

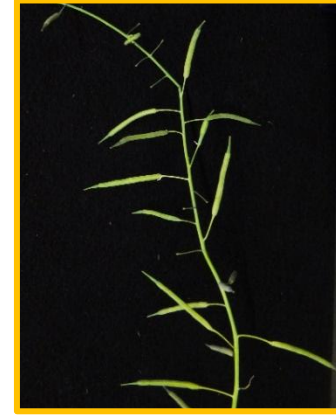
In Need of Arrest

Understanding floral duration in OSR

Tom Bennett

Centre for Plant Sciences, University of Leeds

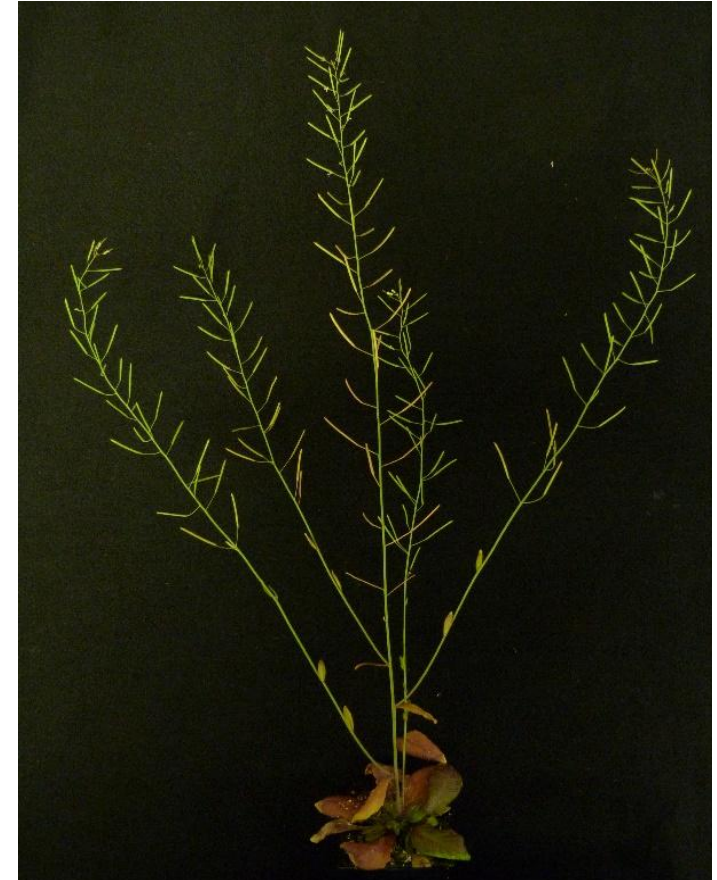
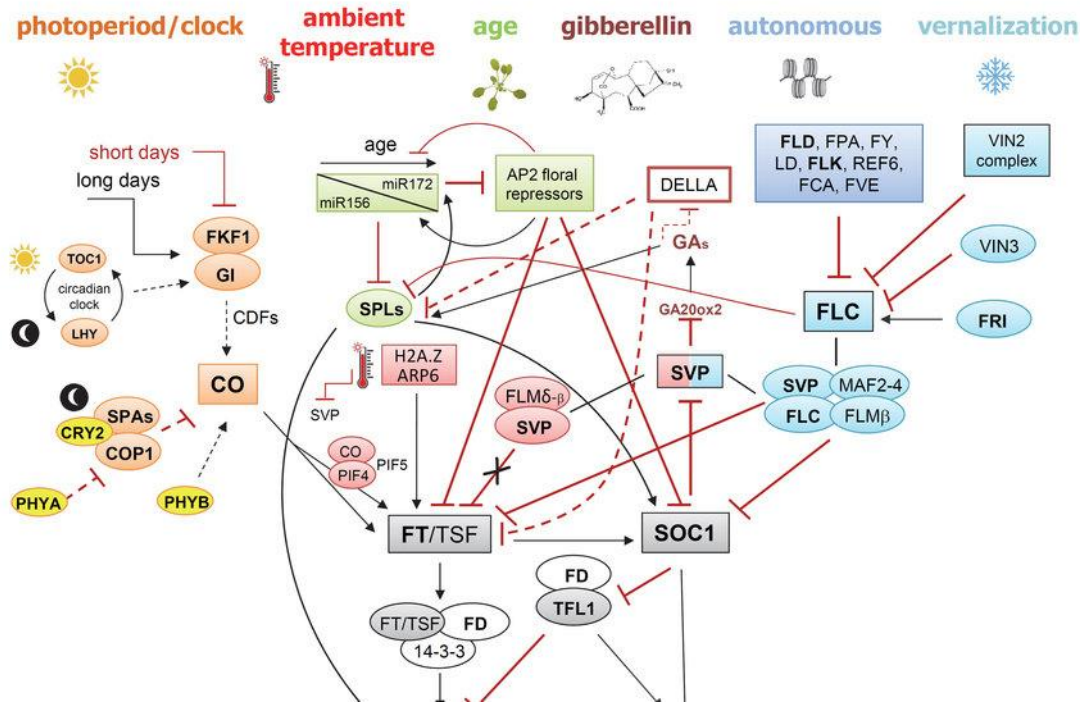
Hitting the target



