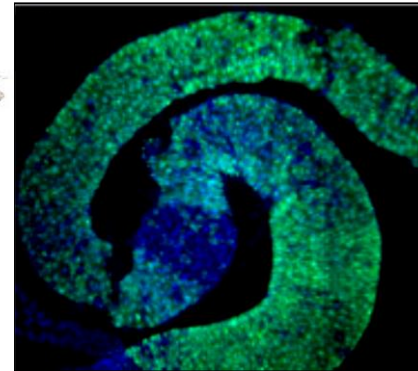


Stem Cell Practical Course
Master M2 Gene, Cell & Development

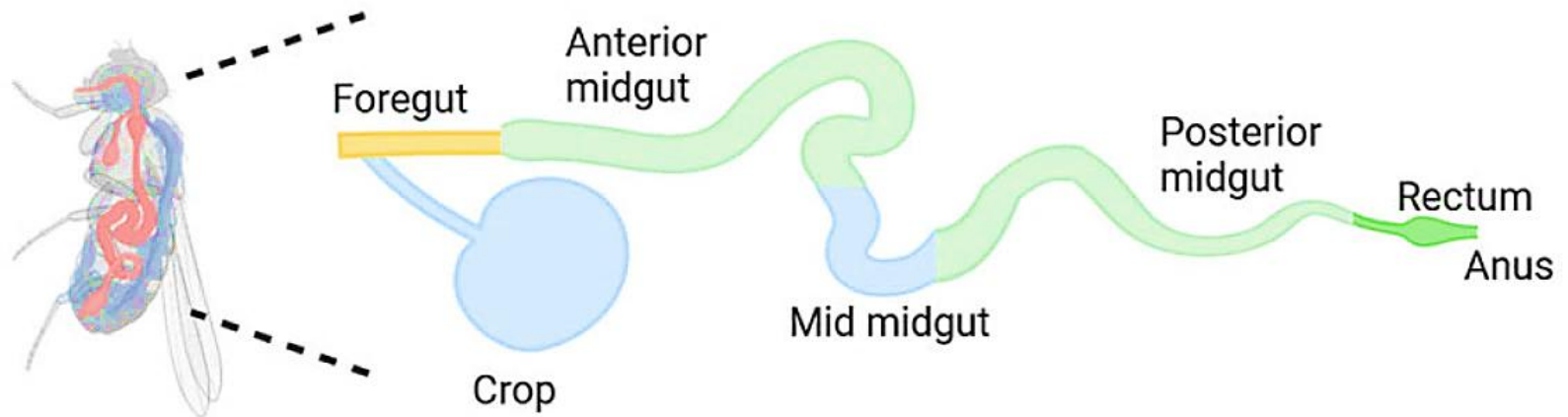
“ Homeostasis of *Drosophila* adult midgut ”



The team

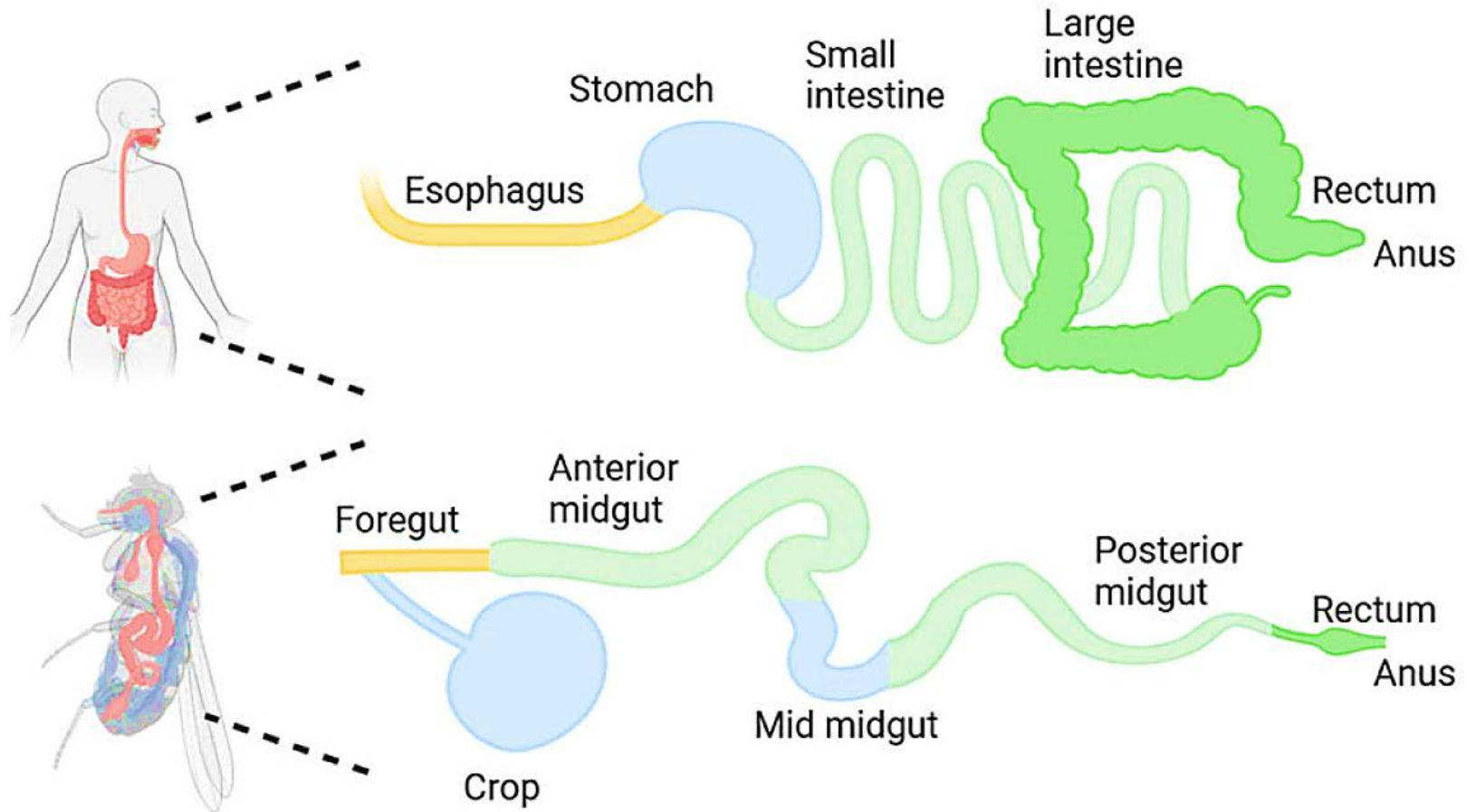
- **Isabelle Guénal** professor UVSQ organization, evaluation
- **Aude Jobart-Malfait** Cymages facility UVSQ imaging, FACS
- **Emma Le Guyader** graduate student UPSay imaging, FACS
- **Vincent Rincheval** researcher engineer UVSQ infections, imaging, FACS
- **Sébastien Szuplewski** assistant-professor UVSQ imaging, organization, evaluation

