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NOMPC ion channel hinge forms a gating spring that initiates mechanosensation

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		NOMPC::GFP	NOMPC$^{-/-}$	AR+AR-NOMPC::GFP	LH+LH-NOMPC::GFP
Model select.	Sample size (# flies)	5	22	5	5
	Sample size (# data points)	133	553	107	130
	$AICc$ (1 channel type)	-1428	-5492	-1138	-1456
	$AICc$ (2 channel types)	-1544	-5493	-1232	-1461
	w_i (1 channel type)	0	**0.7**	0	0.1
	w_i (2 channel types)	**1**	0.3	**1**	**0.9**
Fit param.	N_s	649 ± 106	-	494 ± 85	553 ± 78
	z_s (fN)	23 ± 2	-	24 ± 1	11 ± 1 ***
	N_i (x 10^3)	59 ± 16	24 ± 0.5	53 ± 12	34 ± 14 **
	z_i (fN)	3 ± 0	3 ± 1	3 ± 0	3 ± 0
	K_∞ (μN)	78 ± 2	63 ± 2 ***	77 ± 2	70 ± 2 ***
	K_{lin} (μN)	50 ± 2	46 ± 1 **	52 ± 3	49 ± 2

Supplementary Table 1. Gating spring model selection and fit parameter values. Model selection: Akaike information criterion with corrected sample size ($AICc$) and respective Akaike weights (w_i) obtained by fitting the dynamic stiffness of the fly's antennal receiver with gating spring models with one and two channel types. The model that yielded the larger value of w_i was used (highlighted in bold). Fit parameters: values represent mean ± SEM. K_{lin} was measured directly, independent of the fits. Asterisks indicate significant differences from NOMPC::GFP controls (**: p < 0.01; ***: p < 0.001, two-tailed Mann-Whitney U-tests with Bonferroni correction). For respective model equations, see Methods.

system	force applied on	force constant (kJ/(mol nm^2))	force value (kJ/(mol nm))	pulling rate (nm/ps)	position restrained of	simulation time (ns) × # of replicates
Conformational changes under external force						
TMD+LH+5ARs (ARs25-29)	-	-	-	-	-	100×3
	AR25	5000	/	1.5×10^{-5} / -1.5×10^{-5}	-	
Spring constant calculation						
TMD+LH+5AR (ARs25-29) system a	-	-	-	-	-	100×3
	AR25	-	30 / 60 / -30 / -60	-	TRP+S6	
LH+26ARs (ARs4-29) system b	-	-	-	-	-	100×3
	AR4	/	20 / 30 / -10 / -20 / -30	-	LH	
	AR25	/	60 / -30 / -60	-	LH	

Supplementary Table 2. Simulations performed in this work.