



CDB SEMINAR

Speaker:

Patrick Lemaire

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Title: “Neural induction in *Xenopus* requires early FGF signalling in addition to BMP inhibition”

Date: Tuesday, April 19

Place: 1F Auditorium of Building C, CDB

Time: 16:00 ~ 17:00

Dr. Patrick Lemaire is one of the leading scientists in the field of induction and axis determination during early development of vertebrates and protochordates. One of his well-known works is the discovery of *Siamois*. He talks on his recent *Xenopus* study in this seminar and on the tunicate work in the CDB symposium.

Summary:

We have re-evaluated in the context of the whole embryo the roles of the BMP and FGF pathways during neural induction in *Xenopus*. We find that ectopic BMP activity converts the neural plate into epidermis, confirming that this pathway must be inhibited during neural induction in vivo. Conversely, inhibition of BMP, or of its intracellular effector SMAD1 in the non-neural ectoderm leads to epidermis suppression. In no instances, however, is BMP/SMAD1 inhibition sufficient to elicit neural induction in ventral ectoderm. By contrast, we find that neural specification occurs when weak eFGF or low ras signalling are combined with BMP inhibition. Using all available antimorphic FGF receptors, as well as the pharmacological FGFR inhibitor SU5402, we demonstrate that pre-gastrula FGF signalling is required in the ectoderm for the emergence of neural fates. Finally, we show that although the FGF pathway contributes to BMP inhibition, as in other model systems, it is also essential for neural induction in vivo and in animal caps in a manner that cannot be accounted for by simple BMP inhibition. Taken together, our results reveal that in contrast to predictions from the default model, BMP inhibition is required but not sufficient for neural induction in vivo.

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