Kamana Misra (Michael Matise, Principal Investigator)
"Role of Pax6 in Specifying Dorso-Ventral Neuronal Identities in the Developing Spinal Cord" - Completed

I was granted a Postdoctoral Fellowship entitled "Role of Pax6 in specifying dorso-ventral neuronal identities in the developing Spinal cord" from the New Jersey Commission on Spinal Cord Research. The grant was funded for the period from June 15, 2004 to June 30, 2006.

The grant cycle finished on June 30th, 2006. As a result of research funded by the grant, I have already published one paper in the journal, Proceedings of National Academy of Sciences, USA. Another paper listed below is in the final stages of being published:

Li S*, Misra K*, Matise MP and Xiang M. (2005) Foxn4 acts synergistically with Mash1 to specify subtype identity of V2 interneurons in the spinal cord. Proc Natl Acad Sci USA,

102(30):10688-93.

*Both authors contributed equally to this work.

Kamana Misra, Eddie Kuang, Shike Li, and Michael P. Matise. Pax6 and sFRP2 control ventral cell fates by blocking Wnt signaling in the developing spinal cord (manuscript in preparation).

As a result of this grant award by the NJCSCR, I received a UMDNJ Postdoctoral Stipend Supplementation Program award. This is granted in recognition of the postdoctoral fellow's academic excellence. The primary goal of the UMDNJ Postdoctoral Supplementation Program is to assist in recruiting talented and promising postdoctoral fellows to UMDNJ to collaborate on research projects with faculty members.

In continuation of the results from the above-mentioned grant, I was able to pursue several other very interesting research projects that are currently being investigated. Specifically, to better understand the roles of the genes like sFRP1& 2 in spinal cord neurogenesis, we have procured mutant mice for both sFRP1& 2. The analysis of the sFRP1& 2 double mutants have shown some neural tube defects. This has provided us with means to study the mechanisms in generating neural tube defects during embryogenesis. This can be especially useful when addressing methods for regeneration of neurons required for repairing spinal cord injuries in adults. This provides a useful base for grants that will be submitted in the future. Analysis of sFRP2 mice has shown some very interesting results that have been published recently and are being used in the lab by the principal investigator of the lab, Dr. Michael Matise for other grant fundings:

Lei Q, Jeong Y, Misra K, Li S, Zelman AK, Epstein DJ, Matise MP. (2006) Wnt signaling inhibitors regulate the transcriptional response to morphogenetic Shh-Gli signaling in the neural tube. Dev Cell. 11(3): 325-37.

In pursuing the research goals of the grant, I was able to establish collaboration with other researchers in the field. One such collaboration resulted in the publication of the study in PNAS, as shown above. There are other collaborations that can be developed for further studies due to the opportunity to meet with scientists with similar interests at various NJ meetings and symposia.

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