Mechanical stress and cell fate acquisition during zebrafish trunk neural crest cell migration

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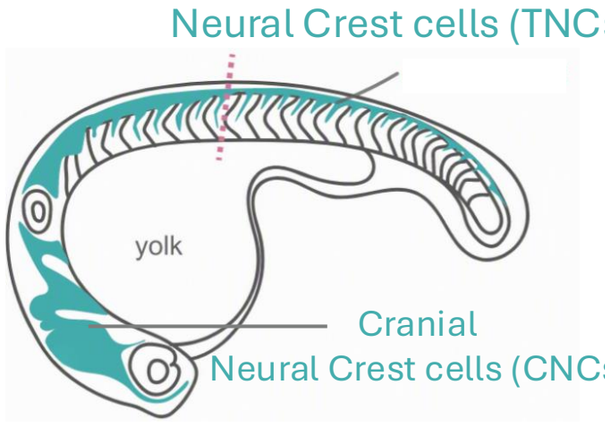
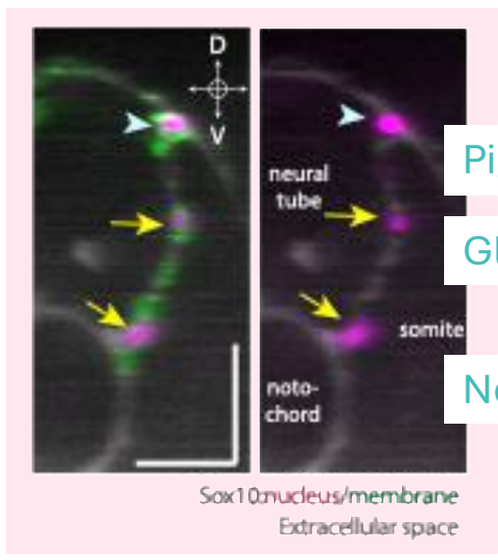
- **TNCs squeeze through tissues inquire various fates**

Scientific question

Trunk Neural Crest cells (TNCs)

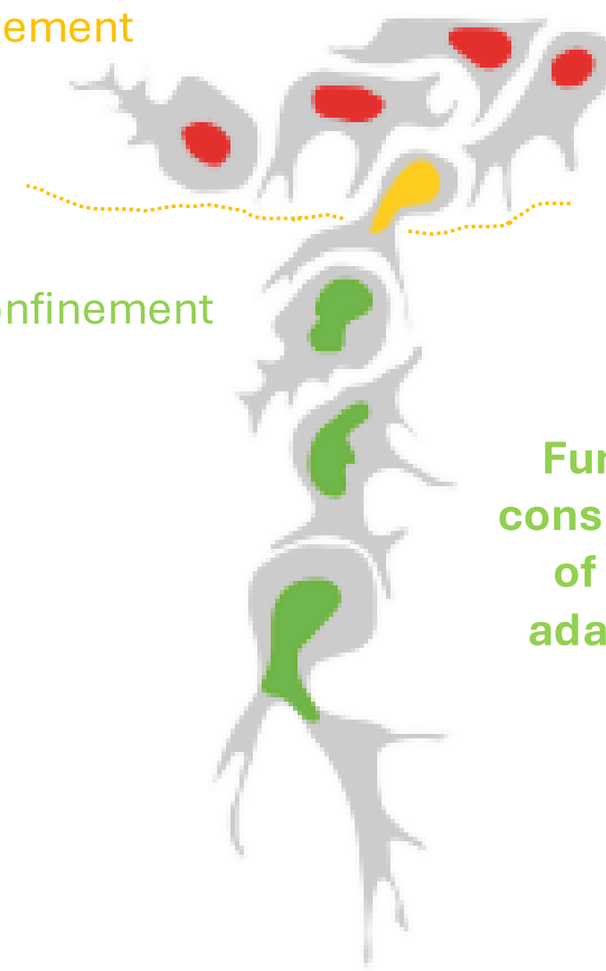




Pigment cells?

