

# When Crops Grow Up

Determining the regulatory control of floral transition in *Brassica napus*

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# Determining the regulatory control of floral transition in *Brassica napus*

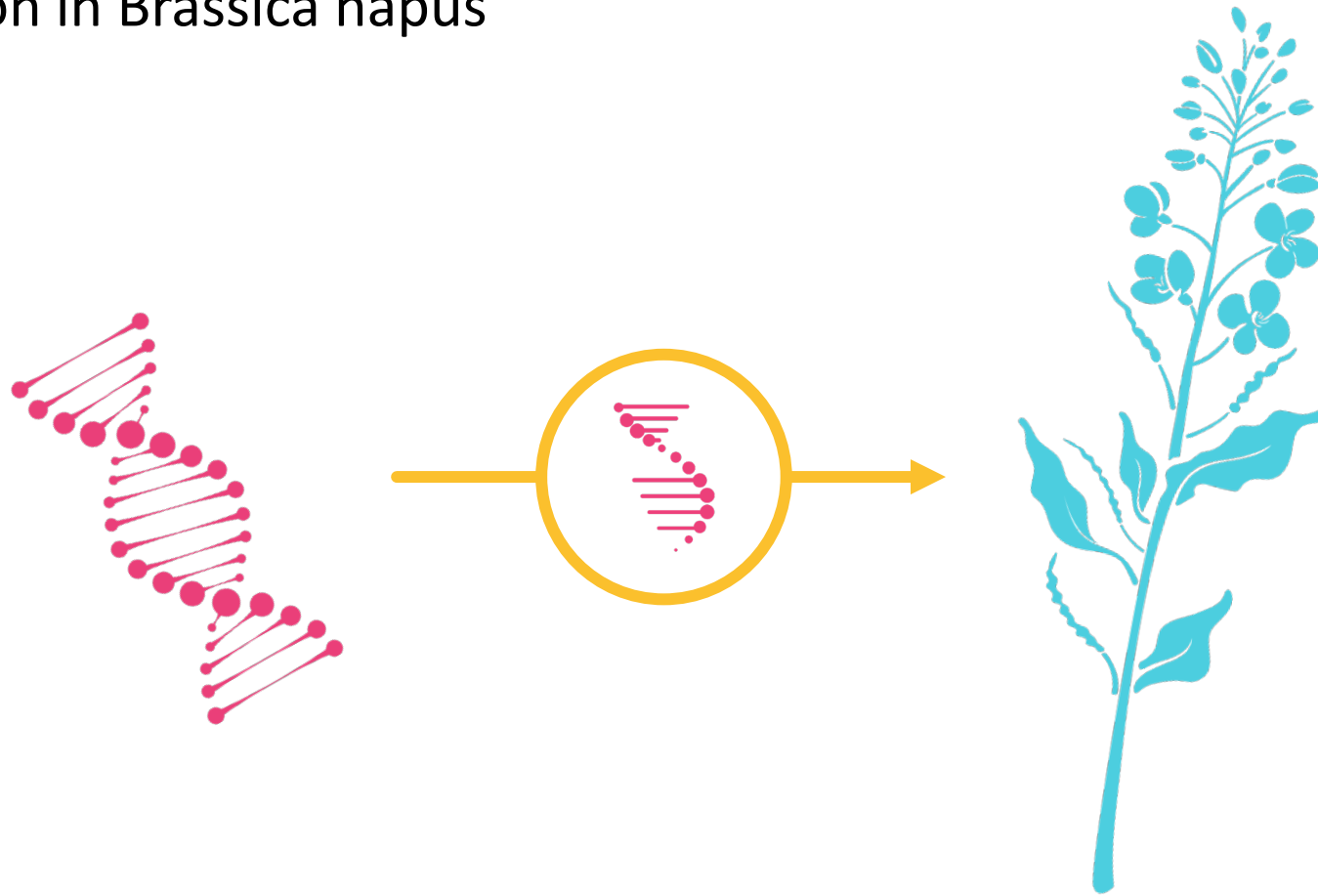


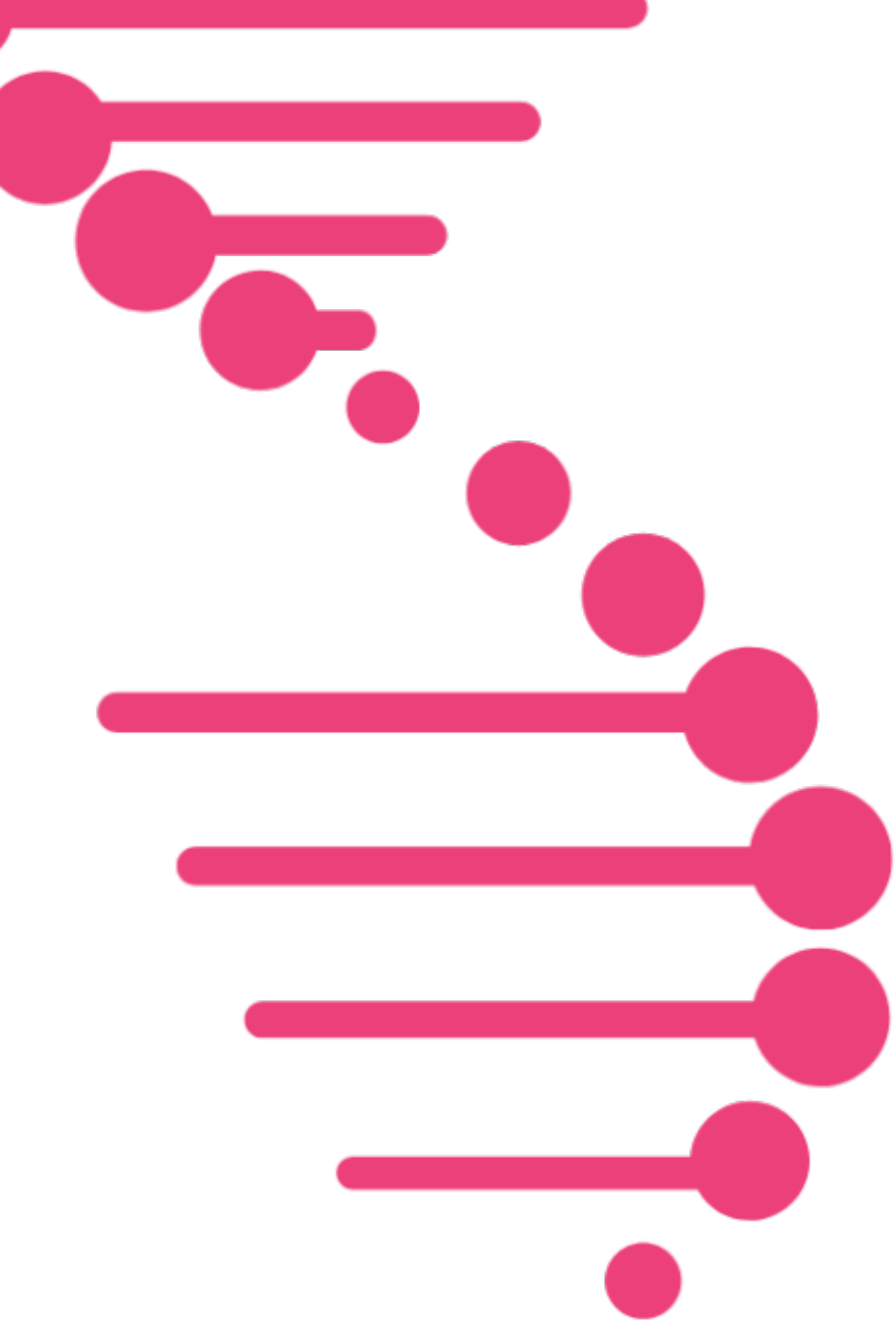
What is the source of variation in *Brassica napus* cultivars?

