Role of Cadherins during embryonic immune cell migration

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INTRODUCTION

- Embryonic development in *Drosophila melanogaster* involves active **migration of immune cells** along predetermined routes leading to tissues that require immune cell driven morphogenetic remodeling [4].
- Recent preliminary data from live imaging of embryos indicate specific forms of immune cell (macrophage) movements reminiscent of **convergence extension** seen during tissue elongation
- Convergence extension occurs through cell intercalation or collective migration or a combination of both [5]. In our case, we can observe both events during macrophage migration.
- During **cell intercalation,** adherens junction proteins undergo changes in junctional localization in a planar polarized manner [1],[2],[4],[6]

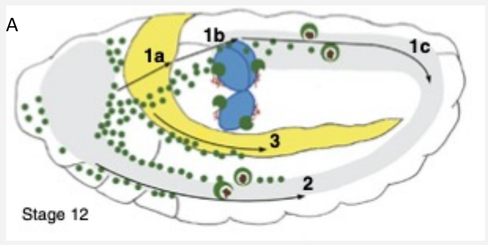


Figure 1: Macrophage migratory routes [4]

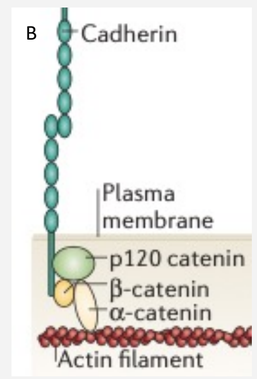


Figure 2: Adherens junction proteins [3]

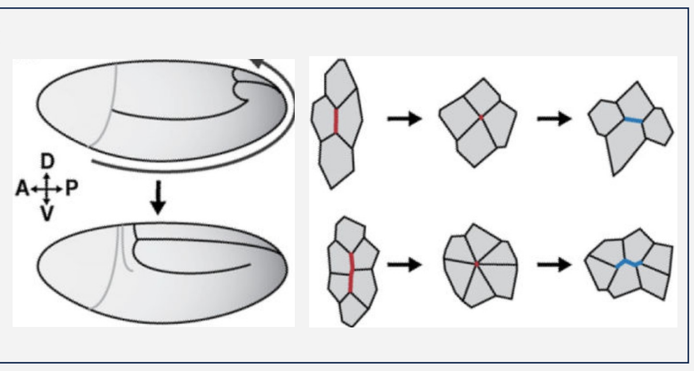
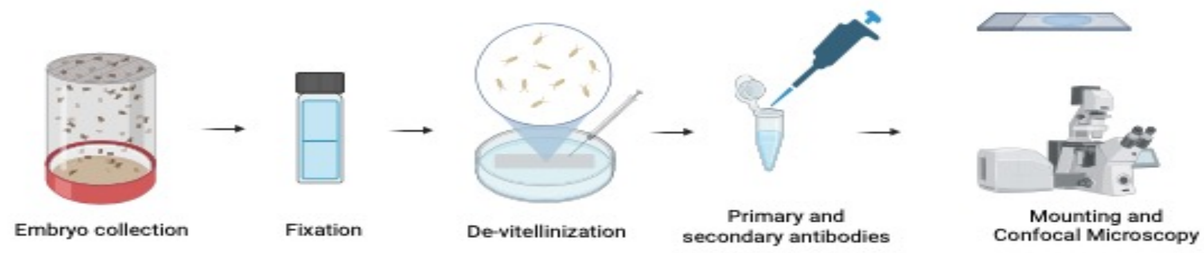


Figure 3: Convergence extension and cell intercalation [6]

AIMS

- Quantitatively describe the localization and levels of adherens proteins at macrophage junctions using immunofluorescence staining and confocal microscopy

METHODS



RESULTS

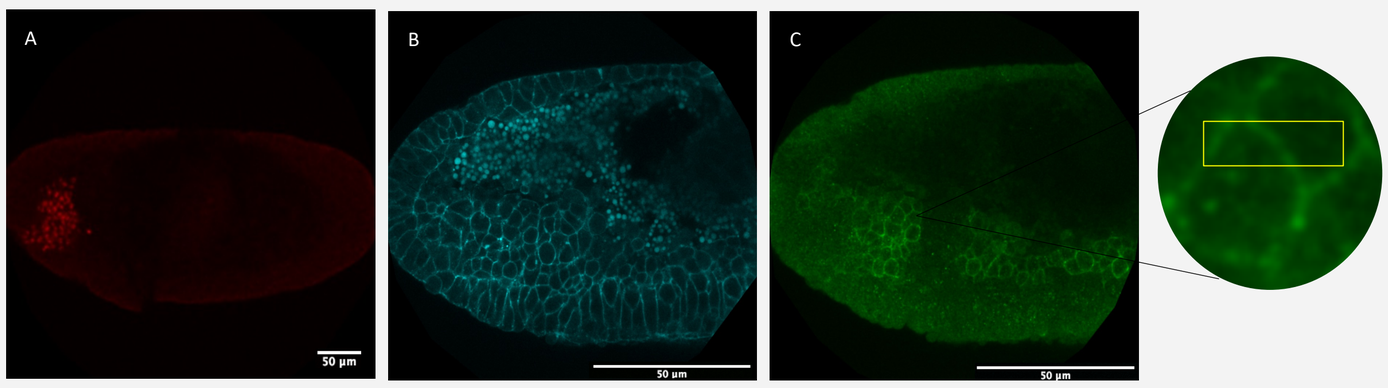


Figure 4: Immunostaining of stage 9 embryos (A) 20X image highlighting macrophages (m-Cherry) clustered in the ventral portion of the head (B) 60X image of junctional actin (phalloidin) (C) 60X image of junctional N-Cadherin (GFP)

