

Figure S1, related to Figure 1.
 Humidity preference of *w^{1118,CS}* and *IR68a^{MB05565}* flies at 0, 5 and 15 minutes

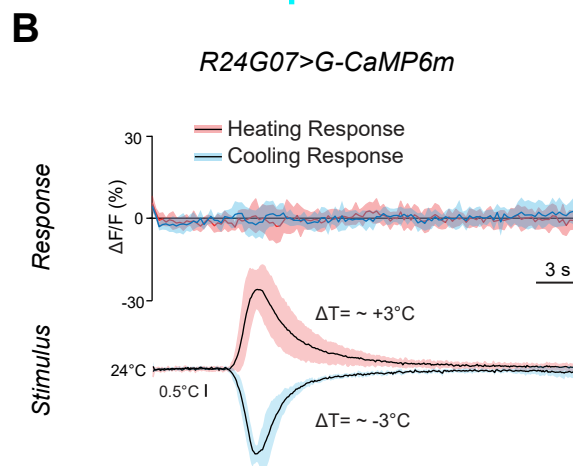
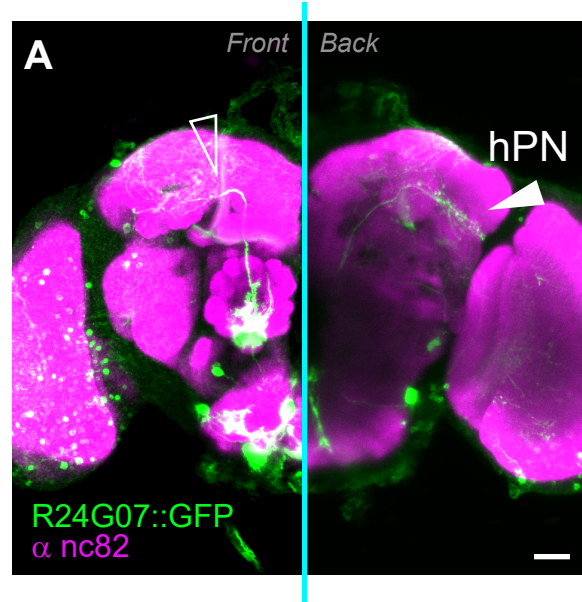


Figure S2, related to Figure 3.

Expression pattern and lack of temperature responses in R24G07 (A) Whole mount brain of a R24G07>CD8:GFP animal, stained with anti-GFP (green) and anti-nc82 (pink, staining the neuropil, scale-bar=10 μ m). Two distinct maximum projections are shown illustrating expression in cells and pathways innervating either the front or back of the brain. Note that a second PN originates from the AL region (empty arrowhead), which is distinct from the hPN cell type described here as responding to humid air (full arrowhead). This second PN innervates a region anterior to the Bean, and did not respond to humid air stimuli (35%RH>85%RH, which robustly activate the Bean and R24G07 hPNs). (B) Lack of temperature responses in the R24G07 hPN that innervates the Bean. Stimuli and responses were recorded simultaneously and are represented as AV \pm STD (N=3 animals/condition).

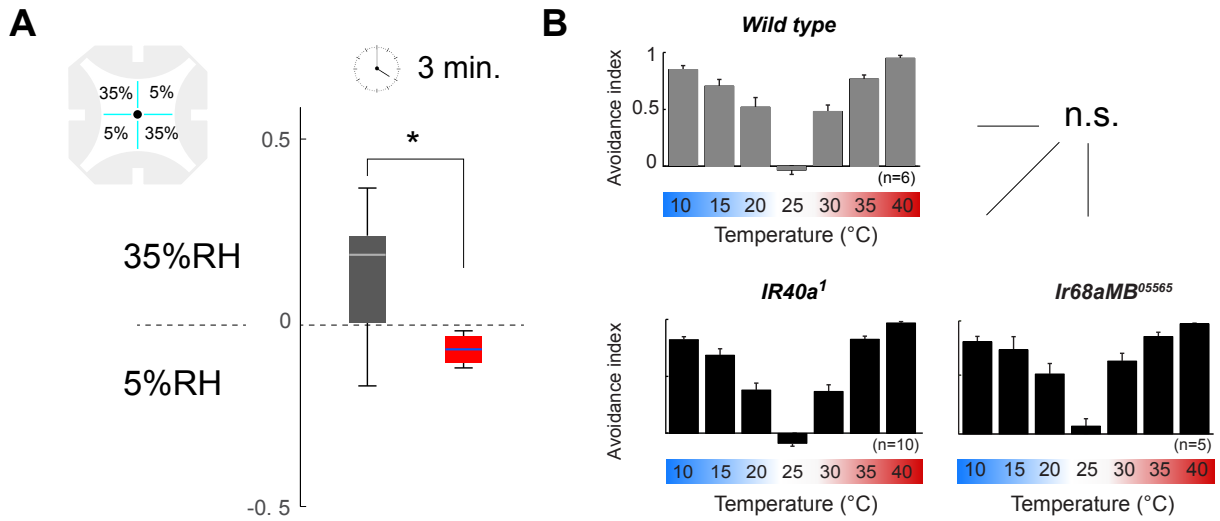
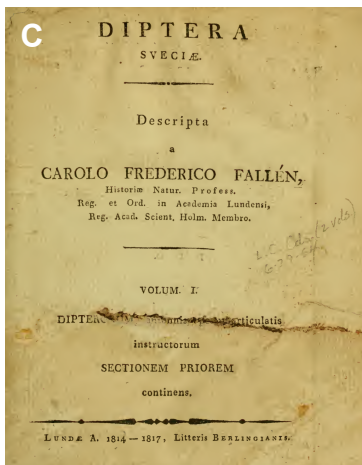


Figure S3, related to Figure 4

(A) Preference behavior for 35%RH vs 5%RH of Control (grey) and *Ir40* mutants (red) in a 3 minutes assay (top left: outline of the chamber used, temperature was constant at 25°C in all quadrants; asterisk $p < 0.05$ in 2-sample t-test).

(B) *Ir40a¹* and *Ir68a^{MB05565}* have no significant temperature preference phenotype. (Av \pm SEM; ANOVA; experiments were performed as in ref. 1; RH ~40%)



D

DROSOPHILA *Clypeus* seta mystacina utrinque armatus.
Antennæ breves, rotundatæ: seta dorsali pectinata.
Corpus obtuse ovatum.

Dignoscitur hocce Genus: statura corporis subtereti & obtusiori, quam in *Geomyza*; imprimis autem: seta antennarum pectinata, s. distincte plumata, radiis scilicet distantibus. *Corpus* parvum vel minutum. *Clypeus* brevis, valde impressus, (foveolatus) infra oculos distantes & rotundatos parum s. vix descendens. *Antennæ* apice rotundatæ, in fovea frontis sæpe occultatæ: seta distinctiori, semper pectinata. *Alarum nervus auxiliaris* simplex, brevis, tertiam costæ partem fere occupans.

Metamorphosis ignota. Hospitantur autem *Imagines* in pratis humidis & umbrosis, imprimis ad Fungos, (Larvæ an Mycetophagæ?) flores raro vtsitantes. Quædam species in fenestris, tempore imprimis autumnali, versantur. Suetiæ *Daggflugor*.

Figure S4, related to Figure 4

A) *Drosophila funebris* from a Swedish 18th century collection (Naturhistoriska riksmuseum, Stockholm, Sweden)

B) Professor Carl Fredrik Fallén (1764-1830).

C) Frontispiece of Fallén's *Diptera Sveciæ*, Volum I (1814-1817)

D) The original description of the genus *Drosophila*.