Supplemental information

Cellular-resolution gene expression profiling in the neonatal marmoset brain reveals dynamic species- and region-specific differences

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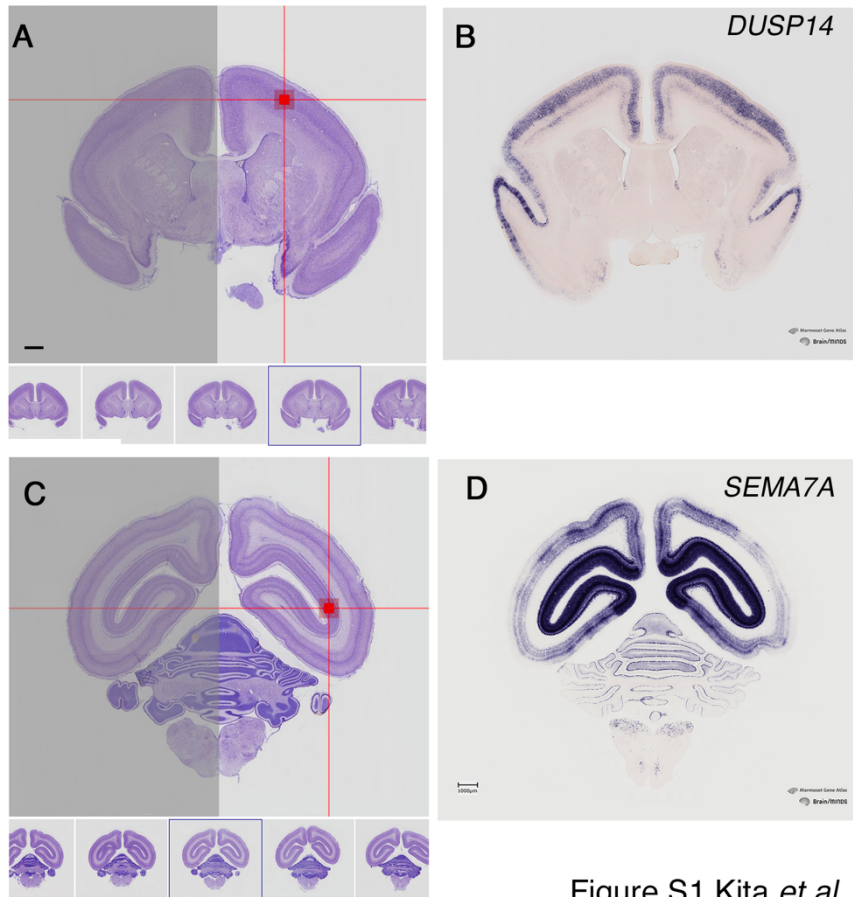
Figure S1 Kita *et al.,*

Supplementary Figure 1. The gene expression detection software identifies gene expression in selected areas

(A) The primary somatosensory cortex (S1: BA3; position 15,416,142) was selected on the Nissl reference atlas. (B) A search result selected from Dataset S1 (dual specificity phosphatase 14 (*DUSP14*)), showing expression in the S1. (C) The primary visual cortex (V1; position 58,480,227) was selected on the Nissl reference atlas. (D) A search result selected from Dataset S2 (semaphorin 7A (John Milton Hagen blood group; *SEMA7A*)).
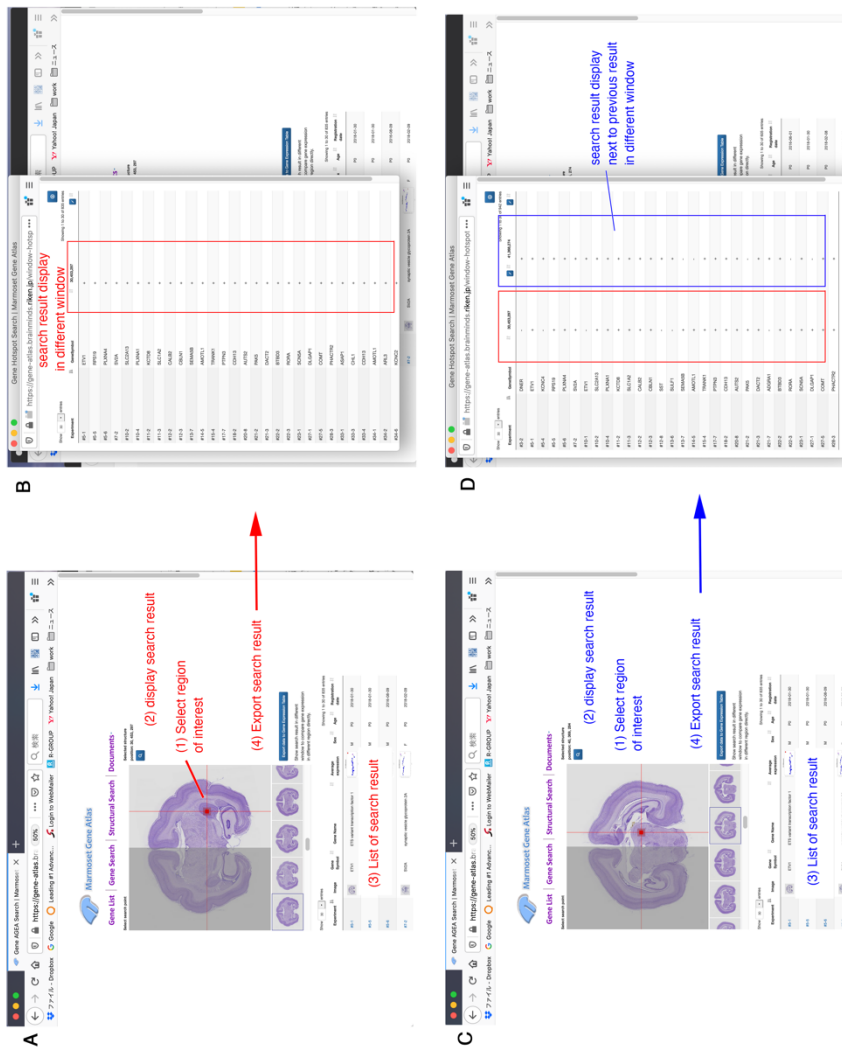
Supplementary Figure 2. Using the gene expression comparison system

