

# AR $\beta$ is essential for DOM-typical traits of the African cichlid fish *Astatotilapia burtoni*

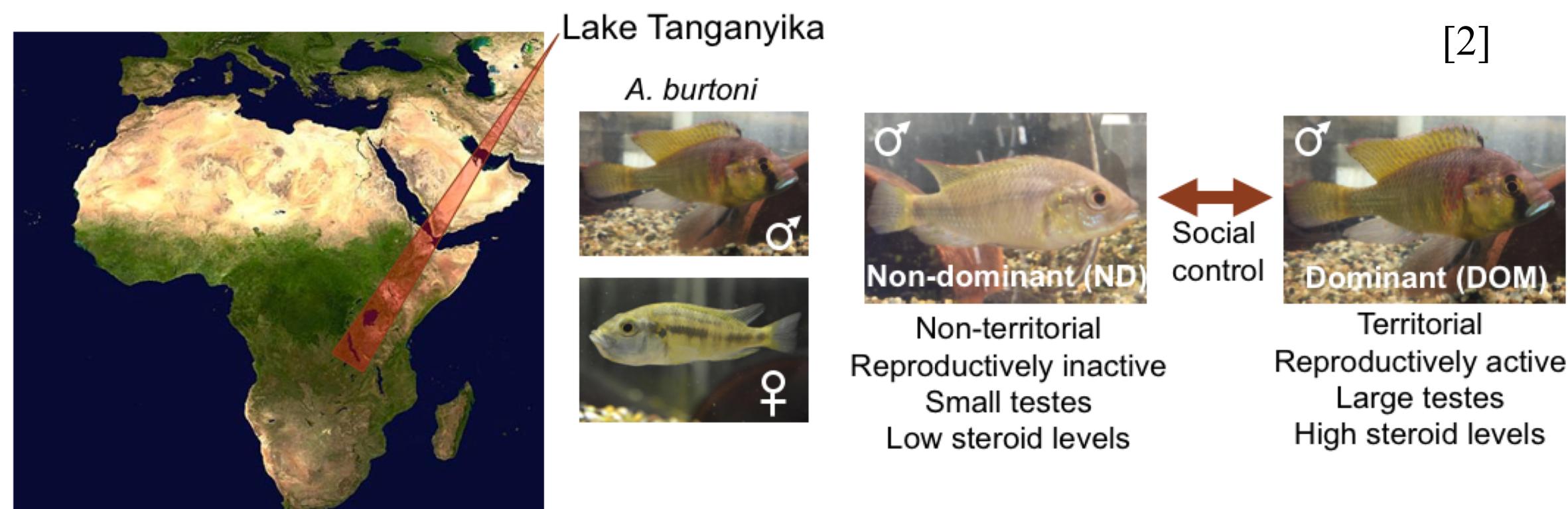


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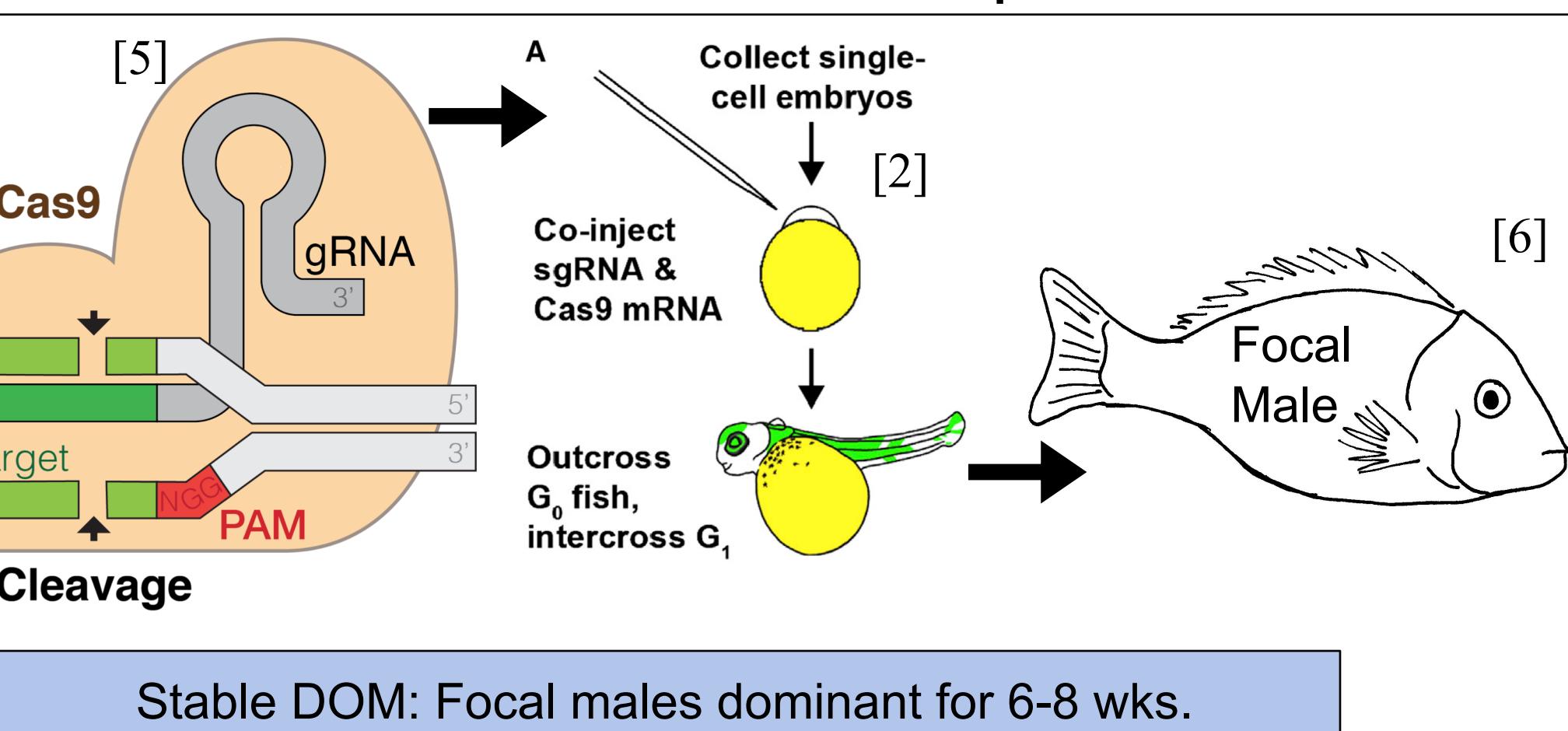
## Introduction

- Androgens may play a role via ARs in causing sex-biased neurodevelopmental conditions like autism in humans.<sup>7</sup>
- The African cichlid fish *Astatotilapia burtoni* is highly social<sup>3</sup> and largely communicates visually.<sup>4</sup>
- Dominant (DOM) males are aggressive, show a lack of fleeing, court females, and have larger testes.
- A. burtoni* have two androgen receptors: AR $\alpha$  and AR $\beta$ . DOMs express more AR $\alpha$ ; non-DOMs express more AR $\beta$ .
- Blocking ARs reduces the normal rise in the androgen 11-ketotestosterone (11-KT) as males become DOM.<sup>1</sup>
- AR $\alpha$  mutants show low levels of aggression.
- What role does AR $\beta$  play in controlling DOM male physiology and behavior?**

