

Publication

Parental investment matters for maternal and offspring immune defense in the mouthbrooding cichlid *Astatotilapia burtoni***JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)**

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Parental care, while increasing parental fitness through offspring survival, also bears cost to the care-giving parent. Consequentially, trade offs between parental care and other vitally important traits, such as the immune system seem evident. In co-occurring phases of parental care and immunological challenges negative consequences through a resource allocation trade off on both the parental and the offspring conditions can be predicted. While the immune system reflects parental stress conditions, parental immunological investments also boost offspring survival via the transfer of immunological substances (trans-generational immune priming). We investigated this relationship in the mouthbrooding East African cichlid *Astatotilapia burtoni*. Prior to mating, females were exposed to an immunological activation, while others remained immunologically naïve. Correspondingly, the immunological status of females was either examined directly after reproduction or after mouthbrooding had ceased. Offspring from both groups were exposed to immunological challenges to assess the extent of trans-generational immune priming. As proxy for immune status, cellular immunological activity and gene expression were determined.; Both reproducing and mouthbrooding females allocate their resources towards reproduction. While upon reproduction the innate immune system was impeded, mouthbrooding females showed an attenuation of inflammatory components. Juveniles from immune challenged mouthbrooding females showed downregulation of immune and life history candidate genes, implying a limitation of trans-generational plasticity when parents experience stress during the costly reproductive phase.; Our results provide evidence that both parental investment via mouthbrooding and the rise of the immunological activity upon an immune challenge are costly traits. If applied simultaneously, not only mothers seem to be impacted in their performance, but also offspring are impeded in their ability to react upon a potentially virulent pathogen exposure.

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