

Program overview. LS² Annual Meeting 2025

University of Fribourg, PER 21-22, Bd de Pérolles 90, 1700 Fribourg, Switzerland

Program overview

YOUNG SCIENTISTS' SATELLITE MEETING (YSS)

Tuesday, 11 February 2025 - Auditorium G140, PER21

12:00 – 12:30

Registration - Young Scientists' Satellite & Welcome Coffee

(Registration will remain open during the entire event)

(Speakers and chairs should load their presentations)

12:30 – 12:35

Welcome Address

Jörn Dengjel (Chair of LS² AM2025, University of Fribourg)

Simon Sprecher (Chair of LS² AM2025, LS² Vice-president, University of Fribourg)

Mario P. Tschan (LS² President, University of Bern)

12:35 – 12:40

Introduction from YSSM Chairs

Jibira Yakubu (University of Bern)

Melvin Alappat (University of Zurich)

12:40 – 13:15

Keynote Lecture YSS

Giovanni D'Angelo (EPFL)

"The Lipotype Hypothesis"

Single-cell genomics techniques have allowed for the deep profiling of individual cells in multicellular contexts. These new technologies have enabled the building of cell atlases where hundreds of different cell types are categorized according to their transcriptional and epigenetic states. These analyses have led to the depiction of detailed cell transcriptional landscapes that could be interpreted in terms of cell identity. Nonetheless, transcription represents only one axis in the establishment of cell phenotypes and functions and post-transcriptional events crucially concur to cell identity in ways that cannot be simply derived from transcriptional profiles. Thus, the chemical composition of individual cells and the activity of metabolic pathways are likely as good descriptors of cell identity as transcriptional profiles are. Moreover, accumulating findings assign to lipid metabolism an instructive role towards the establishment of cell identity, yet our understanding of the integration of transcriptional and lipid metabolic programs in cell fate determination remains superficial. Here I will report on our attempts to investigate lipidomes at single cell levels and at high spatial resolution by MALDI imaging mass spectrometry.

13:15 – 14:00

Scientific Symposium I

13:15 – 13:20

Welcome words from chairs

Speakers selected from abstracts (8 min + 2 min Q/A)

13:20 – 13:30

Yara Ahmed (University of Fribourg)

"Phosphatidic Acid specificity of its dysferlin domain is required for the establishment of Pex30-dependent membrane contact sites"

13:30 – 13:40

Lina Heisting (ETHZ)

"Decision making in the yeast courtship network"

13:40 – 13:50

Florent Lemaitre (University of Geneva)

"Cryo-Expansion microscopy: unveiling the molecular architecture of the immune synapse"

13:50 – 14:00

Pierre Marchal (University of Bern)

"Exploring the biological significance of circulating N-linked glycoproteins for the detection and treatment prediction in pleural mesothelioma cancer"

14:00 – 14:30

Coffee Break

14:30 – 15:15

Scientific Symposium II

14:30 – 14:35

Welcome words from chairs

Speakers selected from abstracts (8 min + 2 min Q/A)

14:35 – 14:45

Darko Stojkov (University of Bern)

"BK and TRPV2 channels induce metabolic changes in neutrophils to prevent life-threatening infections"

14:45 – 14:55

Tian Xie (University of Fribourg)

"Arginase II ablation mitigates high salt diet-induced macrophage infiltration/proliferation in heart and kidney"

14:55 – 15:05

Monika Gjorgjieva (University Hospital Geneva)

"Hepatic IR and IGF1R signaling govern distinct metabolic and carcinogenic processes upon PTEN deficiency in the liver"

15:05 – 15:15

Hadja Safiat Simboro (University of Fribourg)

"Extracellular Vesicles for drug delivery"

15:15 – 15:45

Coffee Break

15:45 – 17:45

Career Workshop - "Mastering connections: the power of listening and effectively communicating"

Elena Barletta (Erasmus Student Network (ESN Switzerland))

Communication is the milestone of every successful interaction, yet the power of listening is often underestimated. Active listening goes beyond hearing words; it involves understanding emotions, perspectives, and underlying needs. This immersive workshop aims to delve into the principles of effective communication and cultivate the art of empathetic listening. Participants will explore the meaning and significance of effective communication, identify its key principles, and share their insights and ideas. Through interactive discussions and activities, attendees will unlock deeper connections and meaningful relationships, gaining a thorough understanding of what makes communication truly effective and how to apply these principles in various contexts.