(A) (1) First, a region of interest is selected by moving the magenta cursor. (2) Clicking on the magnifier displays the search results (3). To export the results, (4) click "Export data to Gene Expression Table". (B) A gene expression table will appear in a new window. (C) To add new gene expression lists, return to the original window to select a new area and repeat steps (1)–(4). (D) A new gene expression list will be displayed next to the first search result. Lists can be filtered for positive or negative results for easier comparison.
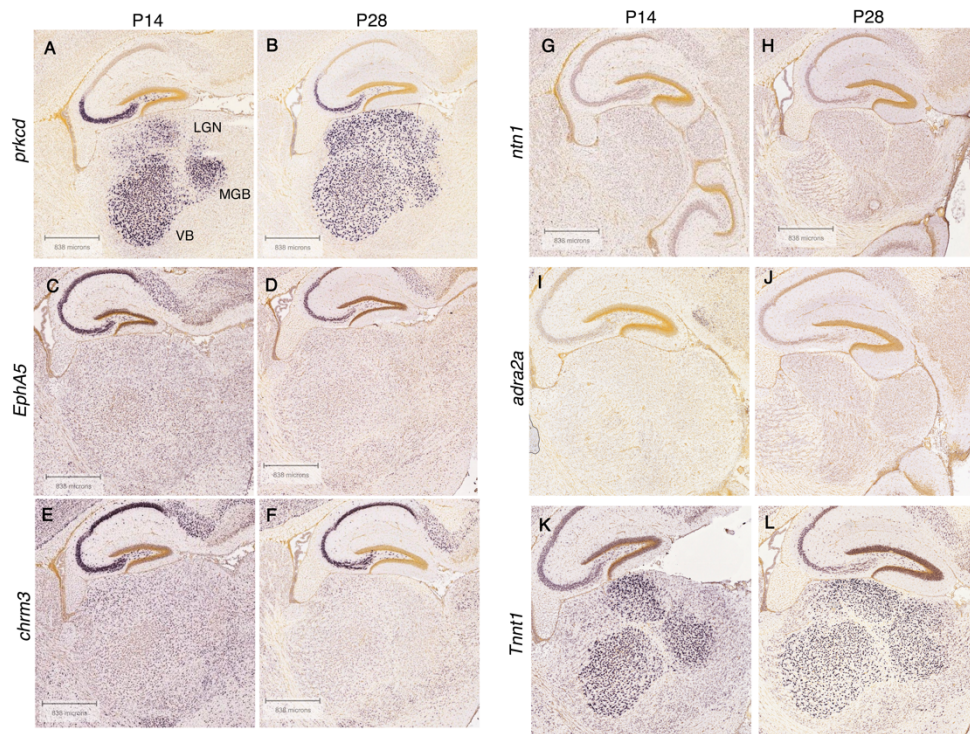
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Supplementary Figure 3. Gene expression patterns in mouse thalamus sagittal sections

