Table S1. Studies that have investigated the mechanism of action of gabazine in molluscs. All studies in molluscs have been done in gastropod molluscs. Target receptor: ion? = unknown which ion(s) the receptor is permeable to, hyper/depolarising? = unknown whether activation of the receptor results in hyperpolarisation (inhibitory) or depolarisation (excitatory). Administration method: bath application = animal/tissue/neuron sitting in the solution. Gabazine effect: the effect of gabazine on the behaviour measured or electrophysiological recording (neurotransmitter-induced hyper or depolarisation): - = no effect, ✕ = completely blocked, ↓ = decrease, ↑ = increase.

Target receptor	**Species** **Common name**	**Life stage**	**Gabazine conc. (uM)**	**Administration method**	**Method of measurement**	**Gabazine effect**	**Reference**
Ionotropic GABA R (Cl-, hyper/depolarising?)	*Tritia obsoleta* Marine mud snail	Larvae	0.1, 1, 10, 100	Bath application	*In vivo* Percentage of larvae metamorphosing	-	Biscocho et al. (2018)
Ionotropic GABA R (ion?, hyperpolarising)	*Helix aspersa* Terrestrial snail	Not stated	10	Bath application then by micropipette	*In vitro* Electrophysiology	✕	Vehovszky et al. (1989)
Ionotropic GABA R (ion?, depolarising)	*Helix aspersa* Terrestrial snail	Not stated	10	Bath application then by micropipette	*In vitro* Electrophysiology	↓	Vehovszky et al. (1989)
GABA R (type unknown)	*Nassarius obsoletus* Eastern mud snail (marine)	Larvae	1, 10 100, 1,000	Bath application	*In vivo* Percentage of larvae metamorphosing	- ↑	Welch (2015)

Table S2. Studies that have investigated the mechanism of action of picrotoxin in molluscs. All studies are in gastropod molluscs, apart from one study in a cephalopod mollusc (Chichery and Chichery, 1985). Target receptor: ion? = unknown which ion(s) the receptor is permeable to, hyper/depolarising? = unknown whether activation of the receptor results in hyperpolarisation (inhibitory) or depolarisation (excitatory). Administration method: superfusion = continuous flow over the outside of the tissue/neuron, perfusion = continuous flow through the tissue/neuron, bath application = animal/tissue/neuron sitting in the solution. Picrotoxin effect: The effect of picrotoxin on the behaviour measured or the electrophysiological recording (neurotransmitter-induced hyper or depolarisation): - = no effect, ╳ = completely blocked, ↓ = decrease, ↑ = increase.

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Table S3. Explanatory variables, distribution family and link function as well as the priors used for the chosen model of each response variable in the gabazine experiment. Explanatory variables: * = interactive effect, + = additive effect. Priors: - = priors not applicable for this parameter, improper uniform = improper uniform priors were used (= uniform priors from infinity to -infinity).

Response variable	Explanatory variables	Family (link)	Intercept prior	Slope prior	sigma prior	shape prior
Time in Zone A (s)	CO2 * Drug	Gaussian (identity)	student_t(3, 316, 458.1)	improper uniform	student_t(3, 0, 458.1)	-
No. of visits to Zone A	CO2 * Drug + Mantle length	Negative binomial (log)	student_t(3, 1.4, 2.5)	improper uniform	-	gamma(0.01, 0.01)
Proportion of squid that touched mirror softly	CO2 * Drug	Binomial (logit)	student_t(3, 0, 2.5)	improper uniform	-	-
Latency to first soft mirror touch (s)	CO2 * Drug	Gamma (log)	student_t(3, 3.7, 2.5)	improper uniform	-	gamma(0.01, 0.01)
No. of soft mirror touches	CO2 * Drug + Behavioural tank + Time of test	Negative binomial (log)	student_t(3, 2.9, 2.5)	improper uniform	-	gamma(0.01, 0.01)
Proportion of squid that touched mirror aggressively	CO2 * Drug	Binomial (logit)	student_t(3, 0, 2.5)	improper uniform	-	-
Latency to first aggressive mirror touch (s)	CO2 * Drug + Behavioural tank + Time of test	Gamma (log)	student_t(3, 3.7, 2.5)	improper uniform	-	gamma(0.01, 0.01)
No. of aggressive mirror touches	CO2 * Drug	Negative binomial (log)	student_t(3, 2.9, 2.5)	improper uniform	-	gamma(0.01, 0.01)
Active time (s)	CO2 * Drug	Gamma (log)	student_t(3, 5.3, 2.5)	improper uniform	-	gamma(0.01, 0.01)
Total distance moved (cm)	CO2 * Drug	Gamma (log)	student_t(3, 6, 2.5)	improper uniform	-	gamma(0.01, 0.01)
Average speed (cm/s)	CO2 * Drug	Gaussian (identity)	student_t(3, 2.1, 2.5)	improper uniform	student_t(3, 0, 2.5)	-

Table S4. Explanatory variables, distribution family and link function as well as the priors used for the chosen model of each response variable in the picrotoxin experiment. Explanatory variables: * = interactive effect, + = additive effect. Priors: - = priors not applicable for this parameter, improper uniform = improper uniform priors were used (= uniform priors from infinity to -infinity).

Response variable	Explanatory variables	Family(link)	Intercept	Slope	sigma	shape
Time in Zone A (s)	CO2 * Drug + Behavioural tank + Time of test	Gaussian (identity)	student_t(3, 677, 315.8)	improper uniform	student_t(3, 0, 315.8)	-
No. of visits to Zone A	CO2 * Drug + System	Negative binomial (log)	normal(0, 8)	normal(0, 2.5)	-	gamma(0.01, 0.01)
Proportion of squid that touched mirror softly	CO2 * Drug	Binomial (logit)	student_t(3, 0, 2.5)	improper uniform	-	-
Latency to first soft mirror touch (s)	CO2 * Drug	Gamma (log)	student_t(3, 4.4, 2.5)	improper uniform	-	gamma(0.01, 0.01)
No. of soft mirror touches	CO2 * Drug + Mantle length	Negative binomial (log)	student_t(3, 2.8, 2.5)	improper uniform	-	gamma(0.01, 0.01)
Proportion of squid that touched mirror aggressively	CO2 * Drug	Binomial (logit)	student_t(3, 0, 2.5)	improper uniform	-	-
Latency to first aggressive mirror touch (s)	CO2 * Drug + System	Gamma (log)	normal(0, 10)	normal(0, 2.5)	-	gamma(0.01, 0.01)
No. of aggressive mirror touches	CO2 * Drug + Number of acclimation days + Date introduced to treatment tank	Negative binomial (log)	student_t(3, 3.1, 2.5)	improper uniform	-	gamma(0.01, 0.01)
Active time (s)	CO2 * Drug	Gaussian (identity)	student_t(3, 297.8, 206.5)	improper uniform	student_t(3, 0, 206.5)	-
Total distance moved (cm)	CO2 * Drug	Gaussian (identity)	student_t(3, 737.1, 641.1)	improper uniform	student_t(3, 0, 641.1)	-
Average speed (cm/s)	CO2 * Drug	Gaussian (identity)	student_t(3, 2.4, 2.5)	improper uniform	student_t(3, 0, 2.5)	-

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