Supplementary Material

H-channels affect frequency, power and amplitude fluctuations of neuronal network oscillations

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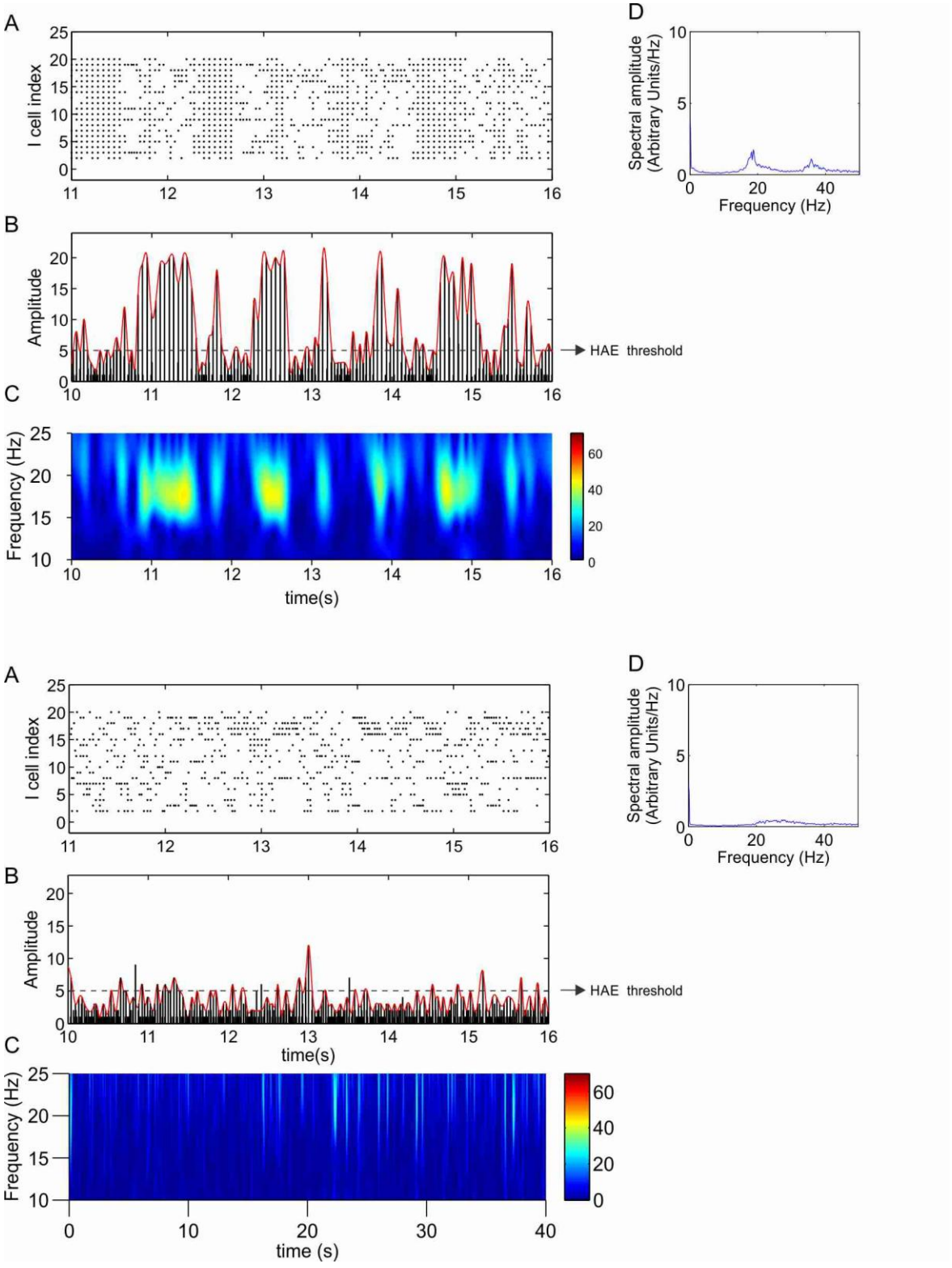
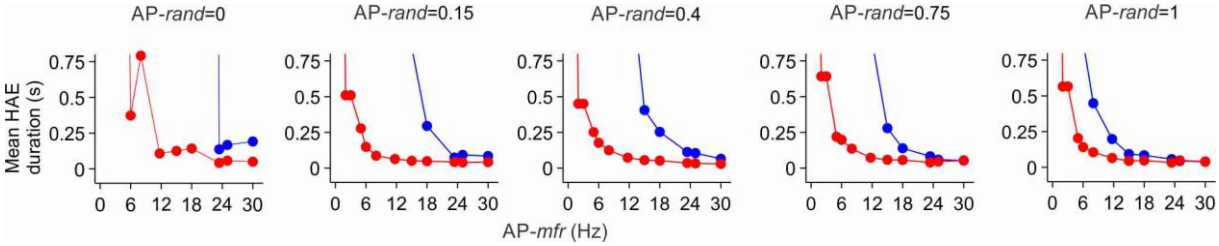
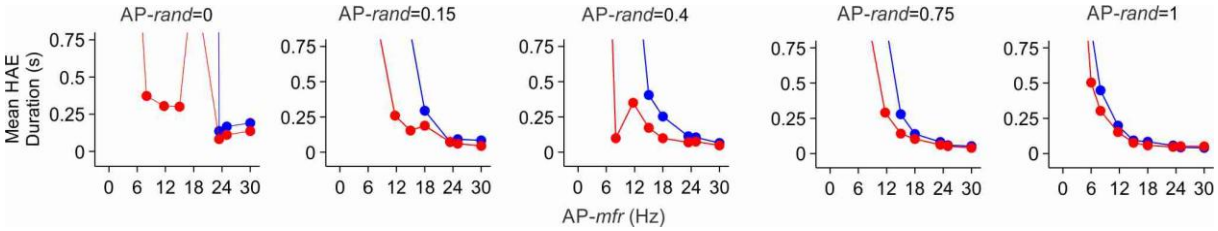