Determining the regulatory control  
of floral transition in *Brassica napus*



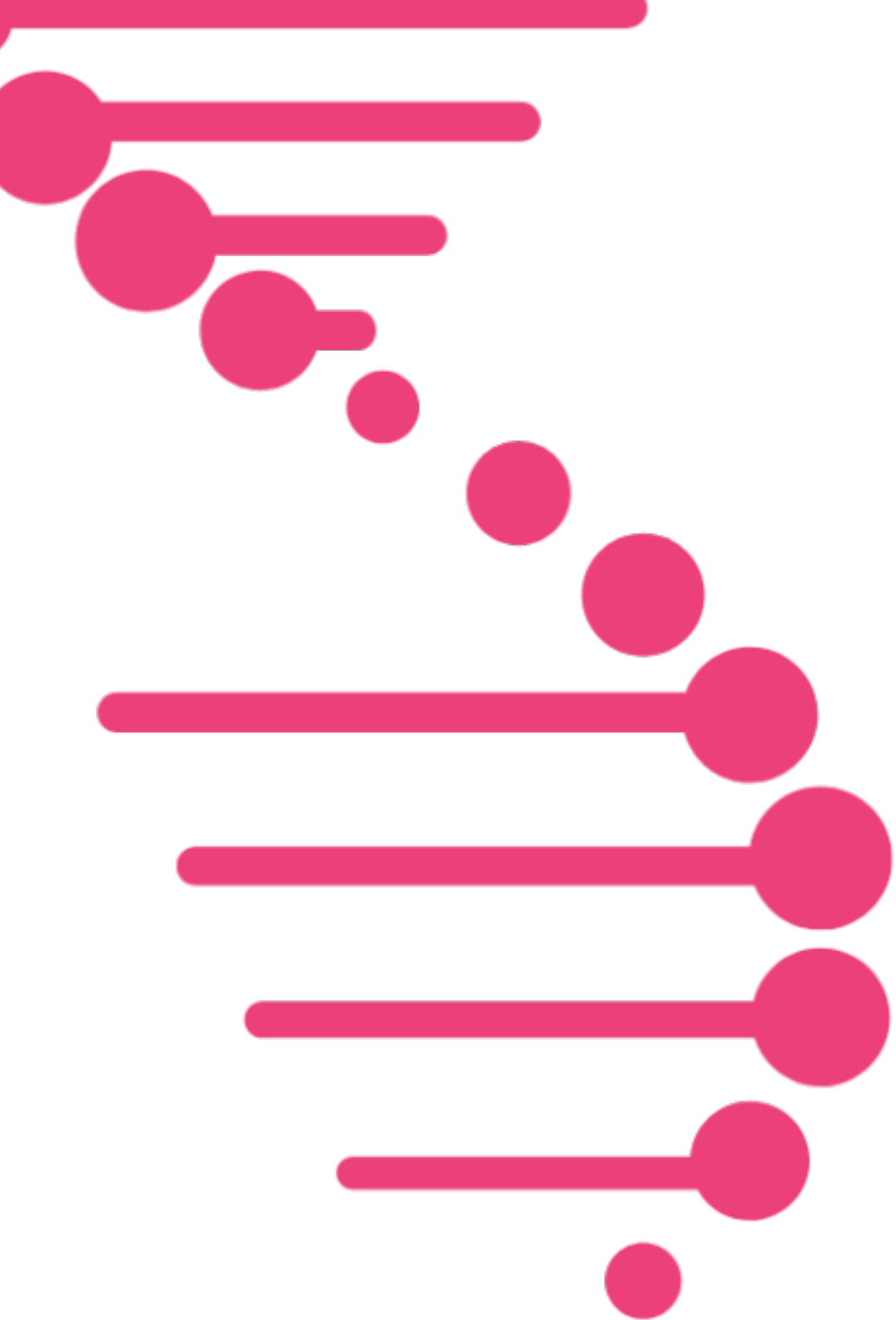
# Determining the regulatory control of floral transition in *Brassica napus*





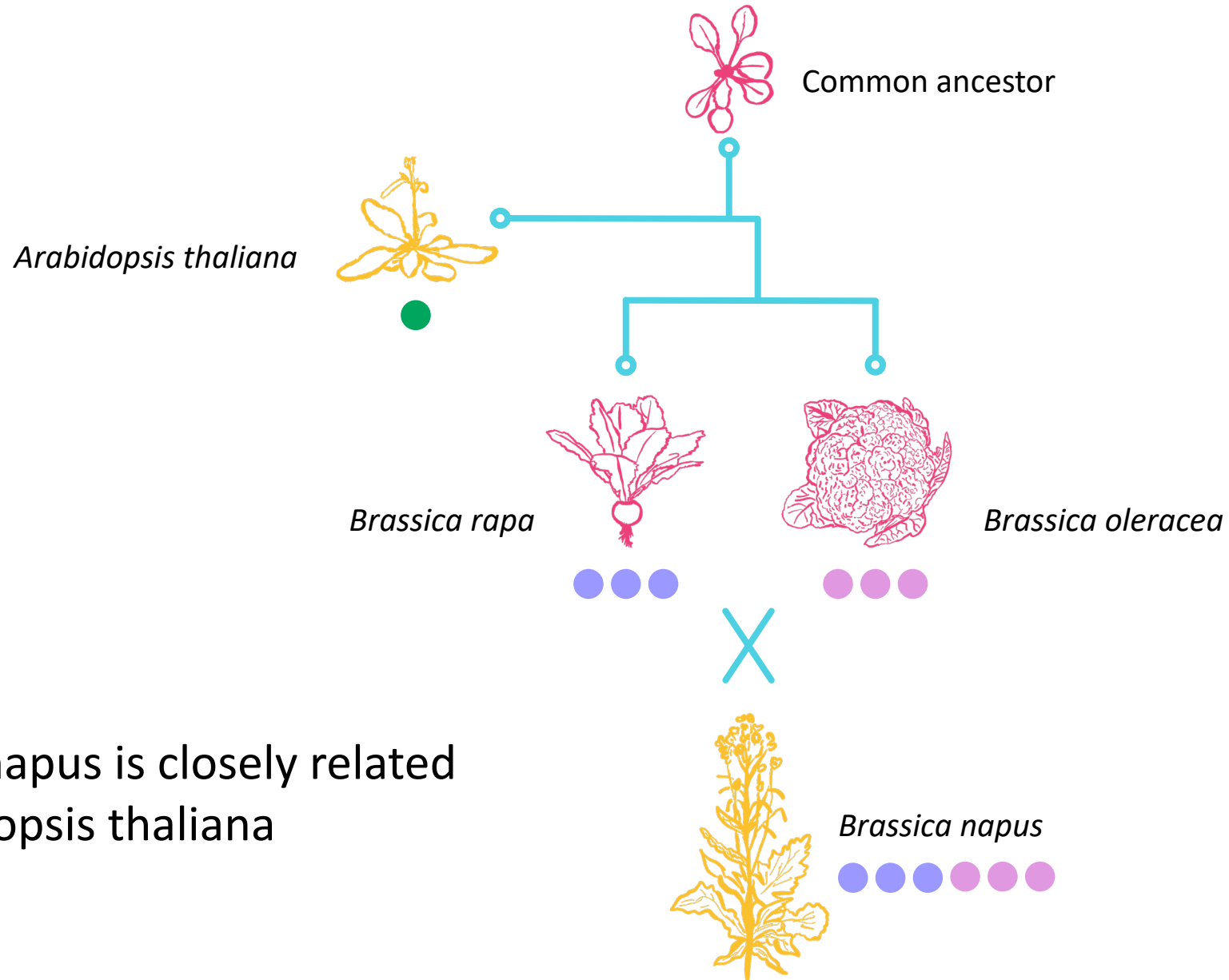
How cultivars 'grow up'  
differently transcriptomic-ally?

