

3rd programmable nucleases (CRISPR/Cas9)

Transgenesis Course

Date: 16th – 20th April, 2018

Czech Centre for Phenogenomics, Prague-Vestec (BIOCEV)

Day 1 – Monday 16th April

10:00 – 10:15	Arrival and Registration
10:15 – 10:35	Welcome and Introduction, Introduction of team members <i>Radislav Sedlacek (IMG/CCP)</i>
10:35 – 11:45	Introduction to the course and teaching material <i>Petr Kasperek (IMG/CCP)</i> Participants: presentation of individual projects
12:30 – 13:30	LUNCH
13:30 – 14:30	Lecture: Genome editing with programmable nucleases: general overview (Lluis Montoliu)
14:30 – 18:00	Ensembl Session (<i>incl. 20 min. coffee break</i>)
18:10	Bus departure
18:30	COURSE DINNER I – Vyšehradský Kandelábr

Day 2 – Tuesday 17th April 2018

08:30 – 09:15	General Lecture: Rapid DNA Synthesis for CRISPR applications Leveraging the BioXp for your Gene editing workflow (Steve Riedmuller)
09:20 – 09:30	Daily agenda and outcomes overview
09:30 - 12:30	Ensembl session II (<i>inc. 20 min. coffee break</i>)
12:30 – 13:30	LUNCH
13:30 - 14:15	Lecture: Design and preparation of gRNA (Brandon Willis)
14:15 –16:30	Practical session (Hands-on) – Preparation of gRNA I Validation of indel mutations I
16:30 – 16:45	TEA & COFFEE
16:45 – 17:30	General lecture: Designing your best RNA guides for CRISPR experiments: multiple solutions available (Lluís Montoliu)
17:45	Bus departure

Day 3 – Wednesday 18th April 2018

08:30 – 09:15	General Lecture: Electroporation of zygotes (Ralf Kuhn)
09:20 – 09:30	Daily agenda and outcomes overview
09:30 - 10:30	Practical training session (Hands-on) – Preparation of gRNA II Validation of indel mutations II
10:30 – 10:45	TEA AND COFFEE
10:45 – 13:15	Practical training sessions: A. Genotyping, digital PCR and Zygote electroporation – <i>Irena Jenickova, Jana Kopkanova (IMG/CCP) and Guillaume Pavlovic (PHENOMIN-ICS, Strasbourg)</i> B. Bioinformatics, gene targeting and CRISPR design – <i>Brandon Willis (UC Davis), Marie-Christine Birling (PHENOMIN-ICS, Strasbourg), Lluís Montoliu (CNB, Spain), Bernd Zetsche (Broad Institute, USA)</i>
13:15 – 14:15	LUNCH
14:15 –14:45	Lecture: Design of targeting vectors (Brandon Willis)
14:45 - 16:15	Practical training session (Hands-on) – Preparation of gRNA III Validation of indel mutations III
16:15 – 16:45	TEA & COFFEE (+get together with time for discussion)
16:45 – 17:30	General lecture: <i>Easi</i> -CRISPR and GONAD: CRISPRing Mouse Genome Made Easy Gurumurthy Channabasavaiah
17:45	Bus departure

Day 4 – Thursday 19th April 2018

08:30 – 09:15	General lecture: CRISPR for the generation of innovative rodent – (Marie-Christine Birling)
09:20 – 09:30	Daily agenda and outcomes overview
09:30 - 10:30	Practical training session (Hands-on): Blastocyst genotyping I
10:30 – 10:45	TEA & COFFEE
10:45 – 11:30	General Lecture: Genome editing with Cpf1 Bernd Zetsche
11:30 – 12:30	LUNCH
12:30 – 15:00	Practical training sessions: B. Digital PCR and Zygote electroporation – <i>Irena Jenickova, Jana Kopkanova (IMG/CCP) and Guillaume Pavlovic (PHENOMIN-ICS, Strasbourg)</i> A. Bioinformatics, gene targeting and CRISPR design – <i>Brandon Willis (UC Davis), Marie-Christine Birling (PHENOMIN-ICS, Strasbourg), Lluís Montoliu (CNB, Spain), Bernd Zetsche (Broad Institute, USA)</i>
15:00 – 15:10	TEA & COFFEE
15:10 – 15:55	Lecture: Analyzing the outcome of genome editing: screening, genotyping and quality control (Guillaume Pavlovic)
16:00 - 17:30	Practical training session (Hands-on): Blastocyst genotyping II, collection of results
17:30 – 18:00	Get together with time for discussions
18:00	Bus departure
18:30	COURSE DINNER II – Restaurant Nola

Day 4 – Thursday 19th April 2018

Day 5 – Friday 20th April 2018

08:30 – 09:15	General Lecture: From genotype to phenotype (Guillaume Pavlovic)
09:20 – 09:30	Daily agenda and outcomes overview
09:30 - 10:30	Collection of results and preparation of short presentations <i>All instructors</i>
10:30 – 10:45	TEA AND COFFEE
10:45 - 13:00	Short group presentations, discussion, summary & conclusions
13:00 – 14:00	LUNCH
14:00	End of course

Optional:

14:00 – 16:00 Tour through Czech Centre for Phenogenomics (phenotyping and breeding)

The lecturers and instructor team

The participants of the **3rd programmable nucleases (CRISPR/Cas9) Transgenesis Course** will be trained by the experienced team of people who are also equipped with the experience of organizing the “hands-on nuclease course”.

The team members are:

Guest speakers:

Lluís Montoliu (CNB, Spain)
Bernd Zetsche (Broad Institute, USA)
Brandon Willis (UC Davis, USA)
Ralf Kühn (Max Delbrück Center, Germany)
Gurumurthy Channabasavaiah
(University of Nebraska Medical Center)
Steve Riedmuller (Synthetic Genomics)

PHENOMIN-ICS, Strasbourg:

Marie-Christine Birling
Guillaume Pavlovic

Czech Centre for Phenogenomics (IMG/BIOCEV):

Radislav Sedlacek
Petr Kasperek
Jana Kopkanova

and all other members of Transgenic and Archiving Module of CCP

Course administration:

Jarmila Sroubkova
Nicol Chambers