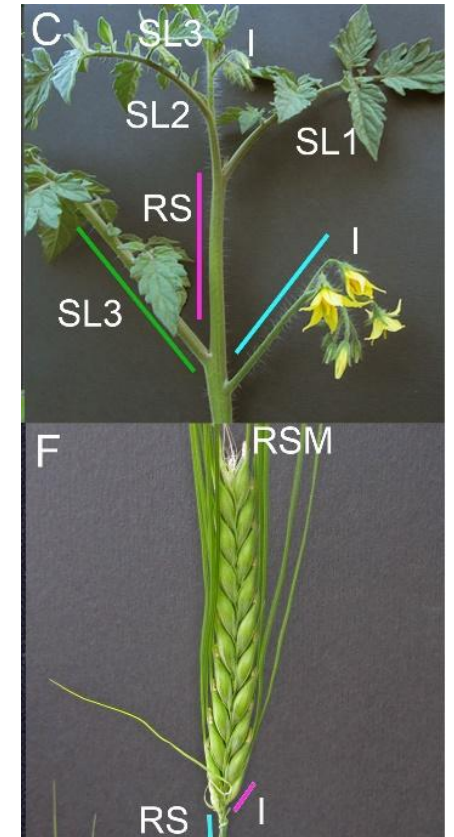
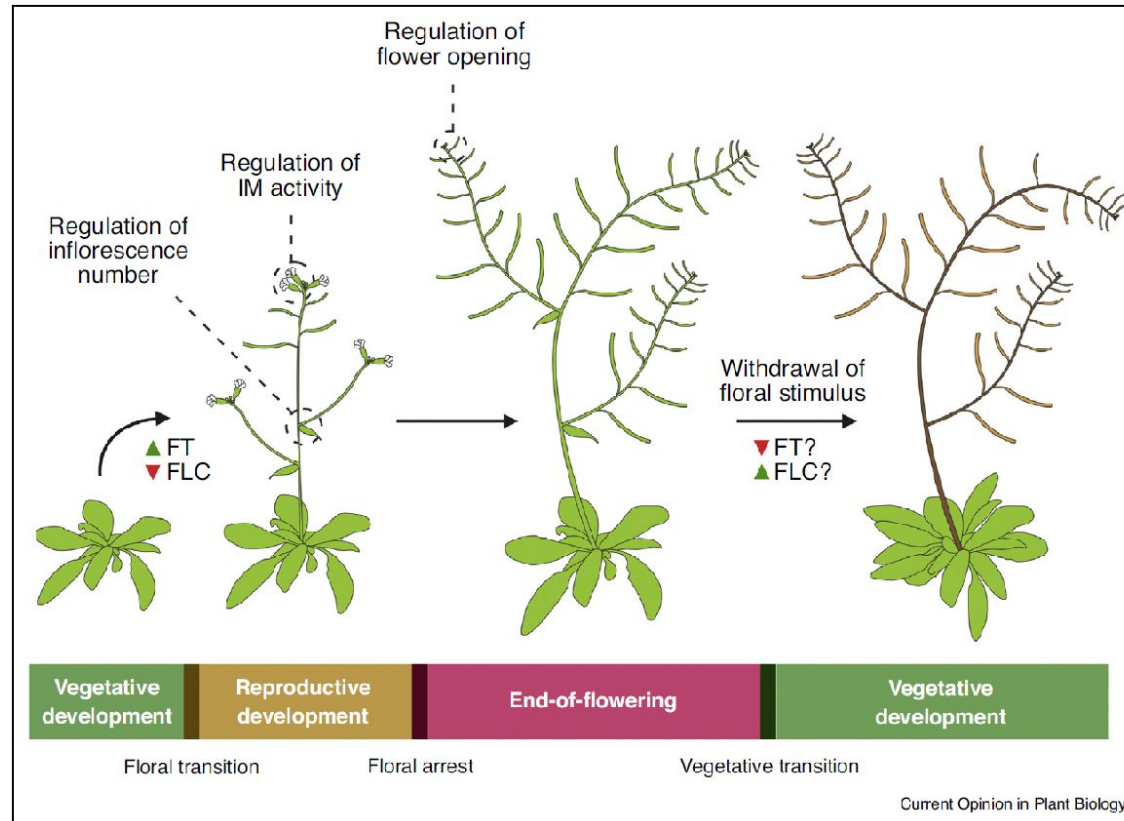
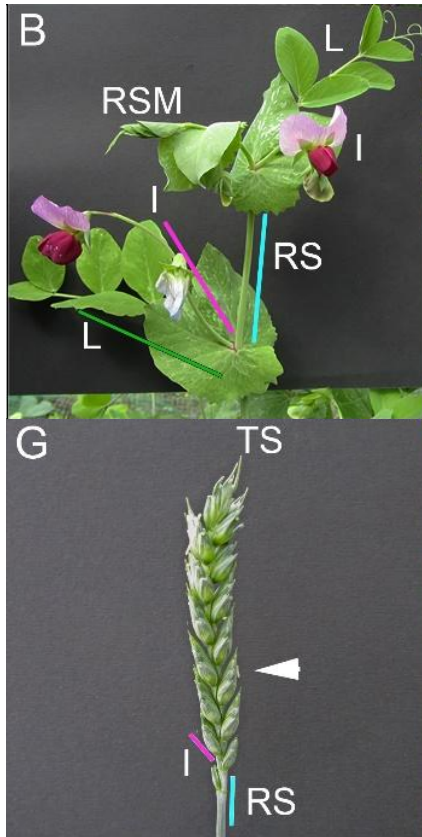
Inflorescences → Flowers → Fruits → Seeds