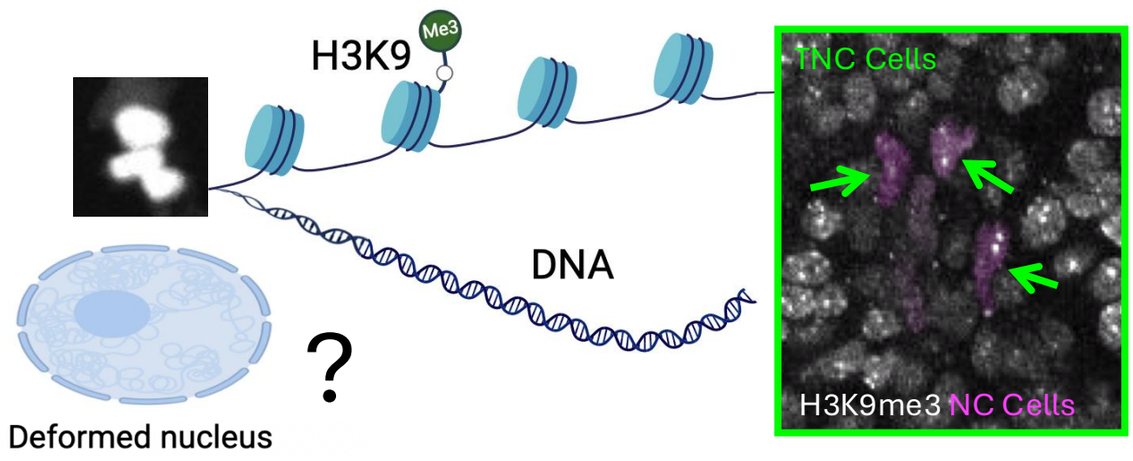
Glia cells?

Neuron?



Functional consequences of nuclear adaptation?

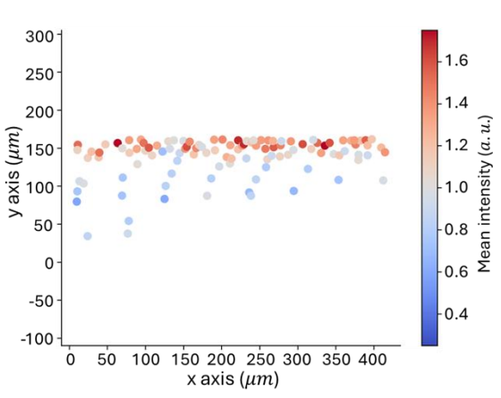
- **Nuclear deformation reorganises chromatin**



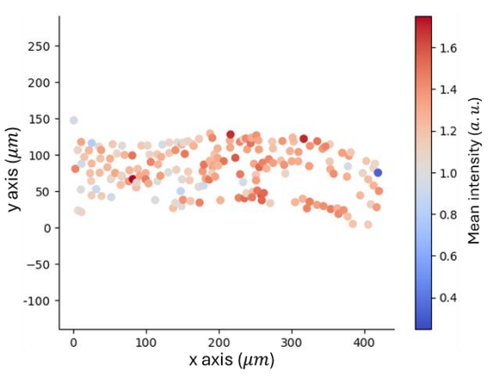
Does tissue confinement influence chromatin organisation and then the fate choices?

Heterochromatin is reduced in migratory TNCs But not in less confined or H3K9me3 OE mutant

