

Cancer Genetics & Epigenetics

Gordon Research Conference

Cancer Epigenetics: Mutations, Functions, and Therapies

Dates

April 23-28, 2017

Location

Renaissance Tuscany Il Ciocco
Lucca (Barga), Italy

Organizers

Chairs:

X. Shirley Liu & Saverio Minucci

Vice Chair:

Jonathan D. Licht

Application Deadline

Applications for this meeting must be submitted by **March 26, 2017**. Please apply early, as some meetings become oversubscribed (full) before this deadline. If the meeting is oversubscribed, it will be stated here. *Note:* Applications for oversubscribed meetings will only be considered by the Conference Chair if more seats become available due to cancellations.

Meeting Description

There has been increasing awareness of the interplay between mutations and epimutations in driving the initiation and progression of cancer. Specific genetic mutations of epigenetic regulators may cause widespread epigenetic alterations, and epimutations similarly predispose to genetic alterations either locally or across the genome. The field has seen a dramatic shift in the past decade from a pure genetic to a mixed genetic/epigenetic explanation of cancer. From the discovery of the alterations, along with significant structural biology and chemistry, new agents with therapeutic potential have arisen. This GRC series focuses on the discovery and functional characterization of novel recurrent genetic and epigenetic alterations, the molecular mechanisms underlying epigenetic mutations and epigenetic changes in cancer, as well as the development and applications of epigenetic therapies in cancer. Recent discoveries on tumor heterogeneity and tumor immunity as well as their interactions with cancer epigenetics also bring new excitement to the field. The development of high throughput "omics" techniques, such as mutational and epigenetic profiling, chemical and genetic screens, proteomics, has greatly accelerated research in this area. Need for computational algorithms and analyses integrating such "omics" data to model epigenetic regulation in cancer also becomes critical. Developments and discoveries on cancer genetics and epigenetics will have far-reaching implications to our capacity to understand tumor initiation and progression, to decipher the pathways and molecules involved, as well as to devise new strategies for prevention and treatment. We hope to attract leaders from academia and industry for stimulating discussions on cancer genetics and epigenetics, from mutation profiles, to mechanistic and functional characterization, to cancer therapies.

Contributors





Meeting Program

Sunday

- 4:00 pm - 8:00 pm Arrival and Check-in
- 6:00 pm Dinner
- 7:30 pm - 7:40 pm Welcome / Introductory Comments by GRC Site Staff
- 7:40 pm - 9:30 pm **Keynote Session: From Epigenetic Mechanism to Epigenetic Therapy**
- Discussion Leader: **Jonathan Licht** (The University of Florida, USA)
- 7:40 pm - 7:45 pm Opening Remarks
- 7:45 pm - 8:15 pm **Shelley Berger** (University of Pennsylvania, USA)
"Regulation of the Nuclear Genome in Mammals and Model Organisms"
- 8:15 pm - 8:20 pm Discussion
- 8:20 pm - 8:50 pm **Scott Armstrong** (Dana Farber Cancer Institute, USA)
"Development of New Therapeutics that Target Chromatin Based Mechanisms"
- 8:50 pm - 8:55 pm Discussion
- 8:55 pm - 9:25 pm **Peter Jones** (Van Andel Research Institute, USA)
"Activating Endogenous Retroviruses for Therapy"
- 9:25 pm - 9:30 pm Discussion

