SL805 A novel retrotransposon-like element in *Xenopus laevis* with a ventralizing activity

Sangwoo Shim and Jin-Kwan Han
Department of Life Science, Pohang University of Science and Technology

The dorsal-ventral patterning of early *Xenopus* embryos is initiated and maintained by cytoplasmically localized information and regulatory interactions between opposing dorsal and ventral signaling molecules. We applied the differential display PCR (DD-PCR) technique to isolate such regulatory factors for pattern formation in *Xenopus* and obtained a novel cDNA clone named 10A1. The 10A1 element has long terminal repeats (LTRs) and encodes a 'CCHC' type zinc finger motif of *gag* product, suggesting that its transcript is derived from a retrotransposon-like element. The presence of multiple copies of 10A1-related elements in the Xenopus genome was confirmed by Southern blot analysis. 10A1 is zygotically activated in the marginal zone and animal pole of the late blastula and early gastrula embryos, and localized in the posterior and ventral regions of the gastrula and neurula embryos being excluded from the head region. The expression of 10A1 is upregulated in the neurula embryo by UV-treatment or ectopic expression of bone morphogenic protein-4 (BMP-4). In a reciprocal way, overexpression of 10A1 positively regulates the expression of BMP-4 and PV.1. Moreover, ectopic expression of 10A1 RNA results in the formation of ventralized emrbyos, and partial-loss-of 10A1 by injections of 10A1 antisense RNA produces dorsal axis structures in UV-ventralized embryos and wild-type embryos. These observations suggest that the newly isolated retrotransposon-like element actually plays a role in the ventral specific signaling pathway.