What underlying **Gene Regulatory  
Networks** govern these  
differences?



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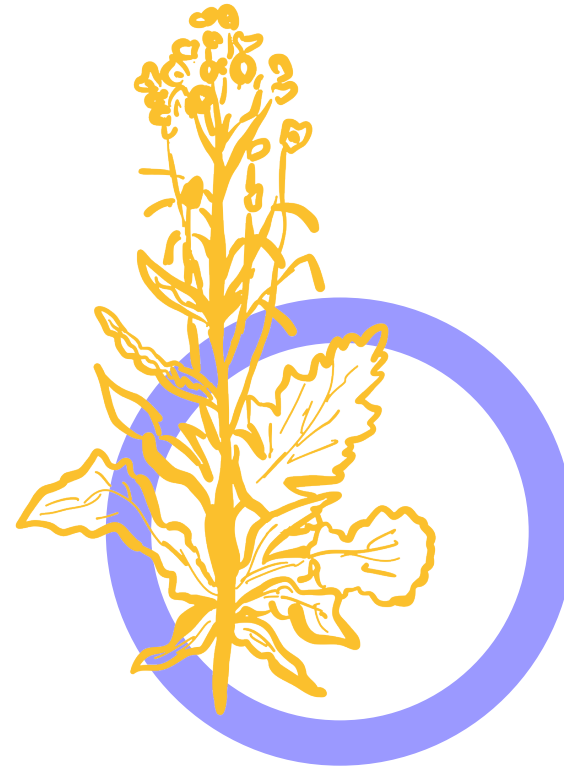
Brassica napus is closely related to Arabidopsis thaliana

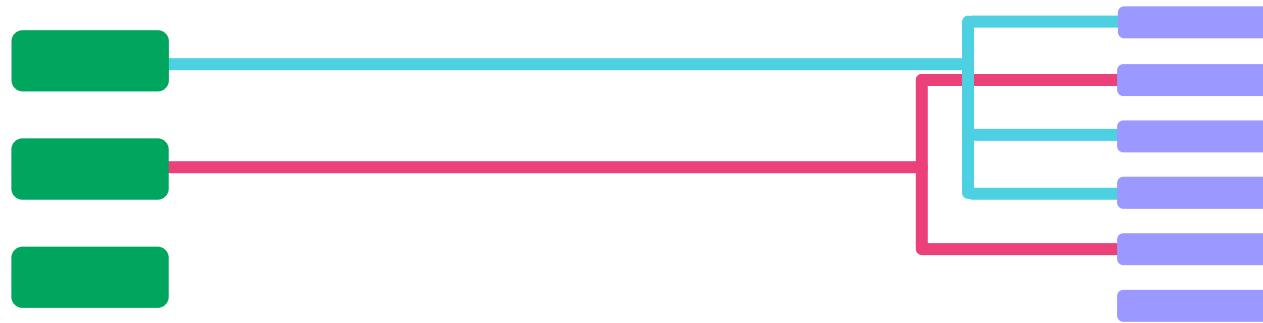
Can we transfer insights from  
Arabidopsis to Brassica?

Model Species



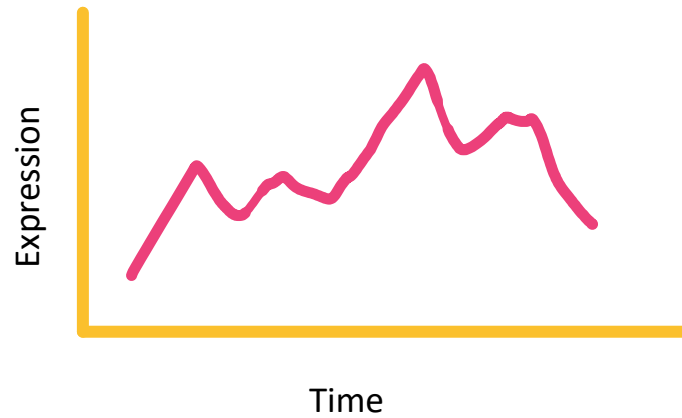
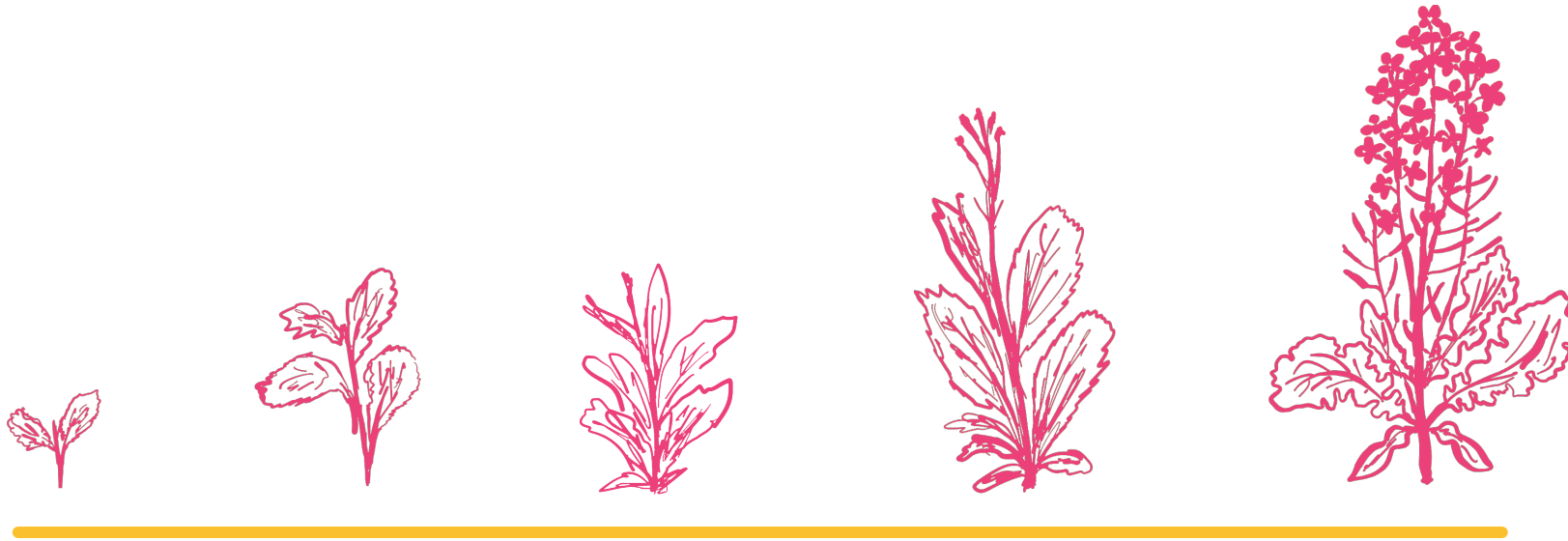
Crop Species





Reciprocal BLAST search to find homologous mapping  
of flowering genes in the FLOR-ID database

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Transcriptomic  
Time series for  
Brassica napus cultivars

