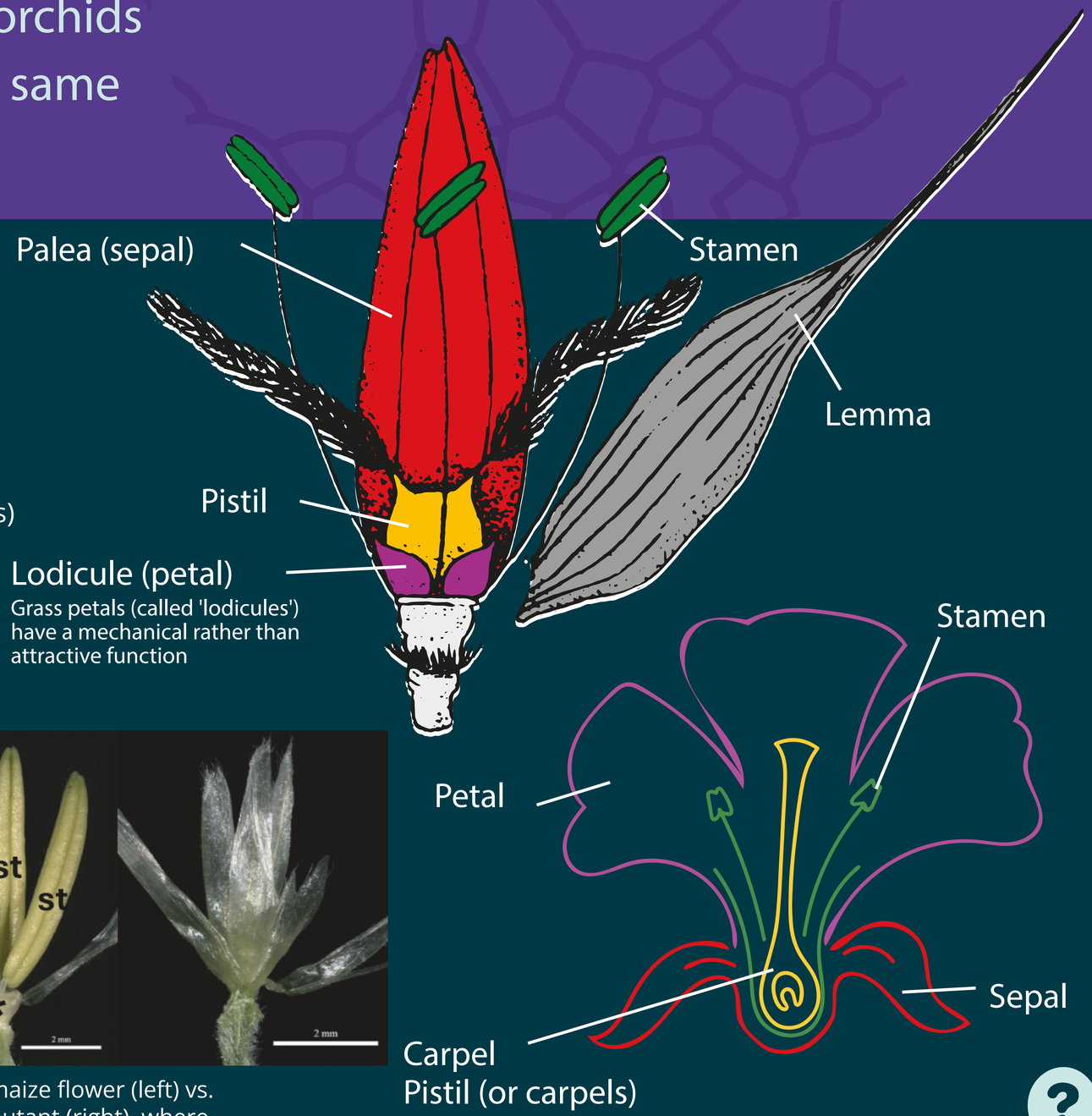
Floral Genetics

How shared genes lead to a world of flowers

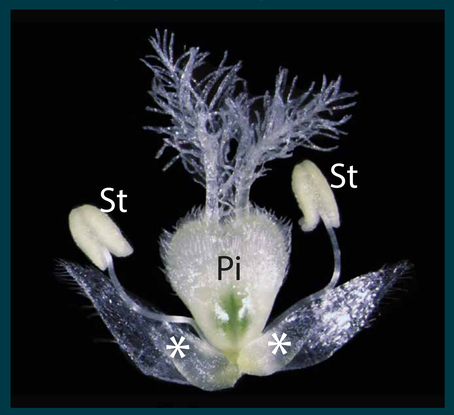
- Genetics
- Machine Learning
- Microscopy
- Biomechanical Modelling
- Behavioural Ecology

Even though flowers like grasses, roses, and orchids look completely different, they often use the same core genetic instructions.



There is vast diversity in flower structures from grasses and daisies to roses and orchids. While they may look very different, their development is guided by similar sets of genes. Small changes to genes that control development can result in big changes in morphology. For example, the so-called 'B-class' genes are essential for stamen and petal development in the model system ***Arabidopsis thaliana*** (arabidopsis) and the grass ***Zea mays*** (maize or corn), even though the stamens and petals look really different between the two species.

We work to understand how conserved genes and molecules act in development to produce vastly different floral forms.



Brachypodium distachyon flower. Petals (called lodicules) marked with asterisks. St = stamen, Pi = pistils.

Normal arabidopsis flower (left) vs. B-class mutant (right), where petal and stamen development is disrupted.

Normal maize flower (left) vs. B-class mutant (right), where petal (lodicule) and stamen development is disrupted.

How do the same genes make so many kinds of flowers?

Images and ilustrations by Madelaine Bartlett, Jennie Nguyen and Erin Patterson.