

Caste plasticity in the *H. saltator* ant: Social context influences dominance and reproduction-related gene expression

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Research Question: How does reproductive status relate to expression of Corazonin and Vitellogenin in *Harpegnathos Saltator*?



Harpegnathos Saltator



All *Harpegnathos* equipped with stingers to hunt food

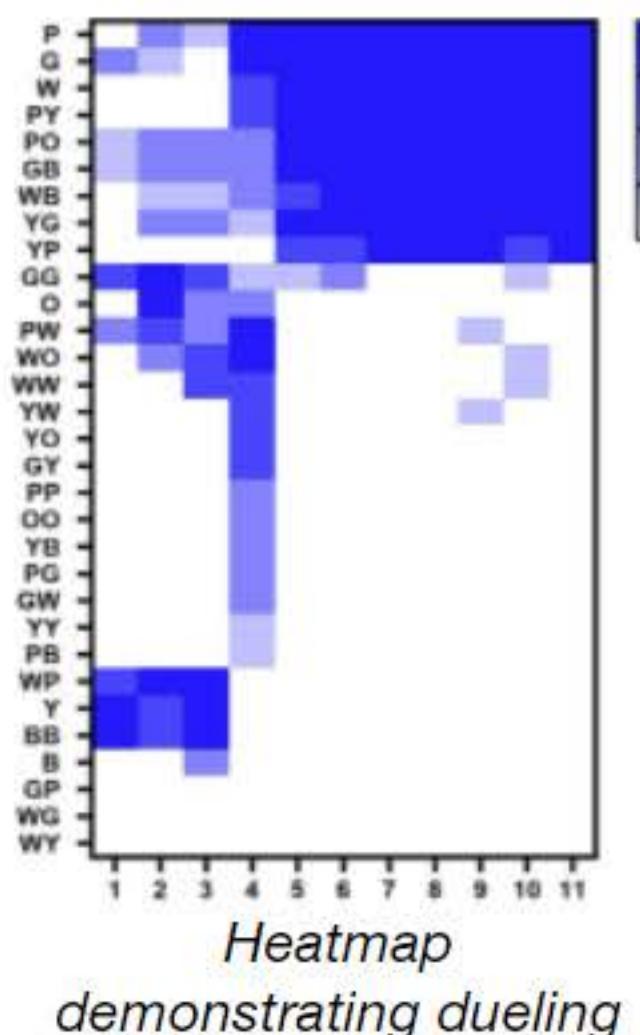


Ants Marked for easy identification

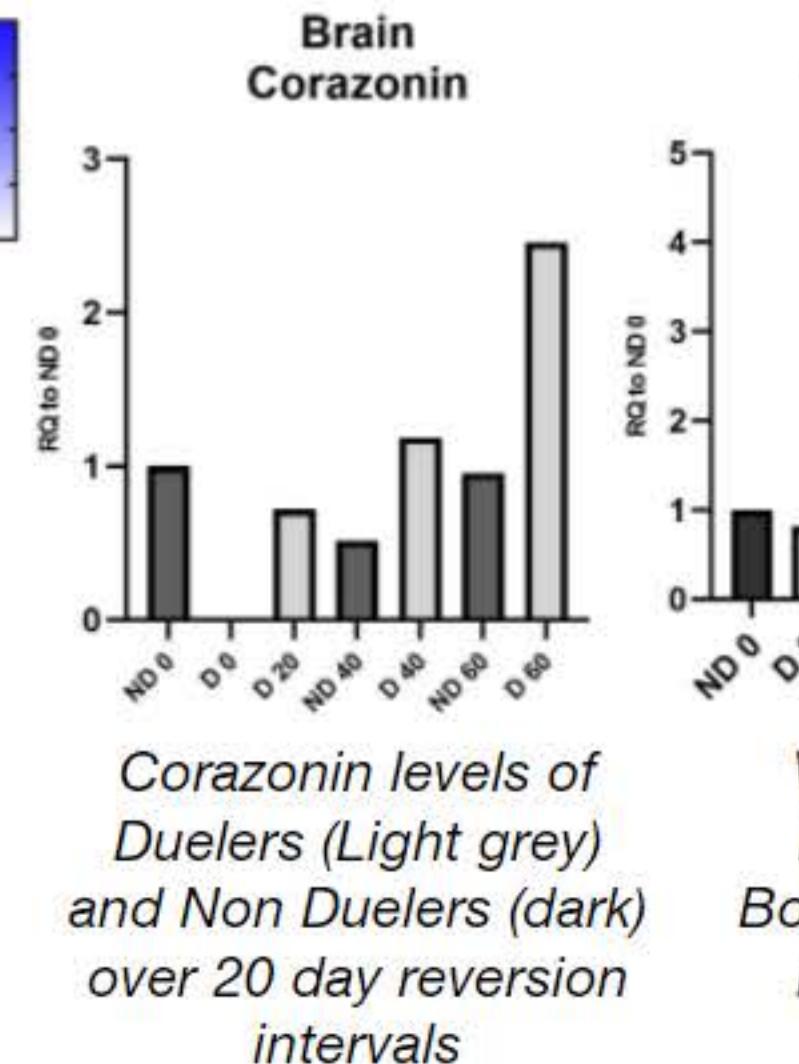
Methodology

- 3-4 Month Study involving two main colonies of ants
 - Each colony contains 30 ants
- Ants allowed to form social order and hierarchy in the first transition, lasts 1.5 months
 - Behavior tracked during this phase
- Once reproductives are established, they are removed and isolated to convert them back into non-reproductives
- Reproductives and non reproductives tested for expression of Corazonin and Vitellogenin on 20 day intervals
 - Testing is done by extraction of cells/brain
- Egg laying is observed and eggs are counted 2-4 days

