

Plenary session 1

Hall: Ambassadeur

08:45 - 09:15 Registration & coffee

09:15 - 09:20 Welcome

THE GENOME ENGINEERING REVOLUTION

Chair: Silvie Van den Hoecke

09:20 - 09:55 Improving the Safety and Versatility of CRISPR Genome Editing
Benjamin P. Kleinstiver, *Harvard Medical School, US*

09:55 - 10:20 Developing tools and technologies for precision genome editing
Peter Cameron, *Senior research scientist, Caribou Biosciences, US*

10:20 - 10:50 Coffee break

Parallel session 1

Hall: Ambassadeur

THE GENOME ENGINEERING REVOLUTION

Chair: Silvie Van den Hoecke

10:50 - 11:25 Editing, Regulating and Imaging Genome with CRISPR Technology
Mazhar Adli, *University of Virginia, US*

11:25 - 11:50 Mitigating risk of off-target effects when using CRISPR genome editing
Mollie Schubert, *Research Scientist, Integrated DNA Technologies, US*

11:50 - 12:25 Precise editing at DNA replication forks enables multiplex genome engineering in Eukaryotes
Farren Isaacs, *Yale University, US*

12:30 - 13:15 Lunch

13:15 - 14:00 Poster session

Hall: Erasmus

Parallel session 2

NEXT-GENERATION IN SYNTHETIC BIOLOGY

Chair: Nico Callewaert

10:50 - 11:15 Balancing complexity and scale in the Foundry at Ginkgo Bioworks, Inc.
Elaine Shapland, *Head of Build, Ginkgo Bioworks, US*

11:15 - 11:50 What DNA origami can help us learn about biology
Björn Högberg, *Karolinska Institute, SE*

11:50 - 12:15 You Design It, We Build It
Emily LeProust, *CEO, Twist Bioscience, US*

12:15 - 12:30 Selected talk: The London DNA Foundry: Using DOE and robotics to enable automated organism engineering
David McClymont, *The London DNA Foundry, GB*

12:30 - 14:00 Lunch + Poster session

Parallel session 3

Hall: Ambassadeur

TOOLS FOR CRISPR CONTROL

Chair: Sven Eyckerman

- 14:00 - 14:25** Tools for target validation with CRISPR/Cas9
Jon Moore, *CSO, Horizon Discovery, UK*
- 14:25 - 15:00** Inhibition CRISPR-Cas9 with Bacteriophage Proteins
Joseph Bondy-Denomy, *UCSF, US*
- 15:00 - 15:05** Sponsored talk: New strategies & insights into CRISPR driven genome editing
Gurpreet Balrey, *Global Technical Applications Manager, Merck KGaA, DE*
- 15:05 - 15:30** Event Driven Gene Programming in Adoptive T-cell Therapy
Bing C. Wang, *Co-Founder & CEO, Refuge Biotechnologies, US*
- 15:30 - 16:05** Phages fight back: the functioning and prevalence of anti-CRISPRs
Alan Davidson, *University of Toronto, CA*
- 16:05 - 16:35** Coffee break

Hall: Erasmus

Parallel session 4

ENGINEERING AND DIRECTED EVOLUTION

Chair: Nico Callewaert

- 14:00 - 14:25** Promoter Tuning: Context is Crucial
Paul Feldstein, *CEO, Circularis, US*
- 14:25 - 15:00** Designing and Evolving Novel Chemistry
Sven Panke, *ETH Zürich, CH*
- 15:00 - 15:05** Sponsored talk: The Echo Acoustic Platform for Synthetic Biology. A Sound Idea!
Anna Lehto, *Field Applications Scientist Europe, Labcyte, FI*
- 15:05 - 15:30** Putting the whole genome to work: microbial and protein evolution with novel compound genes created from native protein-coding sequences
Helge Zieler, *Founder/ President, Primordial Genetics, US*
- 15:30 - 16:05** Engineering new functions with consideration of the host cell
Tom Ellis, *Imperial College London, UK*
- 16:05 - 16:35** Coffee break

Plenary session 2

Hall: Ambassadeur

ADVANCED CRISPR SCREENS

Chair: Thomas Jacobs

- 16:35 - 17:10** Genome-scale genetic screens for cataloging fitness genes in human cells
Jason Moffat, *University of Toronto, CA*
- 17:10 - 17:35** Optimizing CRISPR Screens and Expression Profiling for Genome-Wide Functional Analysis
Paul Diehl, *COO, Cellecta Inc., US*

