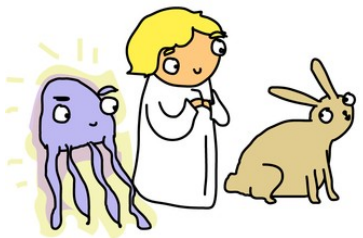
Gene drive mathematical models

Léna Kläy, PhD 3rd year

Gene drive mathematical models



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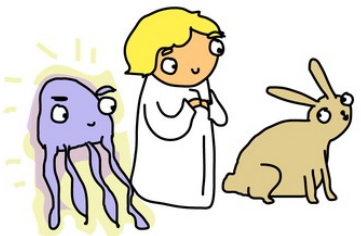

GLOW IN DARK BUNNY (with jellyfish DNA)

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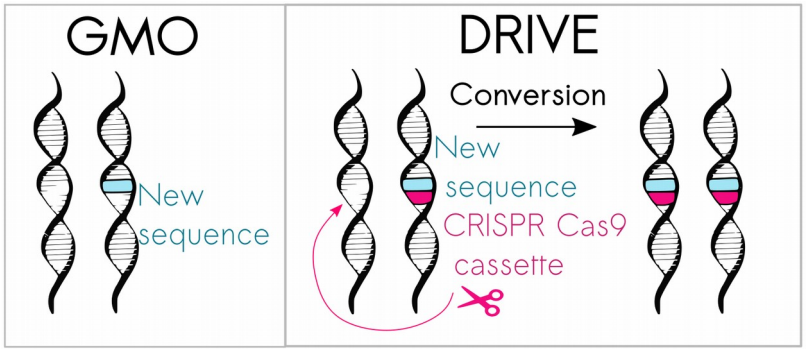

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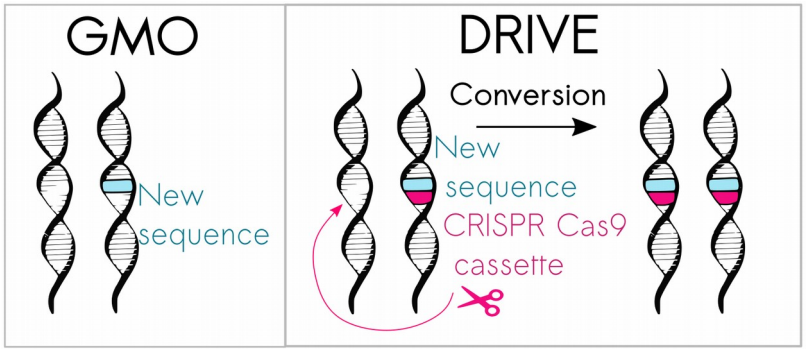

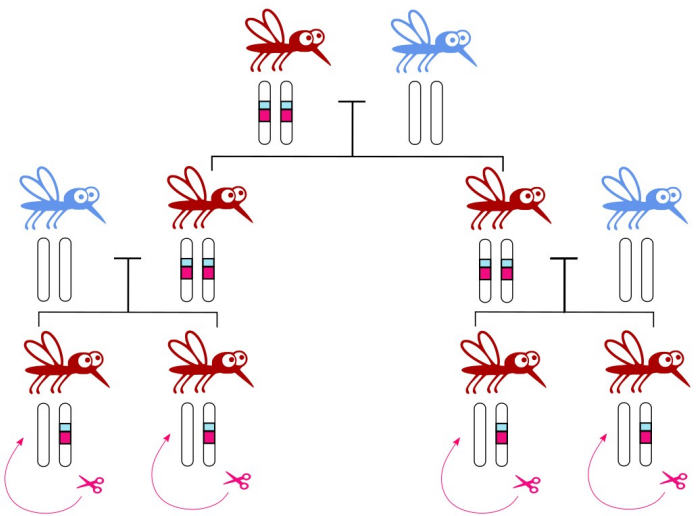

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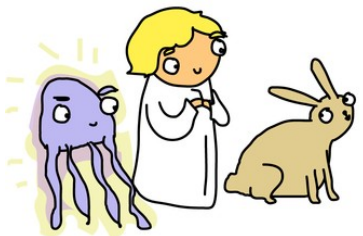

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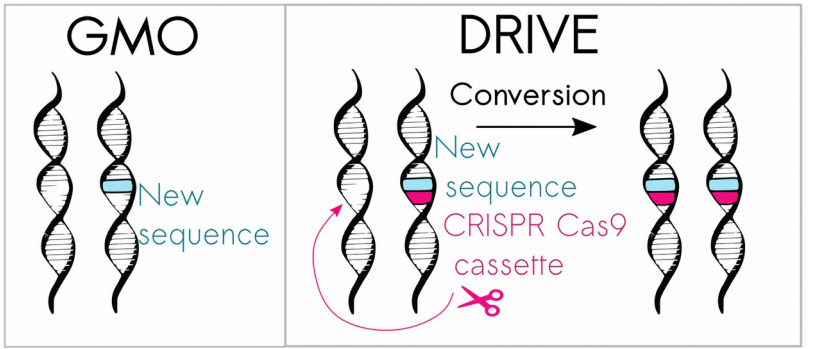

