Source of variability	Correction Method
1. Section rotation and misalignment in the x (medial-lateral) axis	Rotate and align individual thalamic mask sections using two hand-selected midline points along the center y (dorsal-ventral) axis.
2. Cutting angle tilt about the x axis (i.e. rotation around the x axis)	Cutting angle tilt relative to the ABA thalamus is estimated from the z (anterior-posterior) coordinates of: the anterior and posterior points of the corpus callosum along the midline, the medial posterior point of the anterior commissure, and the anterior dentate gyrus, as illustrated in **Supplementary Figure 5**. The tilt is corrected at step 3.
3. Misalignment along the y axis	Multiple steps were involved. A) To control for the tilt about the x axis, the ABA thalamic mask is rotated to the tilt angle determined in step 2 and re-sampled as 50 μm slices. B) The centers of mass of individual thalamic mask sections were aligned to the corresponding adjusted atlas coordinates. C.) The aligned thalamus is rotated back to correct for its tilt angle.
4. Cutting angle tilt about the y axis (i.e. rotation around the y axis)	The 3D thalamus mask is sheared to minimize left-right asymmetry. Unlike a pure rotation, this transformation preserved the midline locations in our coordinate system, which were determined by hand-selected points. The degree of shear correction is determined by measuring the left-right asymmetry between 0.7 mm-wide sagittal bands located 0.4 mm lateral to the midline.
5. Overall size of the thalamus	A) Each 3D thalamic mask was scaled in z so that the distance along the midline between 1% (anterior) and 99% (posterior) of the thalamus voxels in a 110 μm sagittal band matched that of the ABA thalamus. B) The thalamus is scaled isotropically in x-y based on matching the central volume (0.8 mm thick in the A-P axis) to the corresponding ABA thalamus volume. C) The thalamus is scaled in x (medial-lateral) to the widest point of the ABA thalamus.

Supplementary Table 1 Correction methods for brain-to-brain variability.