Progress Report KUFA-RPS Research Award 2007
Role of RET signaling in kidney health and disease
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We made significant progress towards the specific aim "To establish parameters for conditional loss of RET in the kidney and determine RET's role in kidney development after UB induction using Ret conditional mice."

We established time pregnancies to obtain $Ret^{RETfloxEGFP/+}$:$CAGG\text{-}CreER^{TM}$ mice and treated pregnant mothers with 4-Hydroxytamoxifen (4HT) after UB induction had occurred (e11.5) to induce conditional deletion of the floxed *Ret* allele. We found that 3mg/30g mouse dose resulted in >70% excision of the floxed allele. The excision was specific to the UB epithelium as determined by direct visualization of the EGFP reporter in the conditional allele and Ret immunohistochemistry. Further, we observed Ret excision in less than 12 h after 4HT treatment suggesting highly efficient and specific conditional Ret deletion. We also established a model where 24h after 4HT treatment, the kidneys of e12.5 embryos could be successfully maintained in an time-lapse organ culture system for live imaging of branching morphogenesis. We are now in the process of establishing breedings to achieve complete conditional excision of Ret using the parameters that we have determined in this aim.

We presented some of this work in an abstract form in the ASN 2007 meeting in San Francisco, CA. Importantly, through this award, we were able to generate important preliminary data that was included in 2 R01 applications to NIDDK that are under review.