



# ISAC LETF

## Vienna Cytometry Workshop 2020

November 13.-15., 2020, Vienna, Austria

### SECOND ANNOUNCEMENT

**Venue:** Medical University of Vienna, General Hospital of Vienna, Austria

The *Live Education Delivery Task Force (LETF)* of the *International Society for the Advancement of Cytometry (ISAC)* organizes an educational event with practical session in the Central and Eastern Europe every year. After the successful workshops in Prague 2016, Warsaw 2017, Paris, Ljubljana and Modena 2018, Prague 2019. This year the *1st Vienna ISAC Cytometry Workshop (May 15.-17., 2020)* is organized by the *Medical University of Vienna* and the *Austrian Society for Cytometry* under the aegis of *LETF* and the *ISAC*.

The workshop is intended for 60 cytometrists from Eastern & Central Europe for the practical sessions with an additional 50 for the lectures only. The workshop and lectures will consist of 9-10 basic to advanced modules, with six practical sessions over a duration of 3 days. International ISAC members will serve as faculty for the course.

The lectures and wet lab workshops suit different levels and varied interests, with a good grounding in the basics up to the latest techniques in flow cytometry. We have highly knowledgeable and enthusiastic faculty, some of the best in their field, who are very approachable. In addition, the *participating companies* will make their latest instruments available on which the practical exercises of the Wetlabs will be carried out.

The registration fee is **EUR 300** and includes participation in the lectures on Friday and all workshops on Saturday and Sunday. Registration fee also includes lunch and coffee breaks as well as the social evening in a traditional Viennese wine restaurant („Heuriger“).

### *Confirmed faculty members*

**Immanuel Andrä**, Technical University Munich, Munich, Germany

**Andrew Filby**, Newcastle University, Newcastle, UK

**Maria Jaimes**, Cytek

**Tomas Kalina**, Charles University Prague, Prague, Czech Republic

**Hervé Luche**, Center of Immunophenomics, Marseille, France

**Zosia Maciorowski**, Paris, France

**Péter Nagy**, University of Debrecen, Debrecen, Hungary

**John Nolan**, Scintillon Institute, San Diego, USA

**Matthias Schiemann**, Technical University Munich, Munich, Germany

**Mathias Streitz**, Charité Berlin, Berlin, Germany

**Alexander Tolios**, Medical University of Vienna, Austria

**Joe Trotter**, Becton Dickinson

**Sofie van Gassen**, Ghent University, Ghent, Belgium

**Paul Wallace**, Roswell Park, Buffalo, New York, USA

# Time Schedule & Program Overview

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## PLENARY SESSIONS

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**Friday, November 13<sup>th</sup>, 2020**

**9:00 – 17:30**

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## WETLABS PROGRAM

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During [Online Registration](#), attendees have to choose thematic preferences. For organizational reasons and based on their selection, the participants are provisionally assigned to the workshops.

About 2 weeks before the start of the meeting, the participants are informed about the exact program and the assignment to the workshops.

**Saturday, November 14<sup>th</sup>, 2020**

**9:00 – 17:00 Advanced Data Analysis Workshop using R**

Sofie van Gassen & Alexander Tolios

*IMPORTANT:* Bring your own laptop with R installed

**8:45 – 17:30 Wetlab Workshops (in parallel, 2 hours each)**

Basics cytometry  
Multicolor cytometry  
Flow Imaging  
Extracellular Vesicles  
Sorting - Basics & Advanced  
Advanced data analysis  
Clinical hematology cytometry

**Sunday, November 15<sup>th</sup>, 2020**

**8:45 – 16:00 Wetlab Workshops (in parallel, 2 hours each)**

Basics cytometry  
Multicolor cytometry  
Flow Imaging  
Extracellular Vesicles  
Sorting - Basics & Advanced  
Advanced data analysis  
Clinical hematology cytometry

## Registration

**Registration Deadline:** October 23<sup>rd</sup>, 2020

Please register online at: <https://www.cytometry.at/isac-letf-cytometry-workshop/>

The registration fee is **EUR 300** and includes participation in the lectures on Friday and all workshops on Saturday and Sunday. Registration fee also includes lunch and coffee breaks as well as on Saturday evening a visit in a traditional **Viennese Wine Restaurant** („Heuriger“).

