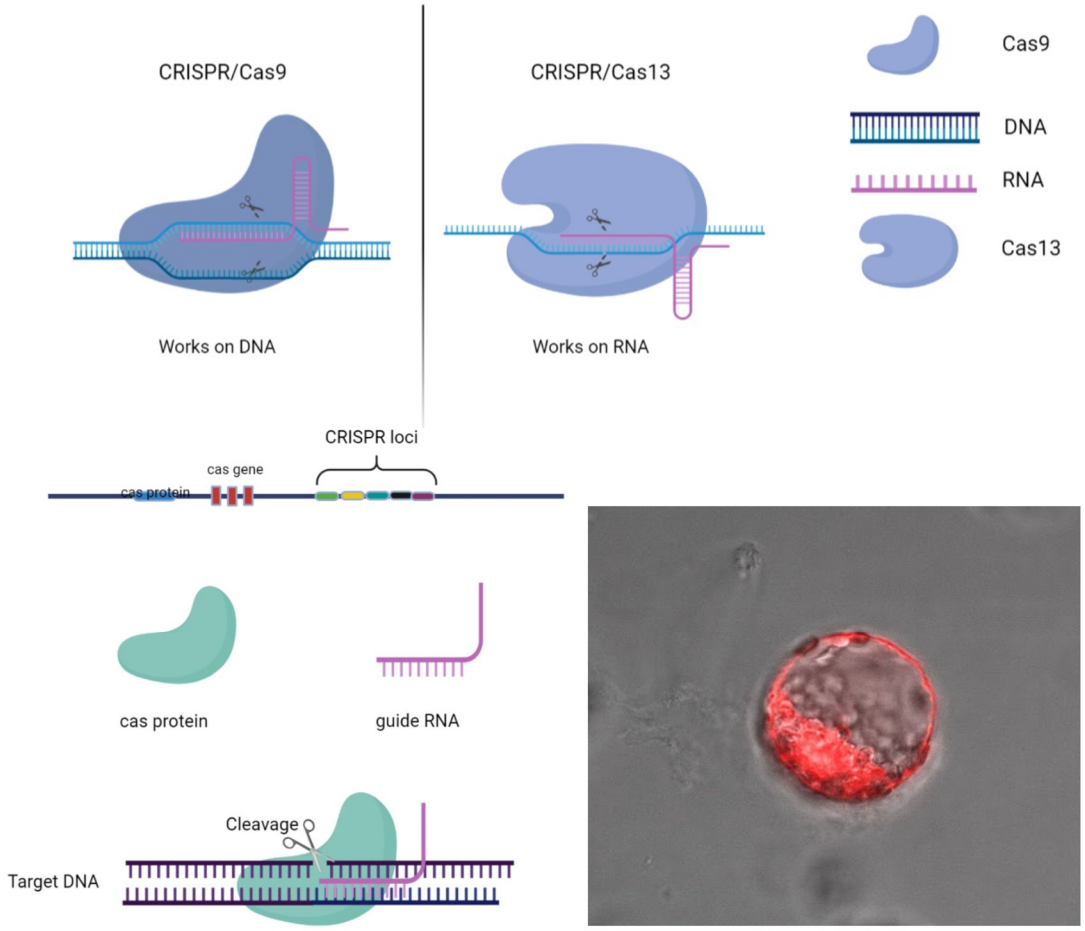
6 Virus	**Funksjonelle studier av CRISPR-Cas-systemene for viruseliminering**
	Functional Studies of the CRISPR-Cas Systems for Virus Elimination



Summary

CRISPR Cas9 has caught the attention of many scientists during the last 5 years. There are many groups doing research on CRISPR Cas9 in plant biology. The focus of these groups is mainly on introducing new trains to plants by DNA modifications and to diversity the CRISPR toolbox for enhanced gene editing. My lab is focusing on CRISPR in a very different way. In my lab we are exploring a different Cas protein (Cas13a and the orthologues Cas13b and Cas13d) which does not target DNA, but rather RNA. In addition, my lab is not focusing on introducing traits or modifying the plant genome, but rather on using Cas13 as a method to localize plant viruses within the cells and to kill them. The thesis will be focused on characterizing the activities, cellular localization and ability to cleave viral RNA of Cas13 proteins. This type of study involves good amount of gene cloning and molecular techniques, the use of delivery vectors, plant cell transfections and cellular localization studies. The student will gain competence in the following areas and techniques: Molecular biology, virology, gene technology, recombinant DNA techniques, plant genetics and plant pathology. This study is part of a CRISPR project in collaboration with China and might provide you the opportunity to spend some time in my colleague's lab in Beijing. If you are interested drop me a line.

Subject area

Molecular Biology, Virology, Cell Biology, Plant physiology, Plant-pathogen interactions

Language thesis (Norwegian and/or English)

Bachelor or Master thesis

Credits

60 credits

Project/company

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Our publications on CRISPR:

- Xu Z, Kuang Y, Ren B, Yan D, Yan F, **Spetz C**, Sun W, Wang G, Zhou X, Zhou H (2021). SpRY greatly expands the genome editing scope in rice with highly flexible PAM recognition. ***Genome Biol***. Jan 4;22(1):6. doi: 10.1186/s13059-020-02231-9. PMID: 33397431; PMCID: PMC7780387.

- Liu, L., Kuang, Y., Yan, F., Li, S., Ren, B., Gosavi, G., **Spetz, C**., Li, X., Wang, X., Zhou, X., & Zhou, H. (2020). Developing a novel artificial rice germplasm for dinitroaniline herbicide resistance by base editing of OsTubA2. ***Plant biotechnology journal***, 10.1111/pbi.13430. Advance online publication. https://doi.org/10.1111/pbi.13430

- Wang, M., Xu, Z., Gosavi, G., Ren, B., Cao, Y., Kuang, Y., Zhou, **C., Spetz**, C., Yan, F., Zhou, X., & Zhou, H. (2020). Targeted base editing in rice with CRISPR/ScCas9 system. ***Plant biotechnology journal***, 10.1111/pbi.13330. Advance online publication. https://doi.org/10.1111/pbi.13330

- Kuang, Y., Li, S., Ren, B., Yan, F., **Spetz, C**., Li, X., Zhou, X., & Zhou, H. (2020). Base-Editing-Mediated Artificial Evolution of OsALS1 In Planta to Develop Novel Herbicide-Tolerant Rice Germplasms. ***Molecular plant***, *13*(4), 565–572. https://doi.org/10.1016/j.molp.2020.01.010