# Comparisons

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*Arabidopsis thaliana*

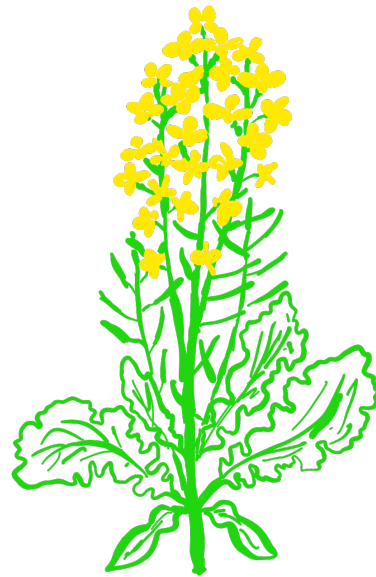
Col-0



*Brassica napus*

Stellar

a spring type cultivar



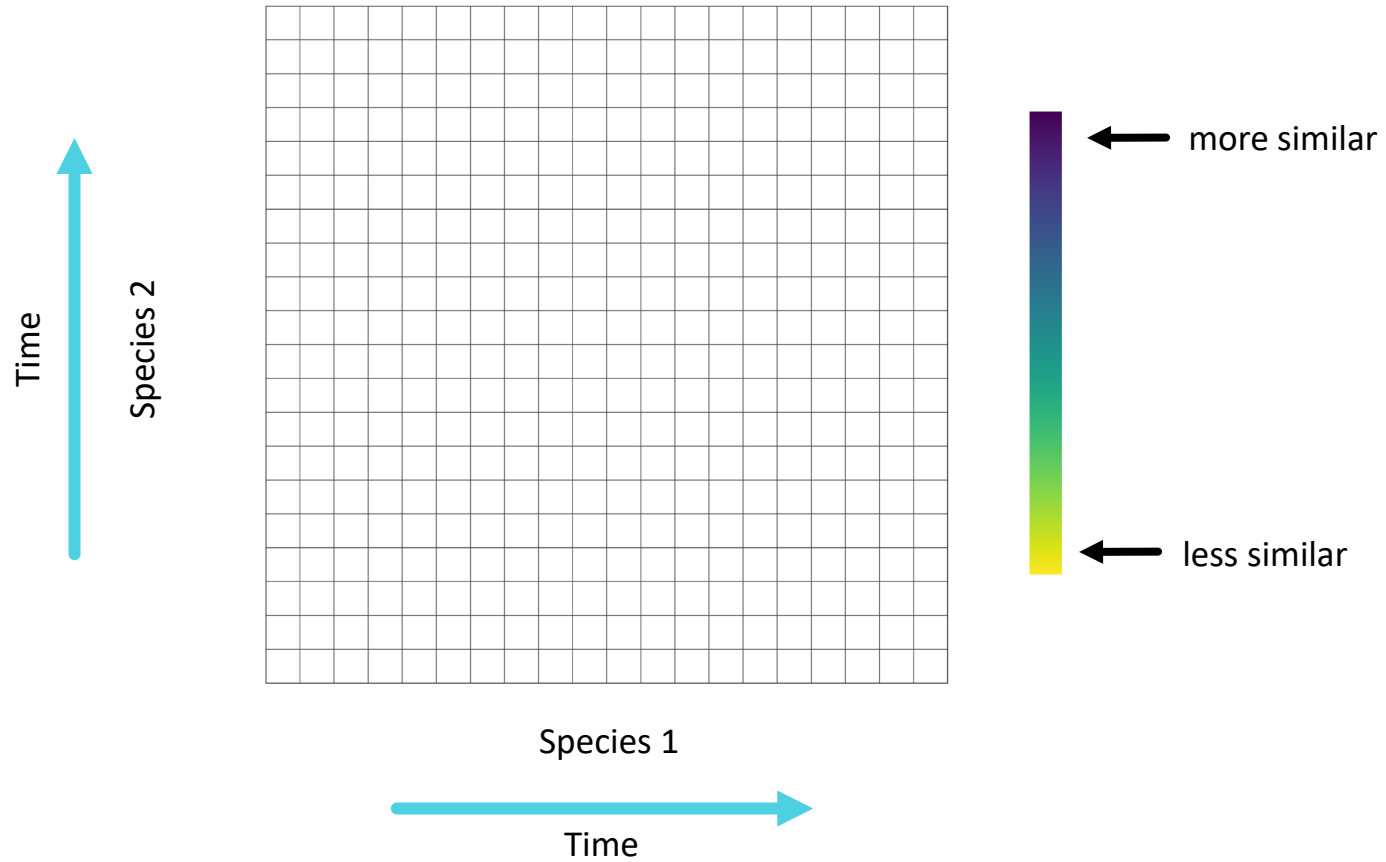
*Brassica napus*

Zhongshuang 11

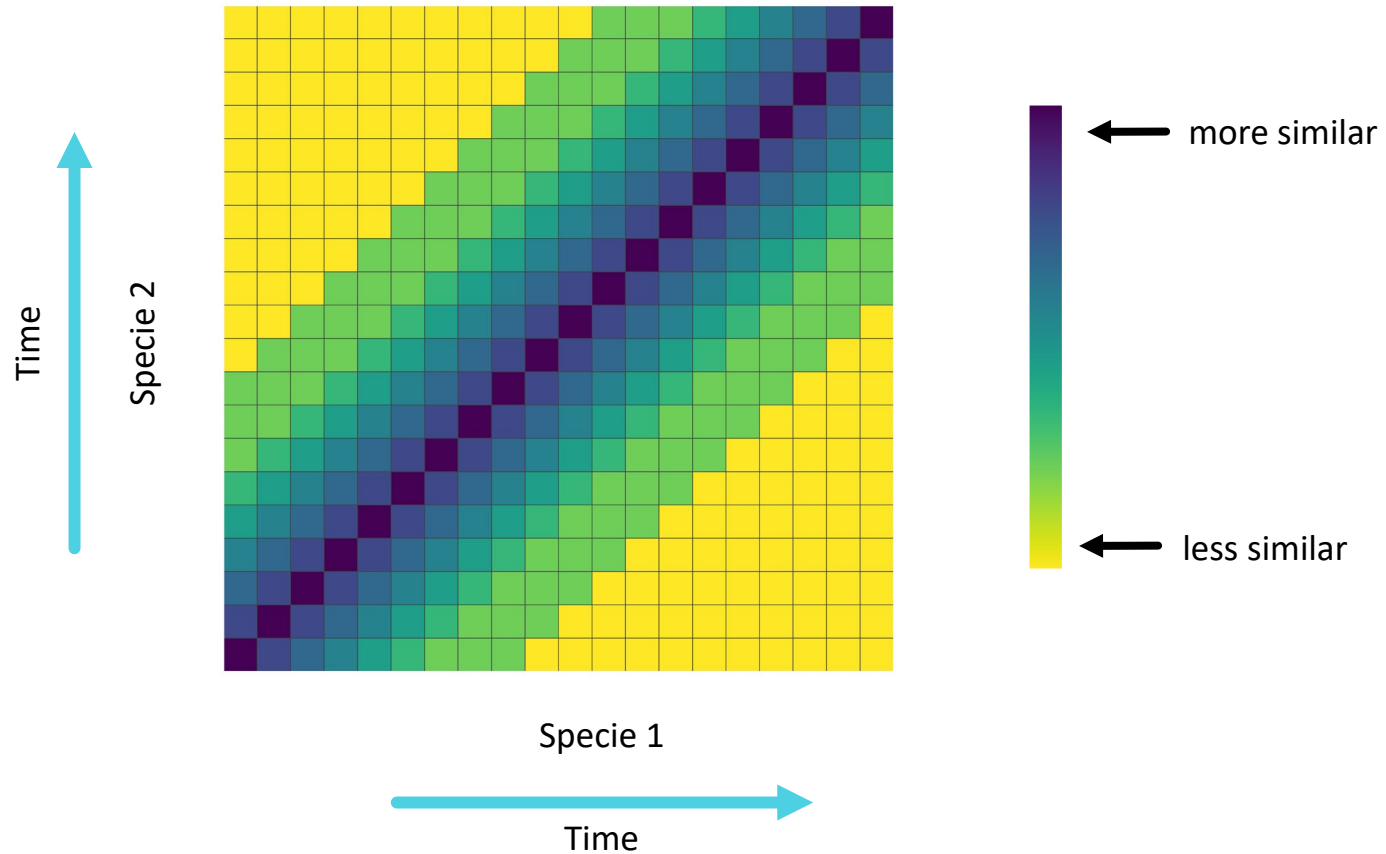
a semi-winter type cultivar



