

Dynamics and evolution of trunk elongation in amniotes

Yu Ieda

Institut Pasteur, Sorbonne Université

Animals, precisely amniotes, acquire each species-specific lengths of their bodies through their embryo developments and their evolutionary trajectories. We can describe the mechanism to elongate their body axes as the bimodal processes: trunk formation and tail bud elongation, corresponding to *primärer Körperentwicklung* “primary body-development” and *sekundärer Körperentwicklung* “secondary body-development”, initially proposed by D. E. Holmdahl in 1925. However, the mechanism and dynamics how the trunk formation drives and then ceases to be switched to the secondary step per se is still poorly understood especially in amniotes. Unveiling them are important for not only understanding the principle and the diversity of trunk formation in amniotes or vertebrates, but also medicinal applications to clinical diagnoses for human congenital diseases or the developments for genetic treatments.

In order to tackle the question, we utilize a quail as a powerful model organism of amniotes to investigate and manipulates its embryogenesis *in vivo*, thanks to not only its accessibility of the embryo in its egg, but also its embryological similarity with a human embryo. In *la soirée scientifique*, I will present our hypotheses and results from the series of research with the state-of-the-art techniques in the model and non-model organism, *e.g.* a turtle as a reference to have a shorter trunk and a snake as the contrary example, acquired an extremely elongated trunk through its unique evolutionary trajectory, in order to compare the dynamics of trunk formation. Altogether, I would like to share the state-of-the-art knowledges and discuss about the evolution and the principle of body elongation in amniotes.