

# 2<sup>nd</sup> PROGRAMMABLE NUCLEASES (CRISPR/Cas9) Transgenesis Course

*Preliminary program*

## Day 1 – Monday 3rd April 2017

10:00 – 10:15	Arrival and Registration
10:15 – 10:45	Welcome and Introduction to the course and teaching material Introduction of team members Radislav Sedlacek (IMG/CCP)
10:45 – 12:30	Participants: presentation individual projects Radislav Sedlacek (IMG/CCP) and all instructors
12:30 – 13:30	<b>LUNCH</b>
13:30 – 14:00	Lecture: Pros-and-cons of programmable nucleases Radislav Sedlacek (IMG/CCP)
14:00 – 14:30	Lecture: Gene targeting with programmable nucleases: The basics Björn Schuster (IMG/CCP)
14:30 – 16:00	Practical training session: gRNA validation I Jana Kopkanová & Björn Schuster (IMG/CCP)
16:00 – 16:15	<b>TEA &amp; COFFEE</b>
16:15 – 17:00	Lecture: Historical perspective - how we came to nucleases Lluís Montoliu (CNB, Spain)
17:00 – 18:00	Get together with time for discussions with the speaker and instructors
19:00	<b>COURSE DINNER I</b>

## Day 2 – Tuesday 4th April 2017

08:00 – 08:45	Lecture: Breaking-Cas, a new guide designing program and CRISPR/Cas function Lluís Montoliu (CNB, Spain)
08:45 – 09:00	Daily agenda and outcomes overview
09:00 - 10:00	Practical training session: gRNA preparation I Jana Kopkanová & Björn Schuster (IMG/CCP)
10:00 – 10:15	<b>TEA AND COFFEE</b>
10:15 – 13:15	Practical training sessions:  A. Zygote injection – Ronald Naumann (MPI-CBG, Dresden) and Inken Beck (IMG/CCP) B. Genotyping, digital PCR - Jana Kopkanova (IMG/CCP) and Guillaume Pavlovic (PHENOMIN-ICS, Strasbourg) C. Bioinformatics, gene targeting and CRISPR design - Björn Schuster (IMG/CCP), Marie-Christine Birling (PHENOMIN-ICS, Strasbourg), Lluís Montoliu (CNB, Spain), Bernd Zetsche (Broad Institute, USA)
13:15 – 14:15	<b>LUNCH</b>
14:15 – 14:45	Lecture: gRNA validation and genotyping of Indel mutations Björn Schuster (IMG/CCP)
14:45 - 16:15	Practical training session: gRNA preparation II Jana Kopkanová & Björn Schuster (IMG/CCP)
16:15 – 16:30	<b>TEA &amp; COFFEE</b>
16:30 – 17:15	Lecture: Title to be fixed Francis Steward (BIOTEC, TU Dresden)
17:15 – 18:00	Get together with time for discussions with the speaker and instructors
18:00	<b>END OF DAY</b>

## Day 3 – Wednesday 5th April 2017

08:00 – 08:45	Lecture: repertoire of gene targeting methods in rodents Guillaume Pavlovic (PHENOMIN-ICS, Strasbourg), Marie-Christine Birling (PHENOMIN-ICS, Strasbourg)
08:45 – 09:00	Daily agenda and outcomes overview
09:00 - 10:00	Practical training session: gRNA preparation III Jana Kopkanová & Björn Schuster (IMG/CCP)
10:00 – 10:15	<b>TEA AND COFFEE</b>
10:15 – 13:15	Practical training sessions:  A. Zygote injection – Ronald Naumann (MPI-CBG, Dresden) and Inken Beck (IMG/CCP) B. Genotyping, digital PCR - Jana Kopkanova (IMG/CCP) and Guillaume Pavlovic (PHENOMIN-ICS, Strasbourg) C. Bioinformatics, gene targeting and CRISPR design - Björn Schuster (IMG/CCP), Marie- Christine Birling (PHENOMIN-ICS, Strasbourg), Lluís Montoliu (CNB, Spain), Bernd Zetsche (Broad Institute, USA)
13:15 – 14:15	<b>LUNCH</b>
14:15 –14:45	Lecture: Targeting vector design Björn Schuster (IMG/CCP)
14:45 - 16:15	Practical training session: gRNA validation II Jana Kopkanová & Björn Schuster (IMG/CCP)
16:15 – 16:30	<b>TEA &amp; COFFEE</b>
16:30 – 17:15	Lecture: Expanding the Research Applications for CRISPR Guillaume Pavlovic (PHENOMIN-ICS, Strasbourg)
17:15 – 18:00	Get together with time for discussions with the speaker and instructors
18:00	<b>END OF DAY</b>