**The organizers thank the following companies for their generous support for the 1<sup>st</sup> Vienna ISAC-LETF Workshop**

### Platinum Sponsors



### Gold Sponsors



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# FACULTY



## **Immanuel Andrä**

*Technical University Munich, Munich, Germany*

Immanuel Andrä is a member of the Flow Cytometry FACS unit CyTUM-MIH and former PhD student at the Institute for Medical Microbiology, Immunology and Hygiene – Technische Universität München. He started as Biologist and received his graduation in Biology/Immunology. He has been on the faculty at Klinikum rechts der Isar since 2011. His area of interest includes quality control and hardware modifications of commercial available flow cytometric analyzers and cell sorters for special immunological applications. The major focus of his work was to visualize and identify cellular effects as well as cellular responses due to purification, especially by flow cytometry cell sorting. But also manipulation of cells during sample preparation for purification, and was using new technologies to minimize these effects. These studies are designed to increase our understanding of how the purification of cells manipulates their functionality. This knowledge is of special interest for adoptive immunotherapy, e.g. T cell mediated immunity. He also worked on methods to improve FACS drawbacks in rare event cell sorting with special pre-enrichment settings to cell sorter instruments. He also co-worked successfully to establish a fluorescence labeled color barcode in *in vivo* single cell transfer experiments.

### **Relevant Literature:**

Cossarizza, ..., **Andrä, I.**, et al. (2017). Guidelines for the use of flow cytometry and cell sorting in immunological studies. *European journal of immunology* 47, 1584-1797.

Cossarizza, ..., **Andrä, I.**, et al. (2019). Guidelines for the use of flow cytometry and cell sorting in immunological studies. *European journal of immunology* 49, 1457-1973.

Florian, M.C., Nattamai, K.J., ..., **Andrä, I.**, Schiemann, M., Oostendorp, R.A., et al. (2013). A canonical to non-canonical Wnt signalling switch in haematopoietic stem-cell ageing. *Nature* 503, 392-396.

Grassmann, S., Pachmayr L., **Andrä, I.**, ..., Buchholz, V., et.al (2019). Single-cell fate mapping reveals clonal dynamics of adaptive NK-cell responses. *Immunity* 50(6), 1391-1400.

**Andrä, I.**, Ulrich, H., ..., Schiemann, M., et al. (2020). An Evaluation of T-Cell Functionality After Flow Cytometry Sorting Revealed p38 MAPK Activation. *Cytometry A* 97(2), 171-183.



## **Diana Bonilla**

*Cytek Biosciences*

Dr. Diana Bonilla is a Microbiologist, graduated from Universidad del Valle in Colombia. She has a Ph.D in Immunology from Texas A&M University, a postdoctoral degree from Baylor College of Medicine and a cytometry specialization, accredited by the American Society of Clinical Pathology. Dr. Bonilla has 20 years of experience in cytometry evaluations for a variety of applications, including hematological disorders, infectious diseases and cancer. She worked five years at MD Anderson Cancer Center for the recent Medicine Nobel Awardee, James Allison, evaluating cytometric immune signatures in patients treated with immunotherapy against cancer. She was appointed as one of the emerging leaders by the International Society for Advancement of Cytometry (ISAC) in 2017 and is actively involved in education with the cytometry associations of Texas, Colombia and Latin America. She currently works as an application specialist for Cytek Biosciences providing technical and scientific support for spectral cytometry applications.

### **Relevant Literature:**

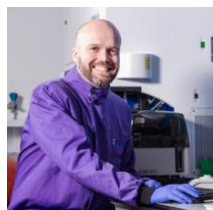
1. Czechowska K, Lannigan J, Wang L, Arcidiacono J, Ashburst T, Barnard R, Bauer S, Bispo C, Bonilla DL, et al. Cyt-Geist: Current and Future Challenges in Cytometry. *Cytometry Part A* 2018

2. Pichler M, Nam S, Anfossi S, Lee SK, Amero P, Klec C, Bonilla DL, Zhang X, Bozo L, Calin G. FLANC, a novel primate-specific long non-coding RNA, is involved in colorectal carcinogenesis and holds potential as a novel therapeutic target. Submitted.