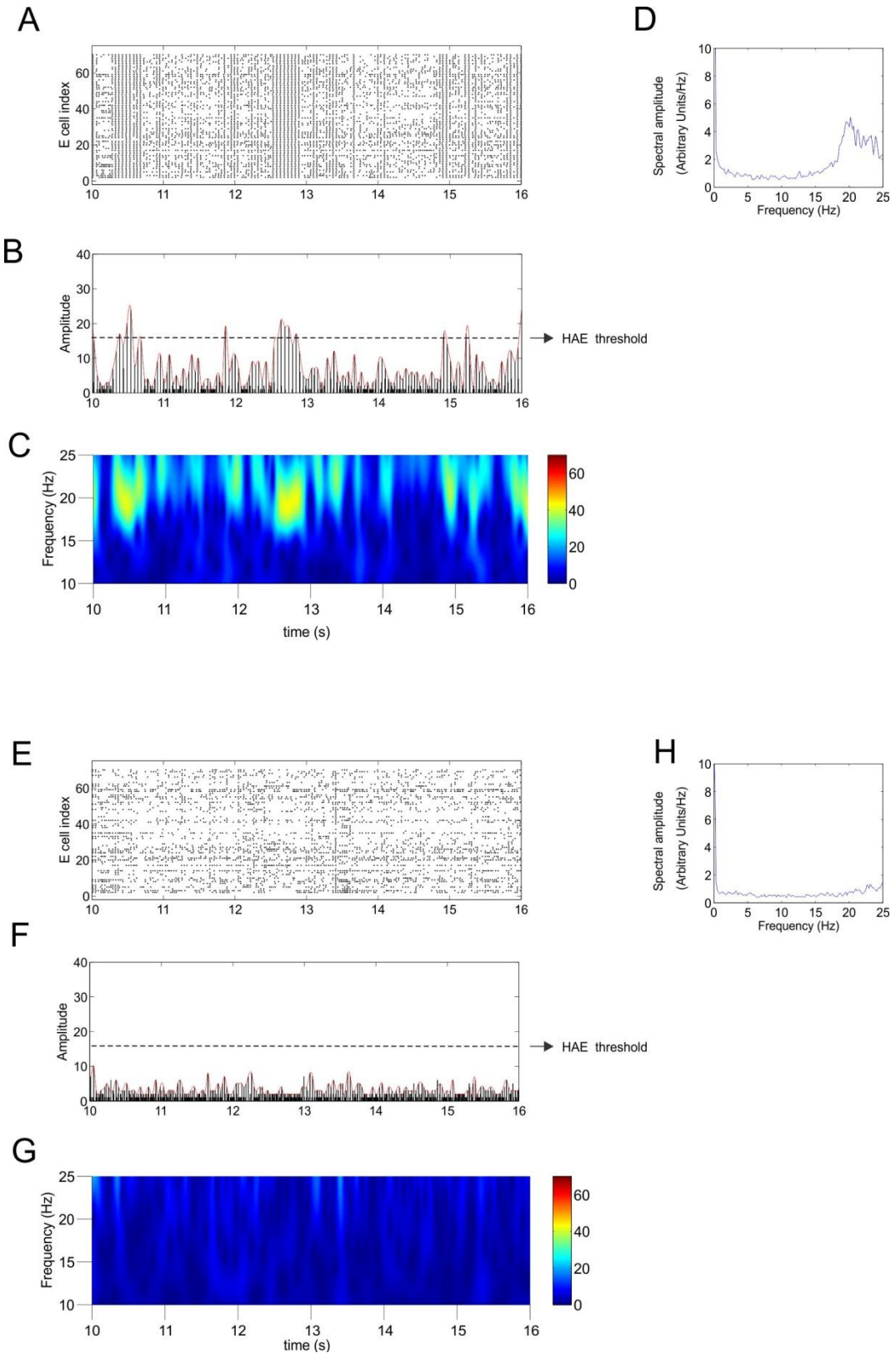
Supplementary Figure 1. I_h reduces the duration of high-amplitude episodes (HAEs). Shown are raster diagram of cell firing **(A, E)**, firing-rate histogram with interpolated spline polynomial **(B, F)**, wavelet transform **(C, G)** and Fourier transform **(D, H)** of the inhibitory population, in the absence **(A-D)** and presence **(E-H)** of h-channels in the network. Both in **A-D** and in **E-H**, all cells received CDC input, while the inhibitory cells received AP input with AP-*mfr* = 11.7 Hz and AP-*rand* = 1.