17:45 – 17:50

Closing Remarks & Acknowledgements

Program overview

MAIN CONFERENCE

DAY ONE

Wednesday, 12 February 2025

08:00 – 09:00

Registration & Welcome Coffee

(Registration will remain open during the entire event)

(Speakers and chairs of the morning sessions should load their presentations)

09:00 – 09:10

Welcome Address

Joseph Deiss Auditorium **Jörn Dengjel** (Chair of LS² AM2025, University of Fribourg)

Simon Sprecher (Chair of LS² AM2025, LS² Vice-president, University of Fribourg)

Mario P. Tschan (LS² President, University of Bern)

09:10 – 09:45

Plenary Lecture I: Keynote

Joseph Deiss Auditorium **Sascha Martens** (University of Vienna, AT)

"Mechanisms of selective autophagy"

Autophagy is an intracellular lysosomal bulk degradation pathway that ensures cellular homeostasis by the removal of damaged and dangerous material from the cytoplasm. This is achieved by the sequestration of the cytoplasmic cargo material within double membraned organelles called autophagosomes. The selective sequestration of only specific cargo material is mediated by cargo receptors that link the cargo to the nascent autophagosomal membrane. How cargo selection, membrane nucleation and growth are coupled is unclear. I will present our recent work on the cargo receptors and the autophagy machinery derived from in vitro reconstitution systems and cell biology. In particular, I will discuss how cargo receptors and the autophagy machinery act sequentially during cargo recognition, membrane nucleation and elongation to mediate the specific sequestration and subsequent degradation of cellular material.

09:45 – 10:15

Plenary Lecture II: LELIO ORCI AWARD 2025

Joseph Deiss Auditorium

10:15 – 10:45

Coffee Break & Industry Exhibition

10:45 – 12:45

Special Plenary Session: PIs of Tomorrow (PIOT) - The Future of Swiss Research

Joseph Deiss Auditorium Chairs:

Timur Ashirov (University of Fribourg)

Rubén D. Manzanedo (University of Bern)

Milad Radiom (ETHZ)

Finalists:

Tetiana Serdiuk (ETHZ)

Vakil Takhaveev (ETHZ)

Gea Silvia Sofia Cereghetti (University of Cambridge)

Carlos Flores (University of Basel)

12:45 – 14:25

Lunch Break / Industry Exhibition / Poster Viewing

(Catering for industry representatives will be open from 12:15)

(Speakers and chairs of the afternoon sessions should load their presentations)

13:15 – 14:25

Feedback Session PIs of Tomorrow

(For jury, chairs and finalists only)

