D121

PDGF, Patelet-Drived Gowth Fctor, Induces Ectodem into Meosoderm in *Xenopus laevis*

Jung-Sun Kil*, Chemyong Ko, Hae-Moon Chung
Department of Biology Education, Seoul National University

Major processes of vertebrate development are controlled by sequential and combinatorial actions of several kinds of growth factors. Meosoderm induction is the most deeply studied process in vertebrate development. During last decade several growth factors (TGF-superfamilial and Wnt-familial genes) are reported to mediate mesoderm induction and pathway. We studied the functions of platelet-derived growth factors(PDGF) in the early development of *Xenopus laevis*. PDGF is a secreted polypeptide growth factor. Suprisingly, we observed that when PDGF was treated to early ectodermal tissue, it induced mesoderm. The PDGF-treated ectodermal tissue expressed mesodermal marker genes, such as MyoD familial genes and α-cardiac actin gene. To confirm its fuctions in mesoderm induction process, *in vitro* transcribed PDGF receptor antisense RNA was injected in 2-cell stage embryo and analyzed its effects with RT-PCR and *in situ* hybridization. The PDGF antisense RNA injected embryo showed morphological abnormalities in early development including exogastrulation and incomplete neural folding. These results suggest that PDGF mediates mesoderm induction and is related to the gastrulation movement.

D122

Application of DDRT-PCR to The Isolation of Genes Which Mediate Neural Induction and Differentiation in The Inducer Treated Tissue

Chemyong Ko*, Hyejoo Kwon, Yongho Son, Hae-Moon Chung
Department of Biology Education, Seoul National University

DDRT-PCR (Differential Display Reverse Transcription PCR) is a recently adopted technique to identify and analyze altered gene expression at the mRNA level in many eukaryotic cells. Cells have been used as the starting material in this technique. Here we report that tissues can be successfully used as the starting material for DDRT-PCR. We applied this technique to isolate genes which mediate neural induction and differentiation in *Xenopus laevis* embryo. As a first step, mesodermal, neural and epidermal tissues were dissected from a normal emberyo. Secondly, we dissected undifferentiated ectodermal tissues from late blastula embryos and then treated them with neural inducers such as Noggin and bFGF as a combinatorial mode. Neural inducibility was confirmed by RT-PCR. To isolate neural induction mediating genes, total RNAs was prepared from the several differentially conditioned tissues, and subsequent steps were done as standard DDRT-PCR procedures. With those materials, we could detect several clear bands on the 6% denarurating polyacrylamide gels, which represent cDNA fragments that were qualitatively and quantitatively diffententially expressed under the experimental conditions. These results suggest that *in vitro* manipulated tissues or different tissues in a embryo can be successfully used as the starting material for DDRT-PCR to isolate the genes which are expressed in a tissue specific manner.