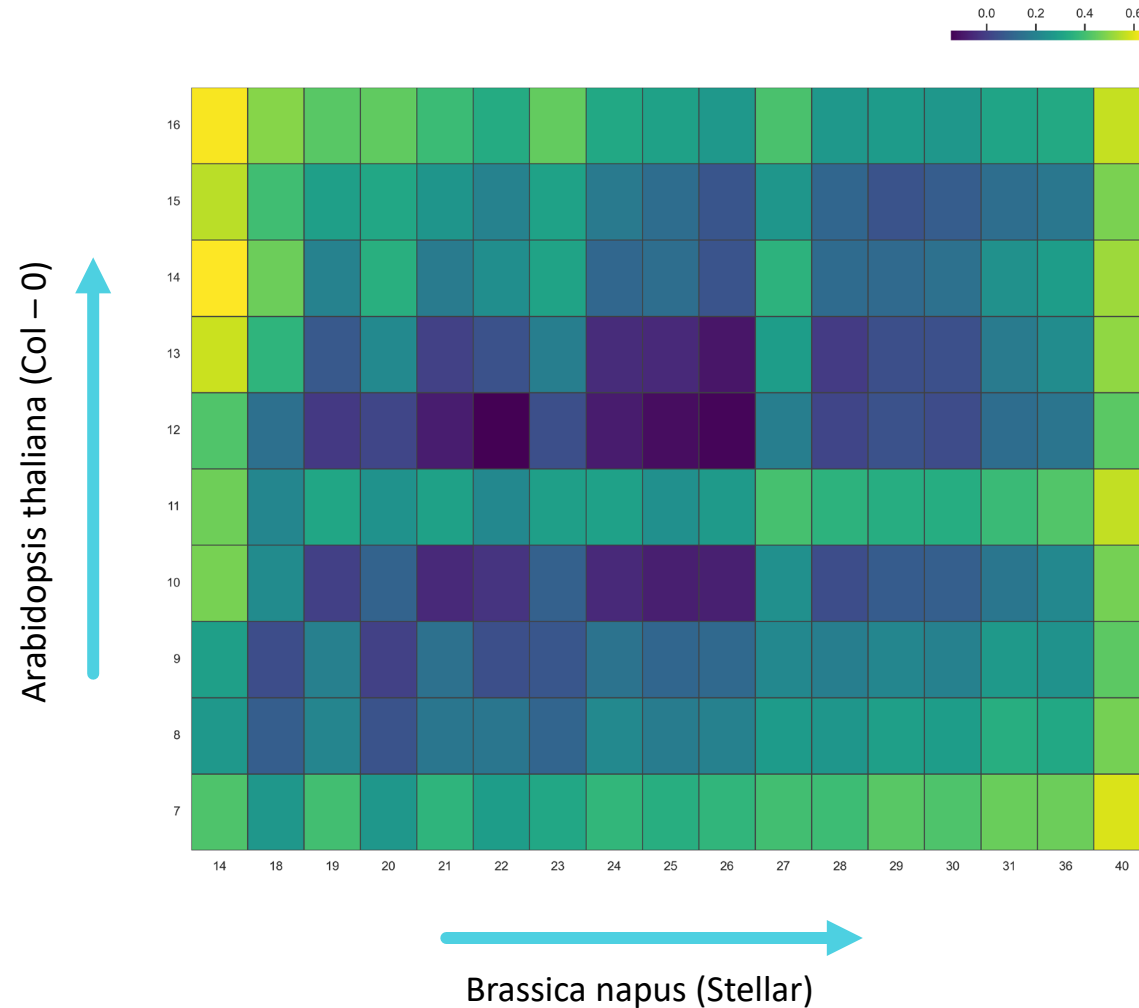
# Using transcriptomes to compare development



# Using transcriptomes to compare development



There are no similarities in transcriptomic development between *Brassica napus* and *Arabidopsis thaliana*



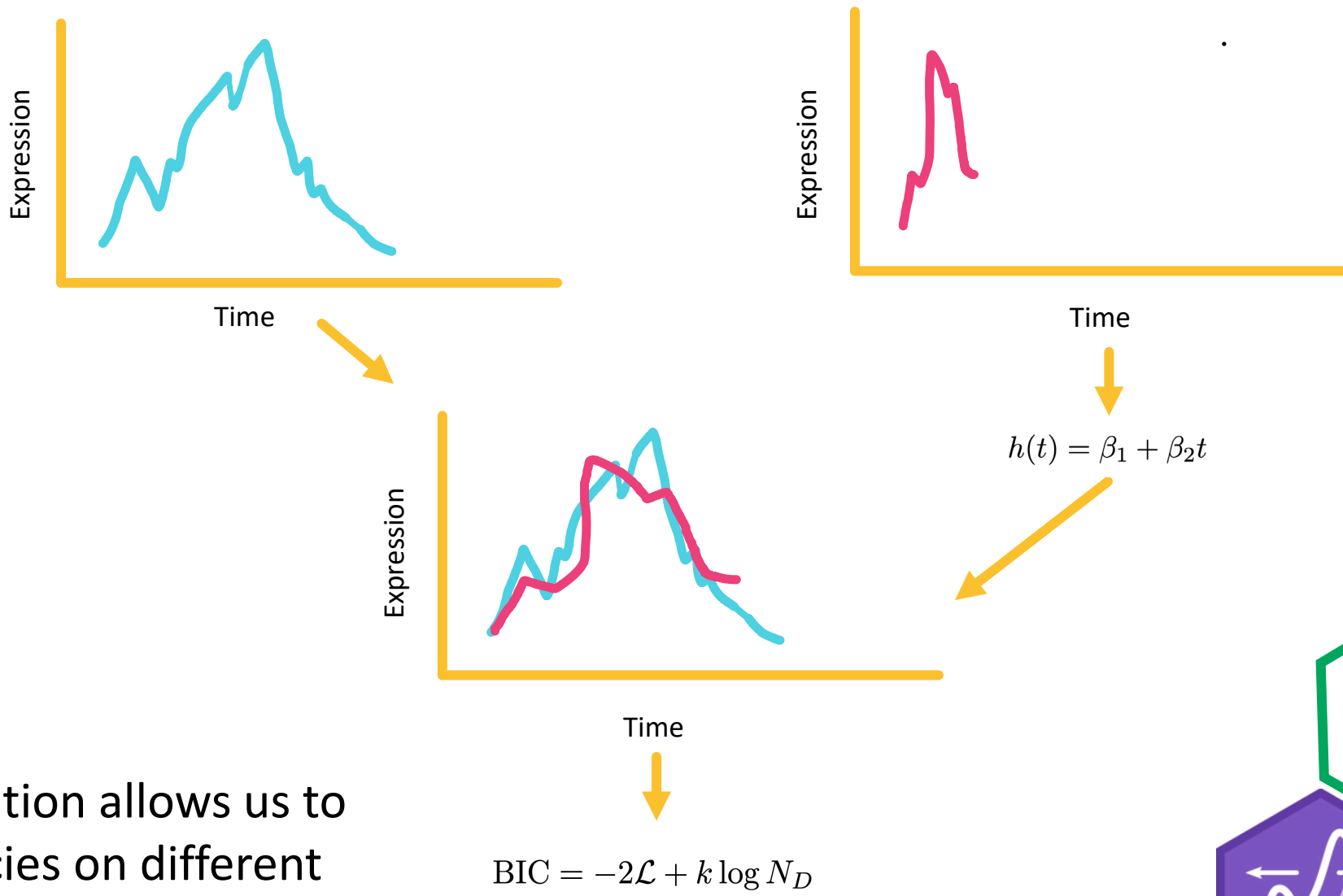
[For Flowering Genes]

**THE END**



THE END?





