Annual Report of the project:

" IDENTIFICATION OF GONADOTROPE-SPECIFIC NOVEL GENES"

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Progress Report

The first goal of the project was to perform electronic subtraction to identify pituitary-specific novel genes. We have completed this goal and have identified ~ 90 ESTs/gene sequences that could be found only in pituitary libraries. We are setting up expression assays for some of these clones now. The second goal was to target GFP to gonadotrope lineage using a mouse GnRH-R promoter. We obtained two female founders harboring this transgene. Both these founders were infertile over a period of 5 months. We will re-inject this transgene to obtain additional founders. If we fail the second time also, I will obtain GFP expressing mice from Dr. Sally Camper (University of Michigan) and perform the experiments outlined in Specific Aim 2.

We believe that our further analyses will establish a number of genes/proteins involved downstream of GnRH signaling in gonadotrope cells. We will eventually understand how they will interact together and orchestrate gonadotropin gene expression and secretion during development. **Clearly, the studies initiated in this project through the support from The Moran Foundation have immense potential and form the basis for all our future investigations of this project.**

Publications (* The Moran Foundation Support acknowledged)

1. **Kumar TR**, Agno J, Janovick JA, Conn PM and Matzuk MM (2003) Regulation of FSHβ and GnRH receptor gene expression in activin receptor II knockout male mice. **Mol Cell Endocrinology 212**: 19-27.

2. **Kumar TR** (2004) Genetic approaches to study the biology of gonadotropins **(Proceed Indian Natl Sci Acad, In Press)**

3. Garcia-Campayo V, Boime I and **Kumar TR** (2004) A tetradomain single chain glycoprotein analog elicits multiple hormone activities *in vivo*. **(Submitted)**

4. Ma X, Dong YL, Matzuk MM and **Kumar TR**. (2004) Targeted mutagenesis of LHβ leads to hypogonadism, defects in steroidogenesis and infertility **(Submitted)**

5. Ma X, Reyna A, Mani SK, Matzuk MM and **Kumar TR** (2004) Impaired male sexual behavior and reduced nNOS activity in the medial pre-optic area in activin receptor II knockout mice. **(Submitted)**

Invited Seminars:

1) Department of Biomedical Sciences, Colorado State University, Fort Collins. (January 2004)
2) Department of Molecular and Integrative Physiology. (May 2004)