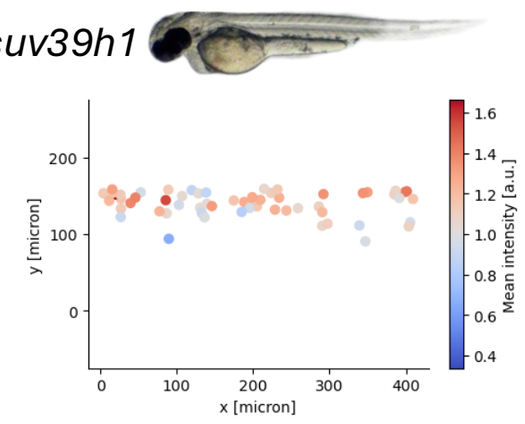
Control

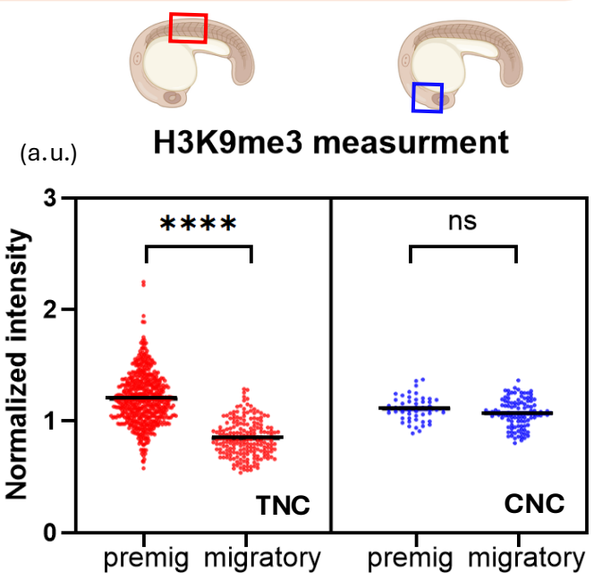


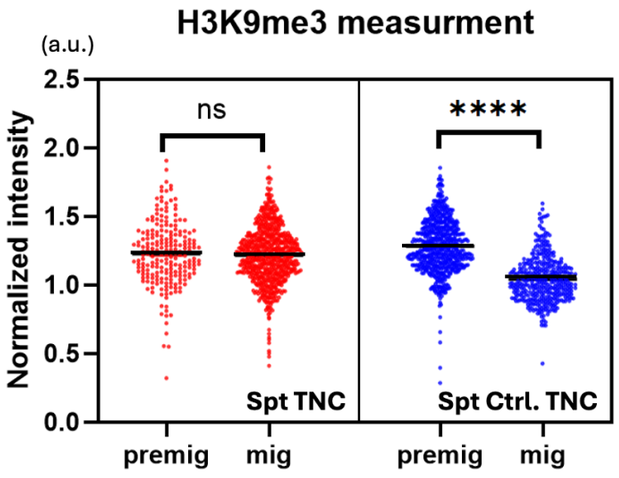
tbx16 (spt) (absent of somite mutant)

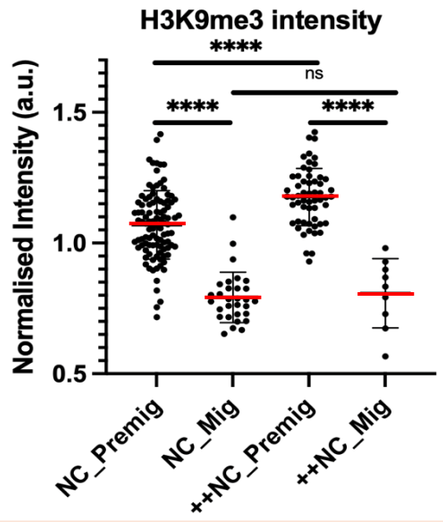


suv39h1 (overexpress methyltransferase)



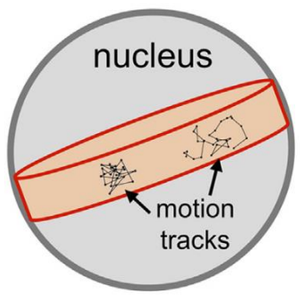


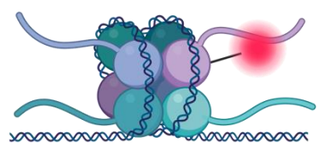


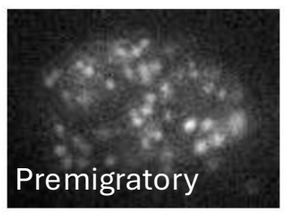


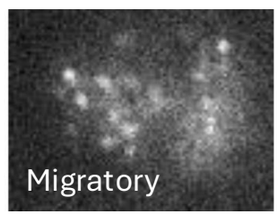
Using single-molecule imaging & live-reporter to track chromatin dynamics