The *Drosophila* digestive tract



Park et al., 2025

The *Drosophila* digestive tract

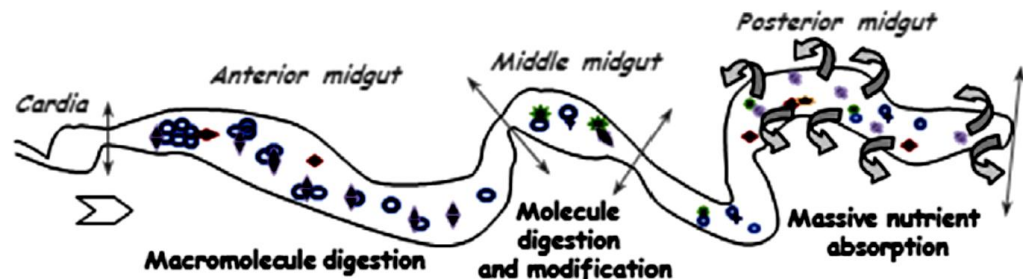
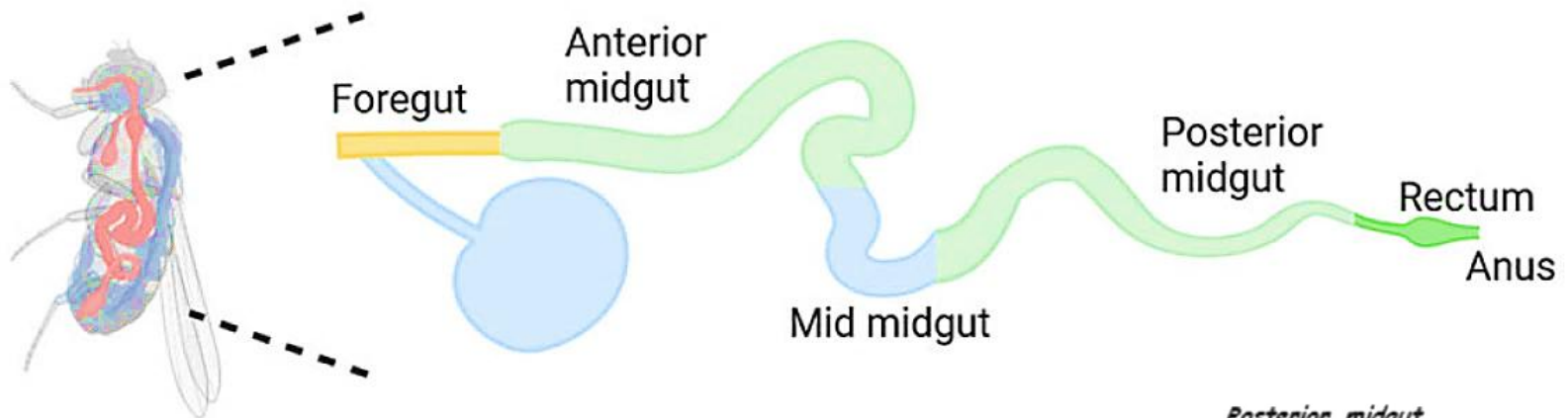


