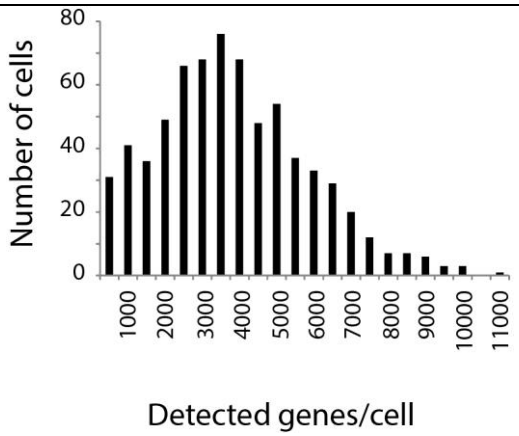
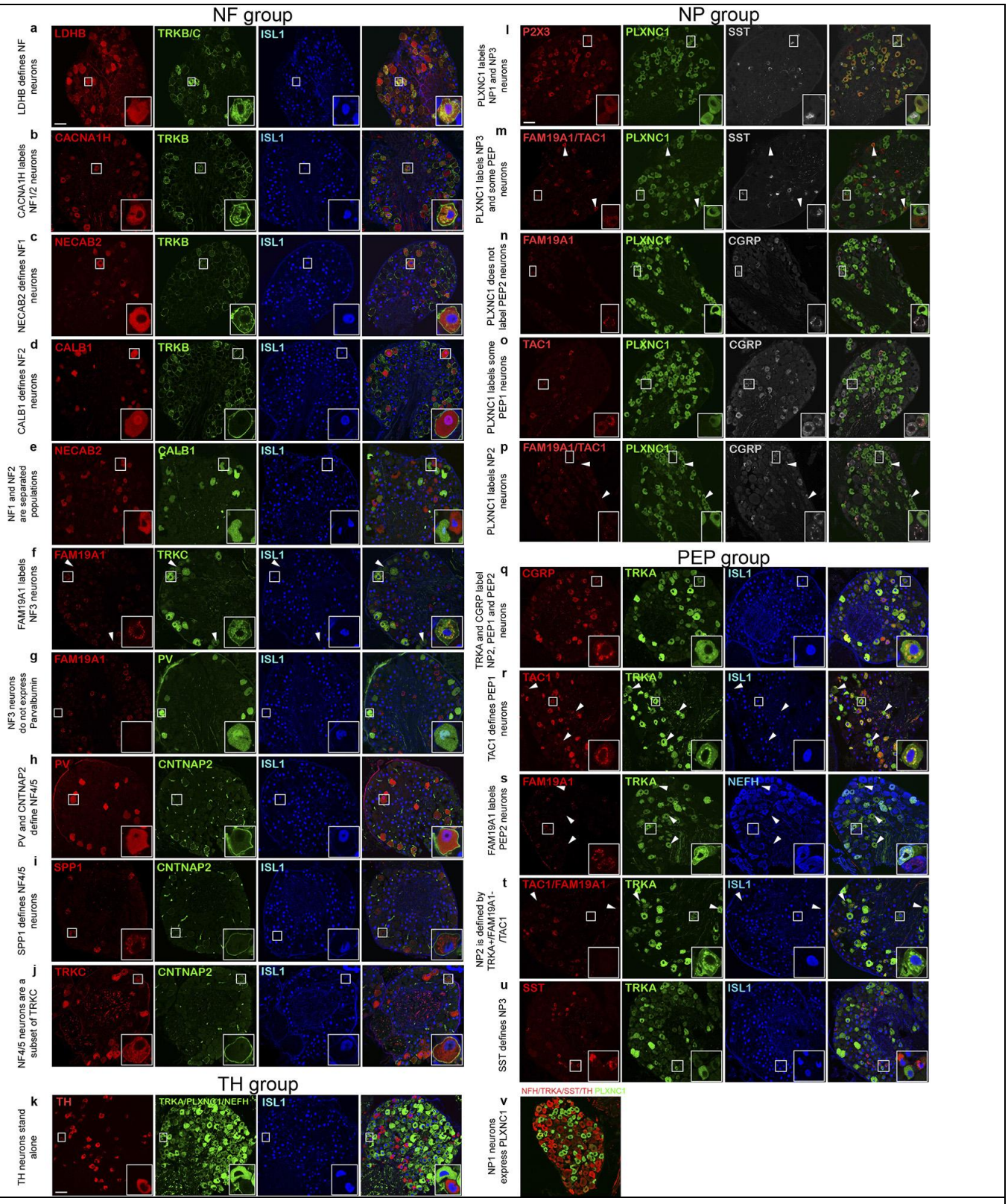


Supplementary Figure 1

Number of genes detected.