Monday

- 7:30 am - 8:30 am Breakfast
- 9:00 am - 12:30 pm **Genetic and Epigenetic Changes in Hematological Malignancies**
- Discussion Leader: **Chi Wai Eric So** (The University of London, United Kingdom)
- 9:00 am - 9:25 am **Pier Giuseppe Pelicci** (European Institute of Oncology, Italy)
"Molecular Mechanisms of Cancer and Ageing"
- 9:25 am - 9:30 am Discussion
- 9:30 am - 9:40 am Short Talk Selected from Poster Abstracts
- 9:40 am - 9:45 am Discussion
- 9:45 am - 10:10 am **Omar I. Abdel-Wahab** (Memorial Sloan Kettering Cancer Center, USA)
"The Role of Disordered Epigenetic Modifiers in the Pathogenesis of Hematopoietic Malignancies"
- 10:10 am - 10:15 am Discussion
- 10:15 am - 10:25 am Short Talk Selected from Poster Abstracts
- 10:25 am - 10:30 am Discussion
- 10:30 am - 11:00 am Coffee Break
- 11:00 am - 11:25 am **Peggy Goodell** (Baylor College of Medicine, USA)
"DNA Methyltransferase 3A in Normal and Malignant Hematopoiesis"

- 11:25 am - 11:30 am Discussion
- 11:30 am - 11:40 am Short Talk Selected from Poster Abstracts
- 11:40 am - 11:45 am Discussion
- 11:45 am - 12:10 pm Late-Breaking Topic
- 12:10 pm - 12:15 pm Discussion
- 12:15 pm - 12:25 pm Short Talk Selected from Poster Abstracts
- 12:25 pm - 12:30 pm Discussion
- 12:30 pm Lunch
- 1:30 pm - 4:30 pm Free Time
- 4:30 pm - 6:00 pm Poster Session

6:00 pm - 8:00 pm

Mutations of Chromatin Regulators in Cancer

Discussion Leader: **Kristian Helin** (University of Copenhagen, Denmark)

6:00 pm - 6:25 pm

Ross Dickins (Monash University, Australia)

"PU.1 Controls Reversible Transitions Between Tumourigenic and Differentiated States in Acute Myeloid Leukemia"

6:25 pm - 6:30 pm

Discussion

6:30 pm - 6:40 pm

Short Talk Selected from Poster Abstracts

6:40 pm - 6:45 pm

Discussion

6:45 pm - 7:10 pm

Cigall Kadoch (Dana-Farber Cancer Institute / Harvard Medical School, USA)

"Mammalian SWI/SNF(BAF) Complex Structure and Function in Human Cancer"

7:10 pm - 7:15 pm

Discussion

7:15 pm - 7:25 pm

Short Talk Selected from Poster Abstracts

7:25 pm - 7:30 pm

Discussion

7:30 pm - 7:55 pm

Chi Wai Eric So (The University of London, United Kingdom)

"Characterize the Mechanisms of Transcriptional Regulation that Are Corrupted in Leukemia"

7:55 pm - 8:00 pm

Discussion

8:00 pm

Dinner

Tuesday

7:30 am - 8:30 am

Breakfast

8:30 am

Group Photo

9:00 am - 12:30 pm

Chromatin Altered Function in Cancer

Discussion Leader: **Sharon Dent** (University of Texas MD Anderson Cancer Center, USA)

9:00 am - 9:25 am

Emily Bernstein (Mount Sinai School of Medicine, USA)

"Mechanisms that Alter the Chromatin Template, Including Histone Modifications, Histone Variants and Their Dedicated Chaperones, and Non-Coding RNAs"

9:25 am - 9:30 am

Discussion

9:30 am - 9:40 am

Short Talk Selected from Poster Abstracts

9:40 am - 9:45 am

Discussion

9:45 am - 10:10 am

Kristian Helin (University of Copenhagen, Denmark)

"Elucidate the Molecular Mechanisms Leading to Cancer and to Transform This Knowledge

into Novel Anti-Cancer Therapies"