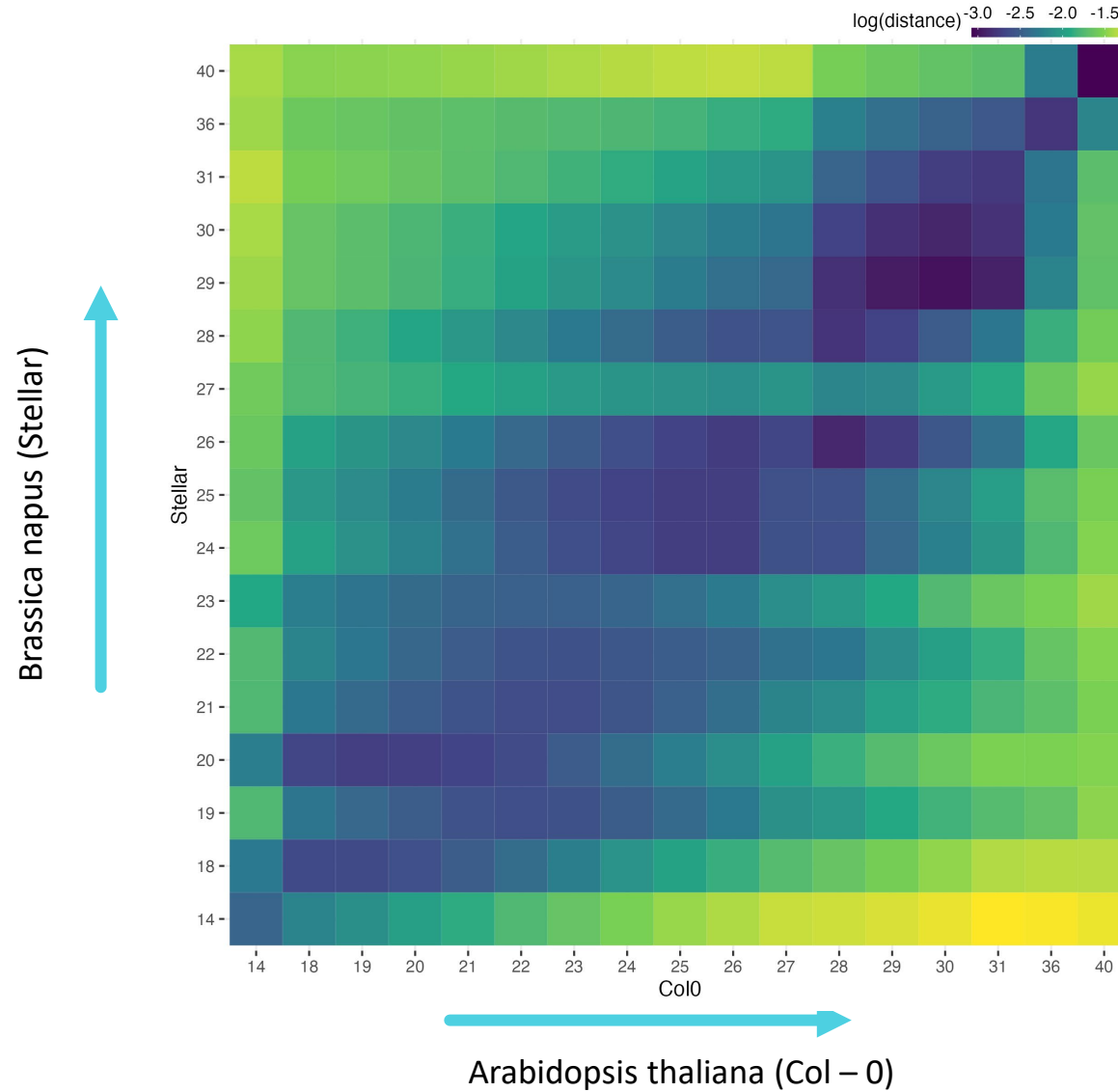
Curve registration allows us to compare species on different timescales.

