CRISPR and Beyond
Perturbations at Scale to Understand Genomes

2-4 September 2019

Wellcome Genome Campus, UK

Lectures to be held in the Francis Crick Auditorium
Lunch and dinner to be held in the Hall Restaurant
Poster sessions to be held in the Conference Centre

Spoken presentations - If you are an invited speaker, or your abstract has been selected for a spoken presentation, please give an electronic version of your talk to the AV technician.

Poster presentations – If your abstract has been selected for a poster, please display this in the Conference Centre on arrival.

Conference programme

Monday 2 September 2019

11:45-12:50 Registration

12:50-13:00 Welcome and Introductions
Leopold Parts Wellcome Sanger Institute UK

13:00-14.00 Keynote lecture
Allan Bradley
Kymab, UK

14:00-15:30 Session 1: Understanding impact of coding variations
Chair: Leopold Parts Wellcome Sanger Institute UK

14:00 New approaches for addressing the effect of genetic variation at scale
Douglas Fowler
University of Washington, USA

14:30 Tools for systematic proactive functional testing of human missense variants
Frederick Roth
University of Toronto

15:00 The mutational landscape of a prion-like domain
Benedetta Bolognesi
Institute for Bioengineering of Catalonia, Spain
15:15  Functional determination of all possible disease-associated variants in a region of CARD11 using saturation genome editing  
Richard James  
University of Washington, USA

15:30-16:00  Afternoon Tea

16:00-17:30  Session 2: Measuring consequences of non-coding variation  
Chair: Lea Starita University of Washington USA

16:00  New tools for high-throughput perturbation of the human noncoding genome  
Molly Gasperini  
University of Washington, USA

16:30  Genome editing to dissect transcription factor - target relationships  
Jussi Taipale  
University of Cambridge, UK

17:00  Context-sensitive analysis of genomic insulator function  
Matthew Maurano  
NYU Institute for Systems Genetics, USA

17:15  Understanding gene regulatory element polymorphisms with arrayed CRISPR screening  
Sarah Cooper  
Wellcome Sanger Institute, UK

17:30-18:15  Lightning Talks  
Chair: Jolanda van Leeuwen University of Lausanne, Switzerland

18:15-19:15  Poster Session 1 (odd numbers) with drinks reception

19:15 prompt  Buffet Dinner

19:15  Cash Bar

Tuesday 3 September 2019

09:00-10:30  Session 3: Screens for gene function in cells  
Chair: John Doench Broad Institute, USA

09:00  Exploring genetic interaction manifolds constructed from rich phenotypes  
Luke Gilbert  
University of California, San Francisco, USA

09:30  Highly multiplexed characterization of post-perturbational transcriptional responses using single-cell RNA-seq  
James McFarland  
Broad Institute, USA
10.00  A single-cell transcriptomic CRISPR-activation screen identifies new epigenetic regulators of zygotic genome activation
Celia Alda Catalinas
Babraham Institute, UK

10.15  A FACS-based CRISPR/Cas9 knockout screen for inclusion body formation uncovers novel regulators of protein quality control in the mammalian nucleus
Stephanie Sansbury
University of Pennsylvania, USA

10:30-11:00  Morning Coffee

11:00-12:30  Session 4: Assaying gene function in organisms
Chair: Jolanda van Leeuwen University of Lausanne, Switzerland

11:00  Integrative analysis of perturbation screens to identify context dependent genetic interactions
Michael Boutros
German Cancer Research Center (DKFZ) and Heidelberg University, Germany

11:30  Scaling up reverse genetics in a malaria parasite: Small genome, big challenge
Ellen Bushell
Umea University, Sweden

12:00  Developing CRISPRi and CRISPRa in Toxoplasma gondii
Benedikt Markus
Whitehead Institute, USA

12:15-13:45  Lunch

Meet the speakers during dessert and coffee – Conference Centre Exhibition Space

13:45-15:30  Session 5: Gene and drug function in disease
Chair: Ellen Bushell EMBL Umea, Sweden

13:45  Using human genetics and functional genomics to identify new drug targets
Maya Ghoussaini
Open Targets, Wellcome Sanger Institute, UK

14:15  CRISPR-Cas9 induces a p53-mediated DNA damage response
Emma Haapaniemi
EMBL Oslo, Norway

14:45  Indel-based barcoding to track cellular engraftment of CRISPR-edited primary cells
Stacia Wyman
University of California, Berkeley
15:00  Using CRISPR to fix the characterization of anti-cancer drugs
Jason Sheltzer
Cold Spring Harbor Laboratory, USA

15:15  Robust genetic interactions in cancer are enriched in protein-protein interaction pairs
Colm Ryan
University College Dublin, Ireland

15:30-16:00  Afternoon Tea

16:00-17:30  Session 6: Interactions with genes, drugs and environment
Chair: Maya Ghoussaini Open Targets, UK

16:00  Systematic genetic perturbation screens to map biological Networks
Brenda Andrews
University of Toronto, Canada

16:30  Solving protein structures and understanding genetic interactions using deep mutagenesis
Ben Lehner
Centre for Genomic Regulation, Spain

17:00  Global mapping of human metabolic genetic interactions using CRISPR-Cas screens
Michael Aregger
University of Toronto, Canada

17:15  Signaling pathways interact with tissue-specific developmental transcription factors to regulate essential processes in cancer
Benedikt Rauscher
German Cancer Research Center (DKFZ), Germany

17:30-18:15  Lightning talks
Chair: Lea Starita University of Washington USA

18:15-19:15  Poster Session 2 (even numbers) with drinks reception

19:15 prompt  Silver Service Conference Dinner

19:15  Cash Bar

Wednesday 4 September 2019

09:00-10:30  Session 7: On- and off-target editing
Chair: Molly Gasperini University of Washington, USA

09:00  CRISPR-Cas mediated cleavage of invading RNAs
Yanli Wang
Chinese Academy of Science, China
09:30  Interrogating the Processes of Genome Editing with High-Resolution Functional Genomics
Britt Adamson
Princeton, USA

10:00  Mitigation of off-target toxicity in CRISPR-Cas9 screens for essential non-coding elements
Josh Tycko
Stanford University, USA

10:15  CRISPR/Cas9 based assessment of DNA DSB repair choices
Balca Mardin
BioMed X Innovation Center, Germany

10:30-11:00  Morning Coffee

11:00-12:45  Session 8: New technologies
Chair: Ben Lehner Centre for Genomic Regulation, Spain

11:00  Genome-scale analysis of on-target precision editing outcomes
Sibylle Vonesch
EMBL-EBI, Germany

11:30  New tools for pooled CRISPR screens at high resolution
Ulrich Elling
Institute of Molecular Biotechnology, Austria

12:00  Analysis and minimization of cellular RNA editing by DNA adenine base editors
Holly Rees
Beam Therapeutics, USA

12:15  Biases and blind spots in CRISPR fitness screens
Traver Hart
MD Anderson Cancer Center, USA

12:30  Closing remarks and poster awards
John Doench, Broad Institute, USA
Leopold Parts, Wellcome Sanger Institute, UK
Lea Starita, University of Washington, USA
Jolanda van Leeuwen, University of Lausanne, Switzerland

12:45-13:30  Lunch

13:30  Coaches depart to Cambridge City Centre and Train Station, Stansted Airport via Heathrow Airport