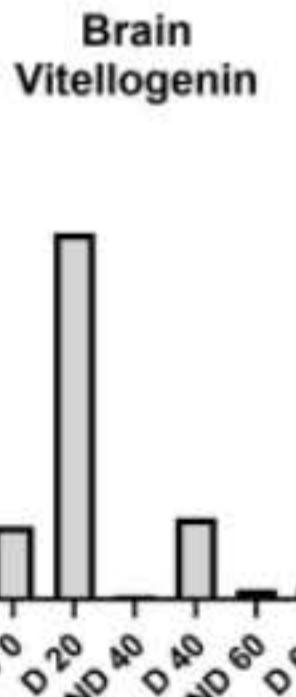
Results



Heatmap demonstrating dueling

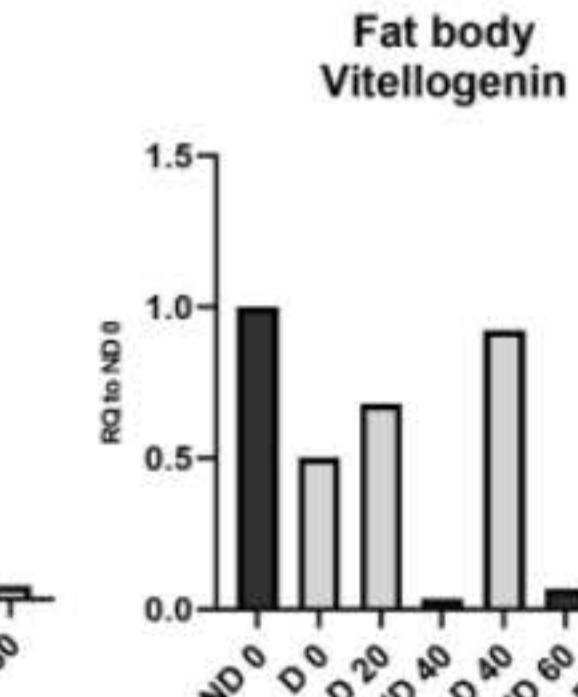


Corazonin levels of Duelers (Light grey) and Non Duelers (dark) over 20 day reversion intervals



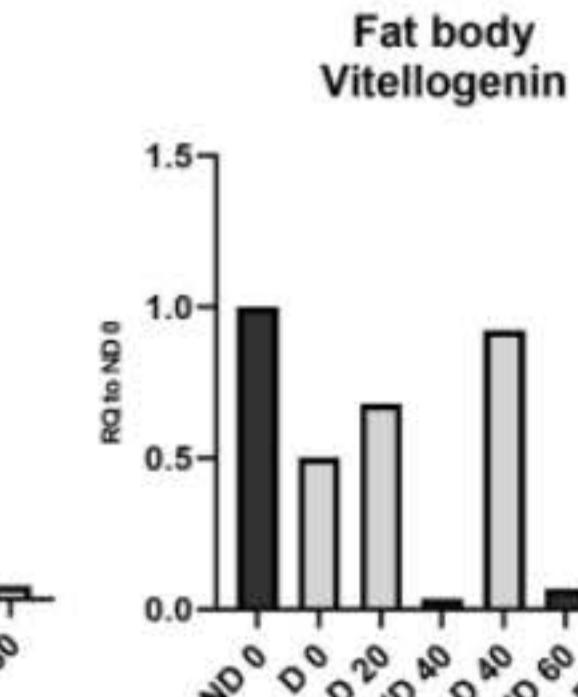
Brain Corazonin

Vitellogenin levels of Duelers and Non Duelers in the Brain and Fat Body. This was done over a period of reversion back to a Non Dueling, non-reproductive state.



Brain Vitellogenin

Fat body Vitellogenin



Fat body Vitellogenin

Results Interpretation

- Dueling ants became reproductive ants given 2-3 weeks
- Reproductives showed lowered levels of corazonin
 - Corazonin acts as a barrier to becoming reproductive
- Vitellogenin was much higher in reproductive ants
 - Vitellogenin is necessary for some means of egg prod.
- Policing occurs when reproductives introduced into an established colony
 - This involves biting and stalking
- Colonies will do very well if the workers focus on addressing the needs of larvae, and proper treatment of pupae.