3. Peniche AG, Bonilla DL, Palma GI, Melby PC, Travi BL, Osorio EY. A secondary wave of neutrophil infiltration causes necrosis and ulceration in lesions of experimental American cutaneous leishmaniasis. *PLoS One*. 2017 Jun 7;12(6):e0179084.

4. Hust MA, Blechacz B, Bonilla DL, Daver N, Rojas-Hernandez CM. Adult cancer-related hemophagocytic lymphohistiocytosis: A case report of a challenging diagnosis. Accepted by *Journal of Medical Case Reports*.

5. Autophagy Is Required for Neutrophil-Mediated Inflammation. Bhattacharya A, Wei Q, Shin JN, Abdel Fattah E, Bonilla DL, Xiang Q, Eissa NT. *Cell Rep.* 2015 Sep 22;12(11):1731-9.



**Andrew Filby**

*Newcastle University, Newcastle, UK*

Dr Filby graduated summa cum laude from the University of Huddersfield with a 1<sup>st</sup> class honours in Biochemistry. After graduating, he undertook a PhD at the National Institute for Medical Research (NIMR) in Mill Hill, London. He worked on the Src family kinases LCK and Fyn in adaptive immunity obtaining his PhD in molecular and cellular immunology from University College London (UCL). Dr Filby remained in the immunological field at the NIMR, working as a post-doctoral researcher on models of retroviral infection. He then worked for a short time in the commercial sector before taking up the deputy head role of the cytometry core at the London Research Institute (now the Francis Crick). Dr Filby is currently director of the Newcastle University Cytometry and Single Cell Core Technology Unit. He leads a dedicated team of cytometry specialists with the sole aim of developing and implementing comprehensive, cutting edge cytometry methods for the wider research community at Newcastle University and beyond. A significant part of his focus is the development of novel cytometry-based techniques that have underpinned several high profile publications in journals including *Science* (2012, 2017, 2018, 2019 and 2020), *Cell* (2013) and *Nature* (2018 and 2019). His current research is focused on whether label-free imaging cytometry techniques can be used to refine or replace the need for directed probes in order to prove cellular identity. To do this he uses Imaging Flow Cytometry (IFC) technology, specifically the Luminex ImageStream x MKII system. Dr Filby has over 10 years' experience of working with IFC and has published several papers in the field.

**Relevant Literature:**

Lippeveld M, Knill C, Ladlow E, Fuller A, Michaelis LJ, Saeys Y, **Filby A**, Peralta D. Classification of human white blood cells using machine learning for stain-free imaging flow cytometry. *Cytometry A* 2019 accepted for publication.

Nassar M, Doan M, Filby A, Wolkenhauer O, Fogg DK, Piasecka J, Thornton CA, Carpenter AE, Summers HD, Rees P, Hennig H. Label-Free Identification of White Blood Cells Using Machine Learning. *Cytometry A* 2019;95:836-842.

**Andrew Filby**, Derek Davies. Reporting Imaging Flow Cytometry Data for Publication: Why Mask the Detail? *Cytometry Part A* 2012;81:637-42. (top 10 most cited of 2012). Top 10 most cited paper in the Journal of 2012.

Filby A, Perucha E, Summers H, Rees P, Chana PJ, Heck S, Lord G, Davies D. An Imaging Flow Cytometric method for measuring cell division history and molecular symmetry during mitosis. *Cytometry A* 2011;79:496-506. AWARDED BEST PAPER 2011 for the Journal. Top 10 most accessed in 2011.



**Tomáš Kalina**

*CLIP Cytometry, Department of Pediatric Hematology and Oncology, Charles University, Prague, Czech Republic*

Tomáš Kalina, MD. PhD, is currently Associated Professor at Department of Pediatric Hematology and Oncology, Charles University in Prague, 2nd Faculty of Medicine, Czech Republic.

He graduated MD in 2000 from 2nd Medical School, Charles University Prague and started his research and diagnostic carrier in Prague (leukemia diagnostics and biology) and continued on a postdoctoral fellowship at Fred Hutchinson Cancer Research Center, Seattle, WA, USA (immune reconstitution post-BMT). He received PhD from Immunology in 2005. He was awarded "ISAC Scholar" in 2010. He is currently a vice-president of Czech Society for Analytical Cytology.

