New experimental models to study blood and lymph vessel formation

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The goal of our group is to understand how blood and lymph vessels grow during normal development and disease. Growth of vessels is central to tumor progression and metastatic spread of tumor cells. We are setting up new experimental platforms that enable us to make advanced manipulations of growing vessels. We are in these systems studying how growth factors, morphogens and oxygen levels signal to stimulate and guide growing vessels. The accepted student will have the opportunity to join one or several of the following projects:

(1) Study of vascular development in advanced stem cell cultures, with focus on cell-cell interactions, growth factor signaling, and blood vessel guidance.
(2) Implementation of a novel microfluidic cell culture platform to carry out live imaging of migrating blood vessel cells in response to stable gradients of growth factors and inhibitors.
(3) Investigation of new mechanisms for embryonic blood and lymph vessel specification using an *ex vivo* organ culture system of mouse embryonic kidneys.
(4) Study of invasive vessel growth (wound healing) in a newly developed chicken chorio-allantoic membrane assay.

The different projects involve techniques such as high resolution confocal microscopy, analysis of protein expression patterns, and new techniques (e.g. proximity ligation) for detection of growth factor signaling.

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