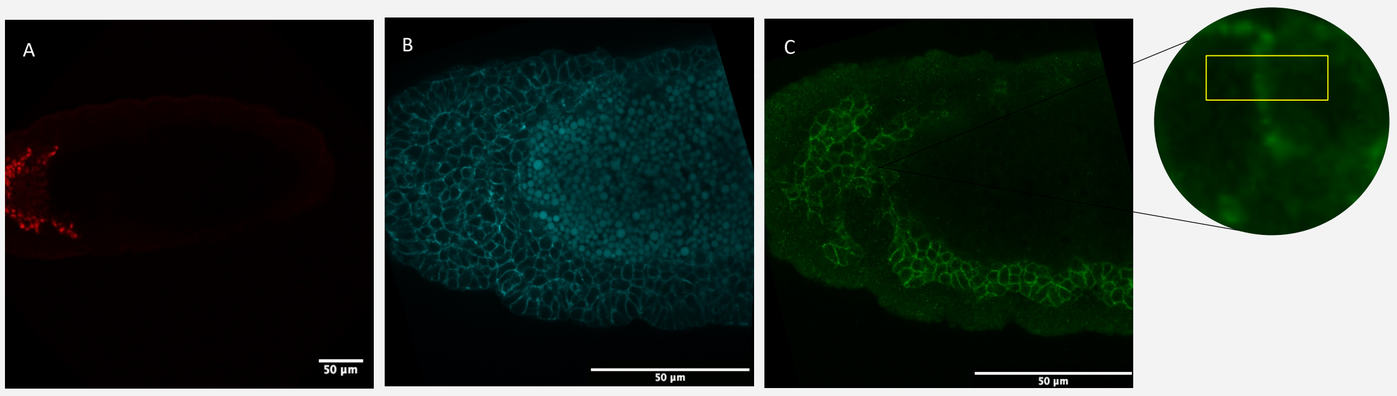


Figure 4: Immunostaining of stage 11 embryos (A) 20X image highlighting migratory macrophages (m-Cherry) (B) 60X image of junctional actin (phalloidin) (C) 60X image of junctional N-Cadherin (GFP)

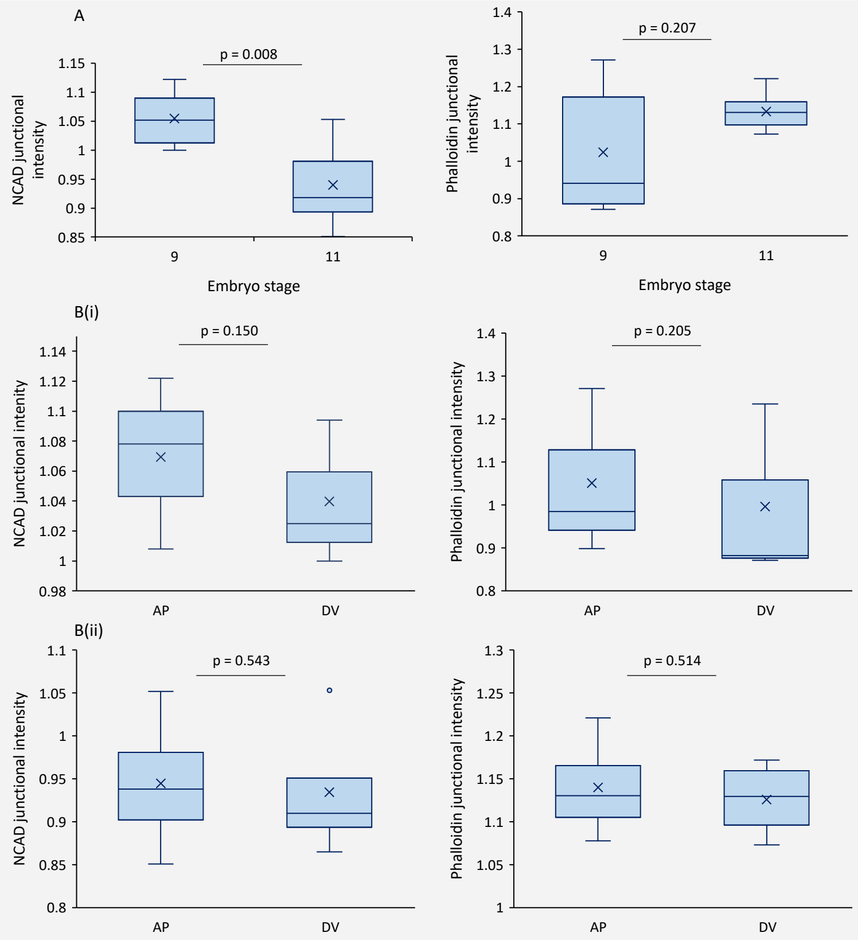


Figure 5: Region of interest analysis using ImageJ (A) Comparing NCAD and phalloidin (actin) intensity between stage 9 and 11 (n=7) (B) Comparing NCAD and phalloidin (actin) AP and DV intensity in (i) stage 9 and (ii) 11 (n = 7) embryos

CONCLUSION & FUTURE PERSPECTIVES

- A decrease in N-Cadherin intensity was observed from stage 9 to 11
- No planar polarization of N-Cadherin and Phalloidin was observed in stage 9 and 11
- The focus for future experiments would be to achieve localization of other junctional proteins such as alpha and beta catenin (armadillo) as well as collect and image greater number of embryos across stages

ACKNOWLEDGMENTS

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References
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