Throughout his carrier he has centered on working with various flow cytometry based techniques (leukemia phenotyping, minimal residual disease monitoring, immune monitoring, immunodeficiency, bead-based proteomics, algorithmic data analysis). He is a founding member of EuroFlow consortium where he is responsible for coordination of the technical aspects and design of flow cytometry procedures. At present, he is actively involved in EuroFlow Primary Immunodeficiency workpackage and EuroFlow proficiency testing. He is member of HCDM council.

**Relevant Literature:**

**Kalina T.**, Flores-Montero J, Lecrevisse Q, Pedreira CE, van der Velden VHJ, Novakova M, Mejstrikova E, Hrusak O, Böttcher S, Karsch D, Şedek L, Trinquand A, Boeckx N, Caetano J, Asnafi V, Lucio P, Lima M, Helena Santos A, Bonaccorso P, van der Sluijs-Gelling AJ, Langerak AW, Martin-Ayuso M, Szczepański T, van Dongen JJM, Orfao A. Quality assessment program for EuroFlow protocols: Summary results of four-year (2010-2013) quality assurance rounds. *Cytometry A* 2015;87:145–156.

**Kalina T.**, Stuchlý J, Janda A, Hrusák O, Růžicková S, Sedivá A, Litzman J, Vlková M. Profiling of polychromatic flow cytometry data on B-cells reveals patients' clusters in common variable immunodeficiency. *Cytometry A* 2009;75:902–9.

**Kalina T.**, Flores-Montero J, van der Velden VHJ, Martin-Ayuso M, Böttcher S, Ritgen M, Almeida J, Lhermitte L, Asnafi V, Mendonça A, de Tute R, Cullen M, Sedek L, Vidriales MB, Pérez JJ, te Marvelde JG, Mejstrikova E, Hrusak O, Szczepański T, van Dongen JJM, Orfao A. EuroFlow standardization of flow cytometer instrument settings and immunophenotyping protocols. *Leukemia* 2012;26:1986–2010.

van Dongen JJM, Lhermitte L, Böttcher S, Almeida J, van der Velden VHJ, FloresMontero J, Rawstron A, Asnafi V, Lécresse Q, Lucio P, Mejstrikova E, Szczepański T, **Kalina T.**, de Tute R, Brüggemann M, Sedek L, Cullen M, Langerak a W, Mendonça A, Macintyre E, Martin-Ayuso M, Hrusak O, Vidriales MB, Orfao A. EuroFlow antibody panels for standardized n-dimensional flow cytometric immunophenotyping of normal, reactive and malignant leukocytes. *Leukemia* 2012;26:1908–75.

Stuchlý J, Kanderová V, Fišer K, Cerná D, Holm A, Wu W, Hrušák O, Lund-Johansen F, **Kalina T.** An automated analysis of highly complex flow cytometry-based proteomic data. *Cytometry A* 2012;81:120–9.



**Zosia Maciorowski**

*Curie Institute, Paris, France*

Zosia Maciorowski received her B.Sc. in Microbiology from McGill University in Montreal and M.A. in Biology from Wayne State University in Detroit. She has worked in many labs and countries over the years on a variety of different subjects, from the early days of tissue culture to small animal surgery, monoclonal antibody production and early immunological and molecular biology techniques. In the 80's she specialized in solid tumor preparation for multicolor and cell cycle analysis. For the last 20 years she has been responsible for the Flow Cytometry Core Facility at the Curie Institute in Paris, France.

Zosia is Chair of the Education Committee of International Society for Advancement of Cytometry (ISAC) in which capacity she has led the education efforts in cytometry. She has participated in international flow cytometry workshops organized by the Live Education Task Force of ISAC in ASEAN Countries, China, India and the US. Zosia will be teaching phenotype analysis and issues of quality control in flow cytometry.

#### **Relevant Literature:**

Sharma S, Cabana R, Shariatmadar S, Krishan A. Cellular volume and marker expression in human peripheral blood apheresis stem cells. *Cytometry A*. 73A; 160-167, 2008.



