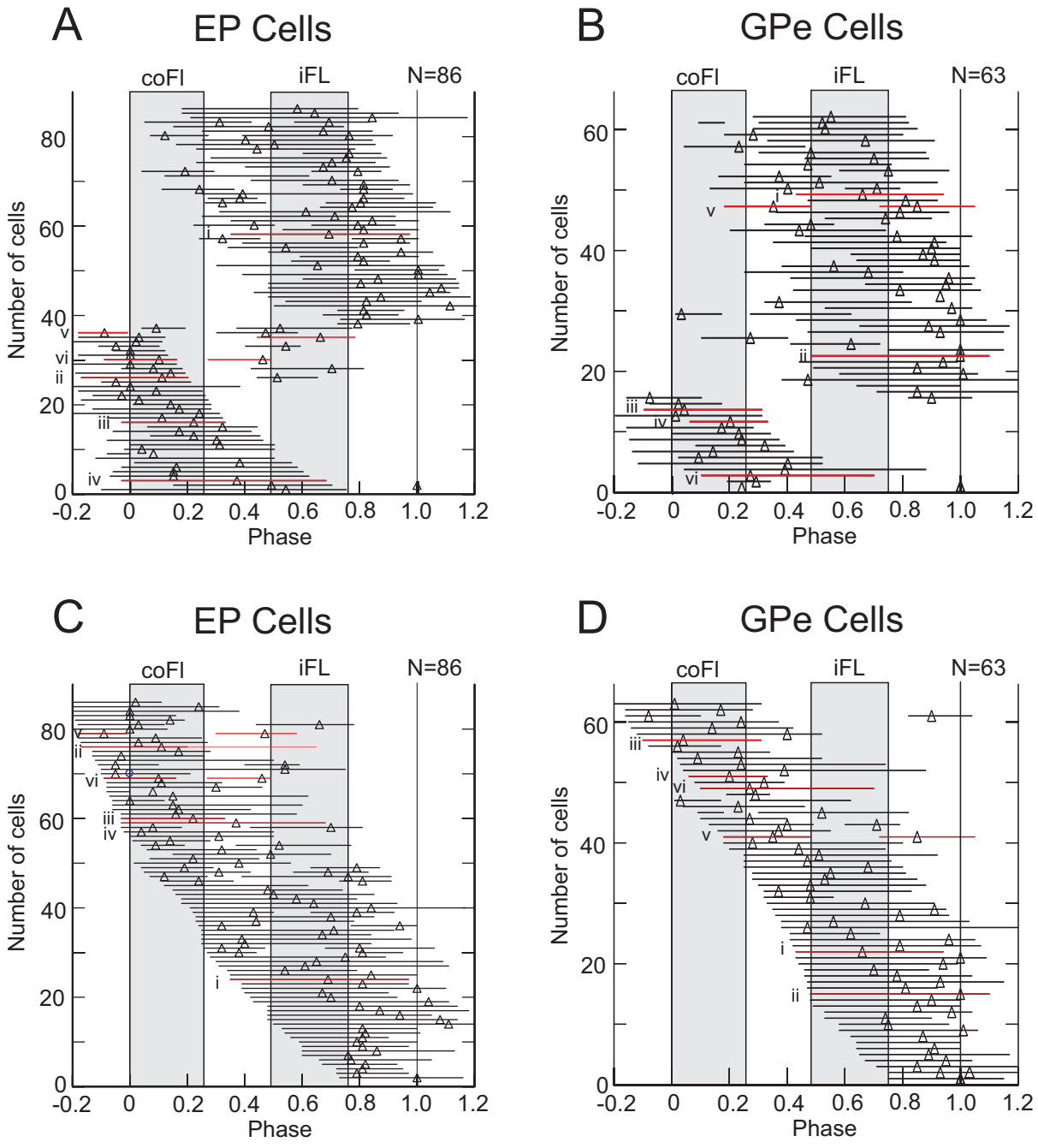
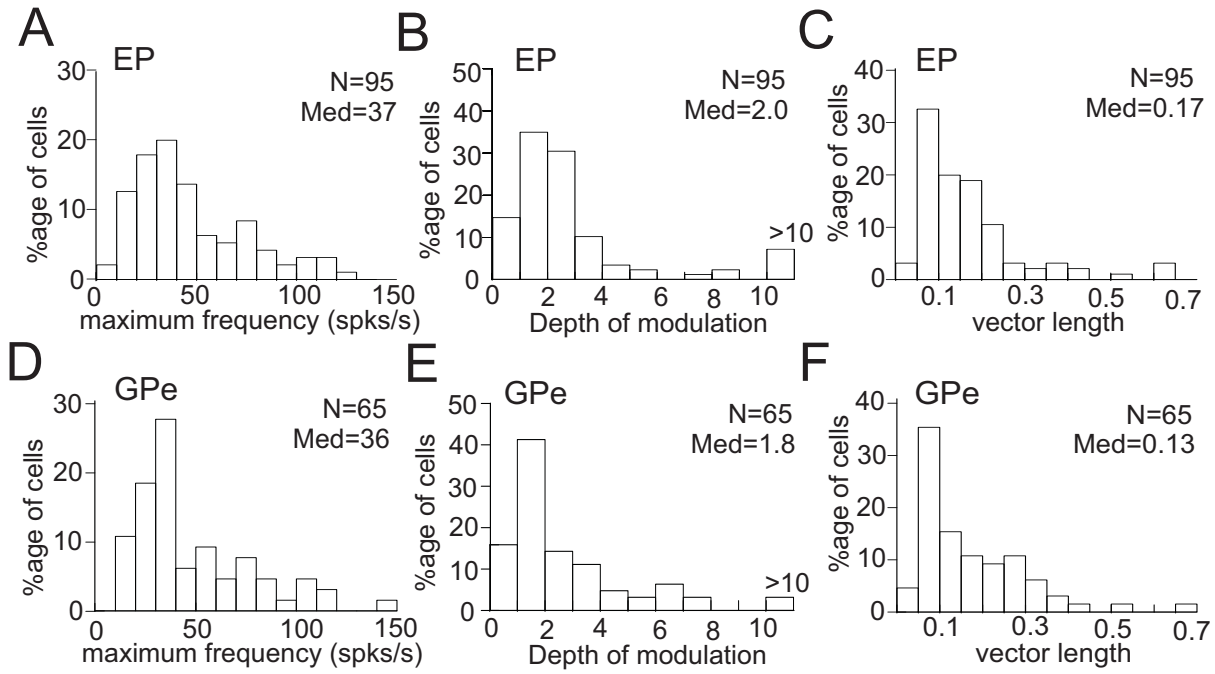
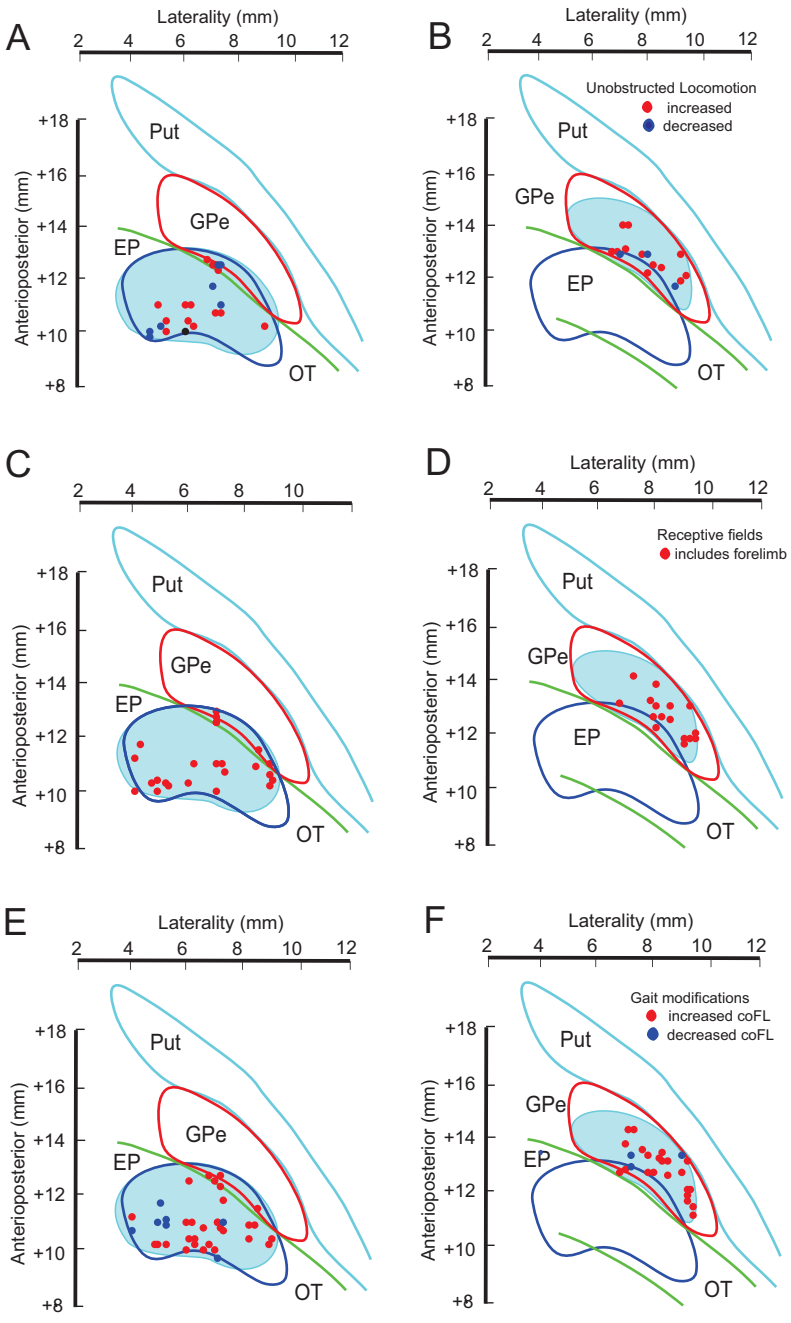


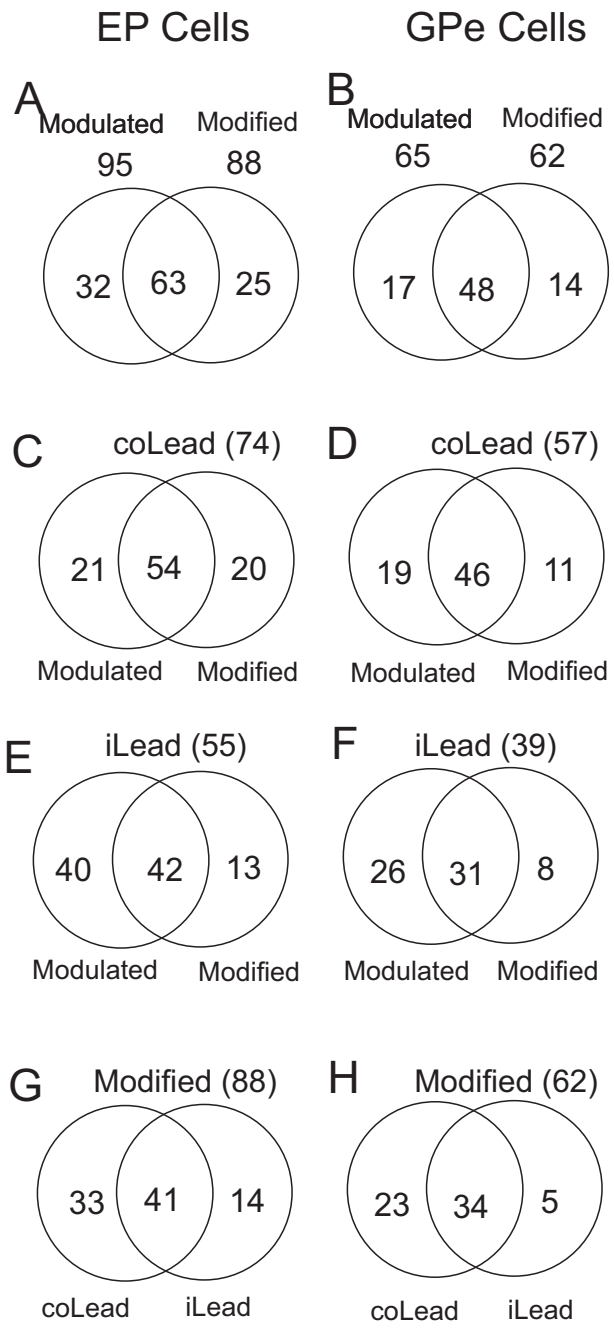
Supplementary Figure 1. Phase plots showing decreases in discharge frequency during unobstructed locomotion. A,B: relative decreases in activity with respect to mean rate are plotted in the same order as for Fig. 3C,D. The data are, therefore, the reciprocal of those in Fig. 3. C.D: the data are replotted rank-ordered according to the phase of onset of the earliest decrease in activity. Data are otherwise arranged as in Figs. 3C.D.



