



the sense

innovation
and research
center

Micah M. Murray

Scientific and Academic Director
The Sense Innovation and Research Center
&
Radiology Department, CHUV-UNIL
micah.murray@chuv.ch

Olivier Lorentz

Executive Director
The Sense Innovation and Research Center
&
School of Health, HES-SO Valais/Wallis
olivier.lorentz@hevs.ch

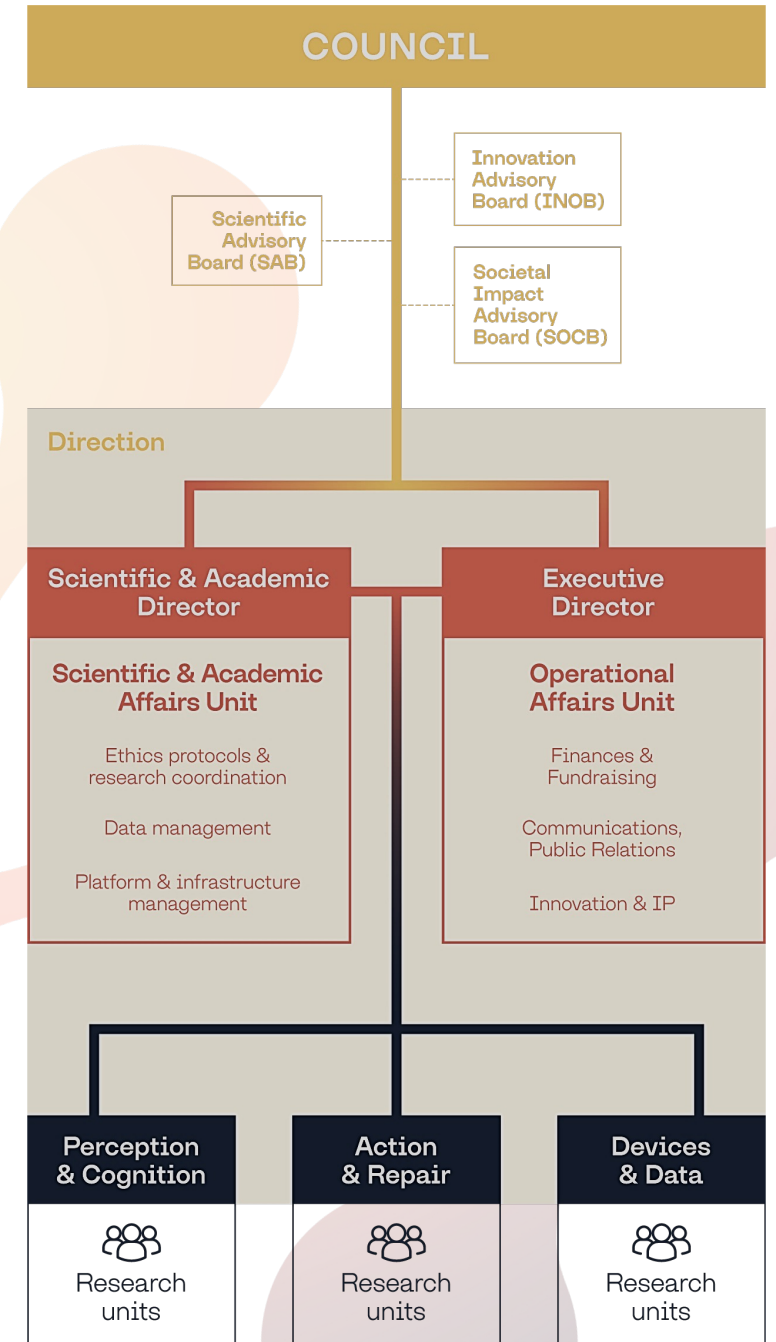




Our Vision & Mission

- The Sense is an academic center for innovation, research, and training.
- Our unique founding principle recognises that **sensory processes scaffold perception, cognition, and behaviour**.
- The Sense's mission is to **create and disseminate knowledge** on human senses and behaviour to the **benefit of society**.
- We achieve these innovations by **federating synergies** across applied, basic, and clinical research.
- Our **impact extends across the lifespan**, improving performance or clinical outcome of sensory (dys)function.