- 17:35 - 18:10** Development of new CRISPR/Cas9-based tools to study drug interactions through knockout and directed evolution
Michael Bassik, *Stanford University, Department of Genetics, US*
- 18:10 - 19:10** Reception
- 20:00** Conference dinner

Plenary session 3

Hall: Ambassadeur

08:45 - 09:15 Coffee

THE SYNTHETIC BIOLOGY REVOLUTION

Chair: Nico Callewaert

09:15 - 09:55 The Genetic Code in the Age of Synthetic Biology
Dieter Söll, *Yale University, US*

09:55 - 10:20 Evonetix: a novel approach to DNA synthesis
Tim Brears, *CEO, Evonetix, UK*

10:20 - 10:50 Coffee break

10:50 - 11:25 Synthetic Genetics: beyond DNA and RNA
Philipp Holliger, *MRC Laboratory of Molecular Biology, Cambridge, UK*

11:25 - 11:50 Evolution of the BioXp™ – Synthetic Biology Workflows Compressing Design Build Test
Steven Riedmuller, *Synthetic Genomics Inc, US*

11:50 - 12:25 Programmable On-Chip DNA Compartments as 'Artificial Cells'
Roy Bar-Ziv, *The Weizmann Institute of Science, IL*

12:25 - 13:10 Lunch

13:10 - 14:00 Poster session

Parallel session 5

Hall: Ambassadeur

TARGETED GENOME ENGINEERING AND DESIGN

Chair: Sven Eyckerman

- 14:00 - 14:35** Development of platform technologies which facilitate the construction of microbial cell factories
Akihiko Kondo, *Kobe University, JP*
- 14:35 - 15:00** Enabling CRISPR applications from functional genomics to therapeutics with synthetic sgRNA
Jason Steiner, *Director, Business Development, Synthego, US*
- 15:00 - 15:05** Sponsored talk: Building DNA libraries for exploring combinatorial design space
Yifan Li, *Senior scientist, Genscript, US*
- 15:05 - 15:40** DNA-free genome editing with functional variants of CRISPR genome editing enzymes
Sunghwa Choe, *School of Biological Sciences, Seoul National University, KR*
- 15:40 - 16:05** Applying high-throughput genome engineering to optimize a variety of microbes for industrial fermentation
Kedar Patel, *Director, Zymergen, US*
- 16:05 - 16:30** Coffee break

Hall: Erasmus

Parallel session 6

NEXT-GEN. CRISPR APPLICATION AND DESIGN

Chair: Silvie Van den Hoecke

- 14:00 - 14:35** Translational CRISPR-Cas9 Genome Editing of Human Hematopoietic Stem Cells
Daniel P. Dever, *Stanford University, US*
- 14:35 - 15:00** TLA Technology for targeted complete sequencing & haplotyping of (CRISPR) gene editing events; expected and unexpected findings.
Erik Splinter, *CTO & co-founder, Cergentis, NL*
- 15:00 - 15:35** Enhancing the CRISPR-Cas genome editing toolbox through structure-guided engineering
Linyi Gao, *Zhang Lab - Broad Institute, US*
- 15:35 - 15:40** Sponsored talk: CRISPR/Cas9 knockins – Get better specificity with single-stranded DNA
Cornelia Hampe, *Product Manager-Scientific Support Specialist, Takara Bio Europe SAS, FR*
- 15:40 - 15:55** Selected talk: SWITCH: Connecting CRISPR tools for genome engineering and metabolic flux control to develop *Saccharomyces cerevisiae* cell factories.
Katherina García Vanegas, *Technical University of Denmark, DK*
- 15:55 - 16:30** Coffee break

Plenary session 4

Hall: Ambassadeur

THE THERAPEUTIC POWER OF GENOME ENGINEERING

Chair: Silvie Van den Hoecke

- 16:30 - 17:05** Determining Regulatory Mechanisms of Human Disease
Tim Reddy, *Duke University, US*
- 17:05 - 17:40** Engineering Next-Generation T Cells for Cancer Immunotherapy
Yvonne Chen, *University of California, US*
- 17:40 - 18:15** Therapeutic Strategies Via CRISPR-Cas: New Approaches and New Challenges
Prashant Mali, *University of California, US*
- 18:15 - 18:25** Closing remarks