**セミナーのお知らせ**

**2010 年 11 月 1 日 （月） 本部棟（201 号室）16:30**

# Origin and Patterning of the Zebrafish Face

## 「ゼブラフィッシュの顔の起源とパターン形成」

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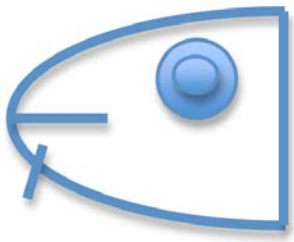

The ability of the cranial neural crest to give rise to many of the vertebrate-specific features of the head is central to vertebrate evolution. By conducting forward genetic screens in zebrafish, we have discovered a remarkably specific function of the variant histone H3.3 protein in generating mesoderm-like (“ectomesenchyme”) derivatives, such as head skeleton, from the ectoderm-derived crest. In zebrafish with a dominant H3.3 mutation we observe a complete loss of the crest-derived head skeleton, yet most other embryonic structures are surprisingly unaffected. We therefore propose that a unique epigenetic reprogramming event in head ectoderm, involving H3.3, underlies the development and evolution of a new source of mesoderm in the vertebrate head. In a second project, we are examining how skeletal elements in the face acquire distinct shapes along the dorsal-ventral (DV) axis. In particular, we have found that Jagged-Notch signaling promotes dorsal identity within the zebrafish face. Whereas loss of Jagged-Notch signaling in *jag1b* mutants results in the dorsal facial skeleton adopting a ventral morphology, JAG1 misexpression results in reciprocal ventral to dorsal skeletal transformations. In contrast, Edn1 is thought to be essential for ventral skeletal patterning, as zebrafish *edn1* mutants lack a ventral face. Strikingly, we find that loss of Jagged-Notch signaling partially rescues ventral facial development in *edn1* mutants, suggesting that Edn1 functions to restrict Notch signaling to dorsal skeletal precursors. Recently, we have found that Bmp signaling functions together with Edn1 to promote ventral identity in the face, with Jagged-Notch signaling regulating dorsal patterning through Bmp inhibition. We find that Gremlin2, a Bmp antagonist, is a target of Notch signaling in dorsal cells, and Gremlin2 reduction or Bmp4 misexpression leads to similar DV skeletal transformations as those seen in *jag1b* mutants. Thus, our genetic analysis is revealing how multiple signaling pathways cooperate to define discrete identities along the DV facial axis.

「脊椎動物の頭の構造の進化と発生の分子メカニズム」についての最新の研究成果を話していただきます。多数の方の参加をお待ちしています。

また、同日 13:00 より 3 回生向けの講義（発生と進化）を「Biology Class in English」の一環として本部棟 202 号室において、行っていただきます。興味ある方はどなたでもご参加ください。

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