfer, Medical Devices
Robert Riener	D- HEST	Rehabilitation Robotics, Human-Machine Interaction, Biomechanics
René Rossi	D-HEST	Smart Textiles, Wearables, Materials-Skin Interactions
Martin Schwab	D- HEST	Neuroscience, Drug Development, Clinical Trial Planning
Roland Sigrist	ETH CYBATHLON	Project Development and Management, Events and Communication, Human Movement Science
Jess Snedeker	D- HEST	Biomechanics, Engineering, Regenerative Medicine
Christina Spengler	D- HEST	Human Physiology in Sleep, Rest and Exercise; Medical and Health Technology
Christoph Stadtfeld	D- GESS	Social Networks, Statistical Modeling, Social Integration and Mental Health
Bill Taylor	D- HEST	Musculoskeletal Biomechanics, Medical Technology, Neuromotor Control
Philip Ursprung	D- ARCH	Contemporary Architecture; Contemporary Art; Relation of Visual Culture and Science, Economy and Politics
Effy Vayena	D- HEST	Bioethics, Data Ethics and Governance, Health Policy
Julia Vogt	D- INFK	Medical Data Science, Machine Learning, Data Mining
Georg von Krogh	D- MTEC	Strategic Management of Digital Technology and Artificial Intelligence, Innovation in Pharma and Health Care, Organisation of User Innovation
Nicole Wenderoth	D- HEST	Neurofeedback, Brain Stimulation, Motor Neuroscience
Peter Wolf	D- HEST	Human-Robot Interaction, Biomechanics, Motor Learning
Mehmet Fatih Yanik	D- ITET	Brain Machine Interfaces, Systems Neuroscience, Ultrasound Drug Delivery
Marcy Zenobi-Wong	D- HEST	Biomaterials, Bioprinting, Cell-Material Interactions

Associate members (ETH external)

Edouard Battegay	UZH/ICMC	Management and Leadership, Internal Medicine, Multimorbidity and Complexity
Christian Baumann	UZH/USZ	Sleep, Parkinson, Innovation
Armin Curt	UZH/Balgrist	Spinal Cord Injury, Neurophysiology, Neurology
Mazda Farshad	UZH/Balgrist	Orthopaedic Surgery, Spine, Surgical Innovation
Thomas Kessler	UZH/Balgrist	Neuro-Urology, Neurosciences, Clinical and Translational Medicine
Verena Klamroth-Marganska	ZHAW	User-Centered Design, Rehabilitation Robotics, Telerehabilitation
Malcolm Kohler	UZH/USZ	Respiratory Medicine, Breath Analysis, Sleep
Andreas Luft	UZH/USZ	Stroke Rehabilitation, Neural Plasticity and Learning and Reward, Telerehabilitation
Andreas Meyer-Heim	UZH/KISPI	Paediatric Rehabilitation, Spastic-Dystonia Management and Neurocognitive Function after ABI, Translational Research
Alfred Müller	Schulthess Klinik	Neurophysiology and Neurology, Functional Neuroimaging, Mindfulness-Based Cognitive Interventions
Rahel Naef	UZH/USZ	Family Health, Nursing Interventions, Implementation Science
Jürgen Pannek	UNIBE/SPZ	Neuro-Urology, Incontinence, Spinal Cord Injury
Peter Sandor	UZH/ZURZACH Care AG	Neurorehabilitation, Headache & Pain, Therapeutic Interventions
Markus Wirz	ZHAW	Rehabilitation of Functions, Assessment of Functions, Pragmatic Research
Björn Zörner	UZH/Balgrist	Clinical Neurorehabilitation, Neuroscience, Gait Disturbances and Analysis

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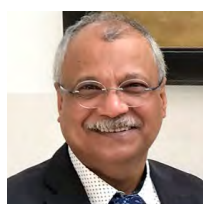
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Stefan Schneller
Content & Multimedia



Financial report 2021

Funding budget for RESC research and development programmes (multi-year)

