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Enhancement of *nkx3.2* Expression After *twist1b* and *twist2* Morpholino Injection in Zebrafish

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Somitogenesis is a developmental event patterned by cellular signaling during gastrulation, ending around 30-hours post fertilization. Somites are segmented regions of mesoderm along the dorsal side of the body which form paraxial mesoderm in *Danio rerio*, zebrafish. Somite development results in the formation of the subcompartment called sclerotome, which differentiates to form the axial skeleton and associated tendons (Stickney et al., 2000). Further differentiation allows for sclerotome progenitor cell to develop into bone, muscle, tendon, and cartilage through sclerotome migration along the mesoderm. A portion of sclerotome cells migrate anterior towards the neural tube, where they will form the vertebral body. (Monsoro-Burq, 2005). Several genes are responsible for development of the vertebral body from sclerotome. Twist1b and Twist2 genes are expressed in the sclerotome and are possibly expressed within precursors of the cells needed during chondrogenesis of vertebra, which express the gene Nkx3.2. Nkx3.2 is responsible for the development of the vertebral body in zebrafish and other model organisms, and if not expressed, is seen to cause skeletal defects in mice. (Herbrand et al., 2002). In this study, we looked at the expression of Nkx3.2 when Twist1b and Twist2 were knocked down using injection of Twist1b and Twist 2 morpholinos at the single cell stage. Our results show increased expression of Nkx3.2 via *in situ* hybridization in Twist1b and Twist2 knock-down embryos. By studying the expression pattern of Nkx3.2 in zebrafish embryos, we are able to better understand the role Twist1b and Twist2 are playing during vertebral development.