14:25 – 16:10

PARALLEL SYMPOSIA SESSION I

14:25 – 16:10

Cellular oxygen sensing in the post-Nobel era

Auditorium E140	Organized by LS ² section Physiology. Chaired by David Hoogewijs & Anna Keppner (University of Fribourg)
14:25 – 14:26	Welcome words from chairs
	<i>Invited speaker (20 min + 5min Q/A)</i>
14:26 – 14:51	Ben Wielockx (TU Dresden, DE) "Oxygen sensing in health and disease"
	<i>Industry speaker</i>
14:51 – 15:06	Krista Rantanen (The Baker Company) "Making small changes for big impact - paradigm shift from normoxia to physoxia"
15:06 – 15:21	Valentina Millarte (Agilent Technologies) "Real-Time cellular metabolism analysis: Agilent Seahorse analyzers and integrated microscopy for comprehensive mitochondrial and glycolytic function profiling"
	<i>Speakers selected from abstracts (10 min + 2 min Q/A)</i>
15:21 – 15:33	Marion Dübi (University Hospital Lausanne) "Impaired angiogenesis and altered myocardial perfusion and metabolism in a rat model of intrauterine growth restriction"
15:33 – 15:45	Antonia Louise Herwig (University of Fribourg) "The role of androglobin (ADGB) in ciliogenesis: transcriptional regulation and functional analysis of its globin domain"
15:45 – 15:57	Carina Osterhof (University of Fribourg) "Characterisation of the hypoxia response of a non-symbiotic marine invertebrate"
15:57 – 16:09	Duilio Michele Potenza (University of Fribourg) "Arginase-II regulates cardiac circadian tolerance to ischemia/reperfusion injury"
16:09 – 16:10	Closing remarks
14:25 – 16:10 Auditorium G120	Imaging-based Spatial Omics Organized by LS ² intersection Microscopy. Chaired by Arne Seitz (EPFL)
14:25 – 14:30	Welcome words from the chair
	<i>Invited speaker (30 min + 5 min Q/A)</i>
14:30 – 15:05	Gioele Ia Manno (EPFL) "Whole-organ spatial lipidomics "
	<i>Speakers selected from abstracts (10 min + 5 min Q/A)</i>
15:05 – 15:20	Tocchini Cristina (University of Basel) "Translation-dependent mRNA localization to apical junctions"
15:20 – 15:35	Walavalkar Kaivalya (University of Zurich) "Elucidating the structure and function of genome-nucleolus interactions in single nucleoli"
15:35 – 15:50	tba

- 15:50 – 16:05** tba
- 16:05 – 16:10** Closing remarks
- 14:25 – 16:10**
Auditorium G140 **Mechanisms of selective autophagy in health and disease**
Organized by LS² section Autophagy. Chaired by **Julien Puyal** (University of Lausanne) & **Patricia Boya** (University of Fribourg)
- 14:25 – 14:30** **Welcome words** from chairs
- Invited speaker (30 min + 5min Q/A)*
- 14:30 – 15:05** **Wade Harper** (Harvard Medical School, US)
"Toward a structural proteome landscape of early endosomes"
- Speakers selected from abstracts (15 min + 5 min Q/A)*
- 15:05 – 15:25** **Gambarotto Lisa** (University of Lausanne)
"Autophagic regulation of RNAs in the brain"
- 15:25 – 15:45** **Klemt Insa** (ETHZ)
"To degrade or not to degrade: Ribosome abundance control under starvation conditions"
- 15:45 – 16:05** **Leytens Alexandre** (University of Fribourg)
"Targeted proteomics addresses selectivity and complexity of protein degradation by autophagy"
- 16:05 – 16:10** Closing remarks
- 16:10 – 16:40** **Coffee Break - Meet the speakers & Industry Exhibition**
- 16:40 – 17:15**
Joseph Deiss Auditorium **Plenary Lecture III: Keynote**
Bernhard Küster (Technical University of Munich, DE)
"Adding a proteomic component to molecular tumor boards"

Cancer is a disease of malfunctioning proteins and the pathways they operate in. Many oncogenic signalling events are not discernible from genomic or transcriptomic data because they are strongly regulated by protein phosphorylation. In this keynote lecture, I will present how we apply proteomics and phosphoproteomics to the analysis of cancer patients in a molecular tumor board setting. Discussed aspects are how we can turn around data from biopsy to tumor board meeting within one week, what the proteome does and does not tell us and what needs to happen next in order to roll this out to broader patient populations.
- 17:15 – 19:15** **Apero, Poster Session I & Industry Exhibition**
(Posters: 17:45 - 18:25 odd numbers, 18:25 - 19:15 even numbers)