Distribution of the number of detected genes, including only the UCSC mRNA gene models (i.e. excluding many non-coding RNAs, ribosomal and tRNAs and expressed repeat families). The average number of detected genes was 3574 (standard deviation, 2010).

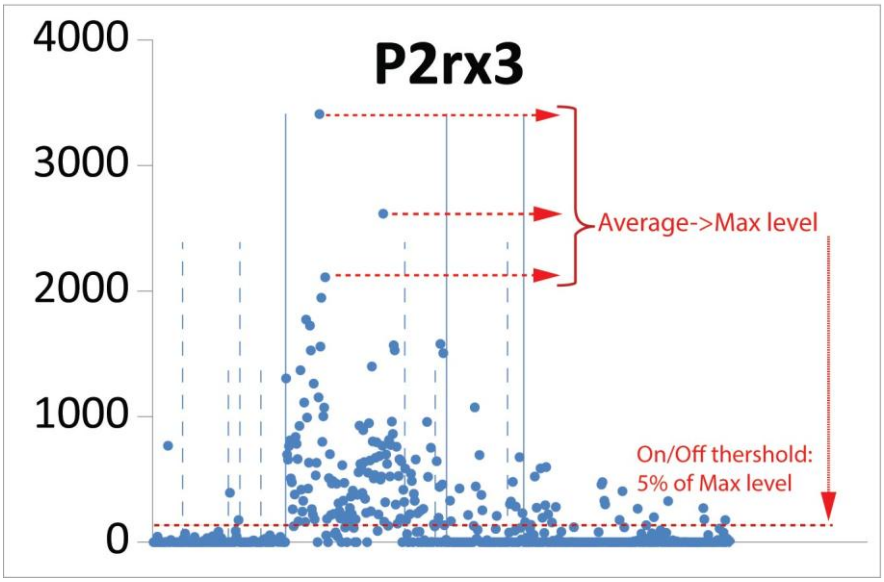


Supplementary Figure 2

Immunohistochemical identification of neuronal types.

