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## $\alpha$ -Parvin regulation of cell re-arrangement is critical for ureteric bud branching morphogenesis

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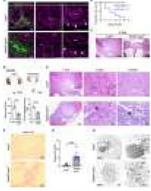
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### Abstract

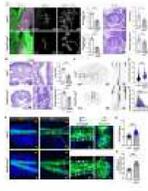
All branched tubular structures, including the kidney collecting system, are formed by branching morphogenesis, a process that includes tip branching and trunk narrowing. Tight control of cell movement and rearrangements is a prerequisite for branching morphogenesis. The role of integrin-associated adhesion proteins in coordinating actin dynamics and cell rearrangements during branching morphogenesis is poorly understood. Here we used 3D live imaging of mouse ureteric bud branching to show that  $\alpha$ -parvin, a component of the integrin binding ILK-PINCH-Parvin (IPP) complex, regulates tip branching and tubule thinning by inhibiting excessive cell adhesion and actin polymerization. Mechanistically,  $\alpha$ -parvin promotes actin turnover by inhibiting activation of the small GTPases RhoA and Cdc42, which in turn enhances the severing function of the actin regulatory protein, cofilin. These results underscore the importance of adhesion protein-regulated actin dynamics in the critical process of cell rearrangement, which is required for branching morphogenesis.

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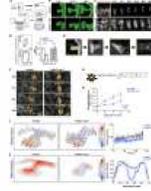
### Figures



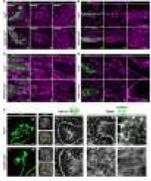
**Figure 1.. Deleting  $\alpha$ -parvin in the UB...**



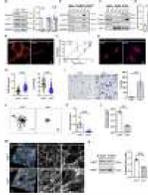
**Figure 2.. Deleting  $\alpha$ -parvin in the UB...**



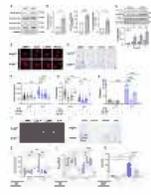
**Figure 3.. CD thinning defect in  $\alpha$ -parvin...**



**Figure 4.. Deleting  $\alpha$ -parvin in the UB...**



**Figure 5..  $\alpha$ -pv <sup>-/-</sup> CD cells have...**



**Figure 6..  $\alpha$ -pv <sup>-/-</sup> CD cells have...**

All figures (8)

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