DAY TWO

Thursday, 13 February 2025

08:15 – 09:00

Registration & Welcome Coffee

(Registration will remain open during the entire event)

(Speakers and chairs of the morning sessions should load their presentations)

09:00 – 09:05

Welcome Address

Joseph Deiss Auditorium **Jörn Dengjel** (Chair of LS² AM2025, University of Fribourg)

Simon Sprecher (Chair of LS² AM2025, LS² Vice-president, University of Fribourg)

Mario P. Tschan (LS² President, University of Bern)

09:05 – 09:40

Plenary Lecture IV: Keynote

Joseph Deiss Auditorium **Irene Miguel-Aliaga** (Francis Crick Institute, UK)

"On sex and form"

Our research explores the idiosyncrasies of adult organs: how they differ between the sexes and are remodelled by their environment. Our work in *Drosophila* uncovered a gut-gonad axis that differs between the sexes and impacts food intake, gamete production and tumour susceptibility. Investigating how the intestine senses and responds to nutrients, we also discovered an intestinal zinc sensor that promotes Tor signalling to sustain food intake and developmental growth. More recently, we have investigated the sex and reproductive plasticity of the mammalian intestine in both mice and humans. We have also become very interested in the idea that the shape and position of the intestine constrain or enable its functions, and we have developed new methods to describe and interrogate these new dimensions to organ function. I will likely present some of this work.

09:40 – 10:20

Coffee Break, Industry Exhibition & Poster Viewing

10:20 - 12:05

PARALLEL SYMPOSIA SESSION II

10:20 - 12:05

Seeing the Complexity of Life: Advances in Structural Cell Biology

Auditorium G140

Organized by LS² section Biophysics. Chaired by **Wanda Kukulski** & **Benoît Zuber** (University of Bern)

10:20 - 10:25

Welcome words from chairs

Invited speaker (20 min + 5 min Q/A)

10:25 - 10:50

Paula Navarro (University of Lausanne)

"Cryo-ET as a tool that enables structural cell biology: unraveling the cellular function of PBP1b"

Speakers selected from abstracts (10 min + 2 min Q/A)

10:50 - 11:02

Leonie Anton (University of Bern)

"Visualizing Plasmodium falciparum 80S ribosome using in situ cryoET"

11:02 - 11:14

Dawid Warmus (University of Bern)

"Investigating the role for alpha-giardins in unconventional secretion of Giardia's virulence factors"

- 11:14 - 11:26** **Cristian Rocha** (University of Fribourg)
"Lipid scrambling is a general feature of protein insertases"
- 11:26 - 11:38** **Sim Sakong** (EPFL)
"Eukaryotic transcription factor target search beyond DNA binding domains"
- 11:38 - 11:50** **Giorgio Tortarolo** (EPFL)
"Gentle and multi-color imaging of region of interests through Smart Scanning Event Driven Acquisition"
- 11:50 - 12:05** Closing remarks
- 10:20 - 12:05** **Evolutionary Cell Biology-cell function and structure through an evolutionary lens**
Auditorium E140 Organized by **Omayma Dudin** (EPFL) & **Carmen Faso** (University of Bern)
- 10:20 - 10:25** **Welcome words** from chairs
- Invited speaker (20 min + 5 min Q/A)*
- 10:25 - 10:50** **Flora Vincent** (EMBL Heidelberg, Germany)
"Symbiosis in marine unicellular eukaryotes"
- Speakers selected from abstracts (10 min + 3 min Q/A)*
- 10:50 - 11:03** **Crisalida Borges** (University of Geneva)
"Who takes over when centrosomes are missing?"
- 11:03 - 11:16** **Saloni Koli** (University of Fribourg)
"Comparative analysis of Snf1 and SnRK1: evolutionary and functional roles of catalytic α -subunits"
- 11:16 - 11:29** **Joseph Oddy** (University of Geneva)
"The role of proteases in bacterial killing in Dictyostelium discoideum"
- 11:29 - 11:42** **Armando Rubio Ramos** (University of Geneva)
"Charting the landscape of cytoskeletal diversity in microbial eukaryotes"
- 11:42 - 11:55** **Tina Zajec Hudnik** (ETHZ)
"Characterizing UV light-induced protein modifications in RNA-protein cross-linking: A biophysical approach"
- 11:55 - 12:05** Closing remarks
- 10:20 - 11:10** **Half-symposium: Personalized and systems pharmacology**
Auditorium G120 Organized by Swiss Society of Experimental Pharmacology (SSEP). Chaired by **Georgia Konstantinidou** (University of Bern) and **Patrycja Nowak-Sliwinska** (University of Geneva)

