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My interest areas are stem cell biology and regenerative medicine, epigenetics and neuroscience. Within regenerative medicine our primary interest is on identifying the molecular mechanisms which underlie the ability of adult tissue stems and/or progenitor cells to control tissue homeostasis and possibly, to regenerate damaged and/or aged tissues. One of the underlying regulatory mechanisms of cellular plasticity is the epigenetic control of gene expression and cellular identity. To understand the self-renewal and differentiation properties of tissue stem cells in normal physiology and disease we are using an integrated approach based on genome-wide analysis of gene expression, chromatin mapping and loss- and gain-of function studies, using RNAi and CRISPR-mediated genome editing. Within neuroscience our interest is focused on translating the emerging genetic basis for neurological disorders, such as autism, into a functional understanding of the signaling pathways which are dysregulated. For this we are using primary cellular neuronal models with a defined genetic susceptibility variant, which have been generated by somatic reprogramming of patient-derived fibroblasts, and study their impact on neuronal cell fate and physiology, and in addition, how these genetic disease-associated variants impact neuronal circuits and behavior in animal models. Several of the research activities are collaborations with principal investigators at the Friedrich Miescher Institute (FMI) in Basel.

Selected Publications

ZNRF3 promotes Wnt receptor turnover in an R-spondin-sensitive manner. [2]
Hao HX, Xie Y, Zhang Y, Charlat O, Oster E, Avello M, Lei H, Mickanin C, Liu D, Ruffner H, Mao X, Ma Q, Zamponi R, Bouwmeester T, Finan PM, Kirschner MW, Porter JA, Serluca FC, Cong F.
Nature. 2012 Apr 29;485(7397):195-200.

Histone methylation by PRC2 is inhibited by active chromatin marks. [3]
Schmitges FW, Prusty AB, Faty M, Stützer A, Lingaraju GM, Aiwazian J, Sack R, Hess D, Li L, Zhou S, Bunker RD, Wirth U, Bouwmeester T, Bauer A, Ly-Hartig N, Zhao K, Chan H, Gu J, Gut H, Fischle W, Müller J, Thomä NH.
Mol Cell. 2011 May 6;42(3):330-41.

Loss of the tumor suppressor Snf5 leads to aberrant activation of the Hedgehog-Gli pathway. [4]
Jagani Z, Mora-Blanco EL, Sansam CG, McKenna ES, Wilson B, Chen D, Klekota J, Tamayo P, Nguyen PT, Tolstorukov M, Park PJ, Cho YJ, Hsiao K, Buonamici S, Pomeroy SL, Mesirov JP, Ruffner H, Bouwmeester T, Luchansky SJ, Murtie J, Kelleher JF, Warmuth M, Sellers WR, Roberts CW, Dorsch M.
Nat Med. 2010 Dec;16(12):1429-33.

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Links
[1] https://www.novartis.com/our-science/postdoc-program/research-themes/regenerative-medicine/tewis-bouwmeester-phd
[2] https://www.ncbi.nlm.nih.gov/pubmed/22575959
[3] https://www.ncbi.nlm.nih.gov/pubmed/21549310

[4] https://www.ncbi.nlm.nih.gov/pubmed/21076395
[5] https://www.ncbi.nlm.nih.gov/pubmed/?term=bouwmeester%2C+tewis