

## Poster Session 1, Friday August 17

*All poster presenters are kindly requested to keep their posters up and available during the whole conference.*

**13:30h - 14:30h**

### **PS1.1-1 - GABAergic modulation of rhythmogenic mechanisms in the lamprey respiratory network**

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Blockade of ionotropic glutamate receptors in in vitro brainstem preparations of lampreys causes apnea, but bath application of bicuculline (10  $\mu$ M) and strychnine (10  $\mu$ M) restores the respiratory rhythm, although at reduced frequency. We investigated the role of inhibitory mechanisms in the lamprey rhythmogenic respiratory network. Bicuculline, but not strychnine, applied alone to the bath restored the respiratory rhythm during blockade of ionotropic glutamate receptors. This effect was also obtained by bicuculline (0.5 mM) or gabazine (0.2 mM) microinjected into the paratrigeminal respiratory group (pTRG), the proposed respiratory central pattern generator (CPG). Similar microinjections into the vagal motoneuron region did not restore respiratory rhythm, but elicited only tonic activity. Under basal conditions, bath application of bicuculline proved to markedly increase respiratory frequency. Bicuculline or gabazine microinjected into the pTRG slightly augmented respiratory frequency and caused the appearance of tonic activity and vagal bursts grouped in duplets or triplets. Bicuculline or gabazine microinjections into the vagal motoneuron region induced marked and regular increases in respiratory frequency. These effects were prevented by CNQX and D-AP5 microinjected into the pTRG and by sections between the vagal motoneuron region and the pTRG. Intense GABA-immunoreactivity was found both within the vagal motoneuron and the pTRG regions. The results support a prominent role of GABAergic inhibition on the lamprey respiratory rhythmogenesis both under basal conditions and during impaired glutamatergic transmission. These outcomes are in keeping with the powerful GABAergic modulatory control exerted on the lamprey locomotor CPG.