ABSTRACT

Cyst enlargement is an important part of the initial stage of organ formation. *in vitro* experiments have shown that the speed of expansion of this nearly spherical object is affected by many factors. Moreover, in many cases, bursting of the cyst cell layer takes place from time to time, leading to nearly periodic deflation of the cyst sphere. Biophysical models have been proposed that take into account the build-up of osmotic pressure in the lumen and cell proliferation in the cyst layer. Here we integrate two previous models – for *Hydra* cyst swelling and collapse cycle and MDCK cyst growth saturation respectively – to describe the Caco-2 cyst swelling and rupture cycle in a series of experiments carried out in Prof. Jian-Dong Huang’s lab at HKU. Gene expression analysis is also carried out to identify pathways that are over-expressed and active during cyst enlargement.
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