Statutes & Structure



Council



Estelle Doudet
Vice-Rector, Research



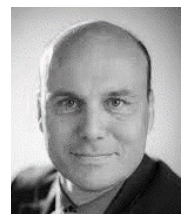
Patrick Bodenmann
Vice-Dean FBM, Education & Diversity



Mauro Oddo
Director of Innovation and
Clinical Research



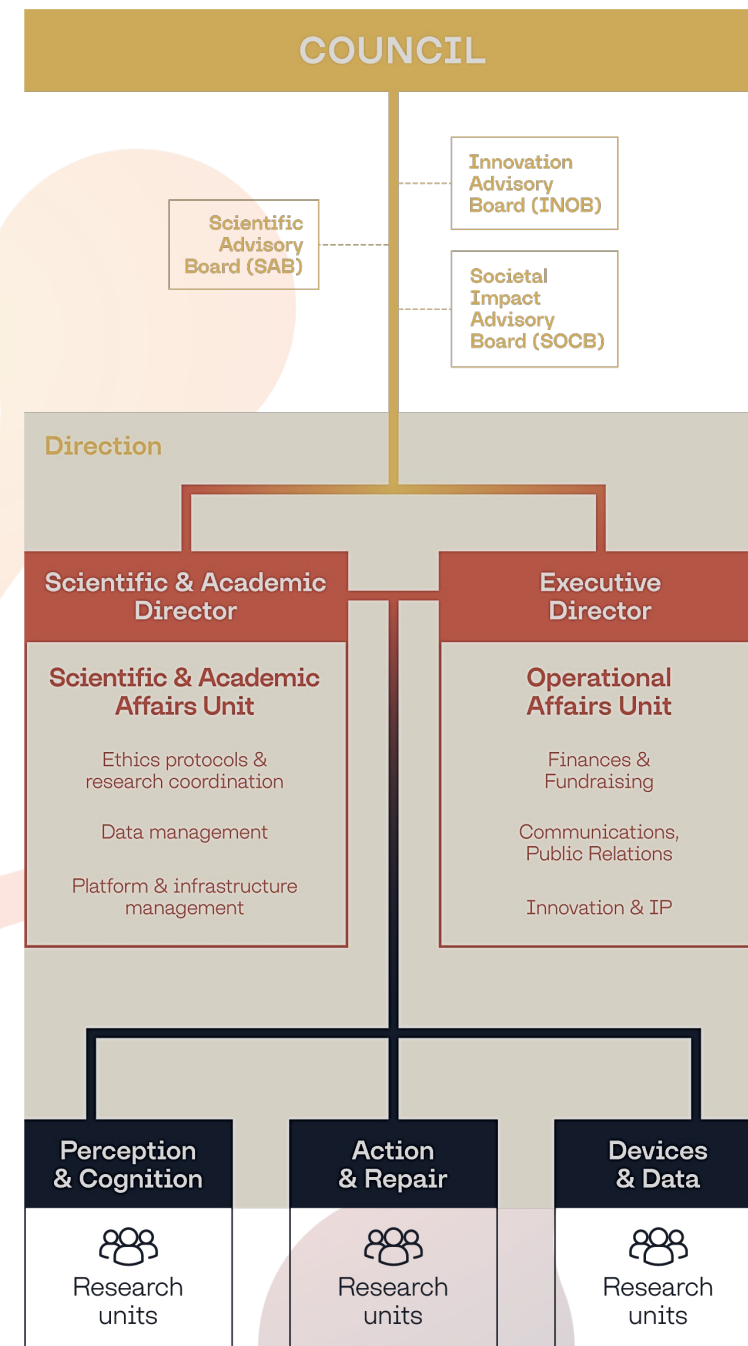
Christian Simon
Chair, Surgery Dept.



