MPIDS Colloquium

MAX-PLANCK-GESELLSCHAFT

Branching morphogenesis: the many ways to grow a tree

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The formation of the correct numbers of arteries and veins is crucial for embryonic development and during tissue regeneration in adult organisms. Furthermore, blood vessels need to acquire appropriate diameters for the efficient delivery of blood throughout the body. It has become clear that genetic signaling pathways in addition to physiological cues, such as hemodynamic forces, orchestrate blood vessel development. Using zebrafish, we identified several genetic pathways that are important for controlling the migratory behaviors and shapes of endothelial cells during these processes.

Selected References

- Sugden W.W., Meissner R., Aegerter-Wilmsen T., Tsaryk R., Leonard E.V., Bussmann J., Hamm M.J., Herzog W., Jin Y., Jakobsson L., Denz C., Siekmann A.F. (2017). *Endoglin controls blood vessel diameter through endothelial cell shape changes in response to haemodynamic cues. Nature cell biology*, 19(6):653-65.
- Hasan S.S., Tsaryk R., Lange M., Wisniewski L., Moore J.C., Lawson N.D., Wojciechowska K., Schnittler H., Siekmann A.F. (2017). *Endothelial Notch signalling limits angiogenesis via control of artery formation. Nature cell biology*, 19(8):928-940.
- Xu C., Hasan S.S., Schmidt, I., Rocha, S.F., Pitulescu, M.E., Bussmann, J., Meyen, D., Raz, E., Adams, R.H., Siekmann, A.F. (2014). *Arteries are formed by vein-derived endothelial tip cells*. *Nature communications*, 5, 5758.
- Bussmann J., Wolfe S.A., Siekmann A.F. (2011). *Arterial-venous network formation during brain vascularization involves hemodynamic regulation of chemokine signaling. Development*, 138 (9):1717-1726.

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