- 10:10 am - 10:15 am Discussion
- 10:15 am - 10:25 am Short Talk Selected from Poster Abstracts
- 10:25 am - 10:30 am Discussion
- 10:30 am - 11:00 am Coffee Break
- 11:00 am - 11:25 am **Luciano Di Croce** (Centre for Genomic Regulation (CRG), Spain)
"Defining Mechanisms that Regulate Polycomb Functions in Stem Cell Differentiation and Cancer"
- 11:25 am - 11:30 am Discussion
- 11:30 am - 11:40 am Short Talk Selected from Poster Abstracts
- 11:40 am - 11:45 am Discussion
- 11:45 am - 12:25 pm Late-Breaking Topic
- 12:25 pm - 12:30 pm Discussion
- 12:30 pm Lunch
- 1:30 pm - 4:30 pm Free Time
- 4:30 pm - 6:00 pm Poster Session
- 6:00 pm - 8:00 pm **Animal Models for Cancer Epigenetics**
- Discussion Leader: **Mathieu Lupien** (Princess Margaret Cancer Centre, Canada)
- 6:00 pm - 6:25 pm **Sharon Dent** (University of Texas MD Anderson Cancer Center, USA)
"A Saga of USPs"
- 6:25 pm - 6:30 pm Discussion
- 6:30 pm - 6:40 pm Short Talk Selected from Poster Abstracts
- 6:40 pm - 6:45 pm Discussion
- 6:45 pm - 7:10 pm **Johannes Zuber** (Research Institute of Molecular Pathology (IMP), Austria)
"Exploring and Exploiting Aberrant Cell Fate Programs in Leukemia"
- 7:10 pm - 7:15 pm Discussion
- 7:15 pm - 7:25 pm Short Talk Selected from Poster Abstracts
- 7:25 pm - 7:30 pm Discussion
- 7:30 pm - 7:55 pm **Iannis Aifantis** (NYU School of Medicine / Howard Hughes Medical Institute, USA)
"Molecular Mechanisms Driving Normal Stem Cell Differentiation and Malignant Transformation"
- 7:55 pm - 8:00 pm Discussion
- 8:00 pm Dinner

Wednesday

- 7:30 am - 8:30 am Breakfast
- 9:00 am - 12:30 pm **Regulatory Genomics and Epigenomics of Cancer**
- Discussion Leader: **Saverio Minucci** (University of Milan, Italy)
- 9:00 am - 9:25 am **Mathieu Lupien** (Princess Margaret Cancer Centre, Canada)
"Identifying the Molecular Biology Underlying Cancer Initiation and Progression by Exploiting the Power of Functional Epigenomics"
- 9:25 am - 9:30 am Discussion

- 9:30 am - 9:40 am Short Talk Selected from Poster Abstracts
- 9:40 am - 9:45 am Discussion
- 9:45 am - 10:10 am **Ben Lehner** (Centre for Genomic Regulation (CRG), Spain)
"Understanding Rare Inherited Variants and Somatic Mutation in Human Tumors"
- 10:10 am - 10:15 am Discussion
- 10:15 am - 10:25 am Short Talk Selected from Poster Abstracts
- 10:25 am - 10:30 am Discussion
- 10:30 am - 11:00 am Coffee Break
- 11:00 am - 11:25 am **Ting Wang** (Washington University School of Medicine, USA)
"Transposable Elements in Normal and Cancer Epigenome"
- 11:25 am - 11:30 am Discussion
- 11:30 am - 11:40 am Short Talk Selected from Poster Abstracts
- 11:40 am - 11:45 am Discussion
- 11:45 am - 12:10 pm **Wei Li** (Baylor College of Medicine, USA)
"Homeobox Oncogene Activation by Pan-Cancer Gene-Body DNA Hypermethylation"
- 12:10 pm - 12:15 pm Discussion
- 12:15 pm - 12:25 pm Short Talk Selected from Poster Abstracts
- 12:25 pm - 12:30 pm Discussion
- 12:30 pm Lunch
- 1:30 pm - 4:30 pm Free Time
- 4:30 pm - 6:00 pm Poster Session
- 6:00 pm - 8:00 pm **Functional Genomics, Epigenomics and Proteomics of Cancer**
- Discussion Leader: **Ricky Johnstone** (Peter MacCallum Cancer Centre, Australia)
- 6:00 pm - 6:25 pm **Benjamin Ebert** (Brigham and Women's Hospital, USA)
"The Genetics and Biological Consequences of Clonal Hematopoiesis"
- 6:25 pm - 6:30 pm Discussion
- 6:30 pm - 6:40 pm Short Talk Selected from Poster Abstracts
- 6:40 pm - 6:45 pm Discussion
- 6:45 pm - 7:10 pm **Christopher Vakoc** (Cold Spring Harbor Laboratory, USA)
"Transcriptional Coactivators as Cancer Dependencies"
- 7:10 pm - 7:15 pm Discussion
- 7:15 pm - 7:25 pm Short Talk Selected from Poster Abstracts
- 7:25 pm - 7:30 pm Discussion
- 7:30 pm - 7:55 pm **Tiziana Bonaldi** (European Institute of Oncology, Italy)
"Elucidation of the Molecular Mechanisms that Regulate Gene Expression Using a Combination of Functional Genomic Approaches"
- 7:55 pm - 8:00 pm Discussion
- 8:00 pm Dinner