The *Drosophila* midgut

WT

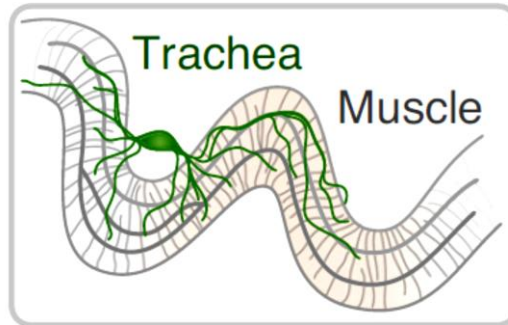


Kim et al., 2017



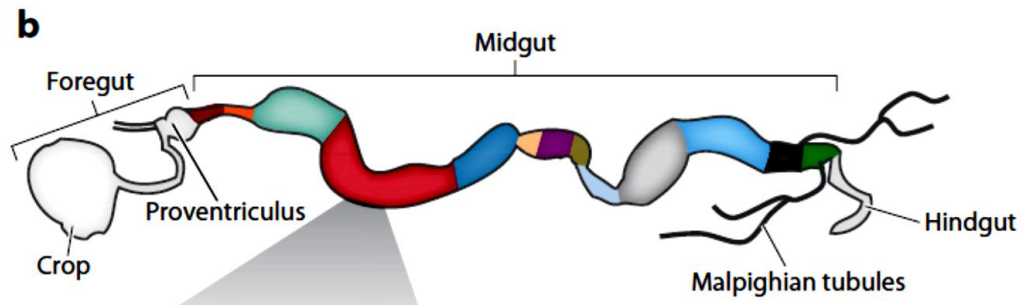
Buchon & Osman, 2015

The midgut cell populations



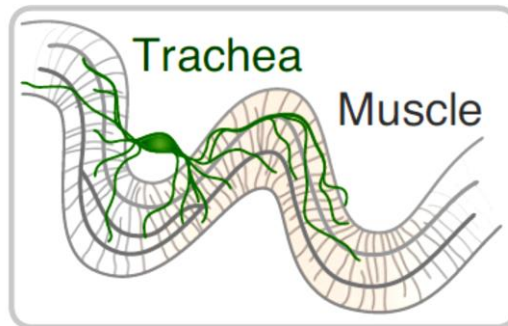
Outer layer: longitudinal muscle
Inner layer: circular muscle

Guo et al., 2016



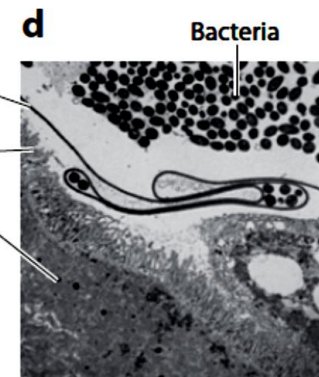
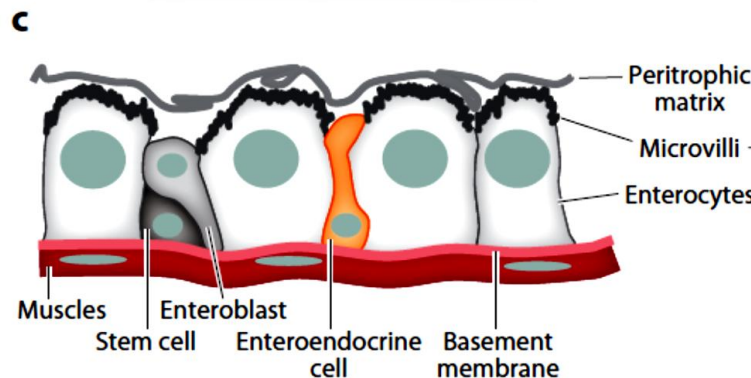
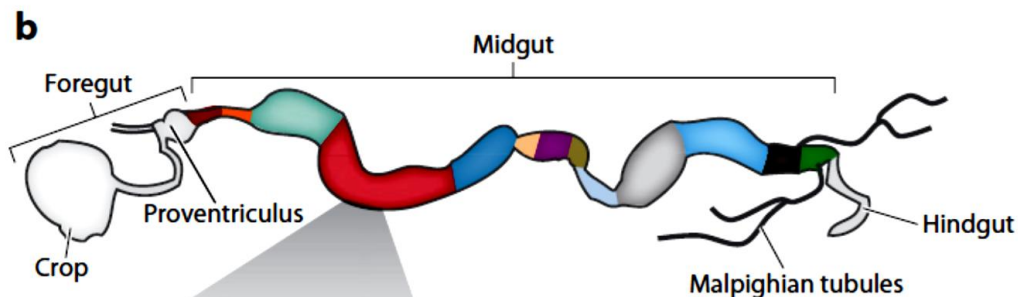
Lemaitre & Miguel-Aliaga, 2013

