

Annual Swiss

Physiology Meeting 2018

Keynote speaker:

Beat Imhof (University of Geneva)

“Novel mechanisms in leukocyte migration”

Young Investigator Awards

to the best oral presentation and the best posters

Sponsored by “Stiftung für Physiologie”

Meeting Booklet

With generous support from:

This meeting booklet belongs to:

**(Please find space for your notes at the
end of this booklet)**



Swiss Academy of Sciences
Akademie der Naturwissenschaften
Accademia di scienze naturali
Académie des sciences naturelles

Table of Contents

Program	4
Keynote Lecture	6
Poster numbers	8
Abstracts	11
Organizers	83
Upcoming Physiology Meetings	84
Space for notes	85
Sponsors	91

1. Program

09:00 – 09:45 **Registration and coffee**
PER21, A120, Campus P erolles, UNIFR

09:45 – 09:50 **Welcome and introductory remarks**

09:50 – 10:35 **Keynote lecture: Prof. Beat Imhof**
(University of Geneva)
"Novel mechanisms in leukocyte migration"

10:35 – 11:00 **Coffee break**

11:00 – 12:00 **Young Investigator Award: Poster competition**
(finalists present printed A4 of the poster on light projector to entire audience)
Two post-doc and four student finalists (5' presentation, 3' discussion)

Post-docs **Nina Criado Santos, UNIGE:** Regulation of cross-presentation by the SNARE Sec22b through ER-phagosome membrane contact sites

Yi Yu, UNIFR: Role of arginase-II in melanoma growth and metastasis

Students **In es Borrego, UNIFR :** Crosstalk between Bone Marrow-Derived Cells and Macrophages for Heart regeneration

Samuel Buntschu, UNIBE: Stem cell transplantation as a strategy to improve spinal circuit plasticity and functional regeneration in vitro after spinal cord injury

Olga Komarynets, UNIGE: Interplay between primary cilia and transepithelial electrolyte transport in kidney tubule cells

Enea Pianezzi, UZH: Tissue specific cell derivation efficiently affect generation and maturation of human iPS-derived cardiomyocytes

12:30 - 14:00 **Lunch and Poster Viewing**

14:00 - 16.00 **Young Investigator Award: Oral communications**
Three post-doc and five student finalists (10' power point presentation, 5' discussion)

Post-docs **Augusto Martins Lima, EPFL:** A new GPVI inhibitor for anti-platelet therapy: from assay development to lead compounds

Jimmy Stalin, UNIFR: A specific NOX1 inhibitor decreases tumor growth, angiogenesis, lymphangiogenesis and enhances PD-1 based immune therapy

Yuyan Xiong, UNIFR: Myosin 1b regulates insulin-induced Akt/PKB activation through nuclear PTEN

Students **Nicole Bonetti, UZH:** Age-dependent change in platelet function and outcome after stroke: Is there a pathogenic link?

Julie Calonne, UNIFR: Low 24-hour core body temperature as a thrifty metabolic trait contributing to the enhanced efficiency of fat deposition during weight regain

Tomaz Martini, UNIFR: Involvement of the monocarboxylate transporter 1 (MCT1) in anticipation of recurrent food availability in mice

Natalia Méndez Carmona, UNIBE: Endothelial function is more susceptible to ischemia-reperfusion injury than contractile function in an isolated rat heart model of donation of circulatory death

Gil Vantomme, UNIL: A novel function of the thalamic reticular nucleus in spatial navigation and memory?

16:00 - 16:10 **Jury session**

16:10 - 16:25 **LS2 Physiology Section Meeting (open for all)**

16:25 - 16:40 **Award ceremony: YIA Research Prize of the "Stiftung für Physiologie" 2018**

16:40 **End of meeting**

2. Keynote Lecture

« Novel Mechanisms in leukocyte homing in inflammation and tumor physiology »

Beat A. Imhof

*Department of Pathology and Immunology
Medical Faculty
University of Geneva*



Inflammation is characterized by the recruitment of leukocytes from the bloodstream. In mice, the rapid arrival of neutrophils is followed by a wave of inflammatory lymphocyte antigen 6 complex (Ly6C)-positive monocytes. In contrast Ly6C^{low} monocytes survey the endothelium in the steady state, but their role in inflammation is still unclear. Using confocal intravital microscopy, we showed that upon viral Toll-like receptor 7/8 (TLR7/8)-mediated inflammation of mesenteric veins, platelet activation drives the rapid mobilization of Ly6C^{low} monocytes to the luminal side of the endothelium. After repeatedly interacting with platelets, Ly6C^{low} monocytes commit to a meticulous patrolling of the endothelial wall and orchestrate the subsequent arrival and extravasation of neutrophils through the production of proinflammatory cytokines and chemokines. At a molecular level, we showed that cysteine-rich protein 61 (CYR61)/CYR61 connective tissue growth factor nephroblastoma overexpressed 1 (CCN1) protein is released by activated platelets and enables the recruitment of Ly6C^{low} monocytes upon vascular inflammation. In addition, endothelium-bound CCN1

sustains the adequate patrolling of Ly6C^{low} monocytes both in the steady state and under inflammatory conditions. Blocking CCN1 or platelets with specific antibodies impaired the early arrival of Ly6C^{low} monocytes and abolished the recruitment of neutrophils. These results refined the leukocyte recruitment cascade model by introducing endothelium-bound CCN1 as an inflammation mediator and by demonstrating a role for platelets and patrolling Ly6C^{low} monocytes in acute vascular inflammation.