(A–L) Expression of *Prkcd*, *EphA5*, *Chirm3, Ntn1, Adra2a*, *and Tnnt1* at P14 (A, C, E, G, I, K) and P28 (B, D, F, H, J, L). Data were obtained from the Allen Brain Atlas (https://portal.brain-map.org/).
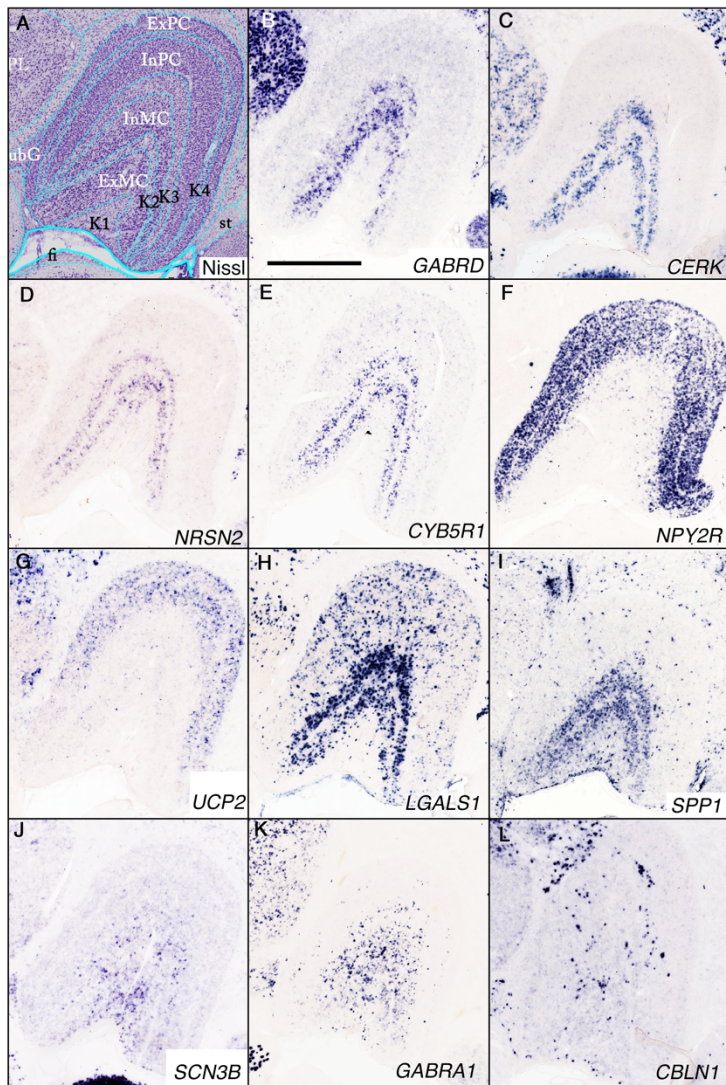
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Supplementary Figure 4. Magnocellular and parvocellular lamina-specific gene expression in the LGN

(A) The Nissl reference atlas of the LGN, including the external and internal parvocellular layers (ExPC and InPC, respectively), external and internal magnocellular layers (ExMC and InMC, respectively), and koniocellular layers 1–4 (K1–K4). (B–E) Genes expressed specifically in the magnocellular layers (*GABRD, CERK, NRSN*, and *CYB5R1*). (F–G) Genes expressed specifically in the parvocellular layers (*NPY2R* and *UCP2*). (H–L) Genes expressed in a scattered pattern in the LGN (*LGALS1, SPP, SCN3B, GABRA1*, and *CBLN1*). Scale bar in B: 1 mm.
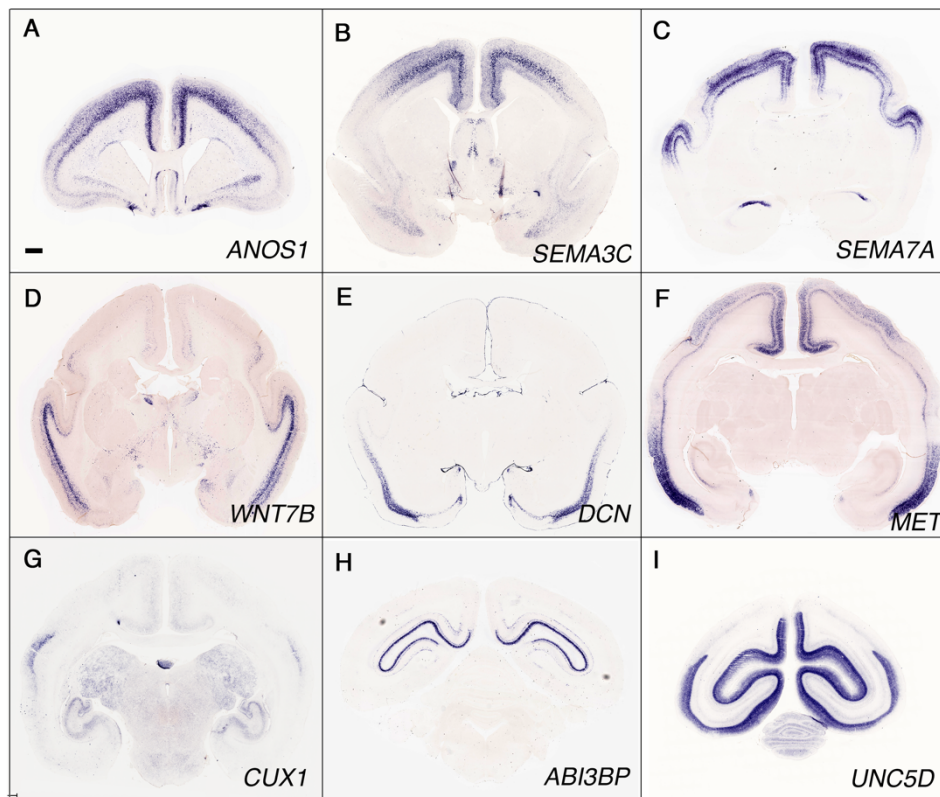
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Supplementary Figure 5. Gene expression in specific cortical areas

