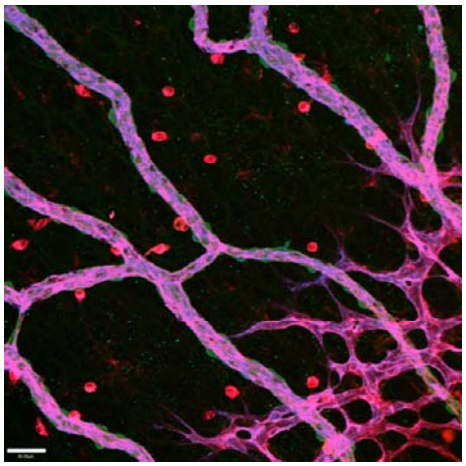
Role of microRNA in endothelial cells



MicroRNA are endogenous small double stranded RNA molecules with profound regulatory functions whose details we are just beginning to understand. It has recently become evident that microRNAs are essential to embryo development, cell fate decisions and to tissue specification. The role of micoRNA in endothelium is at presently largely unknown though our preliminary findings suggest that micro may be critical for endothelial function. This applies both to vessel formation and endothelial homeostasis.

With the aim of clarifying the role of microRNA in endothelial cell function, we studied the microRNA expression on different endothelial cell lines. We identified some microRNA that would be candidates for endothelial cell differentiation and function.
To better study the function of such microRNA in the endothelial cells, we propose to abolish their expression by using anti-sense microRNA. To accomplish that, we plan to use recombinant lentiviral vectors that would harbor the antisense microRNA, expressed from RNA polymerase III promoter.
The project would involve cloning of the anti-sense sequences, preparation of the lentiviral vectors, and *in vitro* infection of endothelial cells –and selected progenitors-. The infected cells will have to be characterized by their endothelial cell phenotype and molecular biology methods. We anticipate that this project will be the platform for further studies involving microRNA and endothelial cell function.

Supervisors:

Johan Dixelius, phone 08.524 87942, email johan.dixelius@ki.se
Guillem Genové, phone 08.524 87955, email guillem.genove@ki.se
Karolinska Institutet
Dept Medical Biochemistry and Biophysics
Div of Matrix Biology, Lab of Vascular Biology
Scheeles väg, 2 A-3 P-4
171 77 Stockholm