Monocyte diversity found in human also leads to complex roles in chronic inflammation and tumor physiopathology. We now have characterized human, non-classical CD14^{dim}CD16⁺ patrolling monocytes as a proangiogenic subset supporting tumor growth. These monocytes were captured by the tumor vasculature stimulated by IFN γ or TNF α . They induced the chemokine CX3CL1 and led to continuous crawling of the proangiogenic monocytes along the endothelium, thus hampering extravasation. Transendothelial migration was initiated by simultaneous exhibition of cytokines and tumor derived angiogenic factors including VEGF. The recruited proangiogenic monocytes further boosted angiogenesis by secreting MMP-9, leading to release of more matrix bound VEGF. This cascade amplified the entry of angiogenic monocytes to the tumor and chronically inflamed tissue. This sets the stage for combined therapies with anti-angiogenic and IFN γ -based immunotherapy for solid tumors. In summary, we have defined new mechanisms that explain acute and chronic inflammation, the latter also applies to tumors.

3. Poster numbers *(In alphabetical order)*

Please find the full abstracts from page 11 onwards.

1

Adams, Olivia Joan

UNIBE

IgA triggers cell death of neutrophils when primed by inflammatory mediators

2

Borgström, Anna

UNIBE

Investigation of TRPM4 in prostate cancer cells with a novel small molecule inhibitor

3

Borrego, Inês

UNIFR

Poster competition finalist

Crosstalk between Bone Marrow-Derived Cells and Macrophages for Heart regeneration

4

Buntschu, Samuel

UNIBE

Poster competition finalist

Stem cell transplantation as a strategy to improve spinal circuit plasticity and functional regeneration *in vitro* after spinal cord injury

5

Cajot, Jean-Francois

UNIFR

Deciphering the molecular function of androglobin

6

Criado Santos, Nina

UNIGE

Poster competition finalist

Regulation of cross-presentation by the SNARE Sec22b through ER-phagosome membrane contact sites

7

Dyrda, Agnieszka

UNIGE

Implication of TRPC1 in SOCE activated by the long isoform of STIM1

8

Komarynets, Olga

UNIGE

Poster competition finalist

Interplay between primary cilia and transepithelial electrolyte transport in kidney tubule cells

9

Lauczkowska, Karolina

UNIGE

Gain-of-function mutation of glutamate dehydrogenase and the contribution of the liver in the associated hyperammonemia of the HI/HA syndrome.

10

Maric, Darko

UNIFR

Novel Epo regulating transcription factors

11

Martins Lima, Augusto

EPFL

Oral presentation competition

finalist

A new GPVI inhibitor for anti-platelet therapy: from assay development to lead compounds

12

Oberhauser, Lucie

UNIGE

The recruitment of intracellular lipids in INS-1E β -cells is essential to glucose-stimulated insulin secretion

13

Pianezzi, Enea

UZH

Poster competition finalist

Tissue specific cell derivation efficiently affect generation and maturation of human iPS-derived cardiomyocytes

14

Ren, Zhilong

UNIFR

Role of arginase-II in human podocyte injury under hypoxic condition

15

Sassi, Ali

UNIGE

Coupling between paracellular and transcellular ion transport in renal collecting duct

16

Saul, Stephanie

UNIGE

Cebpa-Cre-driven Stim1/Stim2 ablation to study store-operated Ca²⁺ entry in mouse neutrophils

17

Teng Wei, Koay

UNIFR

Androglobin - a novel globin protein: insights into its function and expression

18

Wang, Wen-An, Jennifer

UNIGE

The role of ER calcium dynamics in maintaining cholesterol homeostasis

19

Wyss, Rahel Kathrin

UNIBE

Cardiac Mitochondrial Integrity
During Early Reperfusion –
Consequences of Ischemic
Duration and Association with
Post-Ischemic Cardiac Recovery

20

Yu, Yi

UNIFR

Poster competition finalist

Role of arginase-II in melanoma
growth and metastasis

21

Zhao, Huiyuan

UNIFR

A mass spectrometry study of
dopamine's role in alpha-
synuclein oligomerization

5. Organizers

Life Sciences Switzerland (LS²)

Carolin von Schoultz (Scientific Officer)

Jacqueline Oberholzer (Executive Secretary)

...and our freelance support:

Dagmar Bocakova (design, bocakova@gmail.com)