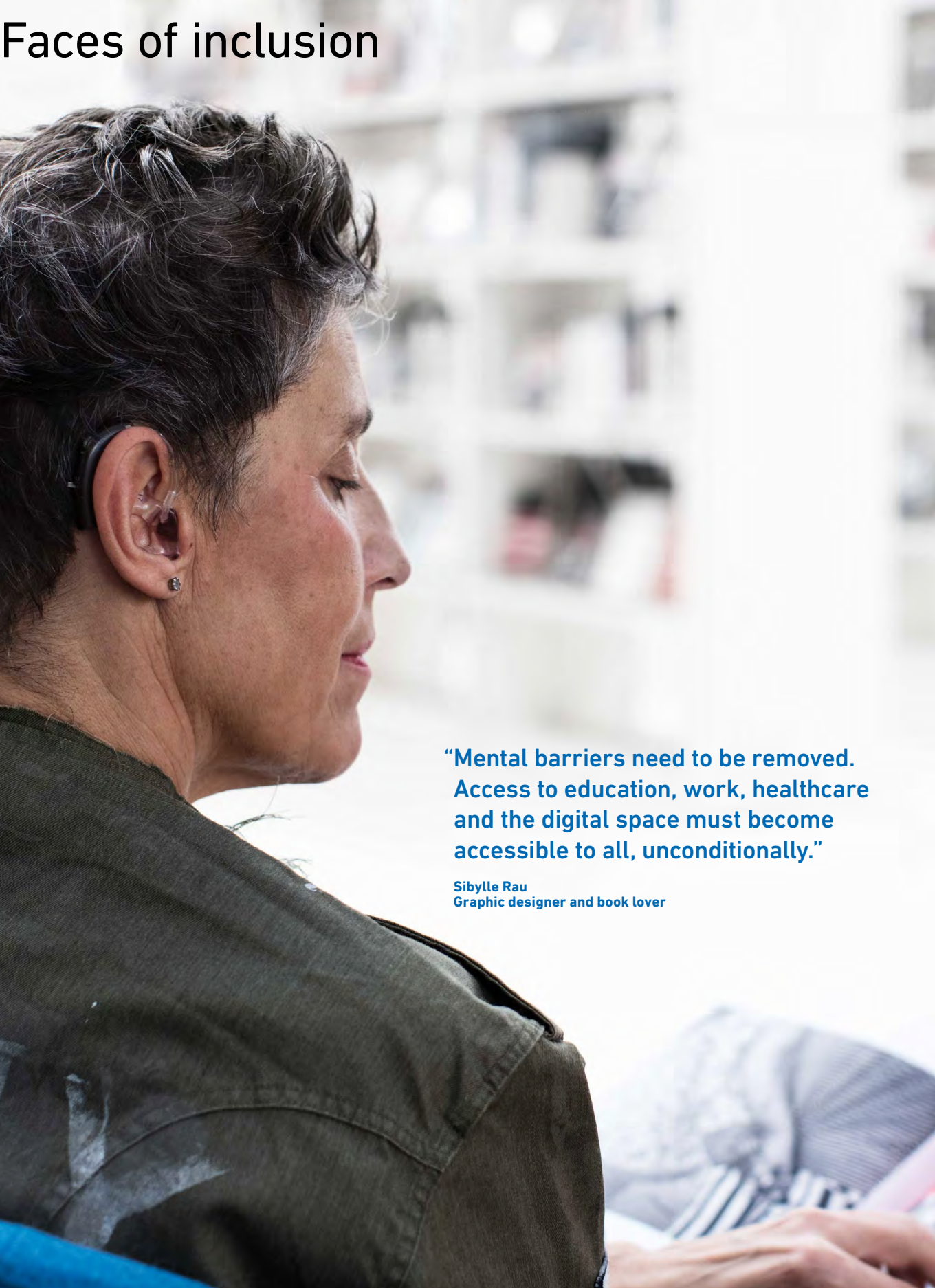
Revenues	Donor	Start	Duration (y)	CHF
	Uplift Fundraising (various)	2020	Open	131,413
	Swiss Paraplegic Foundation ¹	2021	5	1,000,000
	Suva	2022	5	1,000,000
	Total			2,131,413
Awarded Project				
	Hackster (RESC Research Call)	2021	1.5	93,033
	Total			93,033
Balance				2,038,380

¹ Total donation is CHF 2.5 million ≤40% of the volume can be used for research programmes, ≥60% for the ETH research lab at the Swiss Paraplegic Centre

2021 Operational budget of the RESC Executive Office

Revenues	CHF
ETH Zurich Executive Board	200,000
ETH D-HEST Contribution	100,000
RESC Member fees	32,000
Carry over from 2020	150,276
Total	482,276
Expenses	
Personnel costs (incl. social benefits)	254,558
Basic costs (IT, Repro, Office)	2,776
Communications and PR	5,430
Events, Seminars, Development	48,117
Travel, Representation, Education	4,502
Total	315,384
Balance	Carry over into 2022
	166,892

Faces of inclusion

A close-up, profile view of a woman with short, dark, curly hair. She is wearing a cochlear implant on her left ear. She is looking off to the right with a thoughtful expression. The background is a blurred library or bookstore with bookshelves. The lighting is soft and natural.

“Mental barriers need to be removed. Access to education, work, healthcare and the digital space must become accessible to all, unconditionally.”

Sibylle Rau
Graphic designer and book lover

“My wish is that we focus on solutions rather than problems, and that we keep trying to learn from each other. It would be wonderful if we could approach each other with open hearts and minds.”

Philippe Amann
Powerchair hockey player



“My greatest wish for the future is that my children don’t have to grow up in a society where their father is seen as inferior. This means we have to fundamentally improve the perception of disabled people in society.”

Islam Alijaj
Disability lobbyist and social entrepreneur



“I would like to see assistive technologies advanced to the point where people with disabilities are no longer at a disadvantage. I believe it is essential to encourage participation and access to research for people with disabilities.”

Michelangelo Gautschi
Master's student at ETH Zurich
and sports enthusiast



ETH Zurich
Competence Centre for Rehabilitation
Engineering and Science RESC
BAA Balgrist Campus
Lengghalde 5
8008 Zurich

resc.ethz.ch
info@resc.ethz.ch
[linkedin.com/company/ethzresc](https://www.linkedin.com/company/ethzresc)

ETH Zürich Foundation
Weinbergstrasse 29
8006 Zurich

info@ethz-foundation.ch
ethz-foundation.ch

Editor: Competence Centre for Rehabilitation
Engineering and Science RESC
Layout: RESC Executive Office
Photos / Credits: Stefan Schneller, Alessandro della Bella,
Hannes Heinzer, Ufuk Düzgün, Swiss Paraplegic Foundation,
Suva
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