irc 2023

Today  
10:00 AM  
Ballroom 2

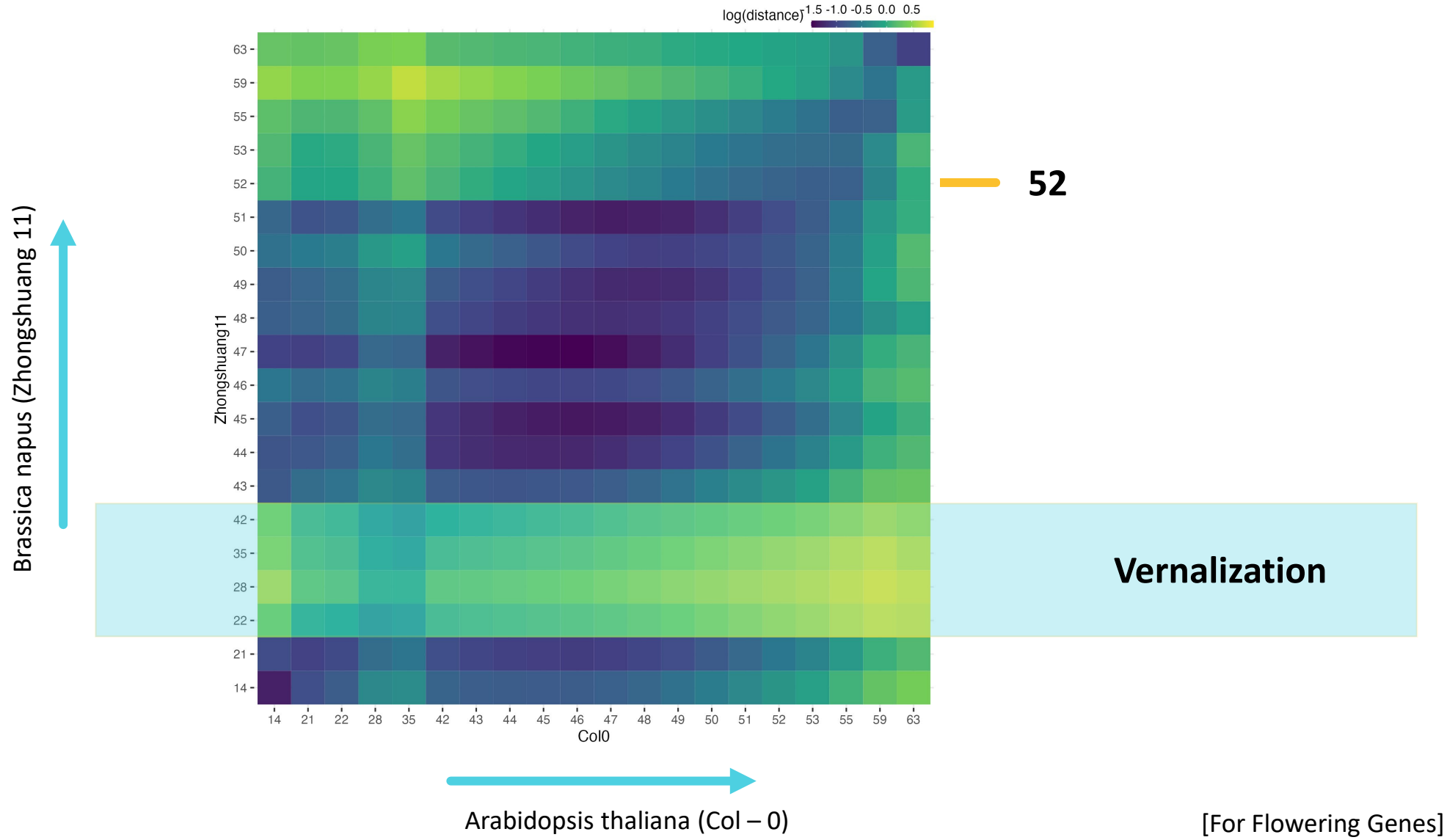
greatR

Col-0 and Stellar follow a similar transcriptomic progression

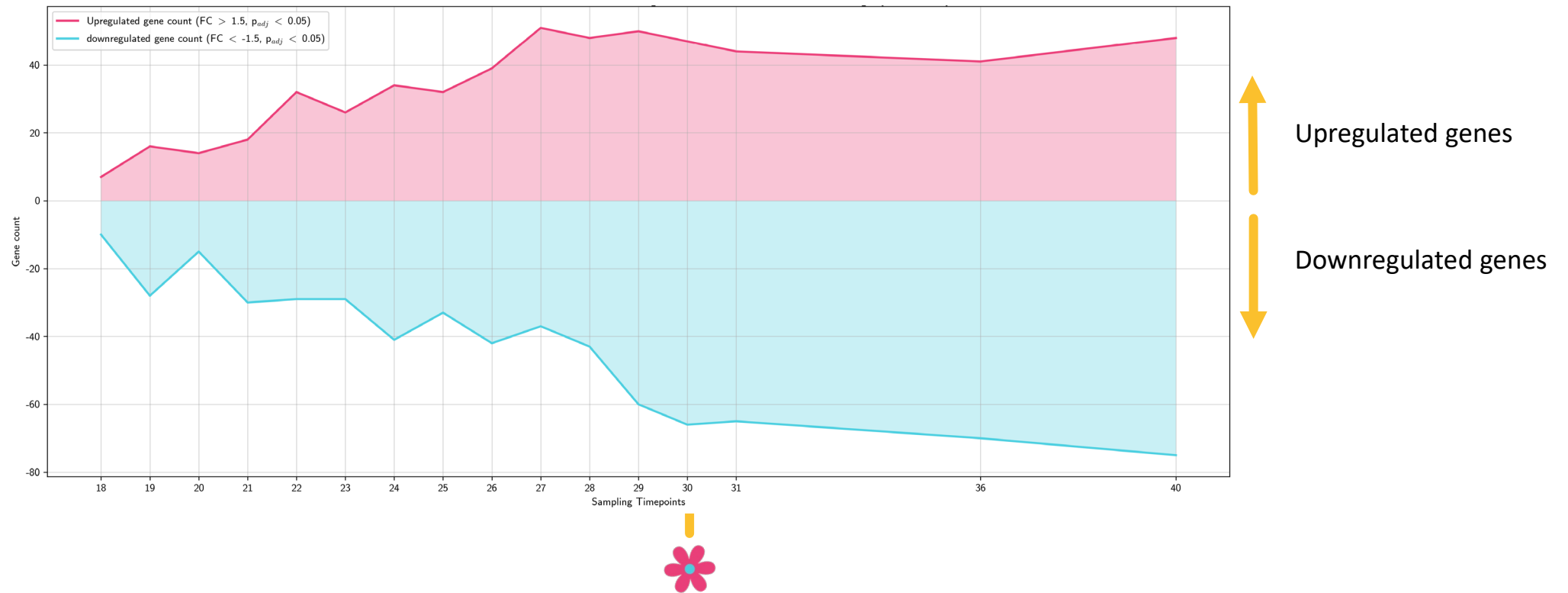


[For Flowering Genes]

Col-0 and Zhongshuang 11 have a complex progression relationship

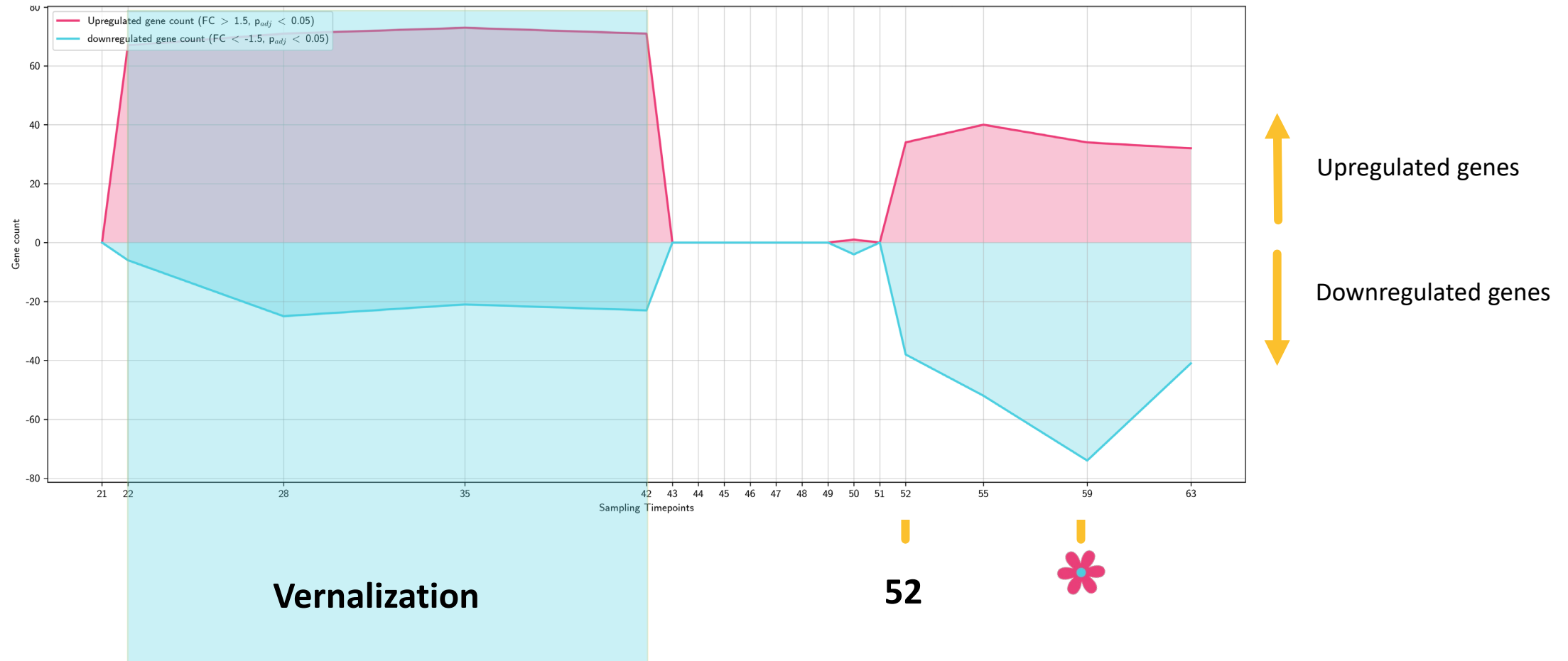


# Developmental progression for Stellar



[For Flowering Genes]