(A) *ANOS1* expression in the frontal cortex, (B) *SEMA3C* expression in the BA3, (C) *SEMA7A* expression in the BA3 and AuA1, (D and E) *WNT7B* and *DCN* expression in the TE, (F) *MET* expression in the TE and parietal area, (G) *CUX1* expression in the MT (V5), (H) *ABI3BP* expression in the V1, and (I) *UNC5D* expression in the caudal part of the V1. Scale bar in A: 1 mm.
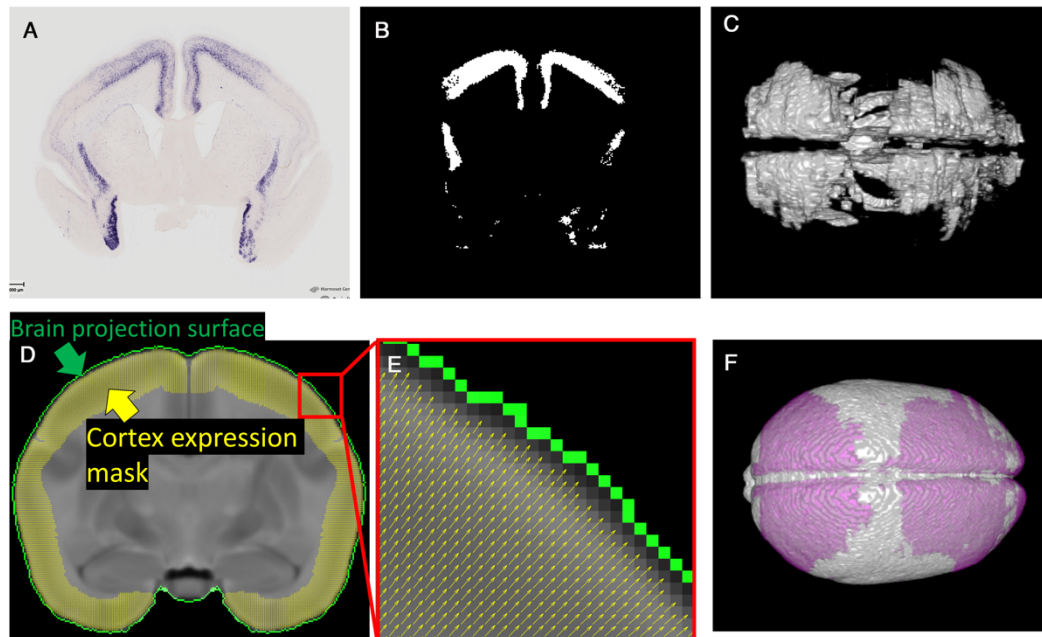
A

B

C

Brain projection surface

D

Cortex expression mask

E

F

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Supplementary Figure 6. Cortical surface projection mapping

(A) ISH image of *ANOS1* expression. (B) Segmentation expression masks of ISH sections. (C) The masks were spatially aligned using a rigid body stack alignment algorithm, and the alignment was improved using an elastic stack alignment algorithm. (D and E) Gene expression in different lamina were projected on the brain surface using a maximum intensity projection. (F) The 3D surface was then embedded as a level set and smoothened under curvature-based forces.

Dataset S1

Search results in the primary somatosensory cortex

Dataset S2

Search results in the primary visual cortex

Dataset S3

Gene expression comparison system search results in the ventrobasal thalamic nuclei (VB)

Dataset S4

Gene expression comparison system search results in the lateral geniculate nucleus (LGN)

Dataset S5

Gene expression comparison system search results in the medial geniculate body (MGB)

Dataset S6

Gene expression comparison system search results in the putamen

Dataset S7

Gene expression comparison system search results in the caudate nuclei

Dataset S8

Gene expression comparison system search results in the nucleus accumbens

Dataset S9

Gene expression comparison system search results in the pulvinar subregions

Dataset S10

Developmental brain disorder gene expression search results in each brain region