Table S1 : Noise sources and corresponding reactions

Noise source	Reaction	Formulation
ζ_1	AHL production	$\sqrt{k_A}\Gamma_1$
ζ_2	Internal AHL (A_i) decay	$\sqrt{\gamma_{A_i} A_i}\Gamma_2$
ζ_3	Complex association	$\sqrt{k_{C1} A_i R}\Gamma_3$
ζ_4	Complex dissociation	$\sqrt{k_{C2} C}\Gamma_4$
ζ_5	Diffusion	$\sqrt{P\left\|A_i/V_i - A_e/V_e\right\|}\Gamma_5$
ζ_6	External AHL (A_e) decay	$\sqrt{\gamma_{A_e} A_e}\Gamma_6$
ζ_7	LuxR production	$\sqrt{k_R}\Gamma_7$
ζ_8	LuxR decay	$\sqrt{\gamma_R R}\Gamma_8$
ζ_9	Complex decay	$\sqrt{\gamma_C C}\Gamma_9$

(Γ_i 's are independent unit Gaussian noise)