# Developmental progression for Zhongshuang 11



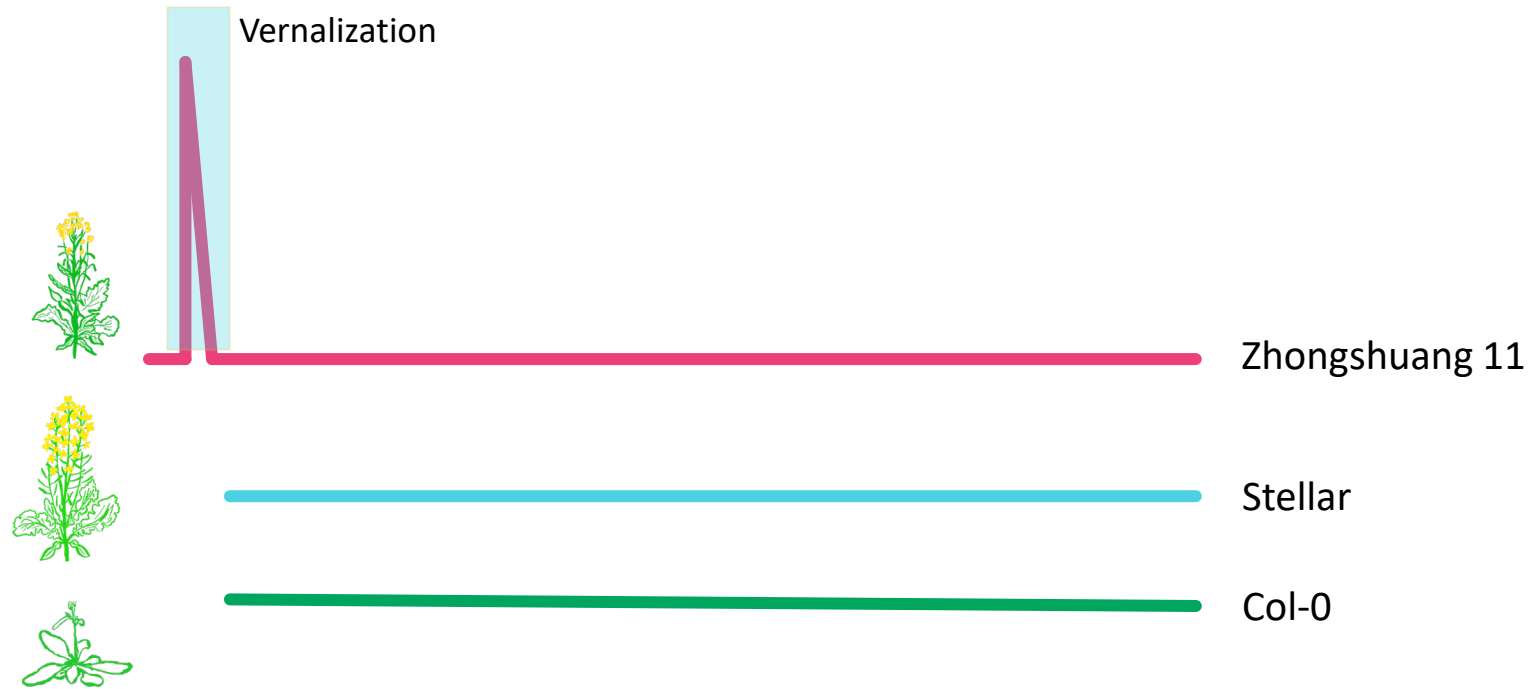
[For Flowering Genes]

So, what does all this  
mean?

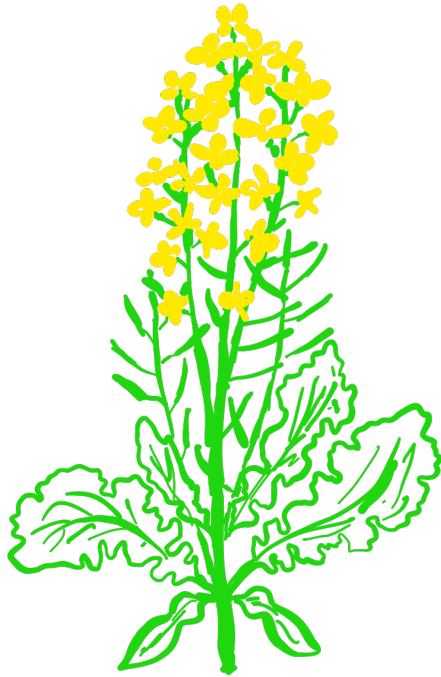
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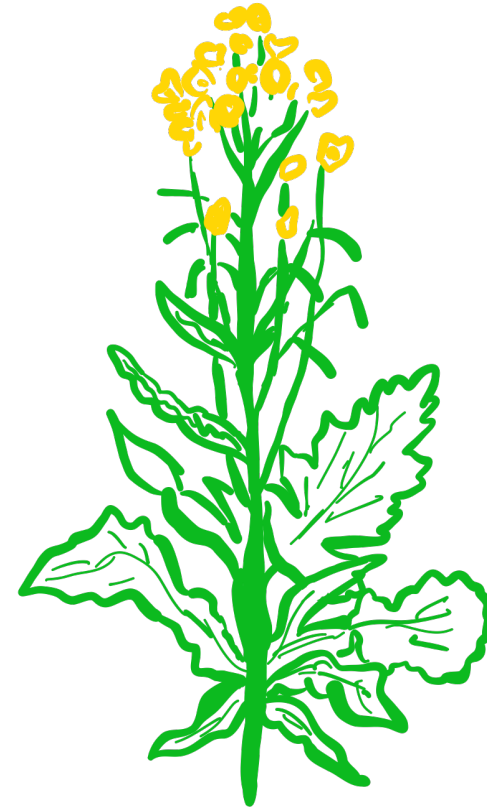
# Transcriptomic Relationships



[For Flowering Genes]



Stellar

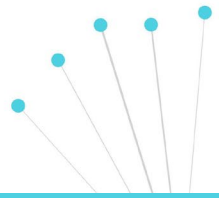


Zhongshuang 11

What is driving these divergent  
floral progressions?

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# SOC1/AGL20 Gene Regulatory Networks indicate rewiring



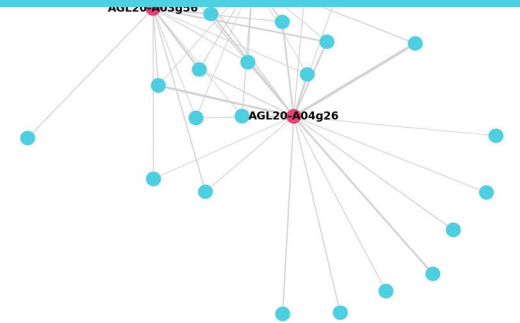
C genome copies



Talk to me : )

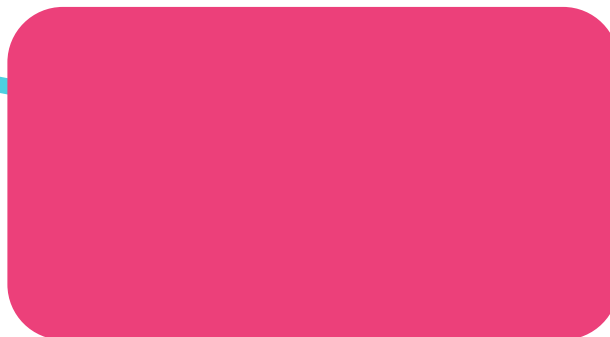


Stellar



Zhongshuang 11

# A tale of two explanations



**SOC1**



A tale of two explanations

# Last two years of my PhD



# Thanks

Richard Morris

Rachel Wells

Ruth Kristianingsih

Hugh Woolfenden

Aileen Magillin

Melissa Tomkins

Azam Lashkari

Jared Carpenter

Franziska Hoerbst

Ruth Veevers

Georgia Yiasoumi

Pirita Paajanen

