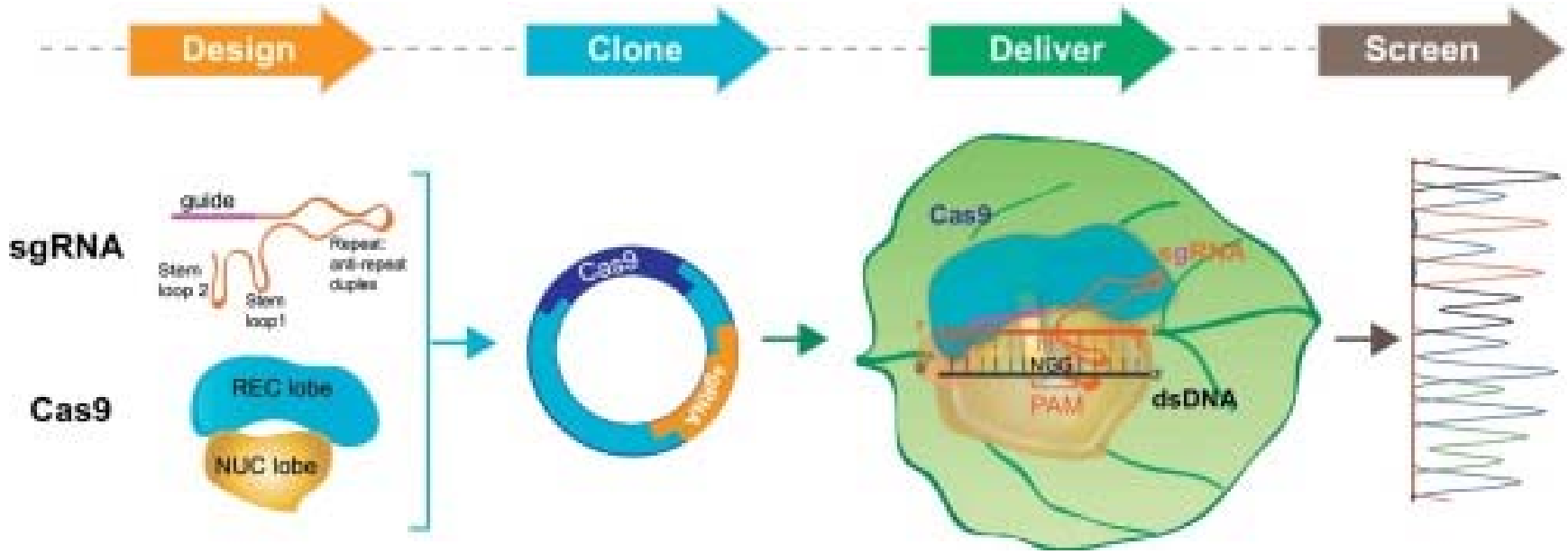
Management of plant diseases using biotechnology tools

Advantages of development in biotechnological approaches

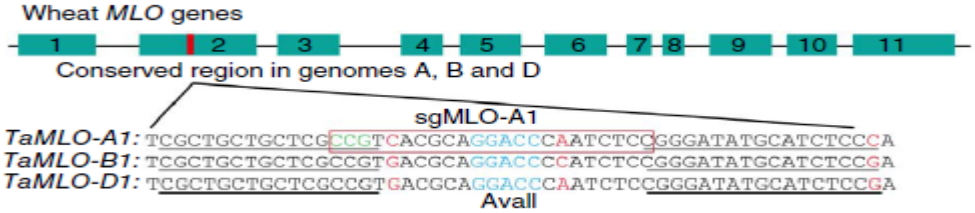
- Boosting Plant Recognition of Infection
- Mining R Genes
- Upregulating Defense Pathways
- Disarming Host Susceptibility Genes
- Producing Antimicrobial Compounds
- Silencing Essential Pathogen Genes
- Modifying Host Targets of Pathogenicity/Virulence Factors
- Detoxifying Pathogen Toxins
- Engineering CRISPR/Cas Immune System
- Reducing Infection Courts