- 10:20 - 10:25** Welcome words from chairs
- Invited speaker (20 min + 5 min Q/A)*
- 10:25 - 10:50** **Olivier Michielin** (University of Geneva)
"Data science and AI for precision oncology"
- Speakers selected from abstracts (6 min + 2 min Q/A)*
- 10:50 - 10:58** **Gagliardi Paolo Armando** (University of Torino, Italy)
"Targeting emergent properties of signaling dynamics: collective ERK-activity waves in PIK3CA H1047R mutant Cells"
- 10:58 - 11:06** **Schuhknecht Laurenz** (University of Basel)
"A human metabolic map of pharmacological perturbations unlocks new modes of action for conventional drugs "
- 11:06 - 11:10** Closing remarks
- 11:15 - 12:05** **Half- symposium: Strategies at the forefront of 3Rs to Replace, Reduce, and Refine animal experiments**
Auditorium G120 Organized by Swiss 3RCC. Chaired by **Michael Walch & Andrina Zbinden** (University of Fribourg)
- 11:15 - 12:05** Welcome words from chairs
- Invited speaker (20 min + 5 min Q/A)*
- 11:20 - 11:45** **Barbara Fuenzalida** (University of Bern)
"Engineering a novel cell-based model for assessing maternal-fetal transfer processes during pregnancy"
- Speakers selected from abstracts (6 min + 2 min Q/A)*
- 11:45 - 11:53** **Lisa Conrad** (University of Bern)
"Utilizing cardioids for the identification of transcriptional enhancer landscapes underlying human cardiac morphogenesis"
- 11:53 - 12:01** **Pierre Cosson** (University of Geneva)
"How recombinant antibodies can change your life"
- 12:01 - 12:05** Closing remarks
- 12:05 – 13:05** **Lunch Break & Industry Exhibition**
(Catering for industry representatives will be open from 11:35)
(Speakers and chairs of the afternoon sessions should load their presentations)
- 13:05 – 14:05** **Poster Session II**
(Posters: 13:05 - 13:35 odd numbers, 13:35 - 14:05 even numbers)

14:05 – 15:50

PARALLEL SYMPOSIA SESSION III

14:05 – 15:50

Auditorium E140

Spatial proteomics: giving up on a bulk

Organized by LS² section Proteomics. Chaired by **Alexander Schmidt** (University of Basel) & **Maria Pavlou** (EPFL)

14:05 – 14:10

Welcome words from chairs

14:10 – 14:25

Poll from chairs

Invited speaker (25 min + 5 min Q/A)

14:25 – 14:55

Isabelle Fournier (University of Lille, France)

"Deciphering patient evolution by studying cancer microenvironment with spatial proteomics"

Industry speaker

14:55 – 15:15

Lisa Schweizer (OmicVision Biosciences ApS)

tba

Speakers selected from abstracts (10 min + 5 min Q/A)

15:15 – 15:30

Melanie Brunner (University of Fribourg)

"Proteome-wide in vitro kinase and phosphatase assays to determine enzyme-substrate interactions"

15:30 – 15:45

Thibault Courtellemont (EPFL)

"Democratizing spatial proteomics: creative solutions for an affordable pipeline"

