



INSTITUTE
FOR RESEARCH
IN BIOMEDICINE

Barcelona BioMed Conference

Quantitative dynamics of aging and premalignancy 14-16 November 2022

Monday, 14 November

8.30 Registration

9.00 Welcome by Dr. Raúl Méndez (IRB Barcelona, Vice Director) and organizers (Dr. Alejo Rodriguez-Fraticelli, Dr. John E. Dick, Dr. Salvador Aznar-Benitah)

Session 1: Deregulated stem cell mechanisms in aging and cancer

Chair: Dr. Salvador Aznar-Benitah

9.15 **What Makes a Stem Cell a Stem Cell and How Does it Go Bad in AML**
Dr. John E. Dick, University Health Network (Toronto, ON, Canada)

9.50 **Clonally resolved single-cell multi-omics identifies routes of cellular differentiation in acute myeloid leukemia**
Dr. Lars Velten, CRG (Barcelona, Spain)

10.25 **Short talk 1: Understanding the role of PHF19 in acute Myeloid leukemias (AMLs): from patients data analysis to cell in-vitro characterization**
Gianni Paolo Gamarra Figueroa, CRG (Barcelona, Spain)

10.40-11.15 *Coffee break and poster session*

11.15 **Somatic evolution in normal and neoplastic hematopoiesis through the lens of single-cell multi-omics**
Dr. Dan A. Landau, New York Genome Center (New York, NY, USA)

- 11.50 **Clonal determinants of stem cell heterogeneity**
Dr. Alejo Rodriguez-Fraticelli, IRB Barcelona (Barcelona, Spain)
- 12:25 **Principles of regeneration captured by imaging the skin of live mice**
Dr. Valentina Greco, Yale University School of Medicine (New Haven, CT, USA)
- 13.00 **Short talk 2: Stromal niche instructs early tumour formation**
Dr. Maria P. Alcolea, Wellcome - MRC Cambridge Stem Cell Institute (Cambridge, UK)

13.15-15.00 *Lunch and poster session*

Session 2: Dynamics of aging

Chair: Dr. Alejo Rodriguez-Fraticelli

- 15.00 **A map of circulating HSCs in age and disease**
Dr. Liran Shlush, Weizmann Institute of Science (Rehovot, Israel)
- 15.35 **Systemic regulation of physiology by circadian clocks in youth and during aging**
Dr. Salvador Aznar-Benitah, IRB Barcelona/ ICREA (Barcelona, Spain)
- 16.10 **Short talk 3: Protective role of cellular heterogeneity preserving the plasticity and complexity of transcriptional networks during ageing**
Dr. Celia P. Martinez-Jimenez, Helmholtz Zentrum Munchen (München, Germany)

16.25-16.55 *Coffee break and poster session*

- 16.55 **New approaches to enhance regeneration of aged muscles: a focus on senescent cells**
Dr. Pura Muñoz-Cánoves, UPF (Barcelona, Spain)
- 17.30 **Intestinal Stem Cell Aging: local and systemic effects**
Dr. Heinrich Jasper, Genentech Inc. (South San Francisco, CA, USA)
- 18.00 **Short talk 4: Genome segmentation by UV light DNA damage repair dynamics**
Hanna Kranas, IRB Barcelona (Barcelona, Spain)

