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Developmental morphological diversity in caecilian amphibians: systematic and evolutionary implications

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STELLINGEN

Behorende bij het proefschrift
Developmental morphological diversity in caecilian amphibians: systematic and evolutionary implications
door **Hendrik Müller**

1. The bones comprising the caecilian skull are comparable to those of frogs and salamanders (*contra* Marcus *et al.*, 1935), and previous descriptions were based on false phylogenetic preconception, misinterpretation of the observed morphology and technical error. (*this thesis Chapter 2*).
2. Oviparity with a free-living larva is the plesiomorphic reproductive mode for caecilians and larvae undergo a metamorphosis comparable to other amphibians (*this thesis Chapter 3*).
3. Direct development in caecilians shows ontogenetic repatterning and heterochronic shifts compared to the ancestral ontogeny (*this thesis Chapter 4*).
4. The head morphology of foetal and newborn *Scolecomorphus* is an adaptation to postparturition feeding, rather than intraoviductal feeding (*this thesis Chapter 6*).
5. The presence of so-called foetal teeth is not indicative of viviparity (*this thesis Chapter 5*).
6. Caecilians would be an ideal group to study the evolution of direct development in amphibians and animals in general.
7. The presence of a distinct metamorphosis is indicative of a monophyletic Lissamphibia. Metamorphosis further points to an origin of Lissamphibia from within the Temnospondyli.
8. All Lissamphibia are primarily gymno- or zygokrotaphic (*contra* Carroll 2000).
9. Skull development shows variations correlated with reproductive mode in amphibians.
10. Ontogenetic repatterning seems to be a common mechanism in direct developing animals.
11. Even in the molecular age, studying morphology is important for understanding the processes of evolution and the patterns it generates.
12. More fieldwork will further our understanding of caecilian biology.
13. It should be at the discretion of the promovendus who he wishes to acknowledge in his thesis.