The reappearance of ciliary head kidneys in *Platynereis* – beside the "cutting edge"

Björn Quast, Thomas Bartolomaeus, Institute of Evolutionary Biology, Bonn University

Within "evo-devo" research *Platynereis dumerilii* is one of the best investigated lophotrochozoan species. Ongoing research with "cutting edge" -methods combine gene expression analyses with sophisticated immunohistochemical investigations in morphogenesis. According to these data, the protonephridia of early *P. dumerilii* larvae, the so called head kidneys, are special in that they completely lack any cilia. Additionally, the nephridia of the first trunk segments are found to pass a protonephridial stage before becoming metanephridia. These disintegrate in late juveniles. Because protonephridial function relies on cilia and closely related annelids possess ciliated head kidneys we re-investigated larval stages of *P. dumerilii*. The head kidneys comprise a typical terminal cell with a filtration structure and an inner ciliation. Ultrastructural details of the head kidneys are congruent with supposed plesiomorphic conditions in Annelida and especially in Phyllodocida. The difference between transitory nephridia in frontal segments and the following definitive metanephridia has been interpreted as evidence for an ancient urbilaterian trunk regionalization preserved in *P. dumerilii* development. Our data confirm that the transitory nephridia pass a protonephridium-like state prior to their completion. But both, disintegration of frontal most nephridia and a transition from proto- to metanephridia, have already been described for annelid taxa and even in those without any obvious trunk regionalization. The occurrence of a transitory protonephridial state in *P. dumerilii* coincides with current assumptions of the evolutionary relationships of protonephridia and metanephridia in Annelida and is not surprising. Thus, the peculiarities in *P. dumerilii* stated earlier are shown to result from artifacts caused by the methods applied. This exemplifies the indispensability of combining "cutting edge" -techniques with traditional methods in morphology, providing a further challenge in the field of correlative microscopy.