## Day 4 – Thursday 6th April 2017

08:00 – 08:45	Lecture: Development CRISPR-Cas9 & Cpf1 technology Bernd Zetsche (Broad Institute, USA)
08:45 – 09:00	Daily agenda and outcomes overview
09:00 - 10:00	Practical training session: gRNA validation III Jana Kopkanová & Björn Schuster (IMG/CCP)
10:00 – 10:15	<b>TEA AND COFFEE</b>
10:15 – 13:15	Practical training sessions:  A. Zygote injection – Ronald Naumann (MPI-CBG, Dresden) and Inken Beck (IMG/CCP) B. Genotyping, digital PCR - Jana Kopkanova (IMG/CCP) and Guillaume Pavlovic (PHENOMIN-ICS, Strasbourg) C. Bioinformatics, gene targeting and CRISPR design - Björn Schuster (IMG/CCP), Marie-Christine Birling (PHENOMIN-ICS, Strasbourg), Lluís Montoliu (CNB, Spain), Bernd Zetsche (Broad Institute, USA)
13:15 – 14:15	<b>LUNCH</b>
14:15 – 14:45	Lecture: CRISPR/nuclease troubleshooting and genotyping Bjorn Schuster and Jana Kopkanova (IMG/CCP)
14:45 - 16:15	Practical training session: collection of results and time for discussion/ trouble shooting All instructors
16:15 – 16:30	<b>TEA &amp; COFFEE</b>
16:30 – 17:15	Lecture: CRISPR technology in cell culture Qingzhou Ji (Sigma)
17:15 – 18:00	Get together with time for discussions with the speaker and instructors
19:00	<b>COURSE DINNER II</b>

## Day 5 – Friday 7th April 2017

08:00 – 08:45	Lecture: genome editing using nucleases: new possibilities and application to reveal gene function in diseases Marie-Christine Birling (PHENOMIN-ICS, Strasbourg)
08:45 – 09:00	Daily agenda and outcomes overview
09:00 - 10:00	Collection of results and preparation of short presentations All instructors
10:00 – 10:15	<b>TEA AND COFFEE</b>
10:15 - 12:30	Short group presentations Summary & Conclusions
12:30 – 13:15	Lecture: “from genotype to phenotype” Yann Herval (PHENOMIN-ICS, Strasbourg)
13:15 - 14:15	<b>LUNCH</b>
14:15	End of course

### **Optional:**

14:30 – 16:00 Tour through Czech Centre for Phenogenomics (phenotyping and breeding)

The lecturers and instructor team

The participants of the 2<sup>nd</sup> 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’ accompanying the Transgenic technology meeting TT2016.

### **Guest Speakers**

Lluis Montoliu (CNB, Spain)  
Bernd Zetsche (Broad Institute, USA)  
Ronald Naumann (MPI-CBG, Dresden)  
Francis Steward (BIOTEC, Dresden)  
Qingzhou Ji (Sigma)

### **Czech Centre for Phenogenomics (IMG/BIOCEV)**

Radislav Sedlacek  
Björn Schuster  
Inken M Beck  
Jana Kopkanova  
*and all other members of Transgenic and Archiving Module*

### **PHENOMIN-ICS, Strasbourg**

Yann Herval  
Marie-Christine Birling  
Guillaume Pavlovic