**Peter Nagy**

*University of Debrecen, Debrecen, Hungary*

Peter Nagy graduated in general medicine in 1995 at the University of Debrecen, Hungary, and began his PhD studies in the same institution right afterwards investigating the clustering of members of the EGFR family using quantitative biophysical techniques. He obtained his PhD in biology in 1999 and obtained a position at the Department of Biophysics and Cell Biology, University of Debrecen. He spent altogether five years at the Max Planck Institute for Biophysical Chemistry, Göttingen, where he identified a mechanism of resistance to the therapeutic anti-ErbB2 antibody, trastuzumab, and continued to apply microscopic and flow cytometric tools for studying clustering of membrane proteins and transmembrane signaling. He is currently a professor at the Department of Biophysics and Cell Biology, University of Debrecen and heads the Quantitative receptor analysis group and the Division of Biophysics within the department. He contributed significantly to the characterization of the hierarchical clustering of membrane proteins applying a combination of molecular biological and biophysical methods (e.g. FRET, confocal microscopy, digital image processing). His current research interest lies in studying how clustering of membrane proteins and their interactions with the lipid environment determine the cell biological properties of the plasma membrane, and how quantitative evaluation of fluorescence experiments can lead to novel discoveries in cell biology.

#### **Relevant Literature:**

Szendi-Szalmári T, Szabó Á, Szöllösi J, **Nagy P.** Reducing the detrimental effects of saturation phenomena in FRET microscopy. *Anal Chem*. 91: 6378-6382. (2019)

Szabó Á, Szendi-Szalmári T, Ujlaky-Nagy L, Rádi I, Vereb G, Szöllösi J, **Nagy P.** The effect of fluorophore conjugation on antibody affinity and the photophysical properties of dyes. *Biophys J*, 114: 688-700. (2018)

Batta G, Soltész L, Kovács T, Bozó T, Mészár Z, Kellermayer M, Szöllösi J, **Nagy P.** Alterations in the properties of the cell membrane due to glycosphingolipid accumulation in a model of Gaucher disease. *Sci Rep*, 8: 157. (2018)

**Nagy P.**, Szabó Á, Váradi T, Kovács T, Batta G, Szöllösi J: rFRET: A comprehensive, Matlab-based program for analyzing intensity-based ratiometric microscopic FRET experiments. *Cytometry A*, 89: 376-384. (2016)

**Nagy P.**, Claus J, Jovin TM, Arndt-Jovin DJ: Distribution of resting and ligand-bound ErbB1 and ErbB2 receptor tyrosine kinases in living cells using number and brightness analysis. *Proc Natl Acad Sci USA*, 107: 16524-16529. (2010)

Szabó Á, Horváth G, Szöllösi J, **Nagy P**: Quantitative characterization of the large-scale association of ErbB1 and ErbB2 by flow cytometric homo-FRET measurements. *Biophys J*, 95:2086-2096. (2008)



### **John Nolan**

*Scintillon Institute, San Diego, USA*

John Nolan received BS degrees (Biology and Chemistry) from the University of Illinois and a PhD (Biochemistry) from Penn State University. He did post-doctoral research at Los Alamos National Lab, where he later served as Technical Staff Member and Director of the National Flow Cytometry Resource. Since 2014, he has been a Professor at the Scintillon Institute in San Diego, where his group develops new instrumentation, reagents, and assays for cytometry and single cell analysis. Recently, his group has been developing quantitative and reproducible single vesicle analysis tools for the study of extracellular vesicles (EVs). He is on the editorial boards of *Cytometry* and *Current Protocols in Cytometry*, past-President of the International Society for Advancement of Cytometry, and Fellow of the American Institute of Medical and Biological Engineering.

#### **Relevant Literature:**

Coumans FAW, Brisson AR, Buzas EI, Dignat-George F, Drees EEE, El-Andaloussi S, Emanuelli C, Gasecka A, Hendrix A, Hill AF, Lacroix R, Lee Y, van Leeuwen TG, Mackman N, Mäger I, **Nolan JP**, van der Pol E, Pegtel DM, Sahoo S, Siljander PRM, Sturk G, de Wever O, Nieuwland R. Methodological Guidelines to Study Extracellular Vesicles. ***Circulation Research***. 2017;120:1632-48

**Nolan JP**. Flow Cytometry of Extracellular Vesicles: Potential, Pitfalls, and Prospects. ***Curr Protoc Cytom***. 2015;73:13.4.1-4.6.

**Nolan JP**, Duggan E. Analysis of Individual Extracellular Vesicles by Flow Cytometry. *Flow Cytometry Protocols*: **Springer**; 2018;79-92.

