Xdelta-catenin, a cadherin-binding molecule of p120-catenin subfamily required for Xenopus laevis development

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Delta-catenin is a member of p120-catenin subfamily characterized by ten Armadillo repeats and binds to cadherin juxtamembrane regions. Mammalian delta-catenin exhibits a neural specific expression pattern. Loss of function of delta-catenin results in abnormal synaptic functions and cognitive defects in mice and is associated with mental retardation in humans. Here we report the isolation of Xenopus laevis delta-catenin (Xdelta-catenin). Xdelta-catenin is present as full length (3942 bp cDNA), or as three alternatively spliced isoforms designated A, B or C, with each isoform expressed throughout development although isoform C varies according to developmental stages. Unlike in mammals, Xdelta-catenin transcripts are detectable in most adult Xenopus tissues. Spatial and temporal expression will be further assessed using whole mount in situ hybridization and western blotting. To explore delta-catenin’s developmental functions, we employed morpholino depletion approaches as well as overexpression strategies. Our preliminary data showed that deviations from endogenous expression result in gastrulation defects, which outwardly resemble functional perturbations of other p120-catenin subfamily members. However, tests of the molecular underpinnings have yet to take place, such as effects upon cadherin or Rho GTPase functions. Likewise, examination of possible later neural phenotypes will be required, as will the use of rescue approaches to define the mechanistic basis of knockdown or overexpression effects.

doi:10.1016/j.ydbio.2006.04.128