

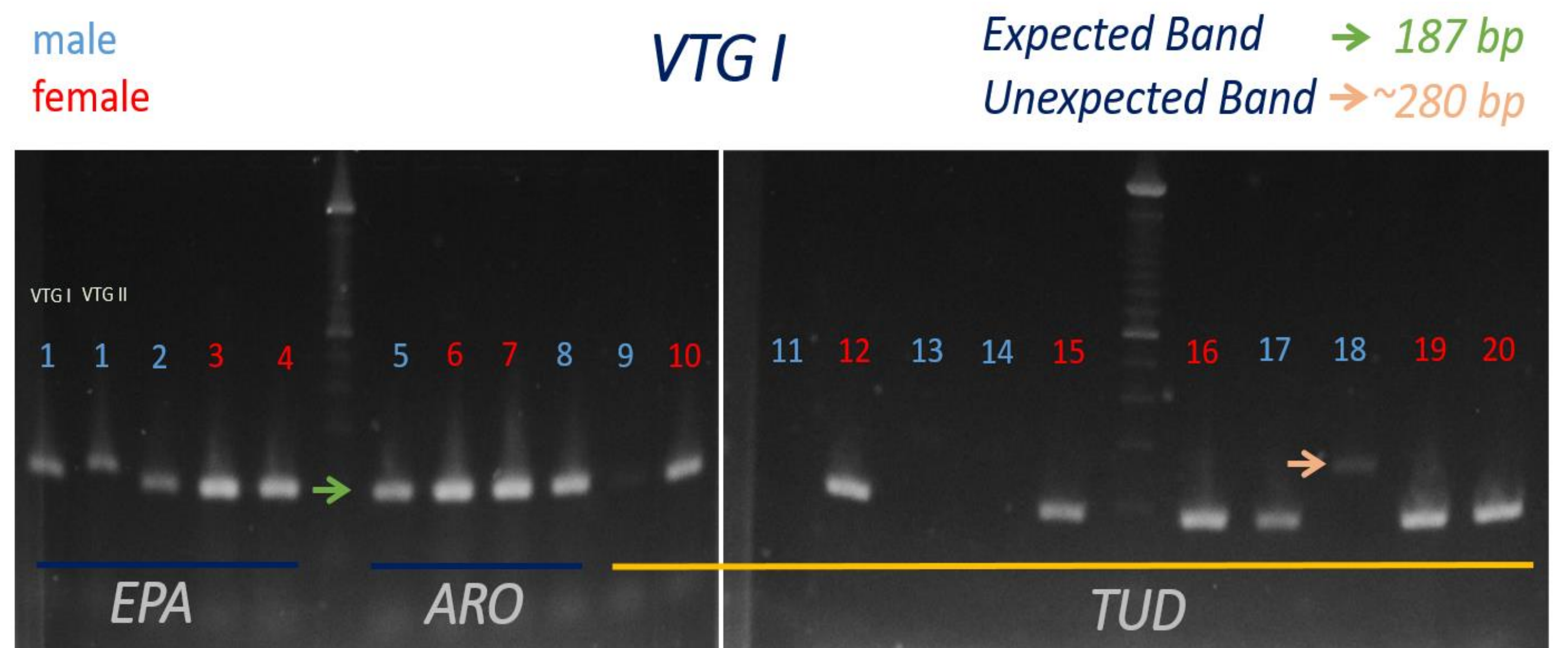
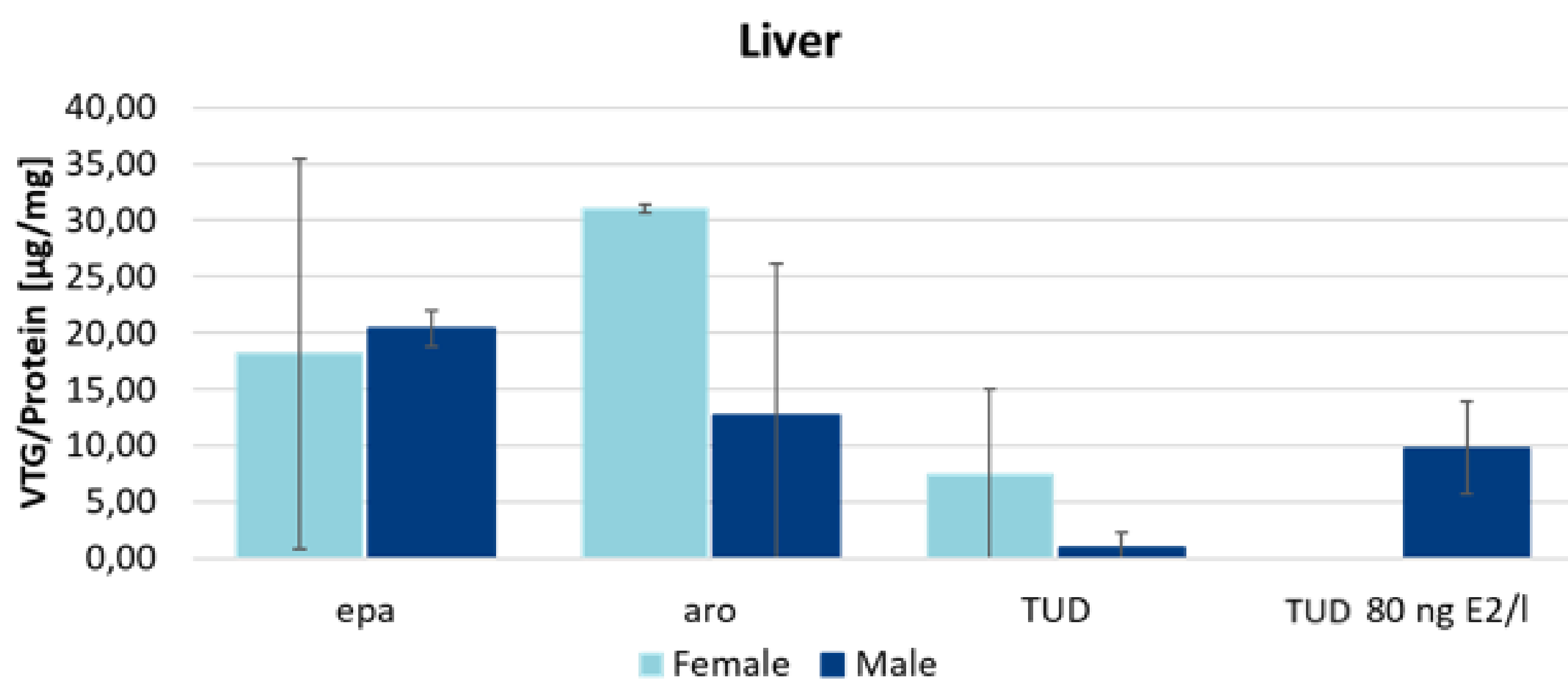
# OECD-High Flow-Through Housing Impacts VTG in Medaka



