

Supplementary Data 1 | Cell lineage reconstruction of early *Drosophila* embryonic nervous system development

The Matlab file “NervousSystem.mat” contains the complete curated and annotated cell lineage data set from our reconstruction of early *Drosophila* embryonic nervous system development (**Fig. 5, Supplementary Videos 24-28**). We included the following variables:

- *trackingNeuroblastCurated*: main data array containing all cell lineage information. Each row represents a nucleus at one time point. Contents of the columns are detailed below.
- *stackResolution*: three-dimensional vector containing information about the pixel size (in micrometers) along each direction. This information is required to convert pixel coordinates to positions in micrometers.
- *stackSize*: three-dimensional vector containing information about the size of each three-dimensional image stack at each time point.
- *tagcell*: cell array of length ten, required to convert the integer identities of the annotated neuroblast types to readable labels.
- *mapLineageToNBType*: array for associating each cell lineage with a neuroblast type. The first column contains a unique set of integer IDs that can be mapped to the first column of *trackingNeuroblastCurated*. The second column contains an integer number from 1 to 10 that can be mapped to the neuroblast identity using *tagcell*.

The variable *trackingNeuroblastCurated* contains six columns with the following information for each nucleus data point:

1. Unique ID (large integer number) in the CATMAID database for identifying each nucleus data point.
2. *x* coordinate (in pixels) of the nucleus.
3. *y* coordinate (in pixels) of the nucleus.
4. *z* coordinate (in pixels) of the nucleus.
5. Parent ID in the cell lineage tree. This ID is equal to -1 if the data point is a root node. Otherwise, it contains the unique ID of the parent (see description of column 1).
6. Time point. Note that the reconstruction starts at time point 0, which corresponds to 175 minutes post fertilization (onset of gastrulation). The time interval is 30 seconds.