**Nolan JP**, Stoner SA. A trigger channel threshold artifact in nanoparticle analysis. ***Cytometry Part A*** 2013;83A:301-5.

Stoner SA, Duggan E, Condello D, Guerrero A, Turk JR, Narayanan PK, **Nolan JP**. High sensitivity flow cytometry of membrane vesicles. ***Cytometry Part A*** 2016;89:196-206.



### **Matthias Schiemann**

*Institute for Medical Microbiology, Immunology and Hygiene, Technische Universität München, Germany*

Matthias Schiemann is Core Manager of the Flow Cytometry FACS unit CyTUM-MIH and group leader at the Institute for Medical Microbiology, Immunology and Hygiene – Technische Universität München. He started as Chemist and received his graduation in Biology/Immunology. He has been on the faculty at Klinikum rechts der Isar since 2000. His area of interest includes quality control and hardware modifications of commercially available flow cytometric analyzers and cell sorters for special immunological applications. He has been involved in training courses in flow cytometry of cell sorting and setup of multicolor experiments for a long time. The major focus of the Schiemann laboratory is to visualize and find out effects as well as influxes due to purification and in general manipulation during handling and purification of cells. These studies are designed to increase our understanding of how the purification of cells manipulates their functionality. This knowledge is of special interest for adoptive immunotherapy, diagnostic monitoring of, for example T cell mediated immunity, and the development of new vaccination strategies.

#### **Relevant Literature:**

Knabel M, Franz TJ, **Schiemann M**, Wulf A, Villmow B, Schmidt B, Bernhard H, Wagner H, Busch DH. Reversible MHC multimer staining for functional isolation of T-cell populations and effective adoptive transfer. ***Nat Med*** 2002;8:631-7.

**Schiemann M**, Busch DH Selection and Combination of Fluorescent Dyes. ***Cellular Diagnostics*** (Sack U, Tárnok A, Rothe G) 2009;106-140.

Stemberger C, Graef P, Odendahl M, Albrecht J, Dössinger G, Anderl F, Buchholz VR, Gasteiger G, **Schiemann M**, Grigoleit GU, Schuster FR, Borkhardt A, Versluys B, Tonn T, Seifried E, Einsele H, Germeroth L, Busch DH, Neuenhahn M. Lowest numbers of primary CD8+ T cells can reconstitute protective immunity upon adoptive immunotherapy. ***Blood*** 2014;pii: blood-2013-12-547349.

Neuenhahn M, **Schiemann M**, Grigoleit GU et al. Transfer of minimally manipulated CMV-specific T cells from stem cell or third-party donors to treat CMV infection after allo-HSCT. ***Leukemia*** 2017;31:2161-2171.

Cossarizza A, Radbruch A, **Schiemann M**, Zimmermann J et al. Guidelines for the use of flow cytometry and cell sorting in immunological studies. ***Eur J Immunol*** 2017;47:1584-1797.



### **Andreas Spittler (local organizer)**

*Core Facility Flow Cytometry & Surgical Research Laboratories, Medical University of Vienna, Austria*

Andreas Spittler received his PhD in Pathophysiology at the Medical University of Vienna in 2001, where he worked in the Department of Surgery, Research Laboratories. He began his research career in the Department of Pathophysiology and was appointed Associate Scientist at Surgical Research Laboratories in 1998. There he worked with amino acids and their monocyte immune regulation in cell culture conditions and in studies with surgical patients. He is currently an Associate Professor of Pathophysiology and Head of the Core Facility Flow Cytometry. Andreas Spittler is President of the Austrian Society for Cytometry and President of the Austrian Society for Extracellular Vesicles. For some years now, he has been primarily interested in extracellular vesicles, especially the measurement and characterization of these particles using flow cytometry and imaging flow cytometry. He is also interested in the characterization of the neonatal immune system and the functional characterization of monocytes in inflammation and sepsis.

#### **Relevant Literature:**

Duerr C, Bacher A, de Martin A, Sachet M, Sadeghi K, Baumann S, Heinz C, **Spittler A**. The novel polyclonal Ab preparation trimodulin attenuates ex vivo endotoxin-induced immune reactions in early hyperinflammation. **Innate Immun.** 2019;25:374-388.

