

MECHANICAL ANALYSIS OF CENTRAL NERVOUS SYSTEM

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Summary: During embryo development, the Central Nervous System (CNS) of *Drosophila* undergoes a condensation process, which is preceded by a retraction of the germ band. We here analyse the three dimensional displacement field of the CNS from images obtained through confocal microscopy of stained embryos.

We mechanically analysis of different regions of the CNS and compute the plausible tractions that enable such deformations in a quasi-static analysis between measured time-steps. This computation involves the solution of an inverse problem that takes the displacement field and retrieves the forces that better match mechanical equilibrium for an active material [1,2].

The results show the central and lateral regions of he CNS synchronise their horizontal displacements along the ventral-posterior axis in a different manner, the traction fields are relatively similar, and exhibit an oscillatory behaviour.

References

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