François Seppey
Director, HES-SO Valais-Wallis



Claude-Alexandre Fournier
Responsable Inst. Santé



Direction & CoDir



Micah Murray
Scientific & Academic Director



Olivier Lorentz
Executive Director



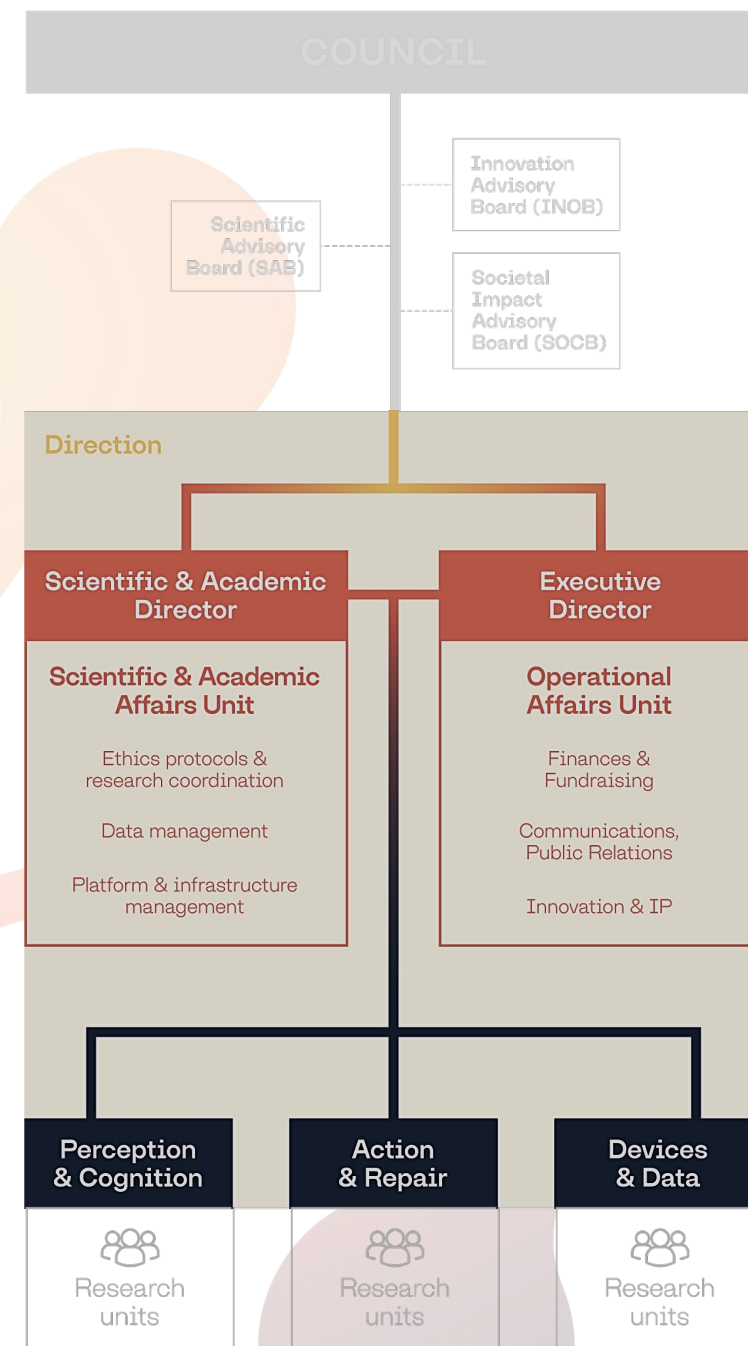
Chantal Berna Renella
Representative of
Perception & Cognition