- Developmental decisions that constrain seed-set occur months before seed-filling.
- Plants have little knowledge of future conditions when these decisions are made.
- So how do plants determine the correct number of flowers, fruit and seed to make?

How, when and why do plants start and stop flowering?



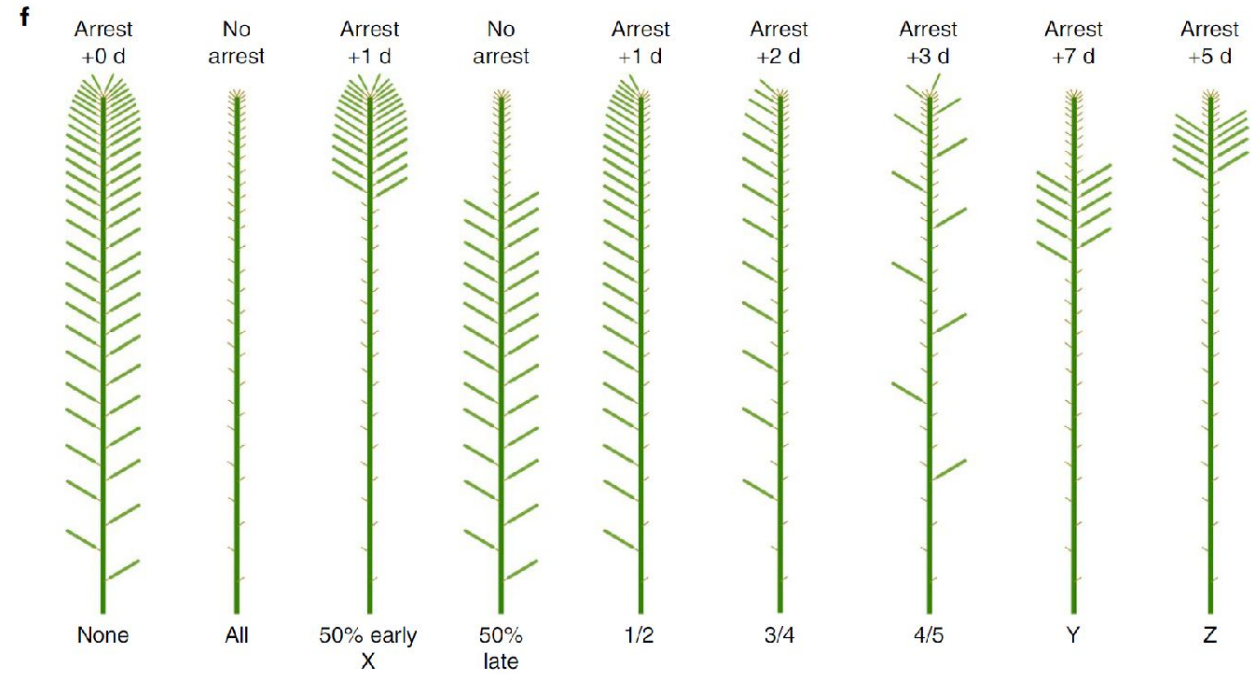
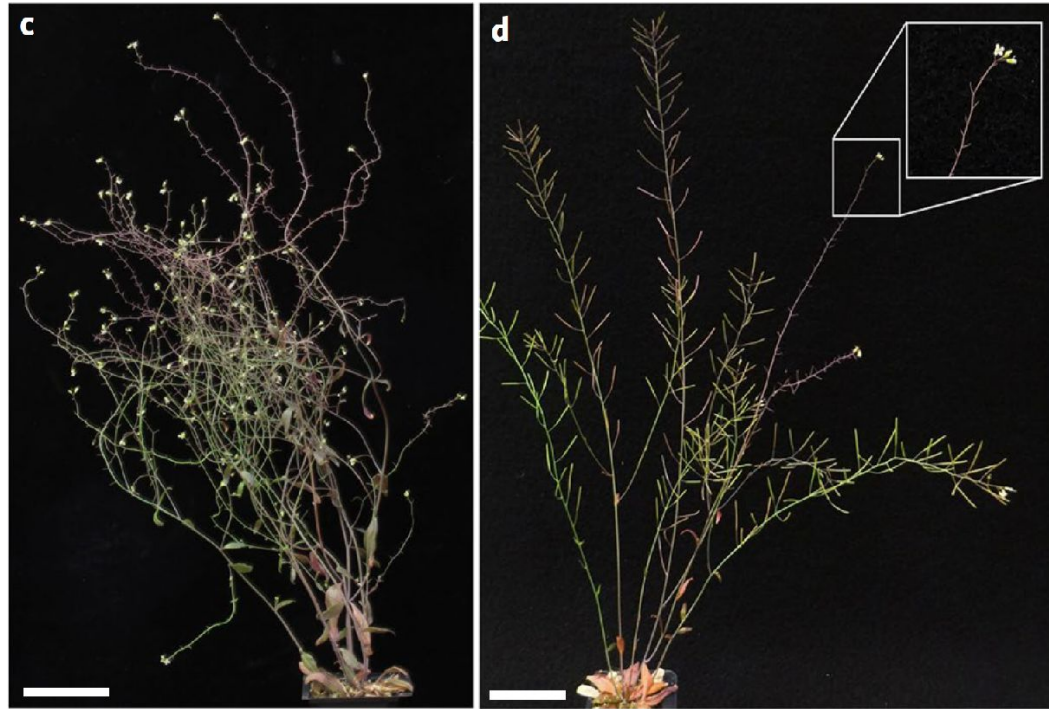
When do plants stop flowering?



Gonzalez-Suarez et al, Curr Opin Plant Biol, 2020

- When they stop opening flowers, right?
- What is the relevant control point?

