



UNIVERSITÀ
DI TRENTO

Dipartimento di
Biologia Cellulare, Computazionale e Integrata - CIBIO

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4.30 P.M.

ROOM A106 - POVO 1

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● ● RETINAL TISSUE ORGANIZATION DURING ● ● EARLY DEVELOPMENT: THE ROLE OF APICAL ● ● AND BASAL ADHESIVE MOLECULES.

We used zebrafish embryos (*Danio rerio*) to investigate the localization, polarization, and early differentiation of retinal ganglion cells (RGCs) and photoreceptors. Upon differentiation, both cell types transition from a neuroepithelial to a neuronal phenotype in a stereotypical manner. Gene knockout studies of adhesion proteins revealed their key role in cell positioning and retinal layer organization. Reduced expression of these proteins leads to partial duplications of the neural retina, with distinct patterns: disruption of apical adhesion (*Cdh2* and *Pals1/Nok*) causes RGCs to accumulate at both retinal edges and photoreceptors to form central rosettes, whereas *Laminin1* loss results in central RGC clustering and peripheral photoreceptor localization, producing a mirror-symmetric duplication of all layers. Complementary analysis using retinal organoids further clarifies the role of cell adhesion in retinal tissue organization during development. By complementing these *in vivo* studies with the analysis of retinal organoids, we are able to discern the role of cell adhesion in the tissue organization of the retina during development.