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Proteomic analysis of protein-protein interaction network involved in growth control and cancer prevention

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Coordination of key signaling pathways required for cell proliferation and survival may contribute to the elegant mechanisms underlying organ size control and tissue homeostasis. We are interested in dissecting the signaling networks underlying tissue homeostasis and organ size control as well as the role of their dysregulation in tumorigenesis. The recognition in the past decade that the Hippo pathway is a crucial signaling pathway in organ size control, allowed us to take the first step to achieve this long-term goal. Our previous proteomic analysis established the protein-protein interaction network for the human Hippo pathway, which helped to uncover a number of potential novel Hippo regulators. We are characterizing the cellular functions of these regulators and examining their roles in organ size control and tumorigenesis. To achieve a comprehensive understanding of tumorigenesis, we have also defined the protein-protein interaction networks for several key signaling pathways/protein families related to growth control and cancer development, especially how they crosstalk with the Hippo pathway by utilizing the proteomic approach. We expect that these studies will also generate additional clues to help us unravel the molecular basis of the Hippo pathway in organ size control and cancer prevention.

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