Weiss R, Gröger M, Rauscher S, Fendl B, Eichhorn T, Fischer MB, **Spittler A**, Weber V. Differential Interaction of Platelet-Derived Extracellular Vesicles with Leukocyte Subsets in Human Whole Blood. **Sci Rep** 2018;8:6598.

Mushahary D., **Spittler A**, Kasper C, Weber V, Charwat V. (2017) Isolation and characterization of human mesenchymal stem cells. **Cytometry Part A** 2018;83:128-134.

Weiss R, Eichhorn T, **Spittler A**, Mičušik M, Fischer MB, Weber V.. Release and cellular origin of extracellular vesicles during circulation of whole blood over adsorbent polymers for lipid apheresis. **Journal of Biomedical Materials Research, Part B – Applied Biomaterials**, 105:636-6461.

Wisgrill L., Lamm C, Hartmann J, Preißing F, Dragosits K, Bee A, Hell L, Thaler J, Ay C, Pabinger I, Berger A, **Spittler A**. Peripheral Blood Microvesicles Secretion is Influenced by Storage Time, Temperature and Anticoagulants. **Cytometry Part A**, 2016;89:663-72.



### **Mathias Streitz**

*Institute of Medical Immunology, Charité – Universitätsmedizin Berlin*

Mathias Streitz received his Diploma in Biology at the Freie Universität zu Berlin. He is the Head of Flow Cytometry Lab, Institute of Medical Immunology, Charité – Universitätsmedizin Berlin. Mathias Streitz is the coordinator of the standardization and validation of flow-cytometry-based immunological monitoring as a part of the Central Immune Monitoring Laboratory for international clinical trials (e.g. ONE-Study and BIO-DrIM). He also team organizer for a certified diagnostic service unit for industrial and academic clinical studies and currently additionally works at a scientist at BCRT (Berlin-Brandenburg Center of Regenerative Therapies). Mathias Streitz works as scientist in the lab of Prof. H.-D. Volk and in the lab of Dr. Florian Kern, Charité – Universitätsmedizin Berlin, Institute for Medical Immunology.

#### **Relevant Literature:**

Sawitzki B, Harden PN, Reinke P, Moreau A, Hutchinson JA, Game DS, Tang Q, Guinan EC, Battaglia M, Burlingham WJ, Roberts IS, **Streitz M**, Josien R, Böger CA, Scotta C, Markmann JF, Hester JL, Juerchott K, Braudeau C, James B, Contreras-Ruiz L, van der Net JB, Bergler T, Caldara R, Petchey W, Edinger M, Dupas N, Kapinsky M, Mutzbauer I, Otto NM, Öllinger R, Hernandez-Fuentes MP, Issa F, Ahrens N, Meyenberg C, Karitzky S, Kunzendorf U, Knechtle SJ, Grinyó J, Morris PJ, Brent L, Bushell A, Turka LA, Bluestone JA, Lechler RI, Schlitt HJ, Cuturi MC, Schlickeiser S, Friend PJ, Miloud T, Scheffold A, Secchi A, Crisalli K, Kang SM, Hilton R, Banas B, Blanco G, Volk HD, Lombardi G, Wood KJ, Geissler EK. The ONE Study: Evaluation of Regulatory Cell Therapy in Kidney Transplantation Using a Harmonized Trial Design **The Lancet** 2020; accepted

Kverneland AH, **Streitz M**, Geissler E, Hutchinson J, Vogt K, Boës D, Niemann N, Pedersen AE, Schlickeiser S, Sawitzki B. Age and gender leucocytes variances and references values generated using the standardized ONE-Study protocol. **Cytometry A** 2016;89:543-64.

Lei H, Kuchenbecker L, **Streitz M**, Sawitzki B, Vogt K, Landwehr-Kenzel S, Millward J, Juelke K, Babel N, Neumann A, Reinke P, Volk HD. Human CD45RA(-) FoxP3(hi) Memory-Type Regulatory T Cells Show Distinct TCR Repertoires With Conventional T Cells and Play an Important Role in Controlling Early Immune Activation. **Am J Transplant** 2015;15:2625-35.