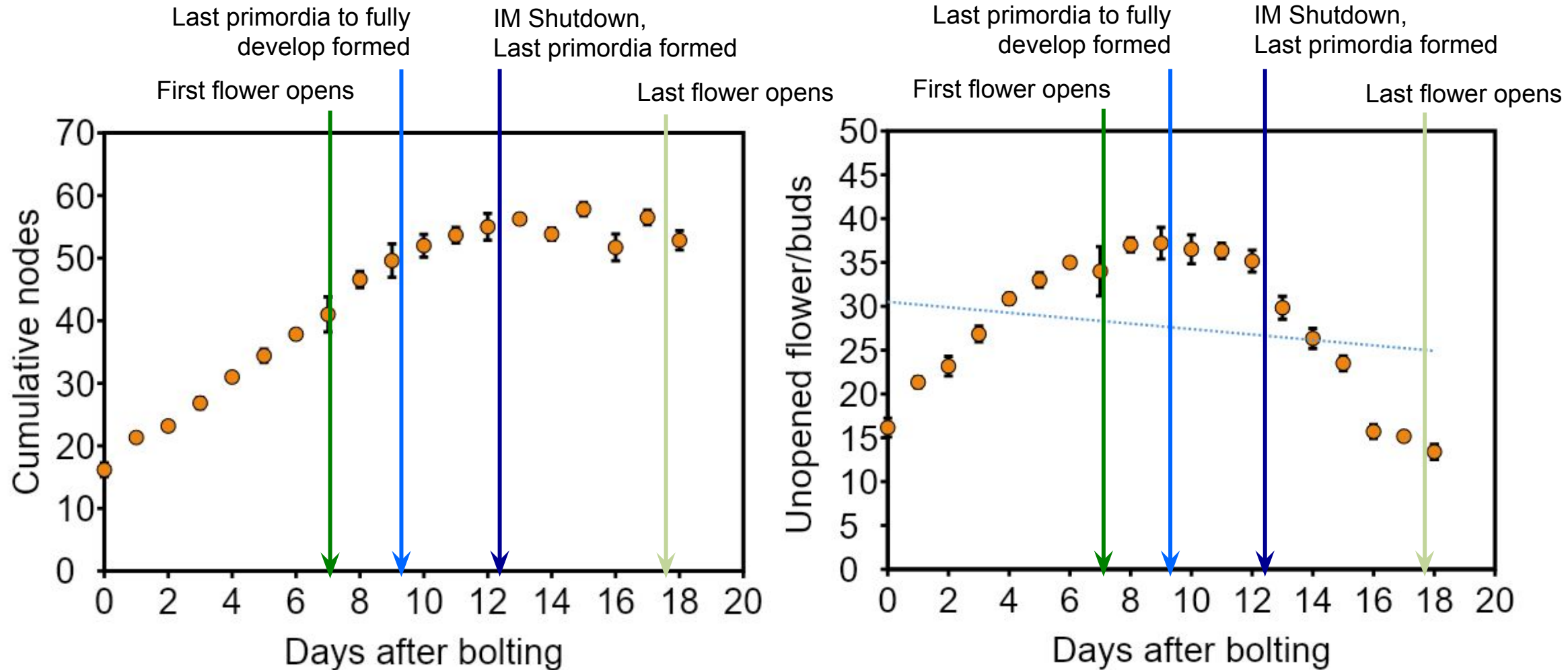
How do plants stop flowering?



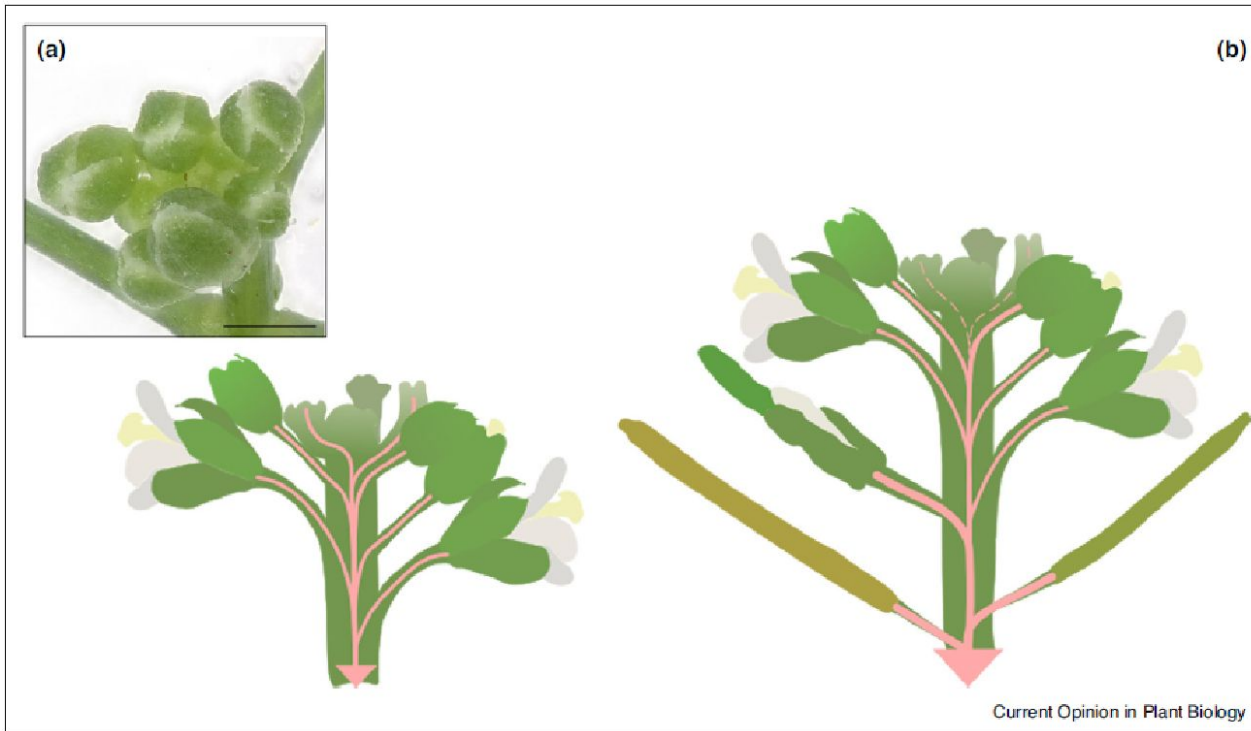
Ware et al, Nature Plants, 2020

- In Arabidopsis, recently produced fruit cause arrest in inflorescences.
- But what is actually happening here?

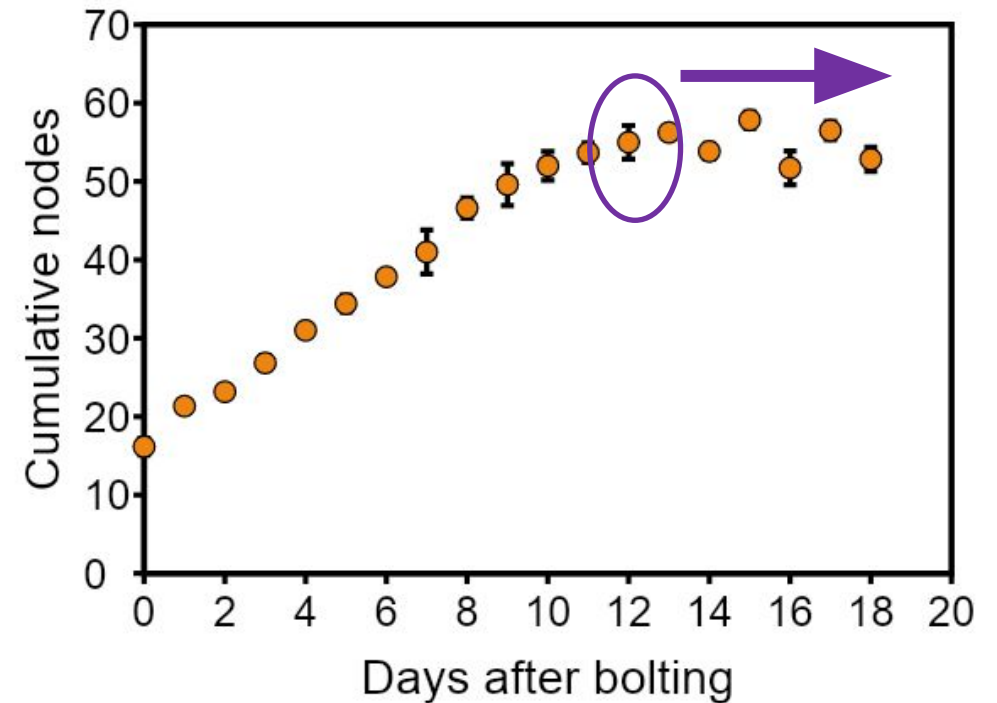
The life and times of an inflorescence



How, when and why do plants stop flowering?