Julien Favre
Representative of
Action & Repair

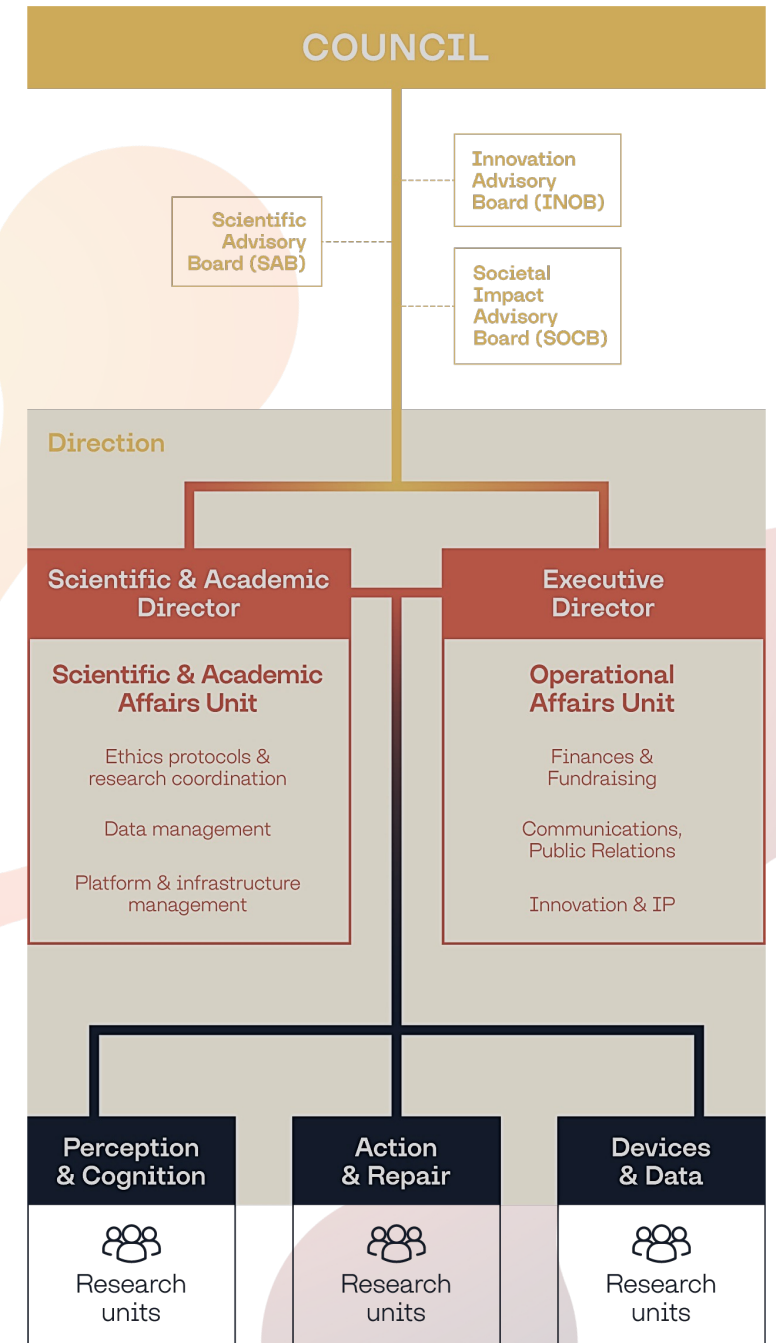


Henning Müller
Representative of
Devices & Data



Scientific Advisory Board

- **Prof. David Sander (University of Geneva)**
Director, Swiss Center for Affective Sciences
- **Prof. Fiona Newell (Trinity College Dublin, IRL)**
Institute of Neuroscience
- **Prof. Mikhael Tanter (Inserm, ESPCI Paris, FR)**
Institut Physique pour la Médecine, E.S.P.C.I. PSL Paris, France
- **Prof. Robert Desimone (MIT, USA)**
Director, McGovern Institute
- **Prof. Mark T. Wallace (Vanderbilt University, USA)**
Former Dean of the Graduate School
Founding Director, Vanderbilt Brain Institute