**Streitz M**, Miloud T, Kapinsky M, Reed MR, Magari R, Geissler EK, Hutchinson JA, Vogt K, Schlickeiser S, Kverneland AH, Meisel C, Volk HD, Sawitzki B. Standardization of whole blood immune phenotype monitoring for clinical trials: panels and methods from the ONE study. **Transplant Res.** 2013;25:17.



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**Streitz M**, Tesfa L, Yildirim V, Yahyazadeh A, Ulrichs T, Lenkei R, Quassem A, Liebetrau G, Nomura L, Maecker H, Volk HD, Kern F. Loss of receptor on tuberculin-reactive T-cells marks active pulmonary tuberculosis. *PLoS One* 2007;2(8):e735.



### **Sofie Van Gassen**

*Department of Applied Mathematics, Computer Science and Statistics, Ghent University & Data Mining and Modeling for Biomedicine, VIB Center for Inflammation Research, Gent, Belgium*

Sofie van Gassen, MSc, PhD, is currently Postdoctoral Researcher at the Department of Applied Mathematics, Computer Science and Statistics, Ghent University in Ghent, Belgium. She graduated PhD in 2017 in Computer Science Engineering, Ghent University. Her experiences are computational analysis of flow and mass cytometry data, including quality control, automated gating, dimensionality reduction, clustering, statistics and predictive modeling. In 2015 Sofie Van Gassen et al. introduced in Cytometry Part A a new visualization technique, called FlowSOM, which analyzes Flow or mass cytometry data using a Self-Organizing Map. Sofie Van Gassen is currently ISAC Marylou Ingram Scholar.

### **Relevant Literature:**

**Van Gassen S.**, Callebaut B., Van Helden M.J., Lambrecht B.N., Demeester P., Dhaene T., Saeys Y. FlowSOM: Using self-organizing maps for visualization and interpretation of cytometry data. *Cytometry A* 2015;87:636-645.

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Alexander Tolios, MSc, MD, is currently physician in residency in the field of transfusion medicine at the general hospital in Vienna and performing a doctoral degree with a focus on bioinformatic analysis of methylation data at the Medical University of Vienna. His research is primarily focussed on the use of computational and predictive modeling tools for outcome prediction as well as genetic and protein biochemical analysis of blood platelets and granulocytes.

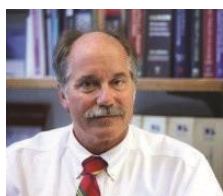
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**Paul Wallace**

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Paul K. Wallace, PhD has served since 2003 as Director of the Flow and Image Cytometry Department and is Professor of Oncology at Roswell Park Cancer Institute (RPCI) in Buffalo, NY. He is also Associate Professor of Microbiology & Immunology, Dartmouth College, Hanover, NH and Associate Professor of Biotechnical and Clinical Laboratory Sciences, University at Buffalo, Buffalo, NY. Dr. Wallace is currently the International Society for Advancement of Cytometry President Elect, an International Clinical Cytometry Society councilor and Associate Editor of Clinical Cytometry B.

Under his direction, the Flow and Image Cytometry Department at Roswell Park offers a strong combination of both clinical and research missions. The department's clinical emphasis is on the diagnosis and monitoring of patients with leukemia and lymphoma. In addition, it serves as a core reference facility performing immunophenotyping and immune monitoring studies on samples from patients enrolled in clinical trials for several bio-tech and grant-funded organizations. The department's research focus is on myeloid cell biology and translational cancer research utilizing flow cytometry.

Before joining Roswell Park, Dr. Wallace was an Assistant Professor of Immunology at Dartmouth Medical School, Hanover NH (1993-2003), a cofounder of Zynaxis Cell Science, Inc., Malvern PA (1988-1991), and the Supervisor of Flow Cytometry at SmithKline (now Quest) Clinical Laboratories King of Prussia, PA (SKCL; 1979-1988). He is internationally recognized for his commitment to flow cytometric education and has been a member of ISAC's Educational Task Force/Committee since its inception in 2006 and of the ICCS Education committee since 2003. He is a consultant with ASCP and CDC's PETFAR (U.S. President's Emergency Plan for AIDS Relief), for which he has developed and presented CD4 training programs in Nigeria, India, Mozambique and Vietnam. Since 1994 he has also been on the faculty of the Bowdoin/New Mexico Annual Course in Methods and Applications of Cytometry.

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