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Site specific expression of the Wnt signaling target gene Nkd1 in mouse intestine and liver

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Wnt signaling plays a crucial role in ontogenesis and development in all metazoans. In adult mammals, the Wnt signaling pathway is required for intestinal homeostasis and establishment of the hepatic zonation. In contrary, aberrant activation of the Wnt pathway leads to neoplasia and cancer development, notably in the intestine and liver. To investigate the role of the Wnt pathway in gut epithelium selfrenewal and malignant transformation we employed chromatin immunoprecipitation method (ChIP) in combination with DNA microarrays (so-called ChIP-on-chip) to identify genes regulated by Wnt signaling. One of the most prominent target was the NKD1 (Naked Cuticle Homolog 1) gene; previously identified as a Wnt-induced intracellular negative regulator of canonical Wnt signaling. We generated mice with CreERT2 recombinase produced from the Nkd1 locus (NKD1-CreERT2). Two of the most interesting tissues of the NKD1-CreERT2 expression in adult mice were pericentral hepatocytes and intestinal crypt compartments. In the small intestine NKD1-CreERT2 expression decreases in proximodistal manner with no expression in ileal stem cells. In the liver NKD1-CreERT2 displayed expression in pericentral hepatocytes where the Wnt signaling pathway is active. Gradient zonal expression of Nkd1 in the mouse intestine and liver gives insight into different regulation of Wnt signaling in these tissues.

Biography

Jitka Stančíková is a PhD student from Faculty of Science of Charles University in Prague. She works in Laboratory of Cell and Developmental Biology in Institute of Molecular Genetics in Academy of Science of the Czech Republic. Until today she published 4 papers in reputed journals.

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