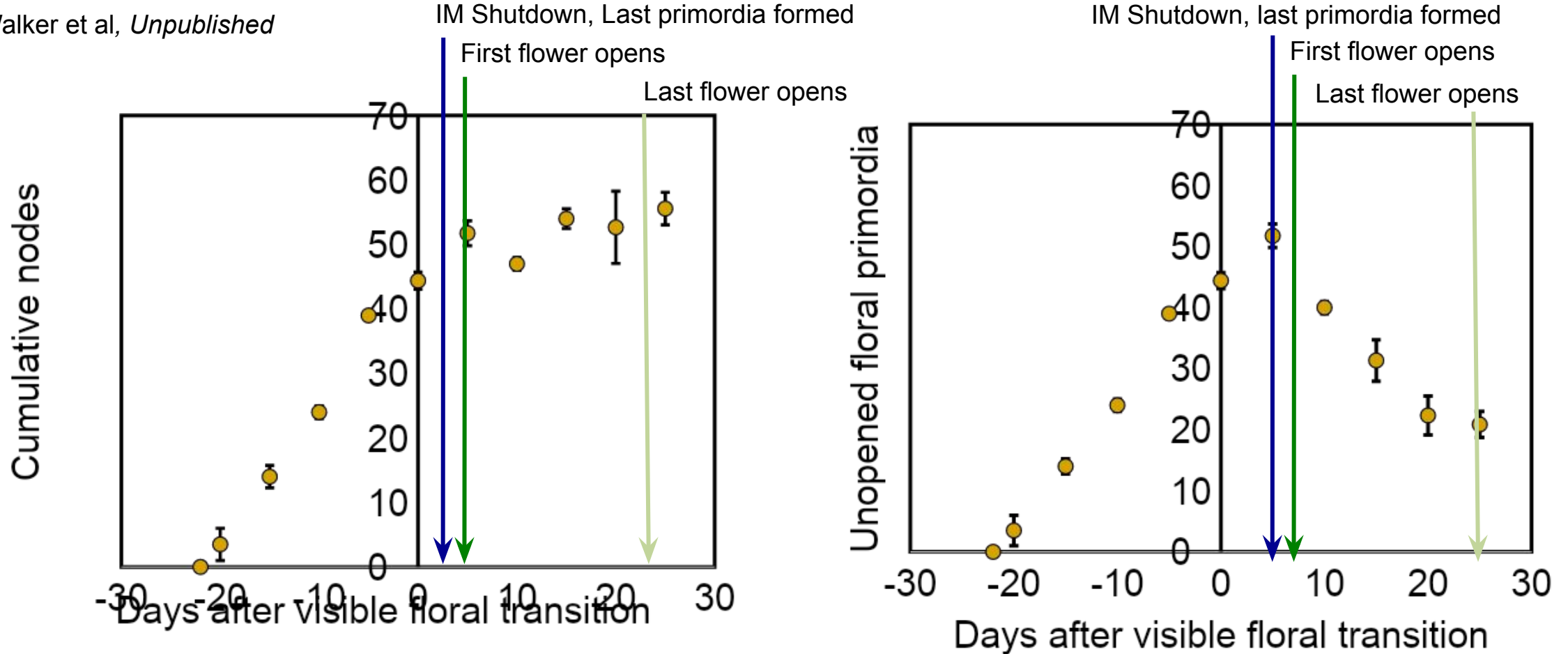
Gonzalez-Suarez et al, Curr Opin Plant Biol, 2020



- In Arabidopsis, visible end-of-flowering occurs by recent fruit inhibiting further flower opening.
- But IMs had already arrested, limiting total flower production.
- Yield potential and realisation.

