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The Conspecific Defense Modulator

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The following is proposed to explain the differential probability of defensive motor responses by muroid rodents against predators and conspecifics ("defense" vs "submission," see Lehman and Adams, 1977, *Behaviour*, 61: 238). There is a conspecific defense modulator (CDM), a pool of neurons which, like the defense motivational mechanism (DMM), is activated by motivating stimuli of defense. Unlike the DMM, which is inhibited by familiar conspecific cues such as the animals' colony odors, the CDM is facilitated. And unlike the DMM, which activates the motor patterning mechanisms of defense such as freezing and submissive postures, ultrasound vocalization, flight, upright posture, and the lunge-and-bite attack, the CDM differentially biases the likelihood that they will be activated by the DMM. The CDM facilitates freezing and submissive postures, ultrasound, and upright posture, and it inhibits lunge-and-bite. The principal actions of hormones upon defense may be mediated by the CDM, which may be facilitated by corticosteroids and inhibited by prolactin. This helps explain how prior defeat increases submissiveness, and how lactating females attack conspecifics as predators.