18.15 *End of session*

Tuesday, 15 November

Session 3: Clonal evolution in aging and cancer

Chair: Dr. Alejo Rodriguez-Fraticelli

- 9.00 **Somatic mutations in tumors and normal tissues**
Dr. Núria López-Bigas, IRB Barcelona/ ICREA (Barcelona, Spain)
- 9.35 **Somatic mutation in normal tissues**
Dr. Iñigo Martincorena, Wellcome Sanger Institute (Cambridge, UK)
- 10.10 **Short talk 5: Genome-wide analyses of 200,453 individuals yields new insights into the causes and consequences of clonal hematopoiesis**
Dr. Pedro M. Quiros, Instituto de Investigación Sanitaria del Principado de Asturias (Oviedo, Asturias)
- 10.25 **Short talk 6: Somatic LMNA mutation and expression of progerin in early vascular aging of chronic kidney disease**
Dr. Gwladys Revêchon, Karolinska Institutet (Huddinge, Sweden)
- 10.40-11.10 *Coffee break and poster session*
- 11.10 **Injury-induced cellular reprogramming as a driver of preneoplastic transformation and tumour initiation in epithelial tissues**
Dr. Benjamin D. Simons, Wellcome Trust-Cancer Research UK Gurdon Institute (Cambridge, UK)
- 11.45 **Haematopoiesis across the human lifespan at single cell resolution**
Dr. Elisa Laurenti, Wellcome-MRC Cambridge Stem Cell Institute (Cambridge, UK)
- 12.20 **Genetic determinants of clonal expansion rate in pre-malignant HSCs**
Dr. Siddhartha Jaiswal, Stanford Medicine (Stanford, CA, USA)
- 12.55 **Short talk 7: Identification of Clonal Hematopoiesis Driver Mutations through In Silico Saturation Mutagenesis**
Dr. Santiago Demajo, IRB Barcelona (Barcelona, Spain)

13.10-15.00 *Lunch and poster session*

Session 4: Immune processes

Chair: Dr. Salvador Aznar-Benitah

- 15.00 **Circadian biology in the bone marrow**
Dr. Andrés Hidalgo, CNIC (Madrid, Spain)

- 15.35 **Rejuvenated blood stem cells extend lifespan of aged immunocompromised mice**
Dr. Maria Carolina Florian, IDIBELL (Barcelona, Spain)
- 16.10 **Short talk 8: Clonal haematopoiesis shapes the immune system: the case of the preleukemic neutrophil**
Dr. Hector Huerga, The Francis Crick Institute (London, UK)
- 16.25-17.00 *Coffee break and poster session*
- 17.00 **Short talk 9: Age-associated T cells drive myelopoiesis skewing in old mice**
Dr. Enrique Gabandé-Rodríguez, CBM- CSIC (Madrid, Spain)
- 17:15 **Short talk 10: Local IL-17 orchestrates skin aging**
Dr. Guiomar Solanas, IRB Barcelona (Barcelona, Spain)
- 17.30 *End of session*
- 20.30 *Speakers dinner (Restaurant Can Pineda) (Sant Joan de Malta, 55)*

Wednesday, 16 November

Session 5: Cell plasticity, aging and cancer

Chair: Dr. Salvador Aznar-Benitah

- 9.00 **Formaldehyde induced endogenous DNA damage disrupts blood regeneration, nutritional homeostasis and promotes ageing**
Dr. Ketan J. Patel, MRC Weatherall Institute of Molecular Medicine (Oxford, UK)
- 9.35 **Understanding and controlling cellular plasticity**
Dr. Manuel Serrano, IRB Barcelona/ ICREA (Barcelona, Spain)
- 10.10 **Short talk 11: Organelle age landscape in skin**
Dr. Agustin Sola Carvajal, Karolinska Institute (Stockholm, Sweden)
- 10.25-11.00 *Coffee break and poster session*
- 11.00 **Neoplastic co-option of epigenetic plasticity and epithelial-immune interactions**
Dr. Direna Alonso-Curbelo, IRB Barcelona (Barcelona, Spain)

11.35 Regulation of stem cell fate and dynamics by niche derived factors and forces

Dr. Sara Wickström, Faculty of Medicine and Helsinki Institute of Life Science (Helsinki, Finland)

12.10 Nutrient dependencies of metastasis formation

Dr. Sarah -Maria Fendt, VIB - KU Leuven Center for Cancer Biology (Leuven, Belgium)

13.00 *Concluding remarks and end of conference*