The midgut cell populations



Outer layer: longitudinal muscle
Inner layer: circular muscle

Guo et al., 2016



Lemaitre & Miguel-Aliaga, 2013

The midgut cell populations

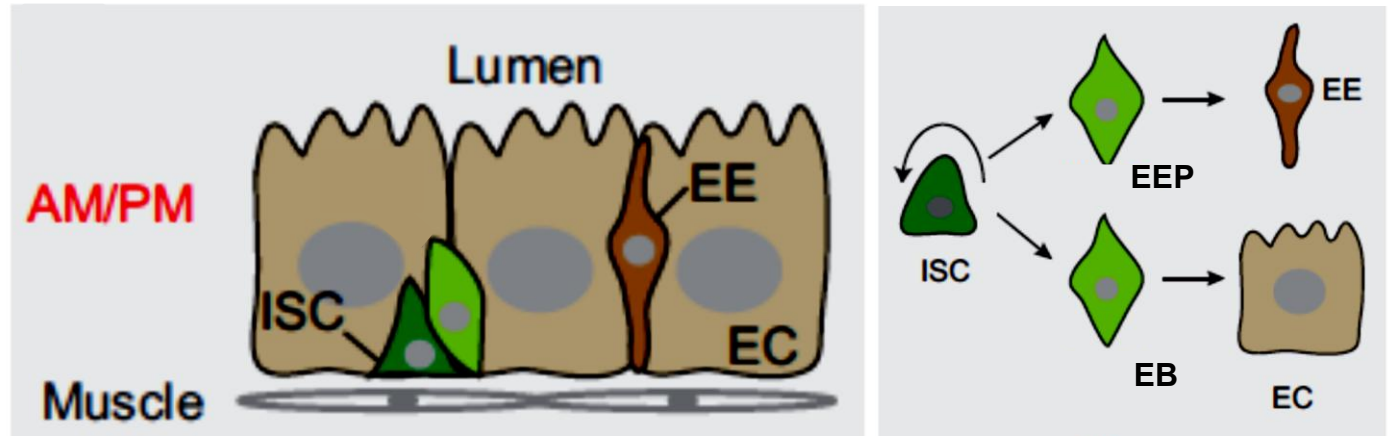
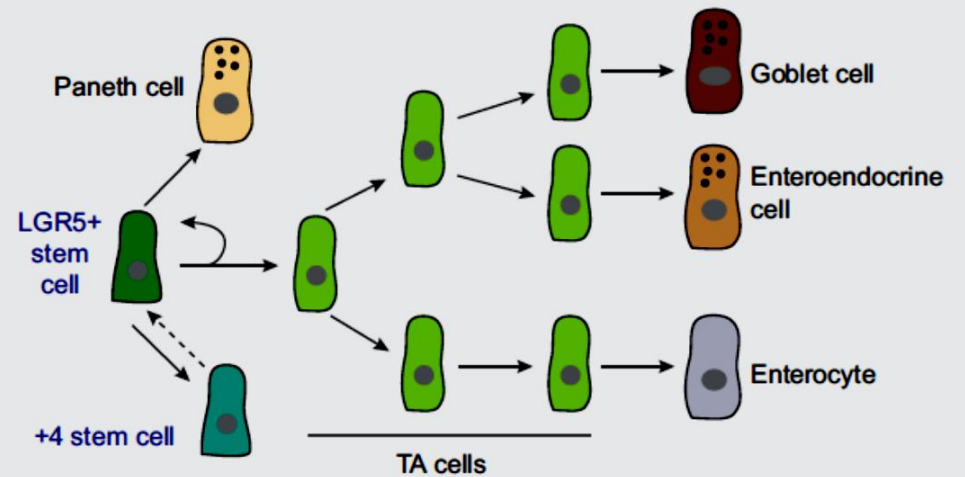
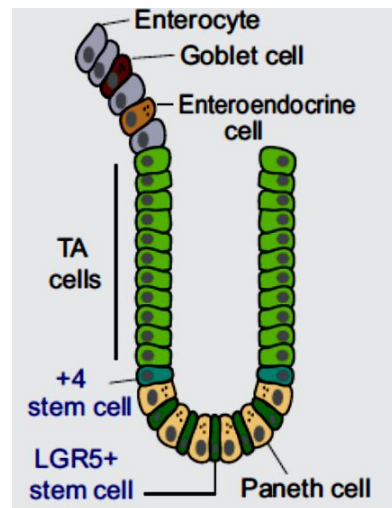
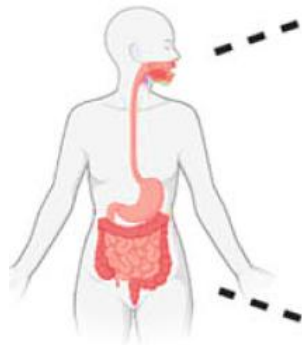
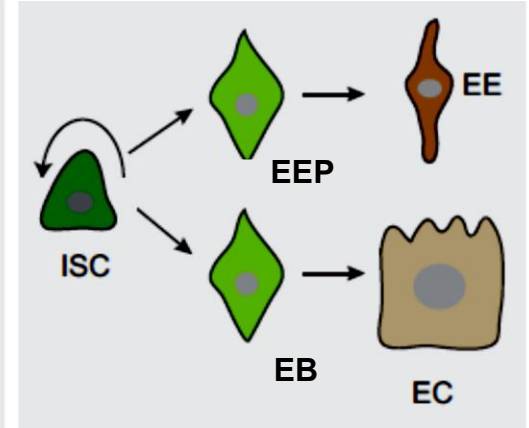
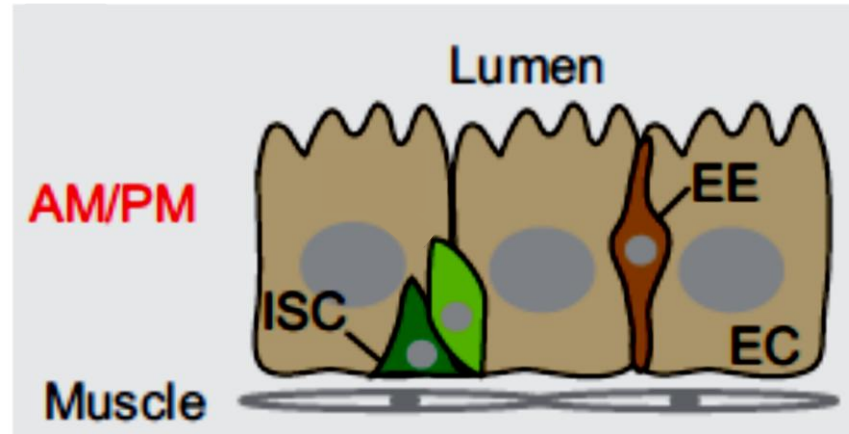