Innovation Advisory Board

swissnex
network



INNOVAUD

the ark
The Foundation
for Innovation in Valais

Societal Impact Advisory Board

action
innocence

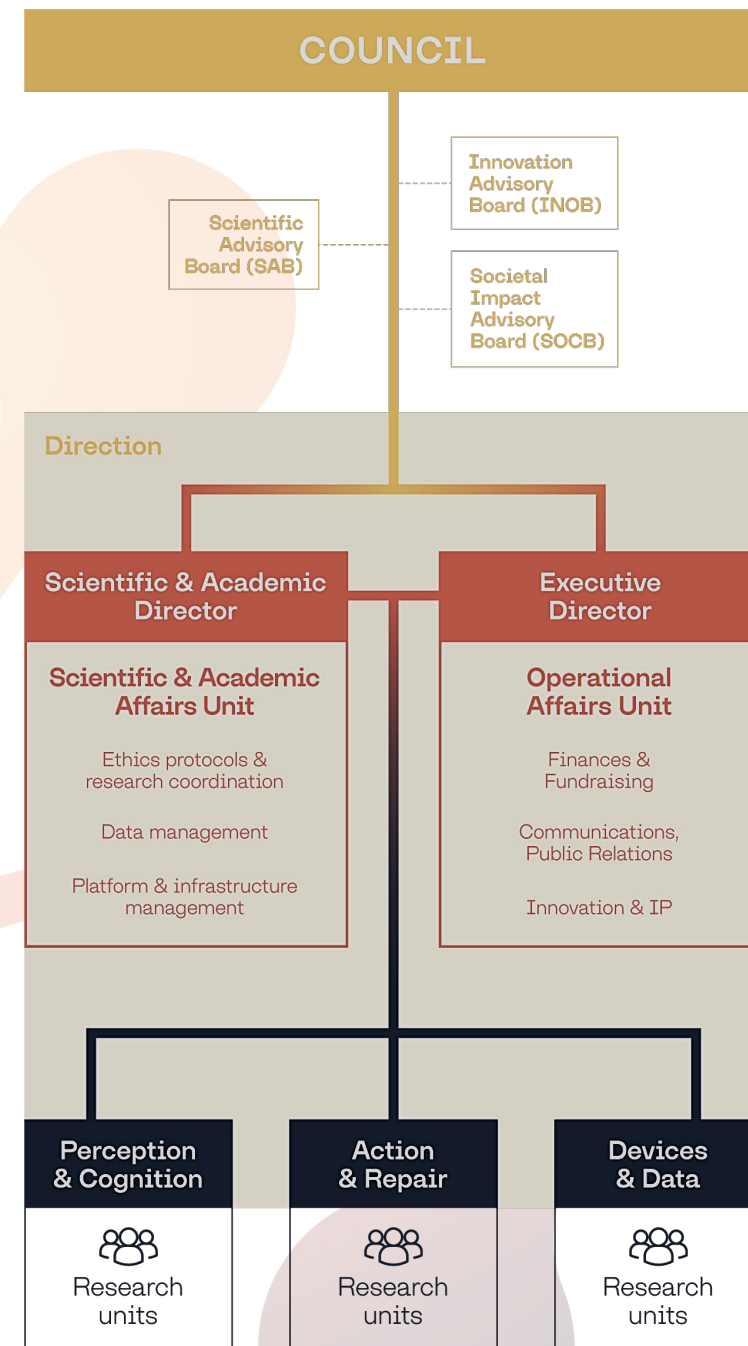


SBV FSA
Schweizerischer Blinden-
und Sehbehindertenverband
Fédération suisse des
aveugles et malvoyants

MaRaVal



SGB-FSS
Fédération Suisse
des Sourds



3 Research Axes

Perception & Cognition

The Sense discovers the “WHAT”

The primary focus of research and innovation within the axis of Perception & Cognition is to determine **WHAT** establishes and maintains sensory processes as a scaffold for higher-level functions. **WHAT** neurobiological mechanisms translate sensory signals into the information that our brains use to make us who we are? **WHAT** neurobiological mechanisms allow us to perceive, to think, and to create?

- Pain & Interoception
- Neuro-development
- Sleep & Dreams
- Chemical Senses
- Real-World Neuroscience
- Multisensory Processes

Action & Repair

The Sense targets the “WHERE”

Intervening to alter the status quo in health, dysfunction and disease is the primary focus of research and innovation within the axis of Action & Repair. **WHERE** does sensory information operate to transform thoughts into perceptions and actions? **WHERE** are the access points for repairing dysfunction? **WHERE** are the limits of neuroplasticity? **WHERE** is the pathway for rehabilitation?