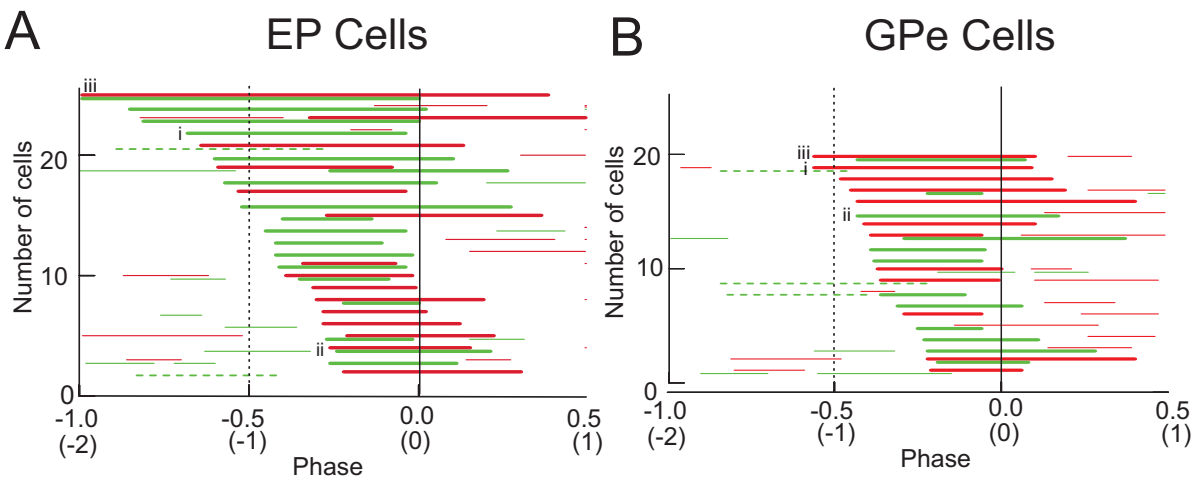
Supplementary Figure 2: Discharge frequency during unobstructed locomotion. A, D: peak discharge frequency (1 value/cell), measured from averaged PEHs of the type illustrated in Fig. 2 for all EP (A) and GPe (D) cells. Values are expressed as a percentage of the population. Binwidth= 10Hz. B, E: the depth of modulation for EP (B) and GPe (E) cells ((maximum frequency- minimum frequency)/ minimum frequency). C, F Histograms representing the length of the vector, as calculated from the Rayleigh test of directionality for the EP (C) and GPe (F). Binwidth = 0.1. Note that the population of cells in A-F includes all cells defined as being modulated on the basis of the Rayleigh test of directionality. Abbreviations: Med, median of the populations.



Supplementary Figure 3: Localization of different groups of cells. A,B, localization of those EP and GPe cells that showed the strongest increases (red symbols) or decreases (blue symbols) of activity during the swing phase of locomotion. C,D: localization of cells with a receptive field that included the forelimb. E.F: localization of cells showing an increase (red symbols) or a decrease (blue symbols) during the step over the obstacle with the limb contralateral to the recording site when it was the lead limb.



Supplementary Fig. 4: Summary of changes in cell activity. A-H: Venn diagrams summarizing the activity of the different populations of cells in the EP and GPe. A-B: Total number of cells modulated during unobstructed locomotion and/or modified during the gait modifications in the EP and GPe. The diagrams show the number of cells activated exclusively during one of the illustrated conditions or during both. C, D: cells activated in the contralateral lead condition showing the proportions of modulated and modified cells. E, F: a similar display for cells activated in the ipsilateral lead condition. G, H. the proportion of cells that showed modification of their discharge in the contralateral and ipsilateral lead conditions.



Supplementary Fig. 5: Phase plots of step-advanced cells. A,B: phase of activity of the step-advanced cells in each nucleus. Thick solid lines indicate activity defined as step-advanced and related to the step over the obstacle by the contralateral limb; dashed lines indicate step-advanced activity related to the step over the obstacle by the ipsilateral limb; thinner lines indicate other significant, step-related, bursts of activity. Changes in activity are rank-ordered with respect to the onset of the change of step-advanced activity and, when significant activity was observed for both conditions, are displayed in pairs with activity in the contralateral lead (red) above that in the ipsilateral lead (green lines). Roman numerals identify the cells in Fig. 9A, B. X axis indicates both phases of the step cycle and steps (values in parentheses). Solid vertical line indicates onset of the swing phase of the step over the obstacle by the contralateral forelimb; dotted vertical line indicates the preceding step.