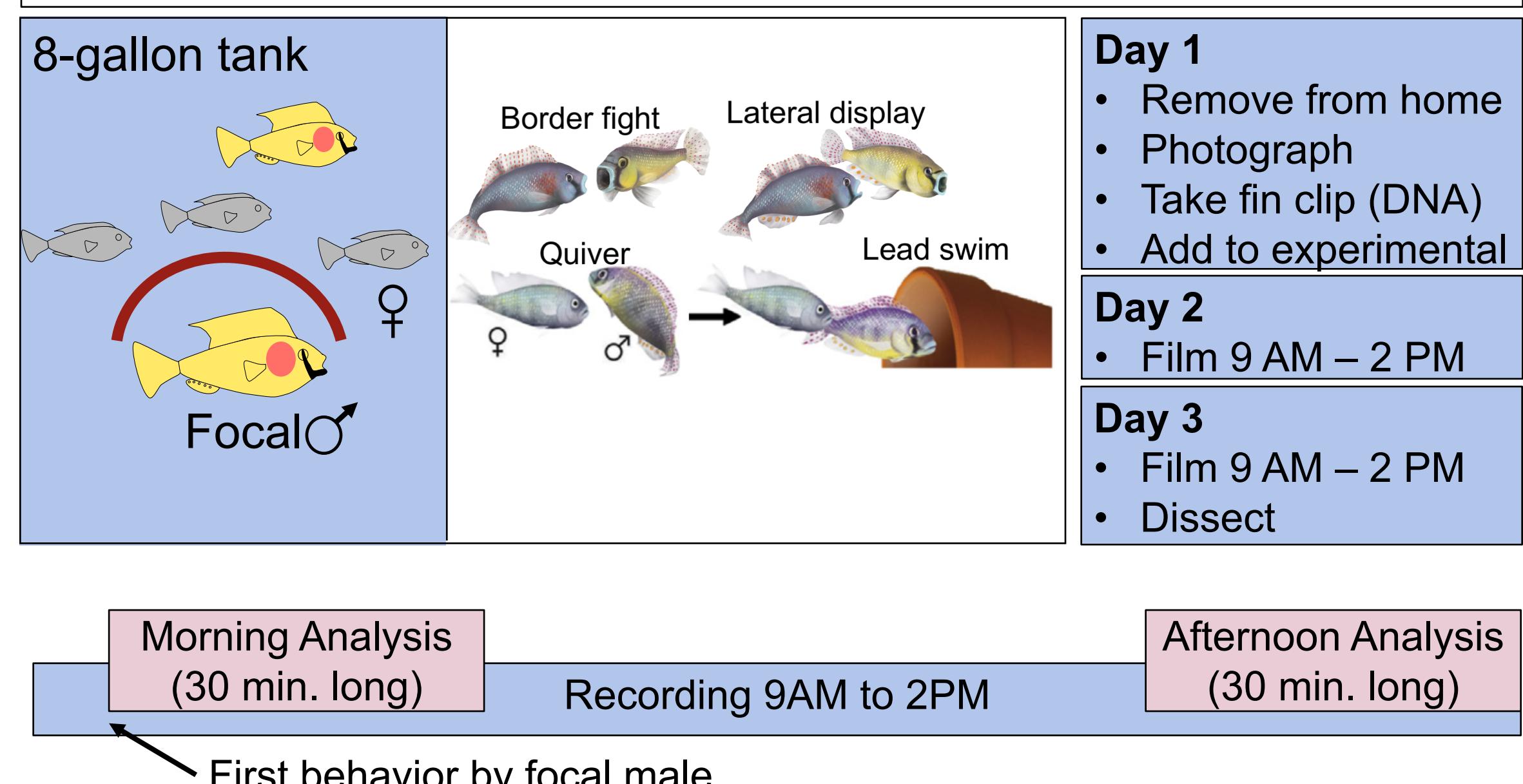


## Methods

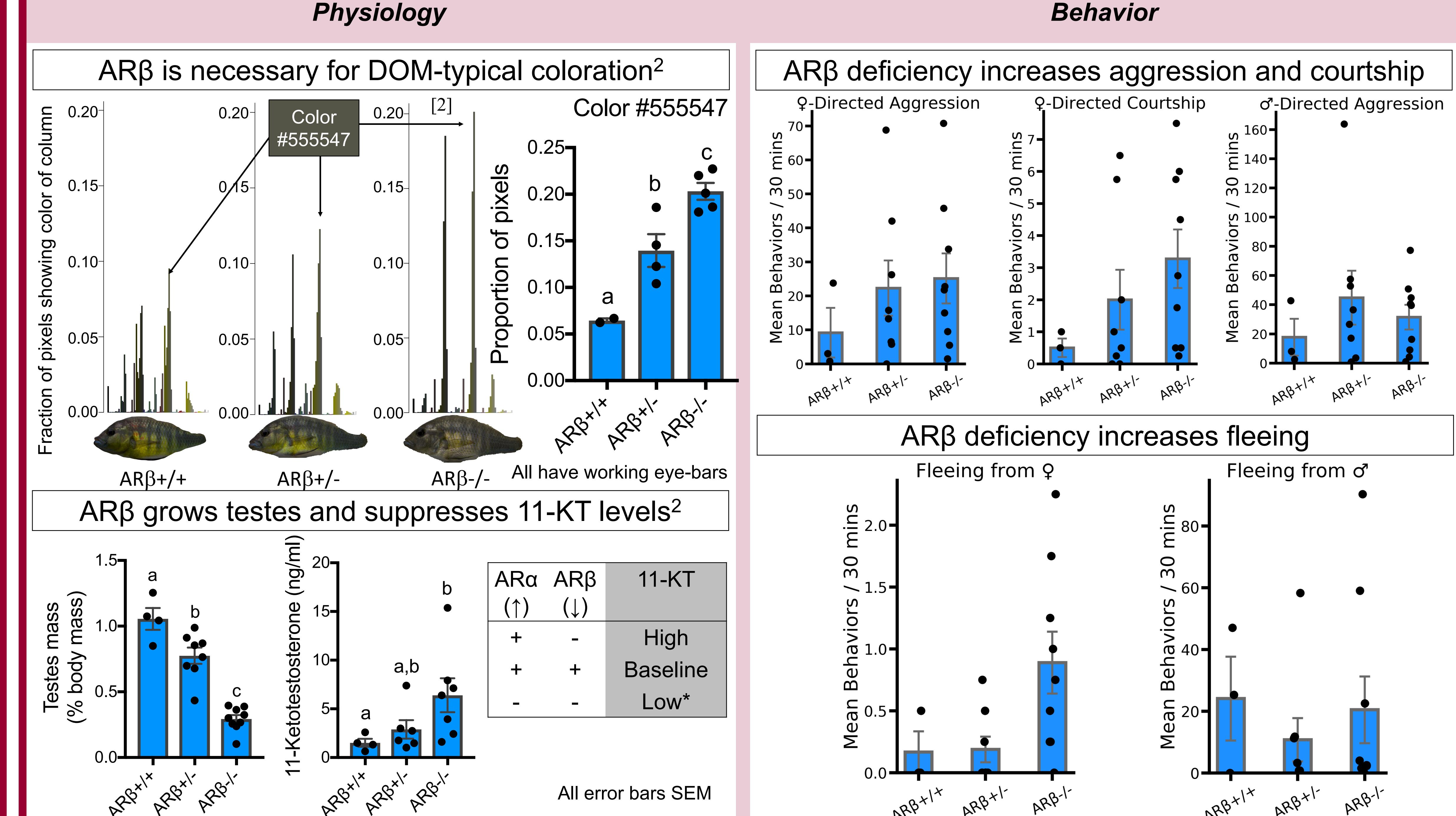
### Use CRISPR-Cas9 to create AR $\beta$ -knockouts