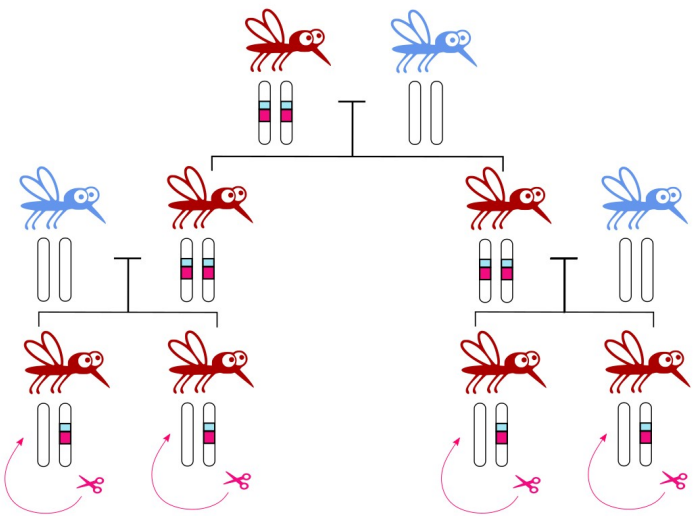

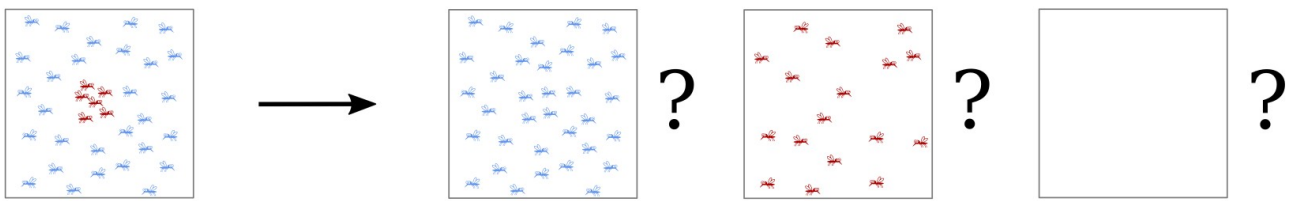

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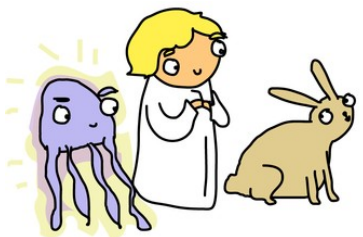

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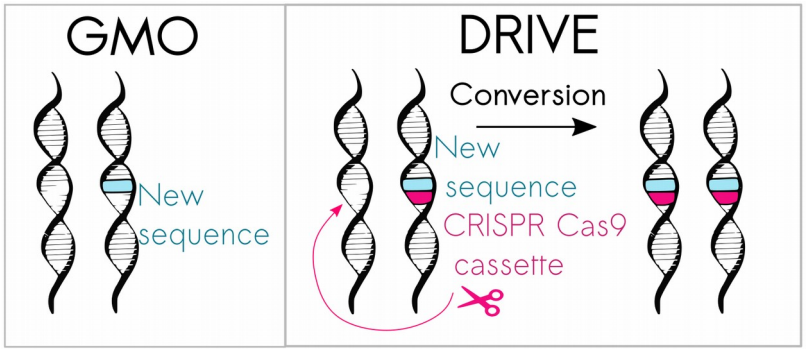

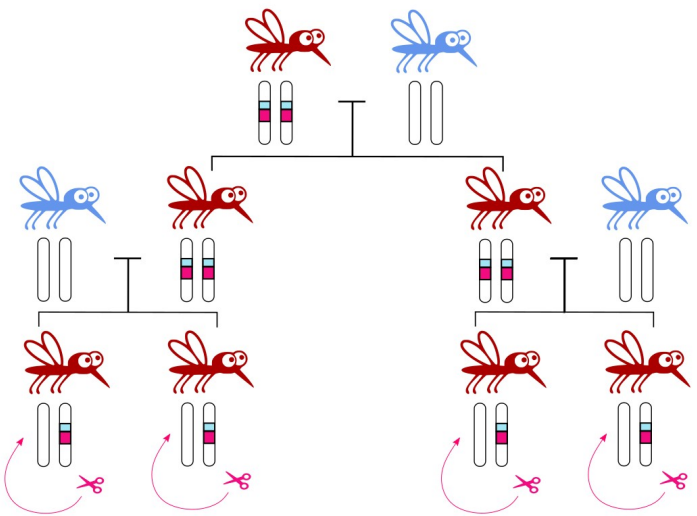

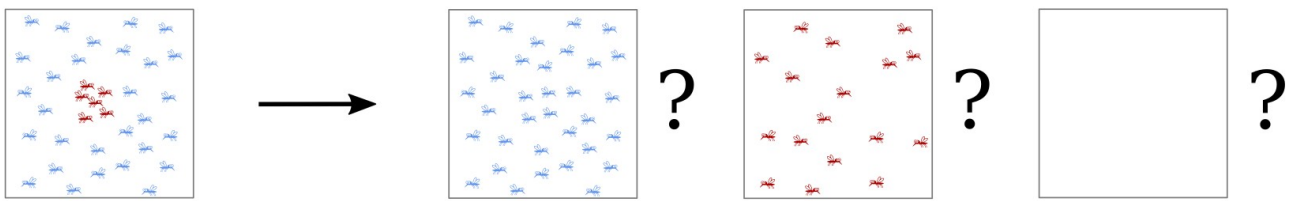

$$\underbrace{\partial_t n_W}_{\text{Variations in time}} - \underbrace{\partial_{xx} n_W}_{\text{Diffusion}} = \underbrace{1}_{\text{Fitness}} \underbrace{\left(r\,(1-n_D-n_W)+1\right)}_{\text{Growth term}} \underbrace{\frac{n_W^2}{n_W+n_D}}_{\text{Mating}} - \underbrace{n_W}_{\text{Mortality}}$$

Wild-type

$$\partial_t n_D - \partial_{xx} n_D = \underbrace{(1-s)}_{\text{Disadvantage}} \left(r\,(1-n_D-n_W)+1\right) \underbrace{\frac{n_D^2+2n_D n_W}{n_W+n_D}}_{\text{Advantage (conversion)}} - n_D$$

Drive Drive

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