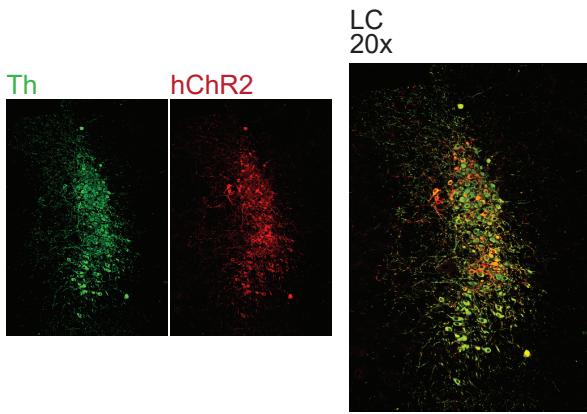
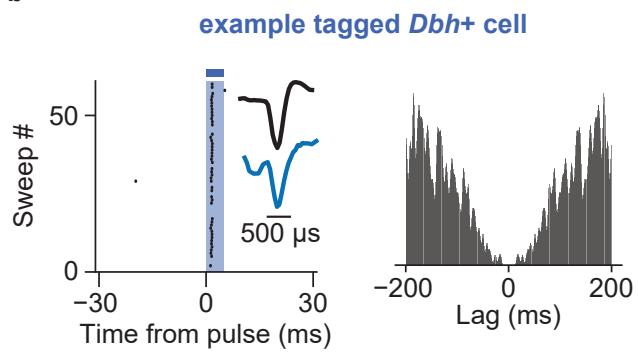
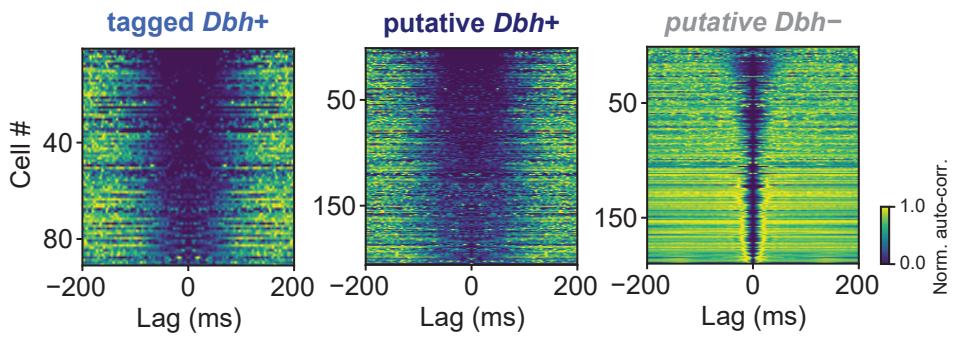
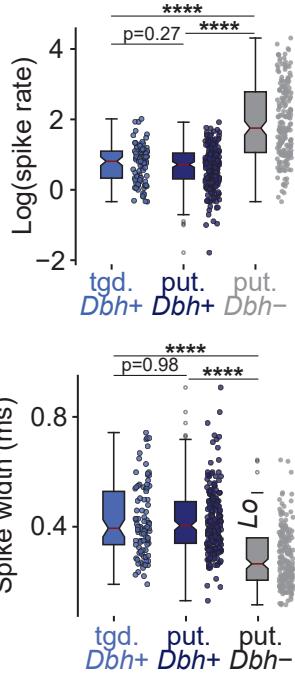
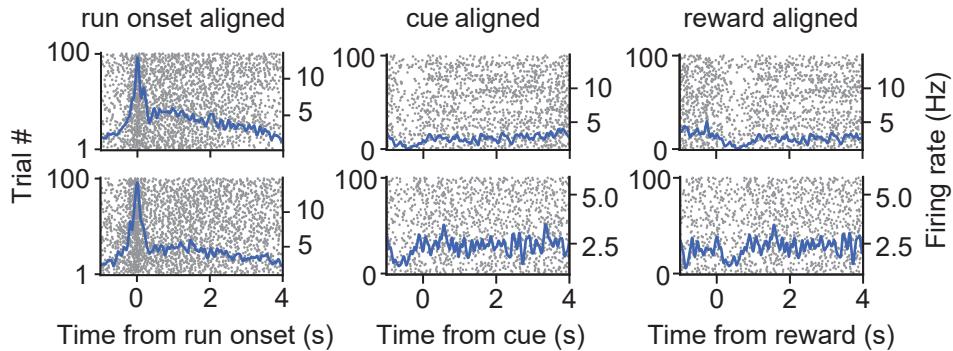
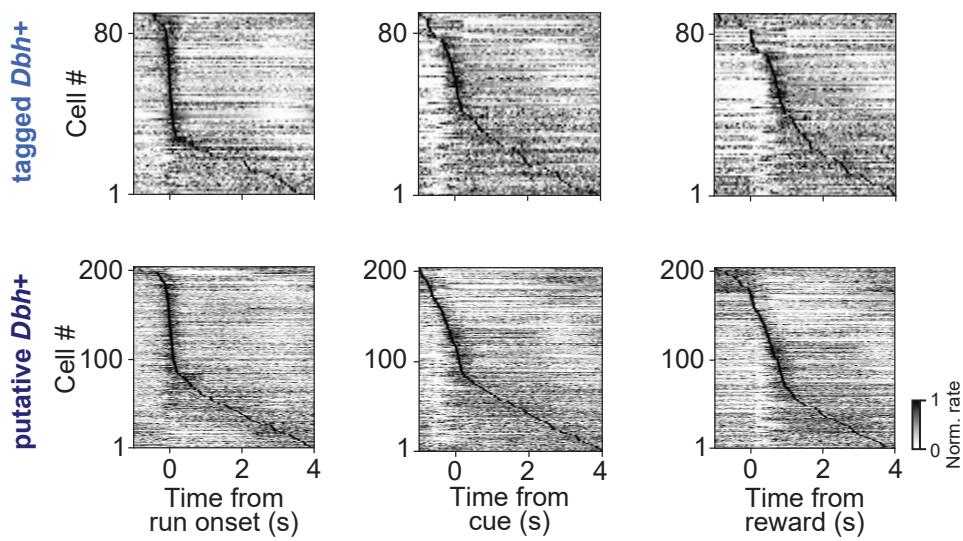
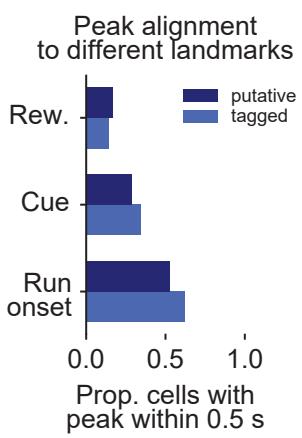


**a****b****c****d****e****f****g**

**Extended Data Fig. 1 | LC *Dbh*+ cell activity aligns to run onsets.** **a**, Example histology of LC *Dbh*+ cells expressing hChR and stained with anti-tyrosine hydroxylase. **b**, Example tagging response, spike waveshape and auto-correlogram for one tagged cell. **c**, Auto-correlograms of all tagged, putative *Dbh*+ and putative *Dbh*- cells. **d**, Putative and tagged *Dbh*+ cells have similar firing rates and spike widths, different from putative *Dbh*- cells. **e**, An example tagged cell aligning to different behavioural landmarks. **f**, LC *Dbh*+ population aligning to different landmarks. **g**, Quantification of LC *Dbh*+ population alignment. The majority of LC *Dbh*+ cells align their activity to run onset.