**Project:** Cellular and signaling mechanisms of mammary branching morphogenesis: Implications in normal development and cancer

**Annotation:** Mammary gland undergoes major developmental changes postnatally. During puberty, ductal epithelial tree is formed by branching morphogenesis and undergoes further remodelling with each estrus cycle and pregnancy. These processes are highly regulated by hormones and local epithelial-stromal interactions via paracrine signals and mechanosignalling. Deregulation of these signaling mechanisms leads to tumourigenesis. Our team is focused on the role of fibroblast and FGF signaling in mammary gland development and cancer.

**Aims:** To investigate the mechanisms of branching morphogenesis using 3D cultures, chemical inhibition, candidate gene knockdown, event. optogenetics. To verify these mechanisms in vivo using mouse models and intravital microscopy.

**Methodologies:** 3D cell culture, imaging techniques, including time-lapse and confocal microscopy, immunofluorescence and immunochemistry, image analysis, mouse models (incl. intravital microscopy), techniques of molecular biology (Western blot, qPCR...).

**Requirements on the candidate:**
- MSc. degree from biology (general, molecular, developmental...) or biochemistry or its equivalent
- Interest in developmental and cancer biology, high motivation and work ethics, scientific curiosity
- Dexterity; Tissue culture skills and imaging experience are advantageous
- Willingness to travel abroad for research internship and conferences
- Active knowledge of English

**Supervisors:** Mgr. Zuzana Koledová, Ph.D.


Publication activity in the field of the project: