

TITLE: The IMPRESS Study: Immune Profiling of Cancer Patients via High-Resolution scRNA-Sequencing

Sébastien Rinaldetti (1), Antonio Cosma (2)

1) Department of Hematology/Oncology, Centre Hospitalier de Luxembourg

2) National Cytometry Platform, Luxembourg Institute of Health

In the last 3-4 years, neoadjuvant immunochemotherapies (= chemotherapy in combination with an immune checkpoint inhibitor) became the standard of care in an increasing number of cancer entities. As a result, the frequency of pathological complete remissions (pCR) and major pathological responses (MPR) increased drastically. Thus, neoadjuvant immunochemotherapies will define the research agenda for the next decade. The IMPRESS Study will perform deep immune profiling on patients with localized triple-negative breast cancer (TNBC) and non-small cell lung cancer (NSCLC) treated by neoadjuvant immunochemotherapy (NIC). To date, the underlying biological mechanisms of pCR and MPR are still unknown. By performing deep immune profiling by means of CyTOF, scRNA-sequencing and spatial proteomics on peripheral blood and formalin- fixed paraffin-embedded (FFPE) tumor samples, the IMPRESS Study will be able to identify biological factors with impact on pCR and MPR.

SPEAKER BIOSKETCH - Sébastien RINALDETTI (CHL)

NAME, SURNAME: Sébastien RINALDETTI

TITLE: MD (Medical Doctor)

ORCID ID: 0000-0003-1053-3831

CURRENT AND PAST POSITIONS:

- 01/2022-ongoing** Hematologist/Oncologist at Centre Hospitalier de Luxembourg - Centre National d'Hémato-Oncologie. Manager of the 'Cellular Therapy Working Group'
- 01/2020-12/2021** Resident in Hematology/Oncology at Centre Hospitalier de Luxembourg
- 2018-2019** Postdoc research fellow at University of Colorado Anschutz Medical Campus and Skaggs School of Pharmacy, Center for Drug Discovery
- 06/2014-2018** Postdoc researcher and former head of basic research for Chronic Myeloid Leukemia, CML Center of Excellence, Heidelberg University Medical Faculty Mannheim
- 06/2014-2018** Postdoc researcher at Bladder Cancer Research Laboratory, Heidelberg University Medical Faculty Mannheim
- 01/2011-07/2013** Undergraduate researcher at Tirolean Cancer Research Institute

EDUCATION:

- 12/2021** Board Certification in Hematology and Oncology by the Medical Chamber Nordbaden
- 2013-2018** Resident and research associate at Heidelberg University, Medical Faculty Mannheim, Department of Hematology/Oncology, 2nd Promotion: Dr. med. (summa cum laude)
- 2007-2013** Medical student at Medical University of Innsbruck, 1st Promotion: Dr.med.univ.

SPEAKER BIOSKETCH - Antonio, COSMA (LIH)

NAME, SURNAME: Antonio, COSMA

TITLE: PhD, Head of the National Cytometry Platform

ORCID ID: 0000-0002-3686-8034

CURRENT AND PAST POSITIONS:

Since November 2018, I am the Head of the National Cytometry Platform at the Luxembourg Institute of Health. From 2009 to 2018, I was the head of the FlowCyTech core facility at the Atomic Energy Commission (Fontenay-aux-Roses, France) and before I was in charge for the Immuno-monitoring core facility at the Institute of Virology, Helmholtz Zentrum München, (Munich, Germany).

EDUCATION:

I graduated in biological science from the “Università degli Studi di Milano” (Italy) in 1992 and obtained a PhD in Human Biology from the Faculty of Medicine of the Ludwig-Maximilians-Universität in 2008 (Munich, Germany). In 2015, I received the Accreditation to Direct Research (HDR) from the Université Paris-Sud (France). In 2020, I also obtained the authorization to direct research from the University of Luxembourg.

AWARDS AND HONORS:

I am an Associate Editor for the journal Cytometry A and a member of the HCDM (Human Cell Differentiation Molecules) Council (hcdm.org).

OTHER RELEVANT PROFESSIONAL ACTIVITIES AND ACCOMPLISHMENTS:

My scientific activity focused for long time on the study of the immune system during HIV infection. In 2011, FlowCyTech was the first core facility in Europe to implement the mass cytometry or Cytometry by Time Of Flight (CyTOF). I used the CyTOF for the comparative analysis of the immune system in humans and in the Cynomolgus macaque model, and the characterization of the innate immune system in infectious diseases, vaccination models and inflammatory diseases. I am an expert in the development of flow-cytometry-based assays, data management and analysis. I wish to facilitate multidimensional data analysis by merging the fields of flow cytometry and Business Intelligence. I recently proposed a new method for the annotation of cell type based on prime numbers and the fundamental theorem of arithmetic. I am very active in the single cell community in organizing workshops and trainings.