Supplementary figure 2. Immunohistochemical identification of neuronal types. (a) Triple immunohistochemistry for LDHB, TRKB and TRKC and ISLET1. Note $TRKB^+$-$TRKC^+$/$LDHB^+$ neurons (inset). All neurons belonging to the large *Neurofilament, heavy polypeptide* neuron class express *Lactate dehydrogenase B (Ldhb).* **(b-e) Validation of the NF1 and NF2 $TRKB^+$ subgroups.** (**b)** Triple immunohistochemistry for CACNA1H, TRKB and ISLET1. Note $TRKB^+$/$CACNA1H^+$ neurons (inset). The *Calcium channel, voltage-dependent, T type, alpha 1H subunit* (CACNA1H) labels most of the *neurotrophic tyrosine kinase, receptor, type 2,* TRKB-expressing neurons. **(c)** Triple immunohistochemistry for NECAB2, TRKB and ISLET1. Note $NECAB2^+$/$TRKB^{high}$ neurons (inset). The NF1 subgroup of neurons expresses the *N-terminal EF-hand calcium binding protein 2* (NECAB2) and TRKB at high levels ($TRKB^{high}$). **(d)** Triple immunohistochemistry for CALB1, TRKB and ISLET1. Note $CALB1^+$/$TRKB^{low}$ (inset). The NF2 subgroup expresses *Calbindin* (CALB1) and TRKB at low levels ($TRKB^{low}$, NF2). **(e)** Triple immunohistochemistry for NECAB2, CALB1 and ISLET1 shows NECAB2 and CALB1 being mutually exclusive (inset). **(f-j) Validation of the NF3, NF4 and NF5 $TRKC^+$ subgroups.** The large, *Neurotrophic tyrosine kinase, receptor, type 3* (TRKC) population is formed by 3 subgroups. **(f)** Triple immunohistochemistry for FAM19A1, TRKC and ISLET1. Note $FAM19A1^+$/$TRKC^+$ neurons (inset) and $TRKC^+$/$FAM19A1^-$ neurons (arrowheads). NF3 is defined as a subpopulation of TRKC neurons expressing the *Chemokine-like protein TAFA-1* (FAM19A1). **(g)** Triple immunohistochemistry for FAM19A1, Parvalbumin (PV) and ISLET1. *Pvalb* and *Fam19a1* expression is mutually exclusive (inset). NF3 neurons are negative for Parvalbumin. **(h)** Triple immunohistochemistry for CNTNAP2, PV and ISLET1. Note PV^+/$CNTNAP2^+$ neurons (inset). **(i)** Triple immunohistochemistry for SPP1, CNTNAP2 and ISLET1. Note $SPP1^+$/$CNTNAP2^+$ neurons (inset) representing NF4 and NF5. NF4 and NF5 PV-positive neurons are a subpopulation of TRKC–positive neurons. **(j)** Triple immunohistochemistry for TRKC, CNTNAP2 and ISLET1. Note NF4 and NF5 $CNTNAP2^+$/$TRKC^+$ neurons (inset), subgroups of the largest TRKC population. We could not distinguish NF4 from NF5. However, *Inhibin, beta* B (INHBB) stood out as a good candidate to mark neurons belonging to the NF5 subgroup of $TRKC^+$/PV^+ neurons. **(k)** Triple immunohistochemistry for TH (sole marker defining TH population), combined TRKA/PLXNC1/NEFH and ISLET1. Note TH^+/$TRKA^-$/$PLXNC1^-$/$NEFH^-$ neurons (inset). TH labels neither neurons belonging to the NF group (defined by *Nefh* expression), nor the NP group (defined by *Plxnc1* expression) or the PEP group (defined by *TrkA*). **(l-v)** A combinatorial immunohistochemistry strategy was used to successfully distinguish the NP (l-p, v) and the PEP (q-u) classes of sensory neurons. Data analysis identified *Plexin C1* (PLXNC1) as a common marker for all three subgroups of the NP group and, additionally, being expressed in some PEP1 neurons. **(l)** Triple immunohistochemistry for P2X3, PLXNC1 and SST. Note SST^+/$PLXNC1^+$/$P2X3^+$ (inset). PLXNC1 labels all Somatostatin (SST) positive neurons belonging to NP3 and $P2X3^+$ neurons belonging to NP1. **(m)** Triple immunohistochemistry for combined FAM19A1/TAC1, PLXNC1 and SST. Note ($FAM19A1^+$ or $TAC1^+$)/$PLXNC1^+$/SST^- (arrowheads) and ($FAM19A1^-$ and $TAC1^-$) /$PLXNC1^+$/SST^+ neurons (inset). PLXNC1 expression is detected in NP3 and some neurons belonging to PEP groups. **(n)** Triple immunohistochemistry for FAM19A1, PLXNC1 and CGRP. *Fam19a1* and *Plxnc1* expression is mutually exclusive (inset); PEP2 neurons do not express PLXNC1 **(o)** Triple immunohistochemistry for TAC1, PLXNC1 and CGRP. Note $TAC1^+$/$PLXNC1^+$/ $CGRP^+$ neurons (inset); expression patterns of *PLXNC1* and of *Tachykinin, precursor 1* (TAC1), a unique marker of PEP1 neurons, show some overlap. **(p)** Triple immunohistochemistry for PLXNC1, combined FAM19A1 and TAC1 and CGRP, shows $CGRP^+$/$FAM19A1^-TAC1^-$/$PLXNC1^+$ neurons belonging to the NP2 subgroup. **(q)** Triple immunohistochemistry for CGRP, TRKA and ISLET1. TRKA and CGRP show 1:1 co-localization (inset). The *Neurotrophic tyrosine kinase, receptor, type 1* (TRKA) and *Calcitonin receptor-like* (CGRP) are expressed by all neurons belonging to NP2, PEP1 and PEP2 subgroups. **(r)** Triple immunohistochemistry for TAC1, TRKA and ISLET1. TAC1 defines PEP1 neurons. Note

$TRKA^+/TAC1^+$ (inset) and $TRKA^+/TAC1^-$ neurons (arrowheads) belonging to the other two TRKA-expressing groups, NP2 and PEP2, respectively. **(s)** Triple immunohistochemistry for FAM19A1, TRKA and NEFH. Note $NEFH^+/FAM19A1^+/ TRKA^+$ and $NEFH^+/FAM19A1^+/ TRKA^-$ neurons, belonging to PEP2 and NF3, respectively (inset) and $TRKA^+/FAM19A1^-$ neurons (arrowheads) belonging to the other two TRKA-expressing groups (NP2 and PEP1). **(t)** Triple immunohistochemistry for combined FAM19A1/TAC1, TRKA and ISLET1. Note $TRKA^+/FAM19A1^-/TAC1^-$ neurons (inset and arrowheads), belonging to NP2 subgroup. **(u)** Triple immunohistochemistry for SST, TRKA and ISLET1. *Sst* and *TrkA* expression is mutually exclusive (inset). *Sst* defines the NP3 subgroup. **(v)** Double immunohistochemistry for PLXNC1 and combined NFH/TRKA/SST/TH. Note $PLXNC1^+/NFH^-/TRKA^-/SST^-/TH^-$ neurons belonging to the NP1 subclass. Scale bar = 50 μm.



Supplementary Figure 3

Illustration of how threshold level was determined for each gene to calculate the fraction of positive cells (thresholding method).