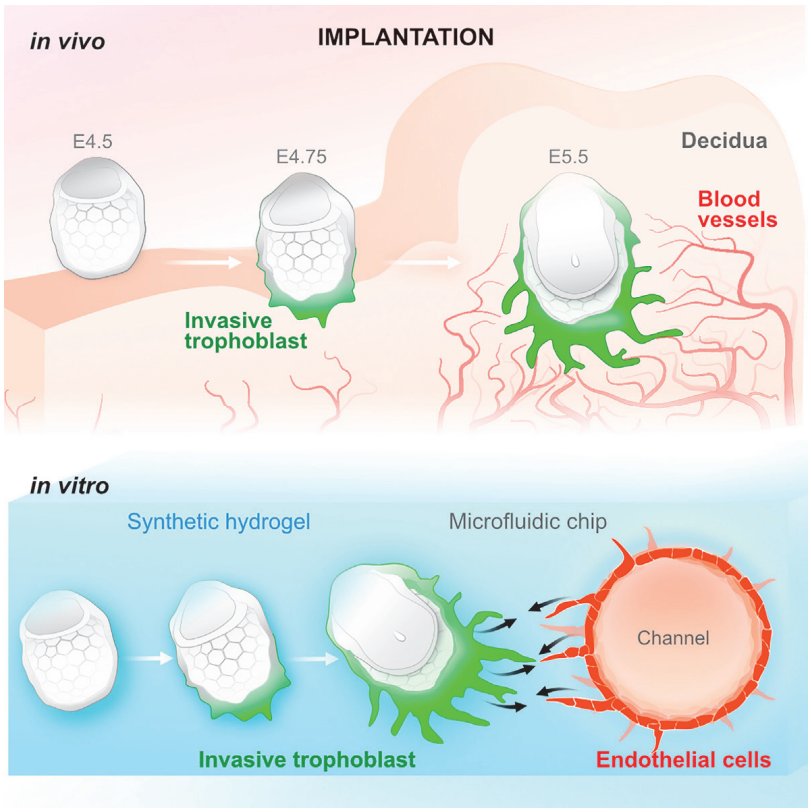
EVBO Publication highlight – December 2021

3D biomimetic platform reveals the first interactions of the embryo and the maternal blood vessels. Govindasamy N, Long H, Jeong HW, Raman R, Özcifci B, Probst S, Arnold SJ, Riehemann K, Ranga A, **Adams RH**, **Trappmann B**, Bedzhov I. *Dev Cell. 2021 Nov 2:S1534-5807(21)00845-5. doi: 10.1016/j.devcel.2021.10.014. Epub ahead of print. PMID: 34741805*.



Key findings:

- This study investigates the hidden dynamics of the early interactions between trophoblast giant cells and maternal endothelium at the implantation site.
- A 3D biomimetic culture environment, harbouring key features of the implantation niche allowed a microscopic analysis of trophoblast invasion and visualized interactions with the maternal vasculature.
- Implantation was mediated by collective migration of penetrating strands of trophoblast giant cells.
- Trophoblast giant cells acquired the expression of vascular receptors, ligands, and adhesion molecules, assembling a network for communication with the maternal blood vessels.
- The potential role of the three angiogenic pathways, VEGF, Notch, and PDGF, in trophoblast-endothelial cell interactions was probed, revealing in particular PDGF signalling as a cue promoting establishment of heterologous contacts.