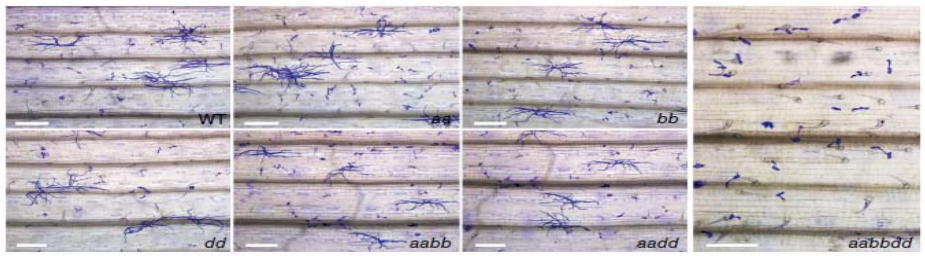
CRISPR/Cas9 system

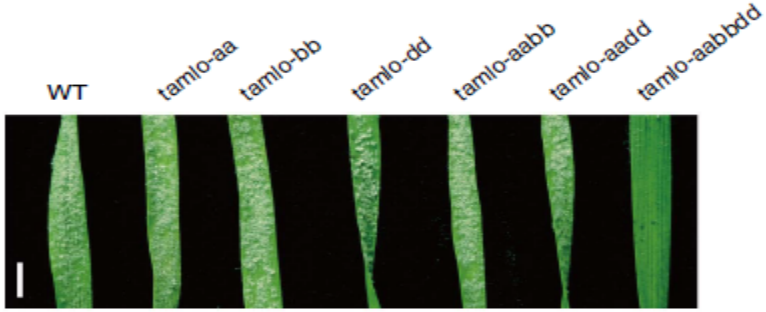
(Clustered Regularly Interspaced Short Palindromic Repeat/
CRISPR-associated protein 9)

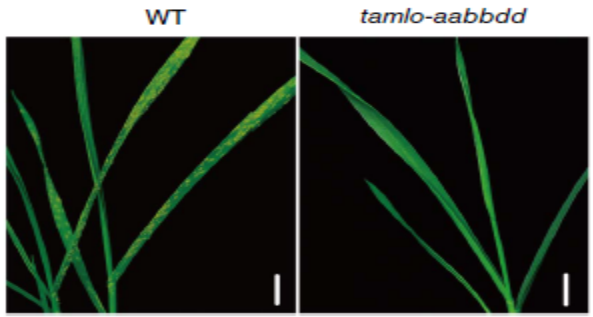


Application in plant disease management: Editing three homoeoalleles in wheat confers heritable resistance to powdery mildew