Thursday

- 7:30 am - 8:30 am Breakfast
- 8:30 am - 9:00 am Business Meeting

Nominations for the Next Vice Chair; Fill in Conference Evaluation Forms; Discuss Future Site and Scheduling Preferences; Election of the Next Vice Chair

9:00 am - 12:30 pm

Cancer Epigenetic Therapies

Discussion Leader: **Stephen Baylin** (Johns Hopkins University, USA)

9:00 am - 9:25 am

Mark Dawson (Peter MacCallum Cancer Centre, Australia)

"Mechanisms of Response and Resistance to Epigenetic Therapies"

9:25 am - 9:30 am

Discussion

9:30 am - 9:40 am

Short Talk Selected from Poster Abstracts

9:40 am - 9:45 am

Discussion

9:45 am - 10:10 am

Ari Melnick (Weill Cornell Medicine, USA)

"Understanding the Mechanisms Through Which Transcriptional and Epigenetic Regulation Occur"

10:10 am - 10:15 am

Discussion

10:15 am - 10:25 am

Short Talk Selected from Poster Abstracts

10:25 am - 10:30 am

Discussion

10:30 am - 11:00 am

Coffee Break

11:00 am - 11:25 am

Jacques Neefjes (Netherlands Cancer Institute, The Netherlands)

"Cell Biology of MHC Class I and II Antigen Presentation"

11:25 am - 11:30 am

Discussion

11:30 am - 11:40 am

Short Talk Selected from Poster Abstracts

11:40 am - 11:45 am

Discussion

11:45 am - 12:25 pm

Late-Breaking Topic

12:25 pm - 12:30 pm

Discussion

12:30 pm

Lunch

1:30 pm - 4:30 pm

Free Time

4:30 pm - 6:00 pm

Poster Session

6:00 pm - 8:00 pm

Interplay Between Cancer Epigenetics and Cancer Immunity

Discussion Leader: **X. Shirley Liu** (Harvard T.H. Chan School of Public Health, USA)

6:00 pm - 6:25 pm

Weiping Zou (University of Michigan Health System, USA)

"Epigenetics Regulate the Cancer Immune Microenvironment"

6:25 pm - 6:30 pm

Discussion

6:30 pm - 6:40 pm

Short Talk Selected from Poster Abstracts

6:40 pm - 6:45 pm

Discussion

6:45 pm - 7:10 pm

Stephen Baylin (Johns Hopkins University, USA)

"Epigenetics or Genetic Modifications Other than Those in DNA that Can Affect Cell Behavior"

7:10 pm - 7:15 pm

Discussion

7:15 pm - 7:25 pm

Short Talk Selected from Poster Abstracts

7:25 pm - 7:30 pm

Discussion

7:30 pm - 7:55 pm

Ricky Johnstone (Peter MacCallum Cancer Centre, Australia)

"Integrating Epigenetic- and Immune-Based Therapeutics to Provide More Potent and

Durable Therapeutic Outcomes"

7:55 pm - 8:00 pm Discussion

8:00 pm Dinner

Friday

7:30 am - 8:30 am Breakfast

9:00 am Departure