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### Exploring the Role of *tgfbr2* During Zebrafish Sclerotome Development

Nooralhuda Feron

*Belmont University*, [noora.feron@pop.belmont.edu](mailto:noora.feron@pop.belmont.edu)

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## Exploring the Role of *tgfbr2* During Zebrafish Sclerotome Development

Nooralhuda Feron

Advisor: Nikki Glenn, Ph.D.

Zebrafish, *Danio rerio*, are used as a source model organism for human development of the tendons, bones, and ligaments. The sclerotome is an embryonic structure known as the somite. The sclerotome gives rise to axial bones and tendons. During development, different genes are involved and affect how these skeletal tissues develop. Specifically, within this project, the effects of Twist1b and Twist2 were studied to see their effects on tendon formation, as they are expressed within the developing sclerotome tissue. Transforming growth factor beta receptor type-2 (*Tgfbr2*) has been shown to be involved in tendon formation (Subramanian, Kanzaki, Galloway and Schilling 2018). We investigated expression of *tgfbr2* in *twist1b* and *twist2* morpholino-injected embryos. Morpholinos are a method used in molecular biology for knocking down gene function. We then used *in-situ* hybridization to visualize expressions of *tgfbr2* in *twist1b* and *twist2* morpholino-injected embryos. It was evident that there was a change when the *twist1b* and *twist2* morpholinos were used. The *twist1b* knockdown revealed reduced *tgfbr2* expression in the tail compared to the wildtype, whereas, *twist2* knockdown increased expression in the head compared to the wildtype. These results will help characterize the role of Twist1b and Twist2 during tendon formation in the sclerotome of the zebrafish.