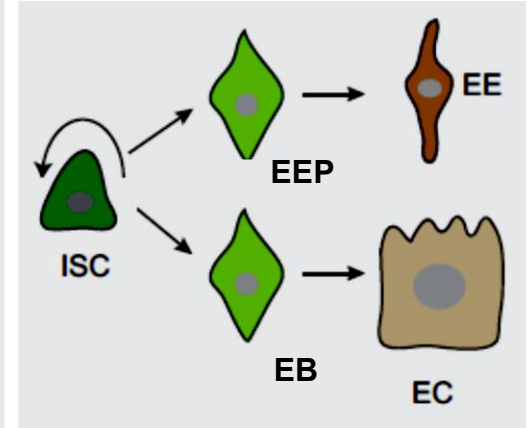
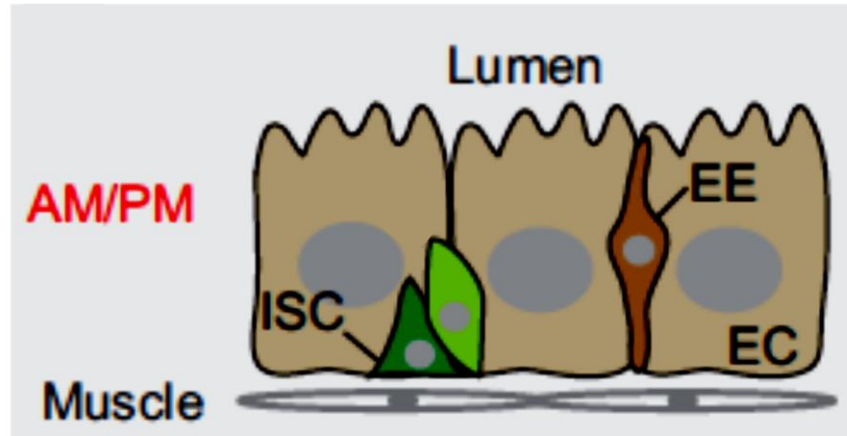
Abb.	Name	Function	Ploidy	Size	Abundance
ISC	Intestinal stem cell	Stem cells	diploid	small	few
EB EEP	Enteroblast Enteroendocrine progenitor	Progenitors	diploid	small	few
EE	Enteroendocrine cell	Hormone secretion	diploid	small	average
EC	Enterocyte	Nutrient absorption	polyploid	large	large

The midgut cell populations



Adapted from Li & Jasper, 2016

Aims of the project

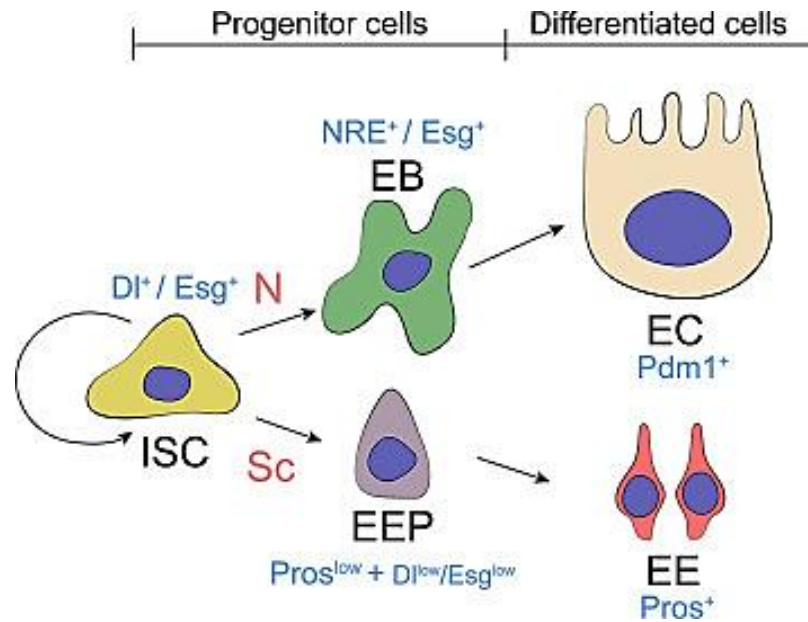


Oral infection with
Pectobacterium carotovorum/
Erwinia carotovora caratovora 15
(Gram-)