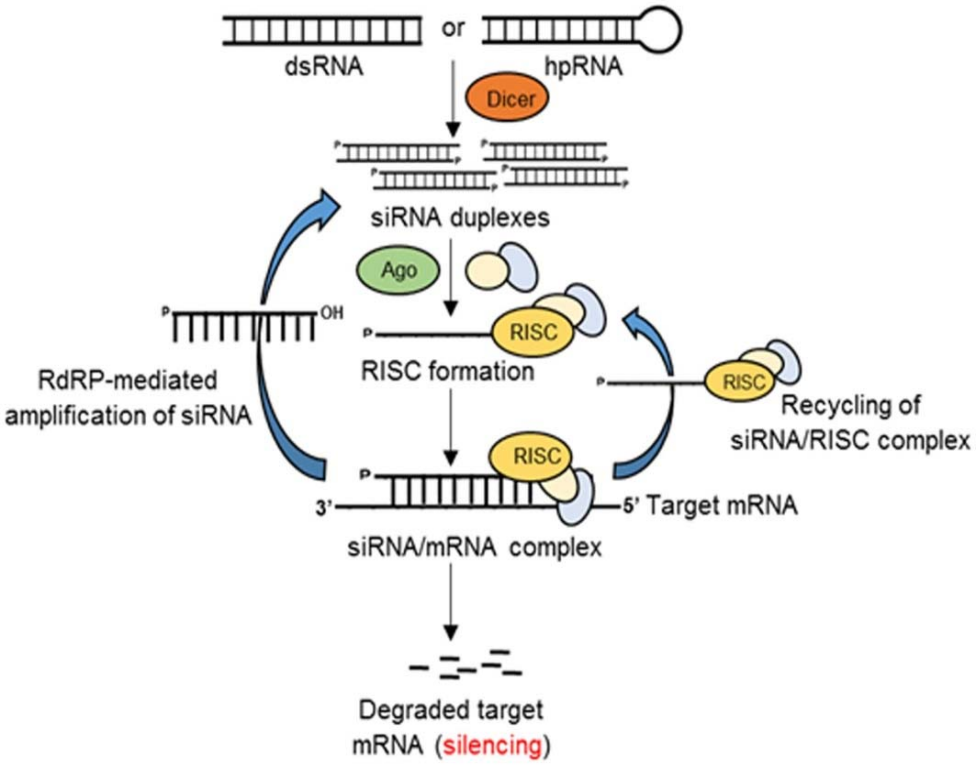


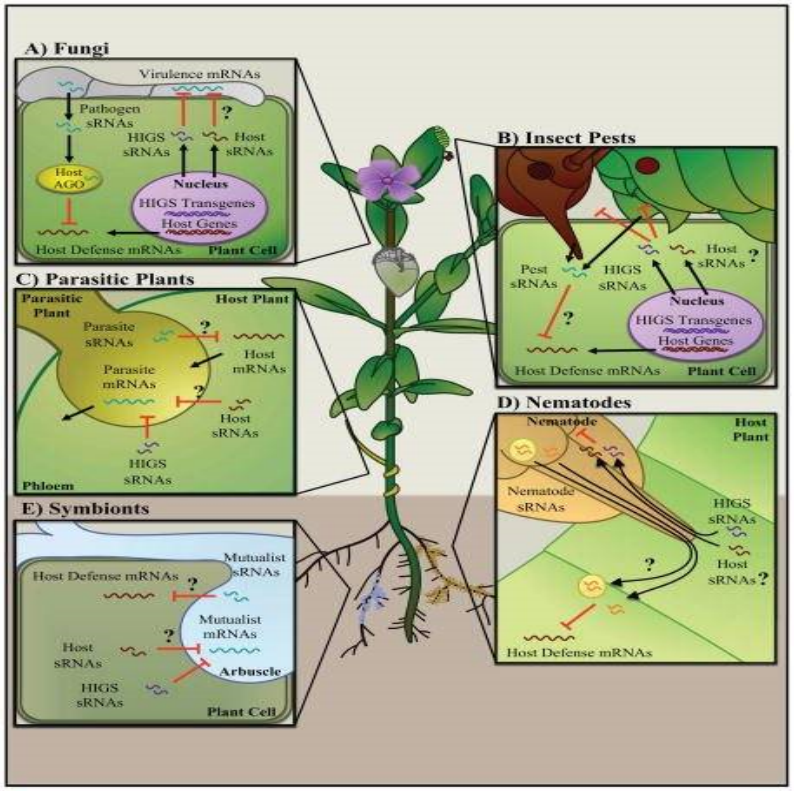




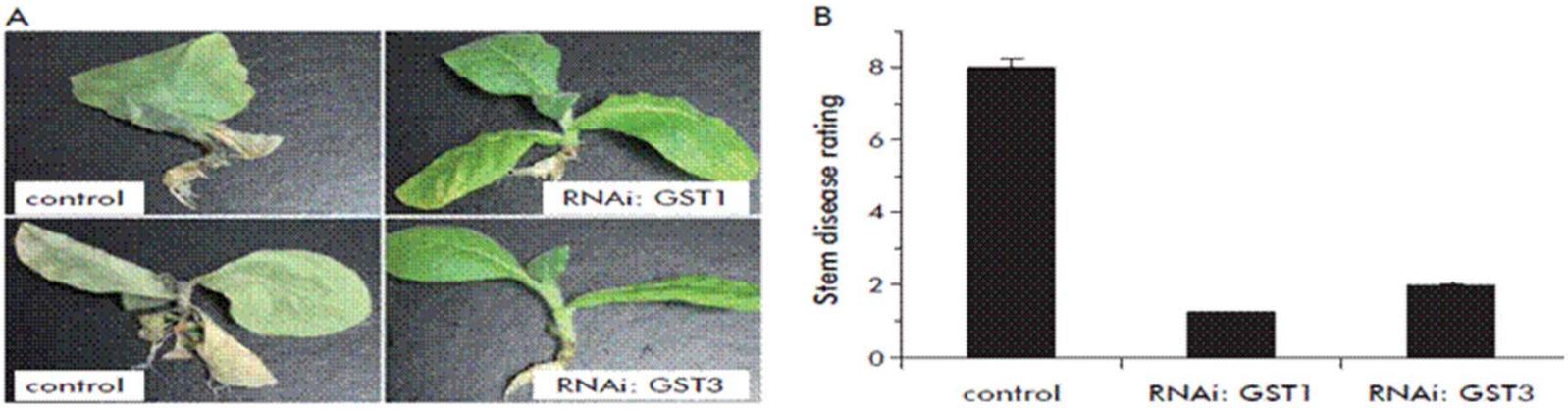


RNAi in plant disease management





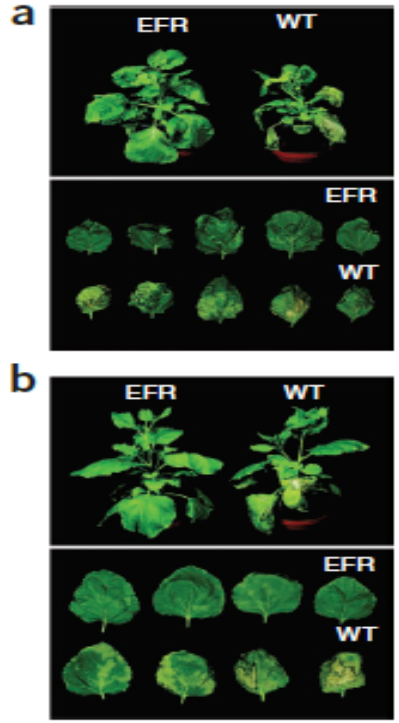
RNAi



Tobacco plants bearing silenced *GST* genes (*GST1* and *GST2*) confer resistance to *Phytophthora parasitica* var. *nicotianae*

Interfamily Transfer of PRRs (Pattern Recognition Receptors)

- Transfer of *Arabidopsis thaliana* Pattern Recognition Receptors(PRR) EFR to *Nicotiana benthamiana* confers resistance to a variety of bacterial pathogens e.g. *Pseudomonas syringae* pv. *syringae* (*Pss*) and *P. syringae* pv. *tabaci* (*Pta*)



Pss

Pta

Nicotiana benthamiana