



**Supplementary figure 2: The success of the second order maximum entropy model is not sensitive to the size of the network.** The fraction of the full network multi-information,  $I_N$  that is captured by  $I_{(2)}$ , is plotted as a function of the size of the network. The average is for randomly chosen groups of cells of each size ( $n=250$ ), and the errorbar shows the standard deviation over the whole set of groups. The connecting line is shown for clarity.