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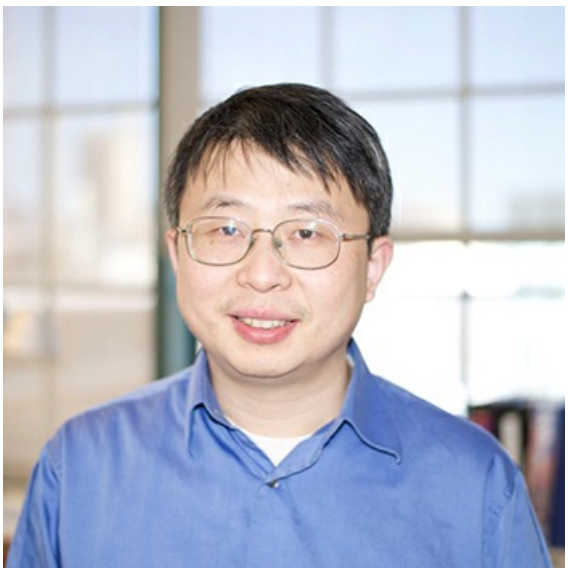
# Feng Cong, PhD



*Chemical Biology & Therapeutics*

*Cambridge, Massachusetts, United States*

My group utilizes an integrative, pathway-based approach to gain a better understanding of the basic mechanisms underlying disease and to identify novel entry points for therapeutic intervention. We have a strong interest in the Wnt, TGFβ/BMP, and HIPPO signaling pathways. These highly-conserved pathways govern proliferation and differentiation of adult stem cells and play critical roles during regeneration and tissue repair. Deregulation of these signaling pathways has been causally linked to a variety of human diseases, including cancer. Despite intense efforts, therapeutic targeting of these signaling pathways is still at an early stage.

Our research program is focused on uncovering novel regulatory mechanisms and identifying new drug targets in the aforementioned stem cell signaling pathways, and developing biologic/small molecule therapeutics to treat cancer and degenerative diseases. We use genetic, chemical genetic, proteomics, and bioinformatics approaches for target identification, and we are keen to develop novel functional genomics screening strategies. We are particularly interested in controlling key signaling pathways by targeting the ubiquitin system. In the past, we have identified a Tankyrase inhibitor that acts as an Axin stabilizer and β-catenin degrader in APC-deficient colorectal cancer cells. We have also discovered ZNRF3/RNF43 as druggable membrane E3 ligases promoting Wnt receptor turnover and identified RNF43 mutations as predictive biomarkers for Wnt inhibitor sensitivity. In addition, we are utilizing an intestinal organoid system to study homeostasis of intestinal stem cells, with the aim of identifying novel therapeutic strategies to treat colorectal cancer. The lab is also pursuing other aspects of cancer discovery including synthetic lethality and drug resistance.

## Selected Publications

Dishevelled promotes Wnt receptor degradation through recruitment of ZNRF3/RNF43 E3 ubiquitin ligases.
Jiang X, Charlat O, Zamponi R, Yang Y, Cong F.

*Molecular Cell. 2015 May; 58(3): 1-12. Epub 2015, April 16.*

ZNRF3 promotes Wnt receptor turnover in an R-spondin-sensitive manner.
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; 485(7397): 195-200.*

Tankyrase inhibition stabilizes axin and antagonizes Wnt signalling.
Huang SM, Mishina YM, Liu S., Cheung A, Stegmeier F, Michaud GA, Charlat O, Wiellette E, Zhang Y, Wiessner S, Hild M, Shi X, Wilson CJ, Mickanin C, Myer V, Fazal A, Tomlinson R, Serluca F, Shao W, Cheng H, Shultz M, Rau C, Schirle M, Schlegl J, Ghidelli S, Fawell S, Lu C, Curtis D, Kirschner MW, Lengauer C, Finan PM, Tallarico JA, Bouwmeester T, Porter JA, Bauer A, Cong F.
*Nature. 2009 Oct; 461(7264): 614-20.*

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