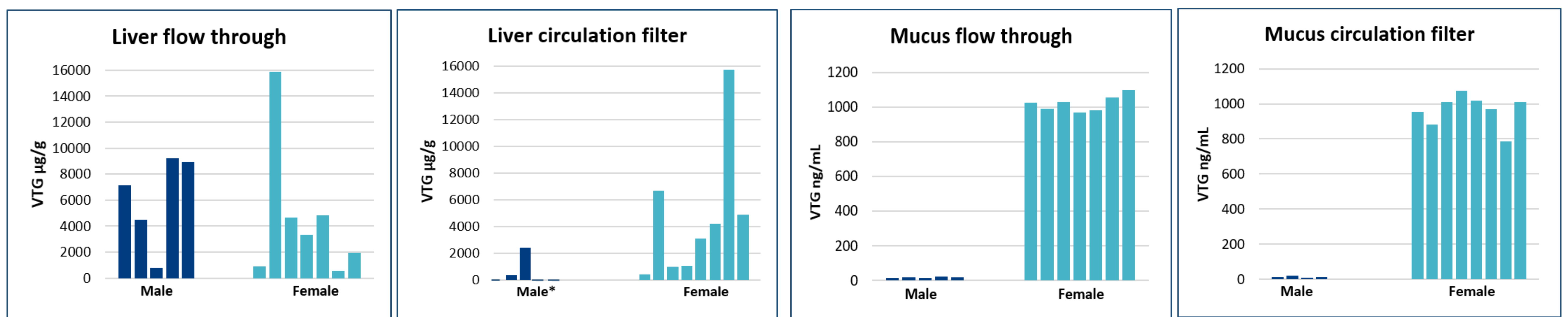
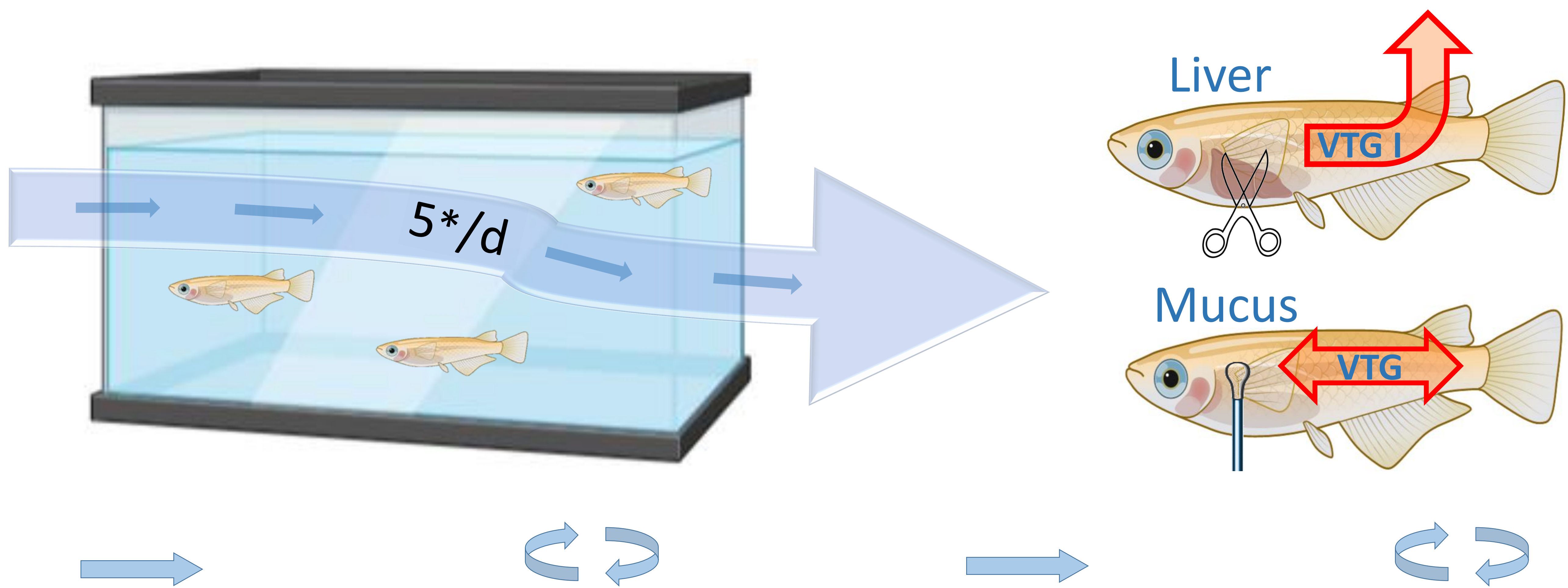
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The OECD test guidelines (229, 230, 234, 240) call for ELISA measurement of vitellogenin (VTG) in the liver of male medaka (*Oryzias latipes*) as an indicator of oestrogen activity. Unexpectedly high VTG values were found in the livers of male control fish of two medaka strains (ARO, EPA), although the fish were maintained guideline compliant. Gene expression analyses using endpoint and real-time PCR showed that the high ELISA values in the EPA and ARO strain were concomitant with a strong induction of the VTG-I gene.