### Observe in a rich social environment (dyad assay)<sup>2</sup>

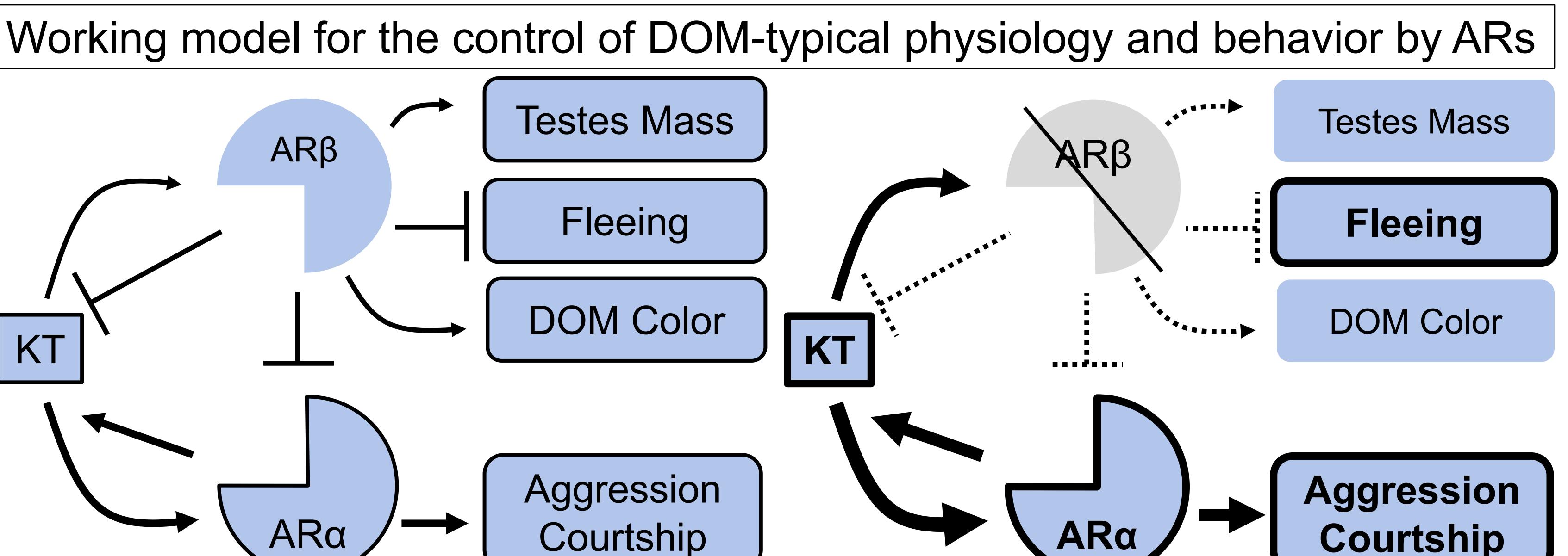


## Results



## Conclusions

- Each functioning AR $\beta$  allele has an additive effect on coloration and testis growth.
- Eye-bar availability is controlled separately from DOM-typical coloration.
- This model can be tested by measuring 11-KT levels and analyzing behavior of AR $\alpha$ -knockouts.



## Acknowledgements

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## References

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