- Human Movement Biomechanics
- Inclusive Physical Rehabilitation
- Vision & Sight Recovery
- Neuro-otology & Audiology

Devices & Data

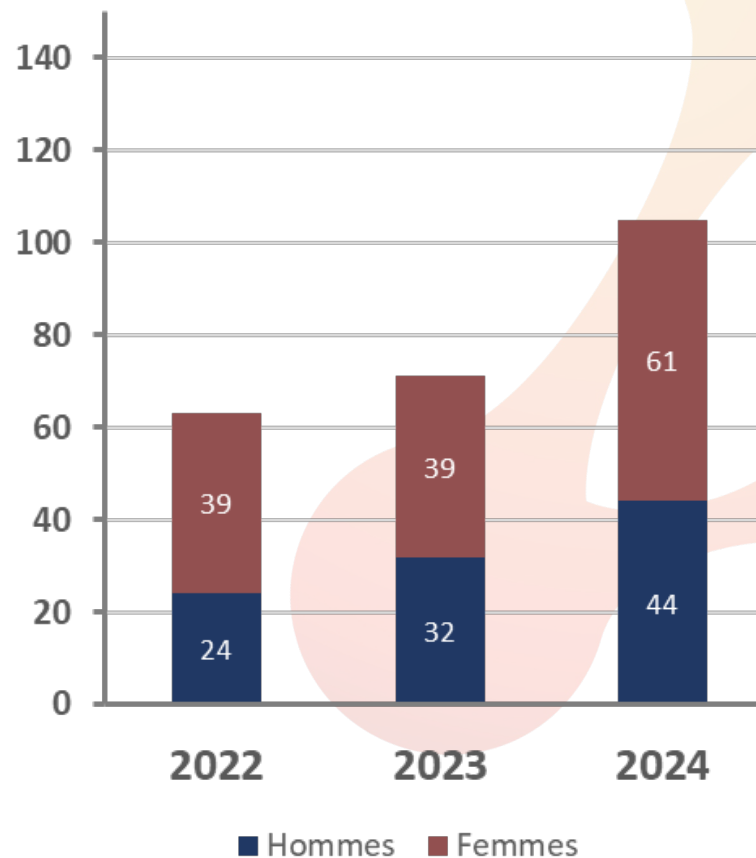
The Sense creates the “HOW”

Addressing the current and foreseeing the future hardware and software solutions to this question is the primary focus of research and innovation within the axis of Devices & Data. **HOW** can we better understand human function and dysfunction? **HOW** can we acquire better measurements and metrics? **HOW** can we optimize the information available in data and improve their interpretability?.

- Data Sciences
- Knowledge Management & Data Streams
- Neuro-devices

We already make a lot of Sense

105
affiliates



>60%
women

Sense supported projects & PhDs

2022



Brain-TRACE

Brain-based Test of Refraction and Acuity
Correction of the Eye

Dream Detector

Developing a real-time dream detector

Attentive Slippers

Development of instrumented footwear to monitor
gait at home or during a clinical stay

ARBORELE

Age-related effect of metric body representation of
lower extremities for walking

2023



Flavor

Flavor perception for plant-based foods;
Bridging sensory analysis and EEG innovations

KiCk fMRI

Kid-compliant fMRI

MVO

Moving virtual objects:
virtual reality in chronic lower back pain

Wildcom

Translating lab-based experiments into field sites

2024



bEAR:

brain Electrical Auditory Restoration:
Development of a cortical
prosthesis to restore hearing

Decoding imagination

Reading the mind's eye

>12MCHF in SNSF grants since 2023

- 2.0 MR-Eye: Towards a consensual Magnetic resonance Imaging protocol of the Human Eye
- Reducing gender bias in detection of autistic spectrum disorders using a co-construction approach with computer vision and mixed reality exercises
- CONNECT-CARE: Inclusive Healthcare Access and Personalized Health Management for Children and Adolescents (CONNECT-CARE)
- eXplainable Artificial Intelligence for histoPATHology (XAI-Path)
- 'Hand in hand': revealing the link between distorted hand perceptions and efficient manual actions
- The ebb and flow of human brain activity, cognition, and performance
- The Food-Medicine Continuum in Vervet Monkeys: Investigations on the interplay between diet quality, stress coping, and the endocannabinoid system
- An integrated joint system (IJS) to model osteoarthritis and uncover phenotypes – phase 2 of the Lausanne Knee Study
- VISION-EAR: Visual sound transmission with dynamic phase-contrast micro-tomography of the human middle ear
- A high-resolution, sub-second and fast-sampled resting state fMRI protocol for a better disentangling of neural, hemodynamic, physiological and movement activity in BOLD signal

We make Sense



Unil
UNIL | Université de Lausanne
Faculté de biologie
et de médecine



Hes·so VALAIS
WALLIS
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