To test whether these findings are due to genetic factors or to different housing conditions, fish of the TUD strain (drR-YHNI) from standardized filter technique equipped aquariums were transferred to filter-less tanks with a daily 5-fold exchange of water.



After 5 days, male fish maintained under flow-through conditions showed an increased gene expression of VTG I as well as increased liver VTG protein levels in ELISA detection with polyclonal antibodies.

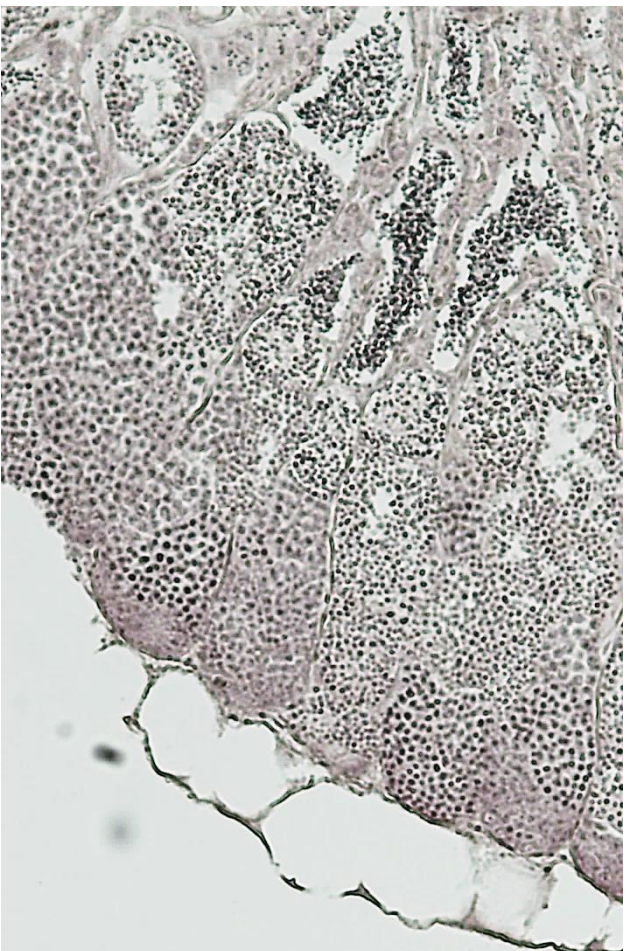
Comparative testing of the mucosa VTG showed no influence of housing conditions on VTG expression in the skin.

[VTG Webinar TUD/ GOBIO](#) [VTG Info GOBIO](#)

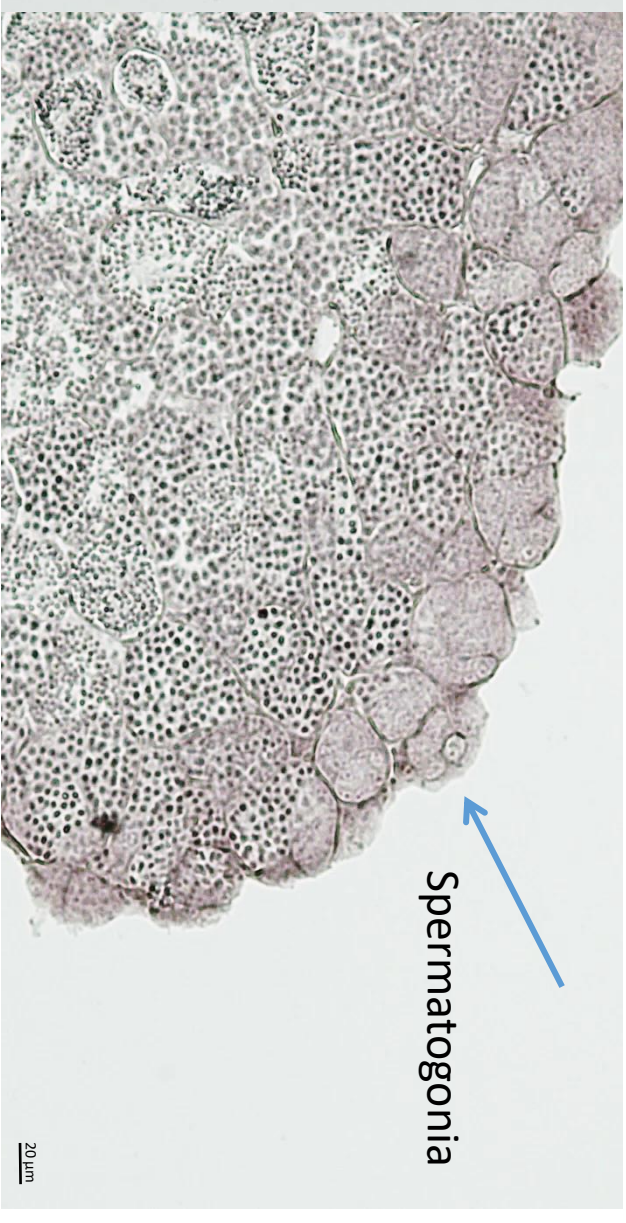


Since OECD housing conditions (> 5 fold water exchange/d) have a non test-compound related impact on the estrogen response in the liver, we consider mucosa as the more reliable matrix. VTG baseline pattern in this matrix allows for recognition of induction in males (estrogen effect) as well as inhibition of VTG in females, indicating estrogen receptor antagonism or aromatase inhibition. The estrogen response in the skin is detectable after 5 days. Thus AOP guided mucosa testing could represent a considerable "Refinement" in terms of a 3R concept and replace complex OECD tests for the detection of estrogen pathway mediated endocrine disruption.

Filter



Flow through



Testes of filter fish do not show a considerable spermatogonia population at the periphery of the gonadal lobe.

