

SUPPLEMENTAL INFORMATION

**Figure S1. The Aer2 receptor contains five HAMP domains.** Sequence alignment of the HAMP domains in Aer2. HAMP domains consist of two helices (AS-1 and AS-2) and a semi-structured connector which folds into a dimeric, parallel four-helix bundle. Conserved glycine residues and hydrophobic residues (HR1 and HR2) in the connector are shown in blue and grey respectively. HAMP2-3 and HAMP4-5 are concatenated to form di-HAMP domains.

		AS-1	connector	AS-2	
HAMP1	8	AVAQQRADRIATLLQSFADGQLDTAVGEAPAPG		-YERLYDSLRLALQRQLRE	57
HAMP2	63	QQVESLEAGLAEMSRQHEAGWIDQTI		PAERLEGRAARI	113
HAMP3	109	AAHIAVKMKVSVVTAYGQGNFEPLMDRL		-PGKKAQITEAIDGVRERLRG	157
HAMP4	287	TEEHRAEQEVSQLVQAAAA		GDFSKRVEEAGKEGFFLR	337
HAMP5	333	DTADRGLRDVSRMLGALA		QGDLTQRI-EADYQGTFGQLKD	382

**Figure S2. Pull-down assays of Aer2 PAS and HAMP domain protein fragments.** Pull-down assays with His-tagged proteins were unable to detect binding of the PAS domain to either HAMP1-3 or HAMP4-5 fragments.

