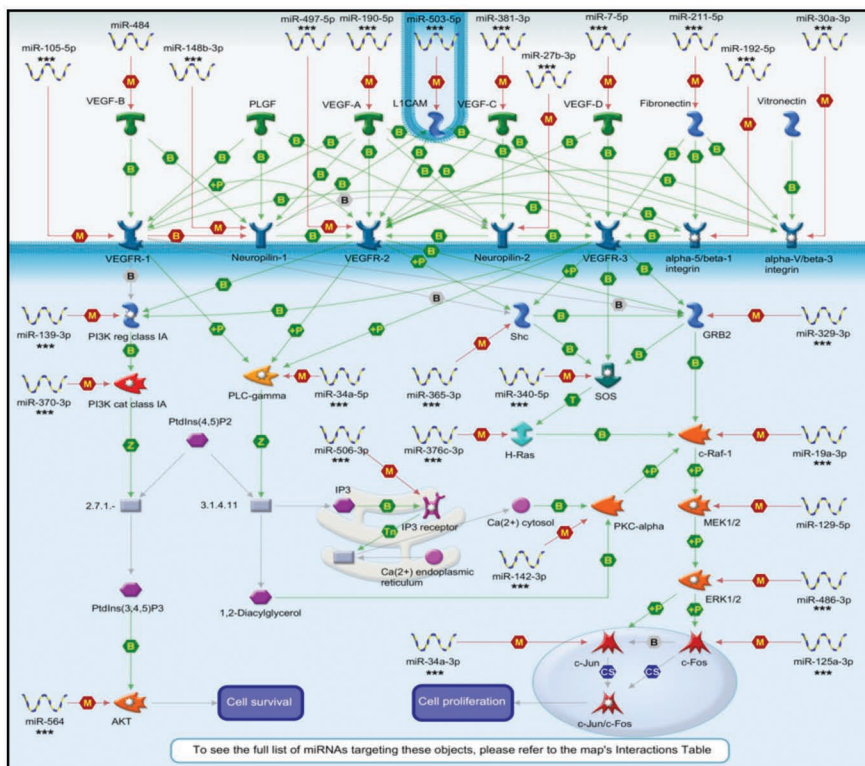


VEGF-family signalling



The vascular endothelial growth factor (VEGF) family of ligands and receptors is crucial for vascular development and neovascularization in physiological and pathological processes in both embryos, and in adults. VEGFs belong to a family of homo-dimeric glycoproteins that contains five members (VEGF-A, VEGF-B, VEGF-C, VEGF-D, and Placenta growth factor PLGF). VEGFs bind to three different VEGF-receptor tyrosine kinases (VEGFR-1, VEGFR-2 and VEGFR-3). Upon ligation, VEGF-receptors dimerize, auto-phosphorylate and, thereby transduce signals that direct cellular function.

VEGFR-1 is a high-affinity receptor for VEGF-A, VEGF-B and PLGF. It is expressed in vascular endothelial and some non-endothelial cells including haematopoietic stem cells, macrophages and monocytes. VEGFR-2 is highly specific towards VEGF-A. However, it also binds the processed forms of VEGF-C and VEGF-D [7]. VEGFR-2 is expressed in both vascular endothelial and lymphatic endothelial cells. Its expression has also been demonstrated in several other cell types such as megakaryocytes and haematopoietic stem cells. VEGFR-3 is highly specific towards VEGF-C and VEGF-D. It is expressed at high levels in lymphatic endothelial cells, but also is important for vascular development. VEGF-receptor function is enhanced by interaction with co-receptors of VEGFs Neuropilin-1 and Neuropilin-2. VEGF-A, VEGF-B and PLGF bind to Neuropilin-1, whereas VEGF-A, VEGF-C and PLGF bind to Neuropilin-2. Neuropilin-1 stabilizes the VEGFR-2 complex with VEGF-A, whereas Neuropilin-2 might be required for stabilizing the complex of VEGFR-3 with its ligands.

MiRXES has 201 miRNAs targeting 40 proteins on this signalling cascade, indicating that most proteins involved in the VEGF pathway are miRNA targets and may therefore be affected by miRNA action.

Hi-resolution
Pathway Map



Full pathway
summary & Citations



Relevant microRNA
and gene transcripts



Interactions Table

