NUS National University of Singapore

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SEMINAR

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Retinal stem cells- fate restriction and multipotency

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Stem cells have the capacity to both self-renew and generate post-mitotic cells. Long-term tracking of individual clones in their natural environment constitutes the ultimate way to validate post-embryonic stem cells. We identify retinal stem cells (RSCs) using the temporo/spatial organization of the fish retina and follow the complete offspring of a single cell during the postnatal life. RSCs generate two tissues of the adult fish retina, the neural retina (NR) and the retinal-pigmented epithelium (RPE). Despite their common embryonic origin and tight coordination during continuous organ growth, we prove that NR and RPE are maintained by dedicated RSCs that contribute in a fate-restricted manner to either one or the other tissue. We show that in the NR, RSCs are multipotent and generate all neuron types and glia. The clonal origin of these different cell-types from a multi-potent NSC has far-reaching implications for cell type and tissue homeostasis.

Artwork by Ann Nee, DBS, NUS