Supplementary Figure 2. I_h reduces the duration of high amplitude episodes (HAEs). The mean HAE duration for different values of the randomness (AP-*rand*) and frequency (AP-*mfr* = 0.1, 1.0, 2.0, 3.0, 5.0, 6.0, 8.0, 11.7, 15.0, 18.0, 23.4, 25.0, 30.0 Hz) of the external action potential input (AP), both in the presence (red) and absence (blue) of h-channels in the network. Close up of Fig. 7A, highlighting the short HAE durations for large AP-*mfr*.



Supplementary Figure 3. The effect of I_h on high amplitude episodes (HAEs) is reduced when h-channel conductance is 25% of its default value. The mean HAE duration for different values of the randomness (AP-*rand*) and frequency (AP-*mfr* = 0.1, 1.0, 2.0, 3.0, 5.0, 6.0, 8.0, 11.7, 15.0, 18.0, 23.4, 25.0, 30.0 Hz) of the external action potential input (AP), both in the presence (red) and absence (blue) of h-channels in the network. Close up of Fig. 8A.



Supplementary Figure 4. I_h reduces the duration of high-amplitude episodes (HAEs). Shown are raster diagram of cell firing **(A, E)**, firing-rate histogram with interpolated spline polynomial **(B, F)**, wavelet transform **(C, G)** and Fourier transform **(D, H)** of the excitatory population, in the absence **(A-D)** and presence **(E-H)** of h-channels in the network. Both in **A-D** and in **E-H**, all cells received

CDC input, while the inhibitory cells received AP input with AP-*mfr* = 11.7 Hz and AP-*rand* = 1. The network had 70 excitatory cells and 30 inhibitory cells. The synaptic conductance g_{EI} was 90% of its default value (see Section Methods), and the synaptic conductance g_{IE} was 60% of its default value. For the rest, all the parameter values were the same as in the default network.