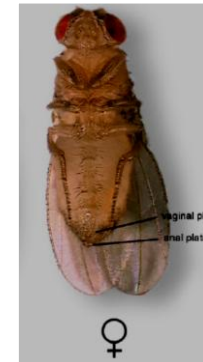
2 days



Material

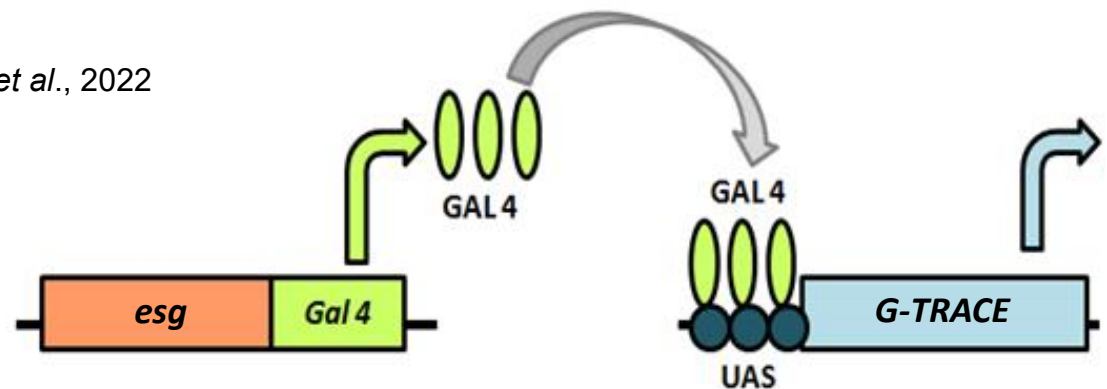


Jin et al., 2022



X

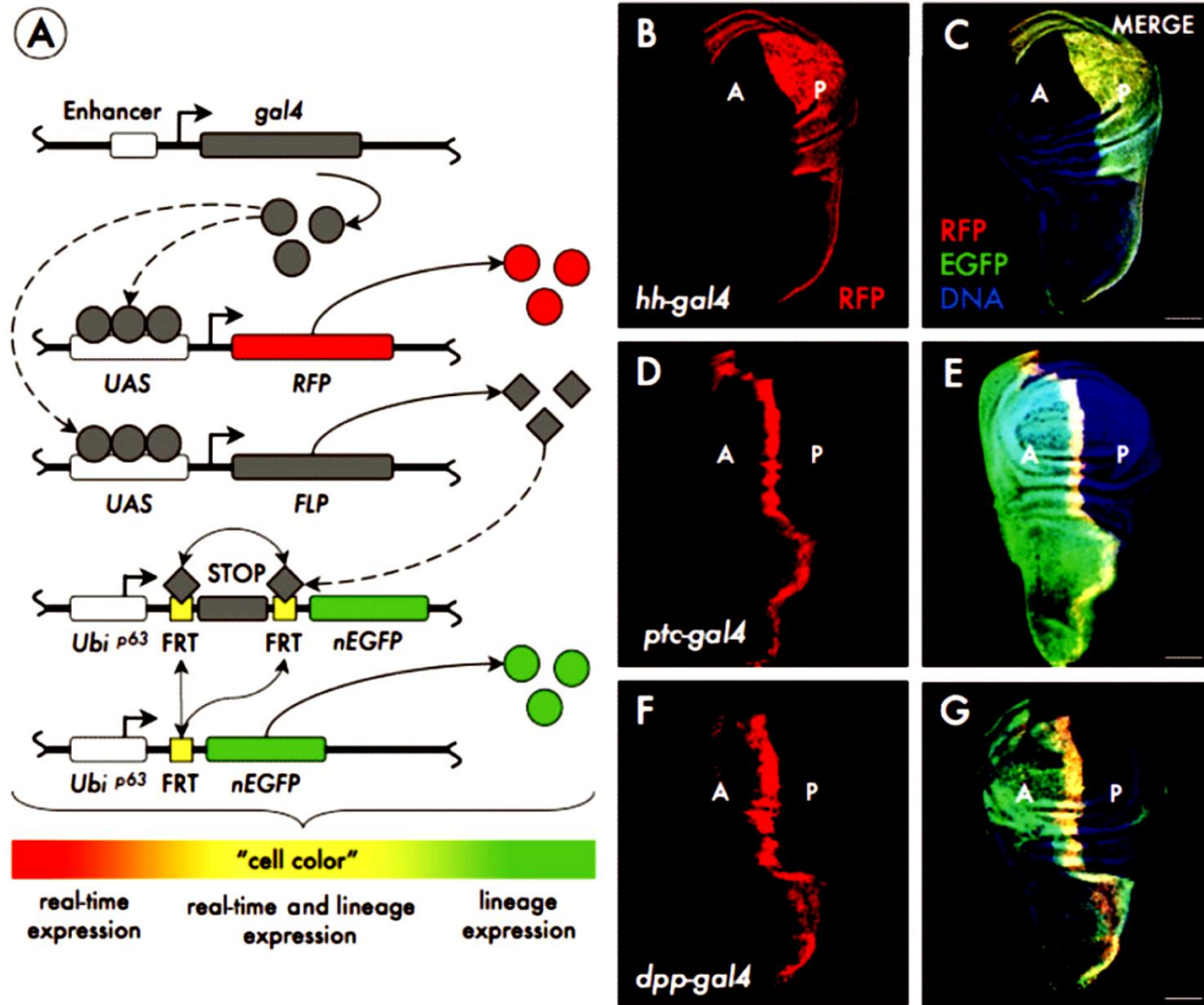
Offspring



Adapted from St Johnston, 2002

