

**DECIPHERING THE ROLE OF KEKKON5 IN
BMP SIGNALING AND
CELL JUNCTION BIOLOGY**

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A Dissertation

Submitted to the Faculty

of

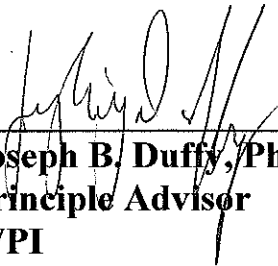
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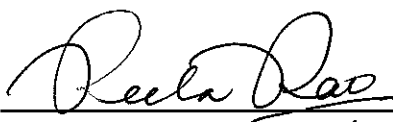
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ABSTRACT

Precise spatial and temporal control of cellular adhesion and signal transduction events are necessary for accurate animal development. Given the necessity for cell communication in carrying out processes like cell fate specification, growth, cell migration and differentiation, it is not surprising that signaling transduction pathways, such as EGFR, BMP, Notch, Wingless and Hippo, are intimately involved. All these pathways encompass a cascade of molecular events over which there is exquisite spatial and temporal control. A wide array of mechanisms, involving a diverse set of molecules, acts to provide this regulatory control. One such molecule implicated in the BMP signaling pathway in *Drosophila* development is Kek5, a Leucine rich repeat and Immunoglobulin domain (LIG) family member. Here I show that Kek5 modulates both BMP signaling and adherens junctions. For these functions, I further demonstrate that structural elements in both extracellular and intracellular region of Kek5 are critical, providing new insight into the LIG family and their roles in signaling pathways.

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Dedicated to my family

Jai Guru Dev