Less space for H2B to move around after migration



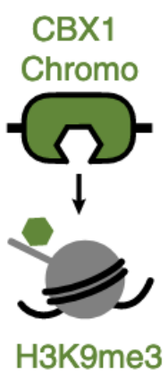


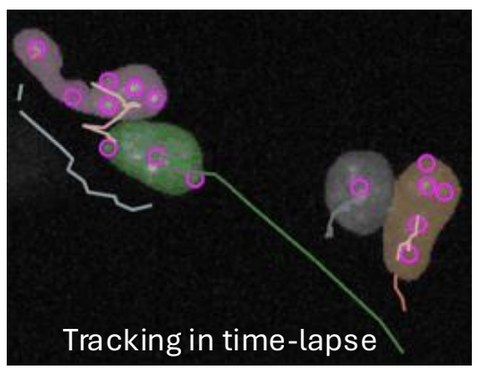


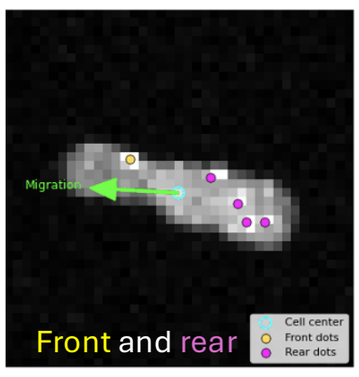


Chromatin loosening In migratory cells

Different phase behaviours during confinement

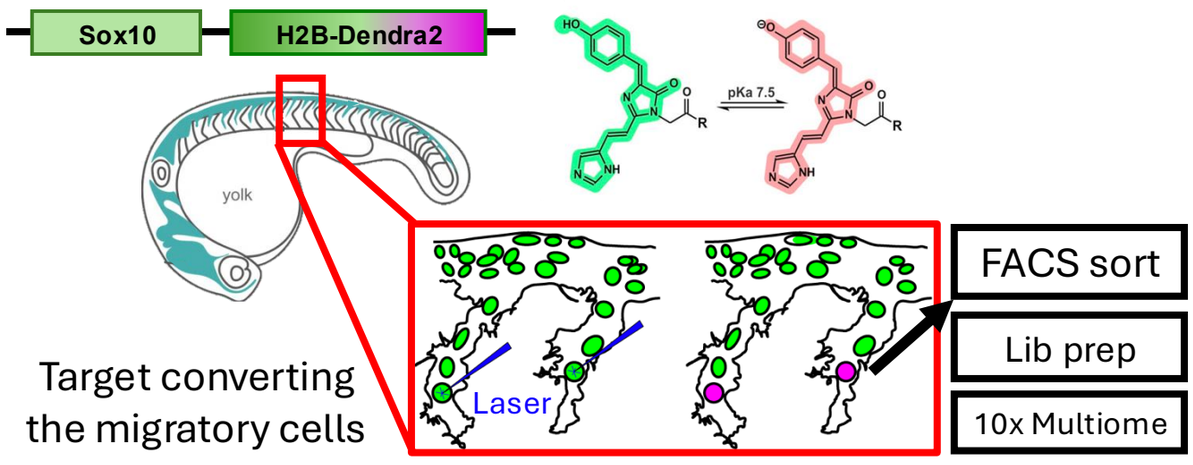






Current ongoing works:

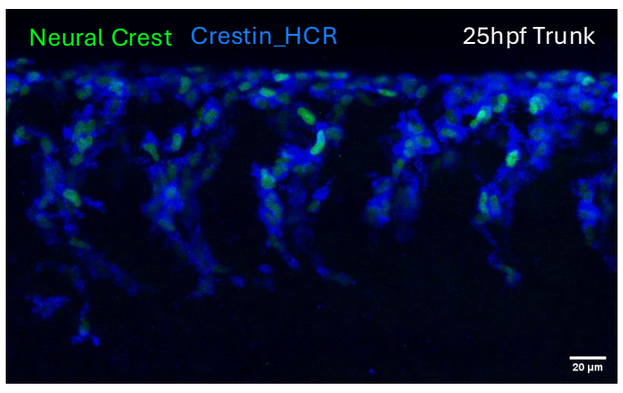
- Single-cell RNA and ATAC-Sequencing



Target converting the migratory cells

- *Ex-vivo* fish culture in squeezing PDMS devices

HCR provide fate specification info at any time-point



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