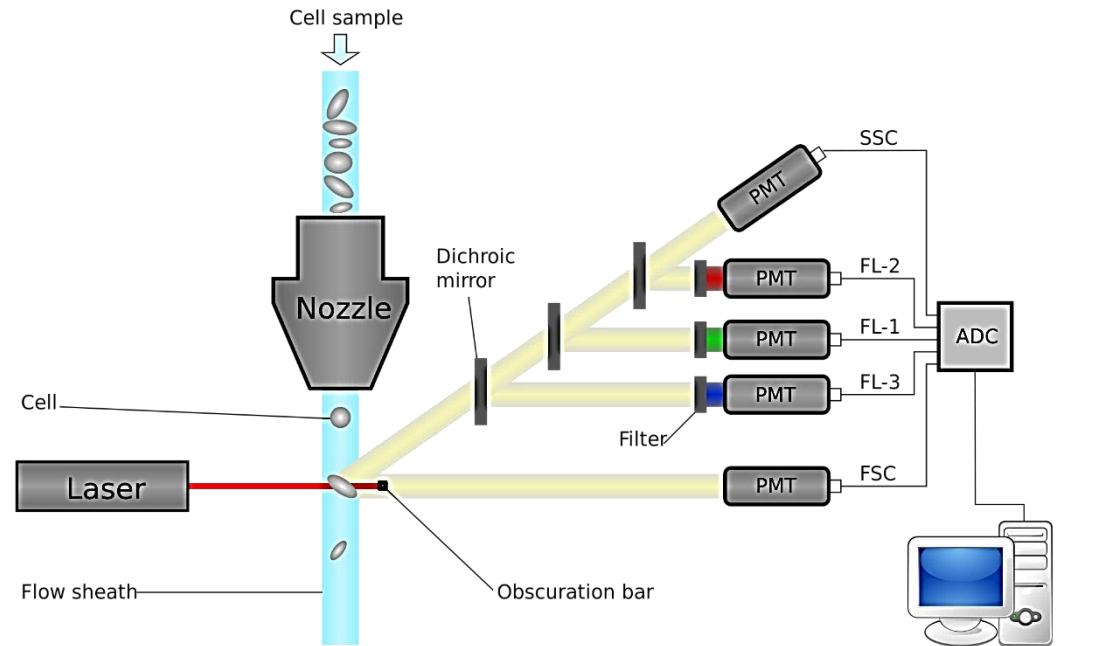
Material

GAL4 Technique for Real-time and Clonal Expression



Evans et al., 2009

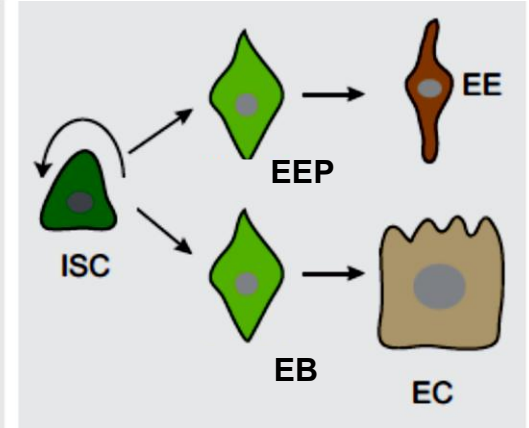
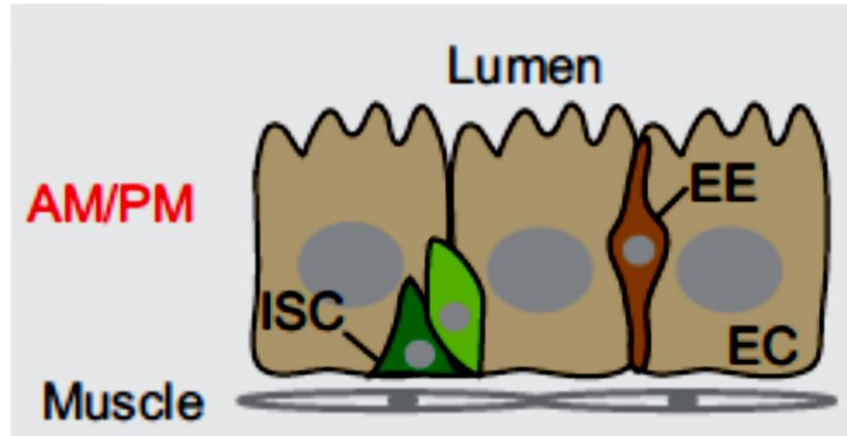
Method 1: Flow cytometry