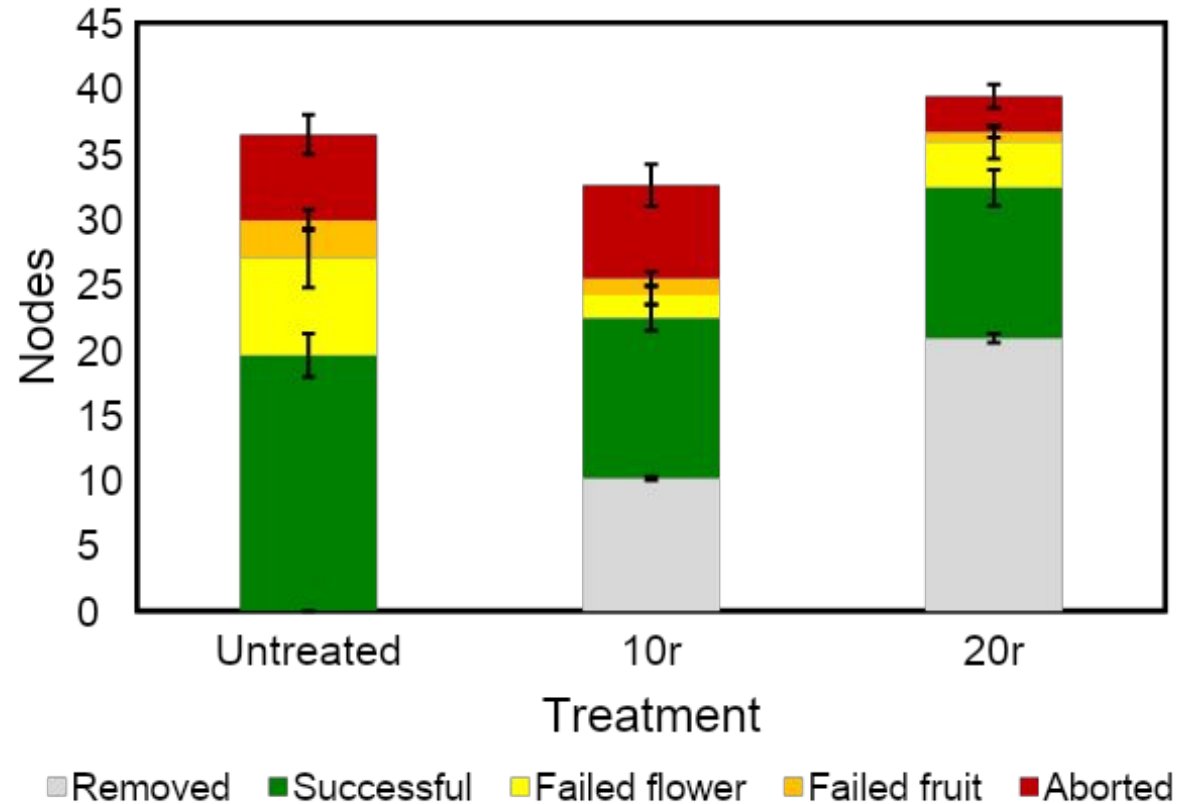
The life and times of an OSR inflorescence

Walker et al, *Unpublished*



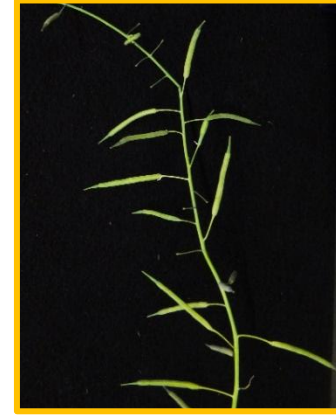
- When it 'flowers', all OSR is doing is opening flowers it has already made.
- Yield potential is determined exceptionally early.

Carpic dominance in OSR



- Late in Arabidopsis inflorescence lifetime, recent fruit trigger *floral arrest* by inhibiting development of unopened floral primordia.
- Late in OSR inflorescence lifetime, do recent fruit trigger *fruit abortion* by inhibiting development of late floral organs?

Hitting the target



Inflorescences → Flowers → Fruits → Seeds

- Developmental decisions that constrain seed-set occur months before seed-filling.
- Plants have little knowledge of future conditions when these decisions are made.
- So how do plants determine the correct number of flowers, fruit and seed to make?

Acknowledgements

Bennett Lab

Catriona Walker
Maxime Josse
Darren Machin
Cara Wheeldon
Mary McKay
Pablo Gonzalez
Ciara Danes



Collaborators

Dave Nelson (Riverside, US)
Mark Waters (Perth, AUS)
Caroline Gutjahr (Munich, DE)
Junko Kyojuka (Tohoku, JP)
Phil Brewer (Adelaide, AUS)
Zoe Wilson (Nottingham, UK)
Lars Ostergaard (JIC, UK)
Andrea Harper (York, UK)
Colin Osborne (Sheffield, UK)
Sarah McKim (Dundee, UK)
Adam Price (Aberdeen, UK)

Pete Berry (ADAS)
Sarah Kendall (ADAS)
Laura Davies (ADAS)
Klaus Oldach (KWS)