P022 Regulation of endocycling in *Oikopleura dioica* by TOR signalling

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The *Oikopleura dioica* life cycle is short with extensive recourse to endoreduplication resulting in rapid growth. Ploidy level in cells is dictated by the timing of entry into endocycles and cell specific regulation of endocycle length, though the molecular details of this remain largely unknown. TOR signalling controls growth and metabolism, thus this study explores the role of TOR signaling in regulating endocycles. Blocking TOR signalling in *Oikopleura* using Rapamycin, revealed endocycle progression to be rapamycin sensitive in somatic cells. Mitotically proliferating intestinal cells, mitotic nuclei of immature gonads and endocycle nuclei in maturing gonads were rapamycin insensitive. Additionally, nutrient deprivation either by growing animals at high densities or starving them, confirmed TOR signalling in promoting endocycling. Under these conditions, Q-PCR analyses revealed that CKS1 and Cyclin Da were upregulated. Expression profiling of the TOR mRNA at different developmental stages of *Oikopleura*, revealed that OdTOR-S, a splice variant of TOR is specifically upregulated during endocycling stages, suggestive of a role in endocycling. Further characterization of the molecules downstream of TOR, with emphasis on effectors of the G1/S transition, will help to increase our understanding of TOR mediated regulation of somatic endoreduplication and oogenesis in *Oikopleura dioica*. 