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Abstracts

Plenary session III

Program/Abstract # 71
Genetic dissection of Drosophila courtship behaviour

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Animal instincts are specified during development by genetic programs that preconfigure the appropriate neural circuitry. Genetic dissection in model organisms thus has the potential to reveal the molecules, neurons, circuits and principles underlying animal instincts. With this goal in mind, we are studying the male courtship ritual of *Drosophila melanogaster*. This instinctive behaviour is specified during development by the male-specific products of the *fruitless* (*fru*) gene, Fru^M, which are expressed in ~2000 cells in the male nervous system. Forced expression of Fru^M in females is sufficient to program the male courtship instinct into the female nervous system. Genetic data suggest that distinct subsets of Fru^M neurons are likely to have distinct functions in the courtship ritual. These distinct functions are in turn likely to have distinct genetic requirements. We are using a genome-wide transgenic RNAi screens to systematically identify the genes required to configure these neurons for male behaviour. We anticipate that these approaches will help to define the functions of the genes and neurons that together shape this complex innate behaviour.

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Program/Abstract # 72
Gastrulation in amniote embryos: positioning and shaping the primitive streak

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In vertebrates, gastrulation is best understood in anamniotes, where cells enter through an equatorial opening, the blastopore. In amniotes, mesendoderm forms from a midline structure, the primitive streak. Using multi-photon time-lapse imaging we show that formation and elongation of the streak are driven by cell intercalation in a small region defined by restricted expression of several components of the Wnt Planar Cell Polarity pathway. Interference with this pathway blocks formation of the streak but not mesendoderm formation, which now proceeds equatorially. We propose that the amniote primitive streak evolved from the ancestral blastopore by the acquisition of an additional medio-lateral intercalation event, preceding gastrulation and axial elongation. This early step defines the shape of the primitive streak independently of mesendoderm formation. What sets up the position of the primitive streak in the first place? Amniote embryos are highly regulative and have the ability to generate multiple embryonic axis. We will briefly present evidence suggesting that Vg1 + Wnt activity initiates a molecular cascade of inductions. At the same time, at least 3 distinct inhibitors play a role in restricting induction to the posterior pole of the blastodisc.

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Program/Abstract # 73
Role of Wnt signaling in neural crest development: from induction to migration

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The neural crest is a migratory cell population found in all vertebrate embryos, that generates several different cell types. In the head, these cells form specific components of the face, and in the body they generate the peripheral nervous system, skin pigment, etc. The neural crest cell forms at the border of the neural plate, and it is from here that the crest cells migrate to different parts of the embryo where they differentiate into a wide range of cell types. I will address here two questions related to neural crest development: first, how is the neural crest INDUCED at the border of the neural plate; and, second, once the neural crest is induced how is the MIGRATION of these cells controlled. Concerning neural crest induction we have