

## FOKUS methods lecture “CRISPR-Cas systems”

Prof. Dr. Chase Beisel, 18 January, 2022

### Lecture Part I

- Discovery of CRISPR-Cas systems
- Types and mechanisms
- Cas9 and the sgRNA

#### Learning objectives

- Define CRISPR, Cas, and other basic terms
- Identify the three steps of adaptive immunity by CRISPR-Cas systems
- Explain how a CRISPR nuclease selects its target
- Explain why CRISPR-Cas systems were readily coopted as genome-editing technologies

### Lecture Part II

- CRISPR for gene editing
- CRISPR for gene regulation
- CRISPR applications

#### Learning objectives

- Design guide RNAs for different CRISPR nucleases
- Describe how CRISPR nucleases have been adapted for gene regulation
- Describe different applications of CRISPR and their impact on society