Analysis workstation

<http://en.wikipedia.org>

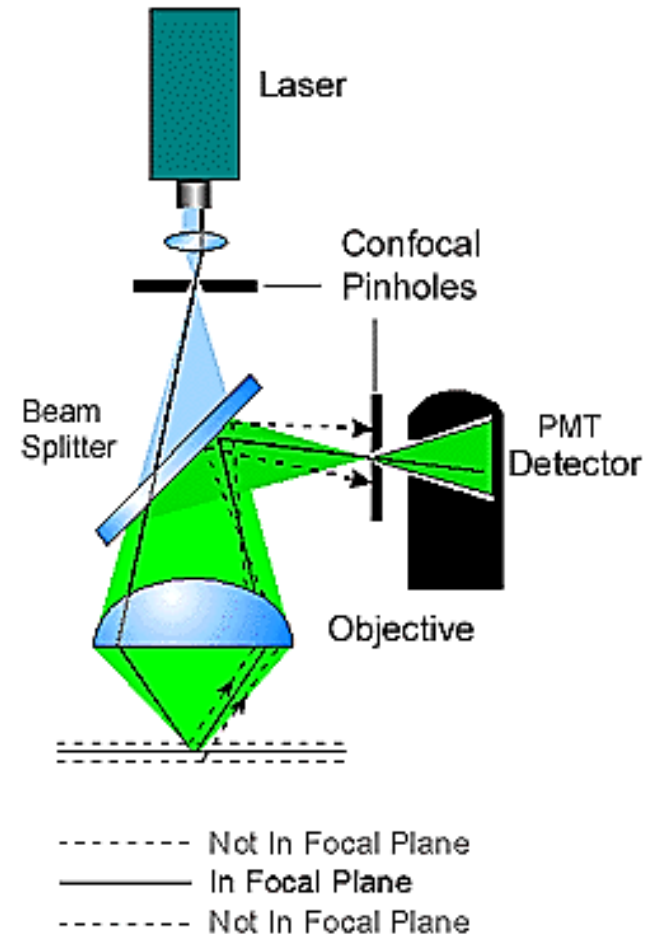
The midgut cell populations



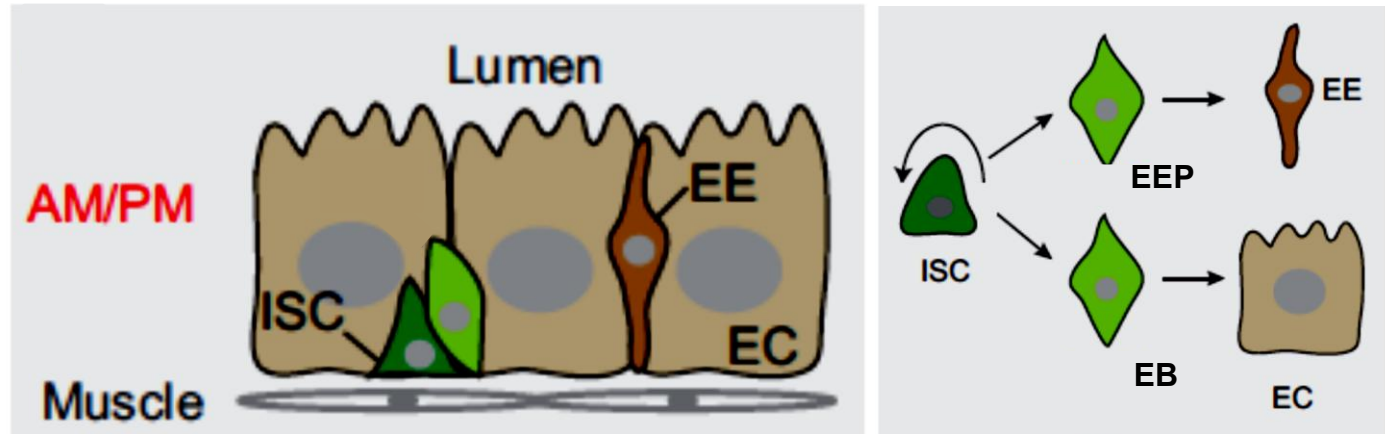
DRAQ5

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EC	Enterocyte	Nutrient absorption	polyploid	large	large

Method 2: Confocal microscopy



The midgut cell populations



Hoechst

Abb.	Name	Function	Ploidy	Size	Abundance
ISC	Intestinal stem cell	Stem cells	diploid	small	few
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