15:45 – 15:50

Closing remarks

14:05 – 15:50

Auditorium G120

The Complexity of GPCR networks

Organized by LS² section MCB. Chaired by **Miriam Stoeber** (University of Geneva) & **Daniel Legler** (University of Konstanz)

14:05 – 14:10

Welcome words from chairs

Invited speakers (25 min + 5 min Q/A)

14:05 – 14:40

Evi Kostenis (University of Bonn)

"Nature's blueprint for hyperefficient GPCR inhibition: Leveraging signaling suppression and receptor endocytosis"

14:40 – 15:10

Stephan Grzesiek (University of Basel)

"Seeing functional motions of GPCRs by NMR"

Speakers selected from abstracts

15:10 – 15:20

Sofia Papadogkonaki (University of Geneva) (8 min + 2 min Q/A)

"Identification of opioid receptor trafficking regulators by unbiased screens"

15:20 – 15:32

Patrick Masson (SIB) (10 min + 2 min Q/A)

"Systematic capture of human receptor-ligand interactions as Gene Ontology Causal Activity Models (GO-CAMs)"

15:32 – 15:44

Julia María Coronas-Serna (University of Geneva) (10 min + 2 min Q/A)

"The Cdc42 effector Pak2 ensures fission yeast cell-cell fusion by antagonizing cell-wall repair mechanism"

15:44 – 15:50	Closing remarks
14:05 – 15:50	Sensing and responding to the environment: An integrative systems biology approach
Auditorium G140	Organized by LS ² section Systems Biology. Chaired by Thomas Michaels (ETHZ)
14:05 – 14:10	Welcome words from the chair
	<i>Invited speaker (20 min + 5 min Q/A)</i>
14:10 – 14:35	Markus Basan (Harvard University, USA) "Mechano-transduction via membrane potential for growth control"
	<i>Speakers selected from abstracts (8 min + 2 min Q/A)</i>
14:35 – 14:45	Elliott Bernard (University of Lausanne) "NIN1 mediated plasma membrane rupture is a two-step process requiring cell swelling"
14:45 – 14:55	Cristina Casals (Swiss Institute of Bioinformatics) "Linking the human metabolome and proteome in UniProtKB through Rhea"
14:55 – 15:05	Vojislav Gligorovski (EPFL) "A geometrical model of cell fate transitions in the budding yeast life-cycle"
15:05 – 15:15	Omar Keshk (EPFL) "Genome-scale metabolic models for a synthetic soil microbial community as a path for understanding community functioning"
15:15 – 15:25	Seraina Olivia Moser (University of Basel) "Inhibition of 11 β -Hydroxysteroid dehydrogenase 2 by a metabolite derived from the gut microbiome"
15:25 – 15:35	Thomas Peskett (ETHZ) "A biomolecular condensation network adjusts cell fate decisions to cellular context"
15:35 – 15:45	Prashant Rawat (ETHZ) "Early transcriptional reprogramming upon chronic nucleolar stress leads to pro-metastatic phenotypes via the TP53-Golgi-TGFB2 axis"
15:45 – 15:50	Closing remarks
15:50 – 16:10	Coffee Break / Industry Exhibition / Poster Viewing / Meet the speakers
16:10 – 16:40	Plenary Lecture V: FRIEDRICH MIESCHER AWARD 2025
Joseph Deiss Auditorium	
16:40 – 17:10	Award Ceremony
Joseph Deiss Auditorium	Jörn Dengjel (Chair of LS ² AM2025, University of Fribourg) Simon Sprecher (Chair of LS ² AM2025, LS ² Vice-president, University of Fribourg) Mario P. Tschan (LS ² President, University of Bern)
17:10 – 17:15	Closing Remarks & Acknowledgements
Joseph Deiss Auditorium	Jörn Dengjel (Chair of LS ² AM2025, University of Fribourg) Simon Sprecher (Chair of LS ² AM2025, LS ² Vice-president, University of Fribourg)

Mario P. Tschan (LS² President, University of Bern)

