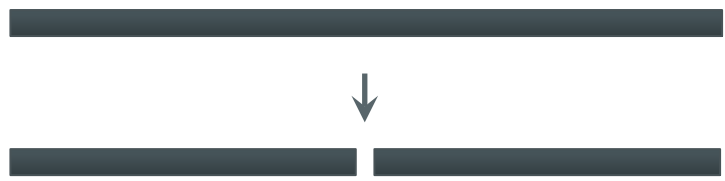


Genome editing using CRISPR/cas system

Dr. Katia Pauwels
Biosafety and Biotechnology Unit (SBB)

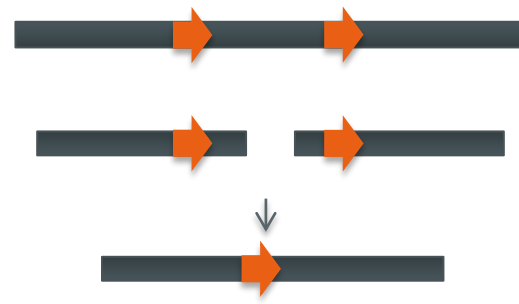
ZFNs TALENs MNs CRISPR



NHEJ

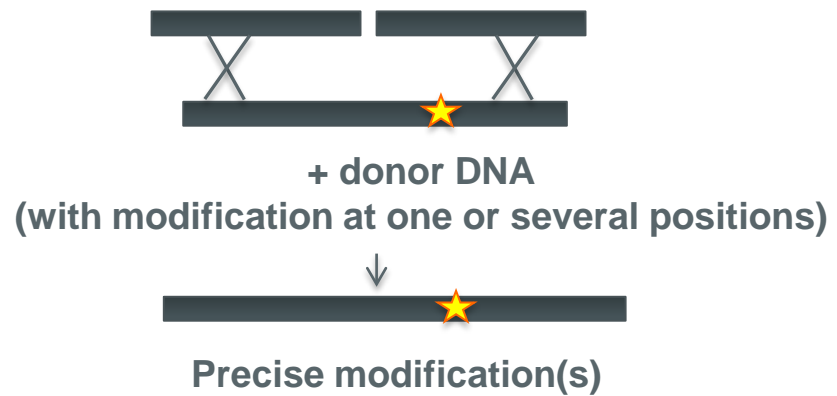
HR

SDN-1

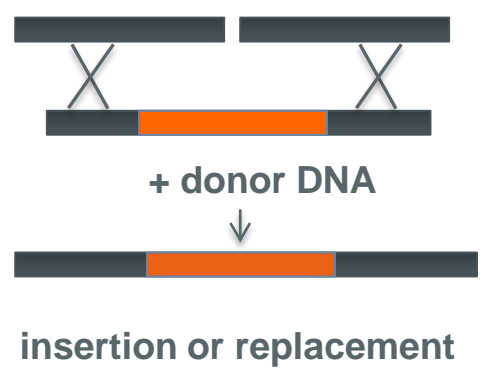


deletion

SDN-2



SDN-3



insertion or replacement

**Are organisms obtained by SDN-1/SDN-2 presenting
any different or additional risk/safety issues
as compared to conventional breeding techniques ?**



SDN-1/SDN-2 using CRISPR/cas system

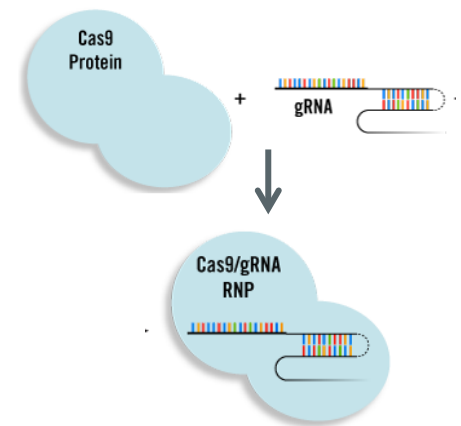
Risk/safety considerations



1. Are genetic modifications/alterations comparable to
 - natural causes of genetic variety?
 - conventional mutagenesis techniques?
 - other techniques of genetic modification?

2. SDN-1/SDN-2 encoding components :
transient versus stable expression

3. Intermediate organisms versus final product





SDN-1/SDN-2 using CRISPR/cas system

Risk/safety considerations



4. SDN-1/SDN-2 associated off-target effects : safety concern ?
5. Any risk/safety considerations with respect to host organisms (e.g. plant versus animal) ?
6. Intended use (contained use versus deliberate release) of final organism
7. Any other aspects specific to SDN-1/SDN-2 approach that may impact risk assessment ?

1. Are genetic modifications comparable to
 - natural causes of genetic variety?
 - conventional mutagenesis techniques?
 - other techniques of genetic modification?
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