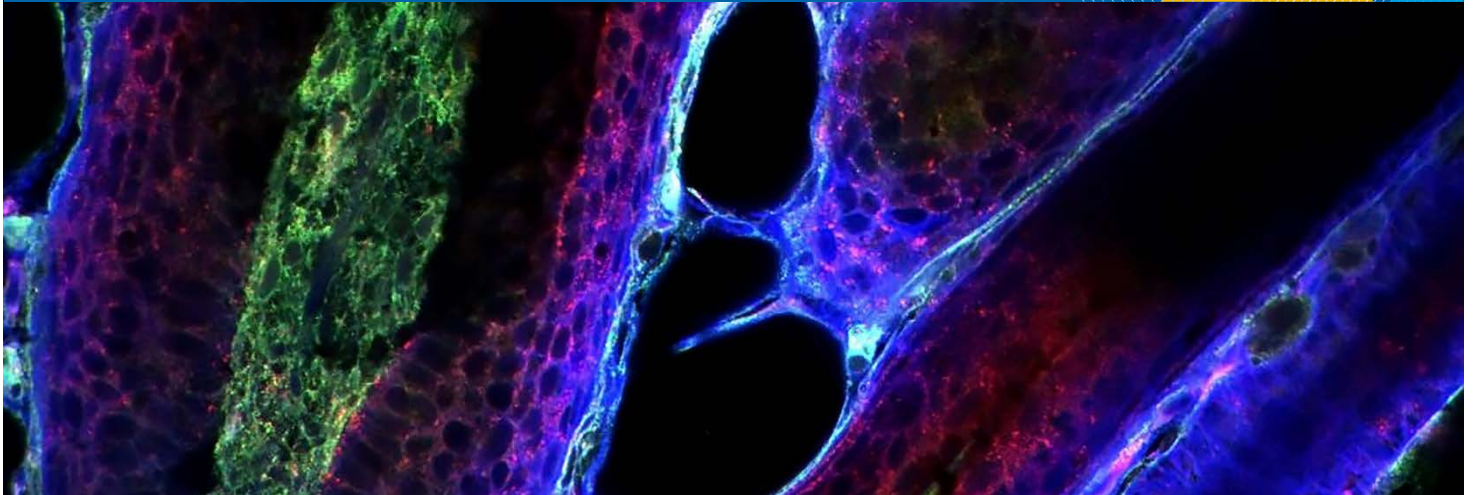


Medicine, Nursing and Health Sciences

Biomedicine Discovery Lecture

Monash Biomedicine Discovery Institute



Physical forces and signaling in vertebrate gut development



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Thursday 15th December 2016



12:00 – 1:00pm



Location: Lecture Theatre S12, 16
Rainforest Walk



Presenter

Professor Cliff Tabin
PhD, ForMemRS

Harvard Medical School,
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Abstract

We have investigated the development of vertebrate gut morphology. We find that muscle layers form sequentially in specific locations established through the dynamic integration of Shh /Bmp signalling while their orientation is dictated by physical forces stretching the tissue circumferentially. The villi form in a stepwise progression wherein the mesenchyme and attached epithelium first fold into longitudinal ridges, then a zigzag pattern, and lastly individual villi. Early in gut development, proliferating progenitors expressing stem cell markers are evenly distributed but then shift their localization through mechanically influenced reciprocal epithelial-mesenchymal signaling which distorts the shape of the morphogenic field. This induces a suite of genes in the mesenchyme to form a signaling center which ultimately restricts the stem cells to the base of each villus

About the presenter

Professor Cliff Tabin is Chairman of the Department of Genetics at Harvard Medical School. His laboratory studies the genetic basis by which form and structure are regulated, both during embryonic development and over evolutionary time to generate the extraordinary and beautiful diversity of animal forms on this planet. Prof Tabin was awarded the Edwin Conklin Medal (2012), the March of Dimes Prize in Developmental Biology (2008) and the NAS Award in Molecular Biology (1999). He was elected as a Foreign Member of the Royal Society (2014), a member of the National Academy of Sciences (2007) and the American Academy of Arts and Sciences (2000).



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