Sexually dimorphic expression of a germ line gene, dead end, during gonadal development in turbot (Scophthalmus maximus)

Qinghua Liu
Institute of Oceanology, Chinese Academy of Sciences, China

Dead end (dnd) is a vertebrate-specific component of germ plasm that is crucial for primordial germ cell migration and survival in zebrafish. In this study, we identified a dnd homologue (Smdnd) in turbot (Scophthalmus maximus) and investigated its expression pattern during embryogenesis and gonadal development. It showed that the predicted amino acid sequence of isolated cDNA shared high identity to Dnd homologues and was classified to its teleost counterparts. RT-PCR and in situ hybridization demonstrated that Smdnd transcripts could be detected in germ cells, including primordial germ cells (PGCs), adult male and female germ cells. Furthermore, the female exhibited higher expression of Smdnd than male before sex maturation. This difference reduced gradually due to the up-regulation of Smdnd in male gonad after the spermatogonia proliferated and meiosis proceeded. The results not only suggest the conserved role of dnd in germ cell development in turbot, but also provide the initial evidence for its possible involvement in sex differentiation and gametogenesis in teleosts.

qingshuailiu@qdio.ac.cn