Dominique Ritter (administration)

Michael Vögeli (IT)

LS² Section Physiology

Board members :

Zhihong Yang (President, UNIFR,
zhihong.yang@unifr.ch)

Nicolas Demaurex (Past President,
UNIGE, nicolas.demaurex@unige.ch)

Simone Camargo (UZH, simonemc@physiol.uzh.ch)

Maud Frieden (UNIGE, maud.frieden@unige.ch)

Marc Chanson (UNIGE, marc.chanson@unige.ch)



6. Upcoming Physiology Meetings

- **Europhysiology 2018**, 14-16 September 2018, London, UK
- **LS2 Annual Meeting 2019**: 14-15 February 2019, University of Zurich, Irchel Campus
 - Including a **Physiology Symposium chaired by Maud Frieden** (UNIGE)
 - **Registration is open at www.annual-meeting.ls2.ch**
- **Asian-Oceanian Physiological Societies congress**, 28-31 March 2019, Kobe, Japan
- **LS2-Swiss Physiology Meeting**, September 2019, Bern
- **Federation of European Physiological Societies 2019 Meeting**: 10-13 September 2019, Bologna, Italy
- **10th Fribourg Obesity Research Conference**, September 12, 2019 (organizer: Abdul Dulloo).
- **Joined Physiological Societies Meeting** (Austria, German, and LS2-Physiology), 30 September - 2 October 2019, Ulm, Germany

Space for notes

Space for notes

Space for notes

Space for notes

Space for notes

Space for notes

7. Sponsors

We're very grateful for the generous support of :



Thank you all for your participation!

Feedback to:
info@ls2.ch

14-15 February, University of Zurich, Campus Irchel

SCIENCE POLICY PANEL

PLS OF TOMORROW CONTEST

AWARD LECTURES

SCIENTIFIC SYMPOSIA

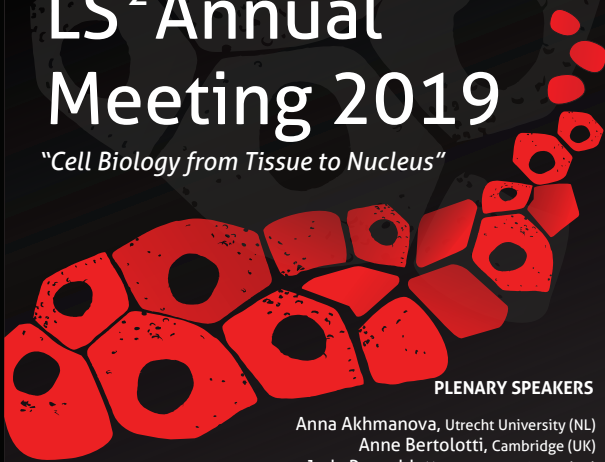
INDUSTRY EXHIBITION

CAREER SESSION

POSTER SESSIONS

LS² Annual Meeting 2019

"Cell Biology from Tissue to Nucleus"



PLENARY SPEAKERS

Anna Akhmanova, Utrecht University (NL)
Anne Bertolotti, Cambridge (UK)
Jody Rosenblatt, University of Utah (US)
Leonie Ringrose, Berlin (DE)

Infos & Registration: www.annual-meeting.ls2.ch



Universität Zürich



ETH zürich



Universität Basel



unibe



LS² Life Sciences Switzerland



UNIVERSITÉ DE GENÈVE

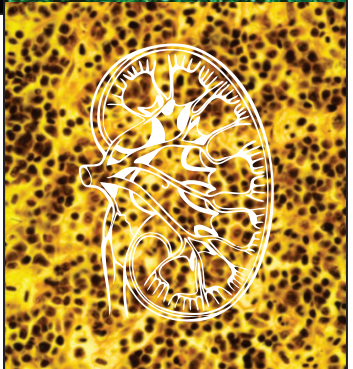
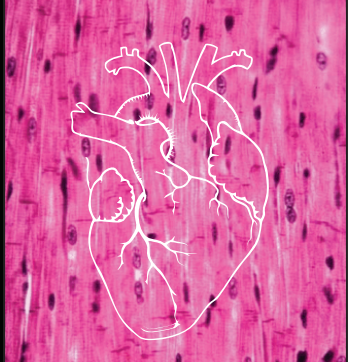
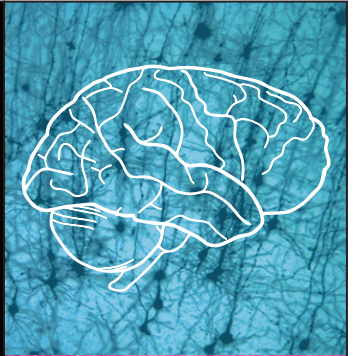


UNIL



sc|nat

Design by Dagmar Bocakova
Zurich 2018
bocakova@gmail.com



Life Sciences Switzerland - www.ls2.ch - info@ls2.ch