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Supplemental Information

Microtubules Regulate Localization and Availability of Insulin Granules in Pancreatic Beta Cells

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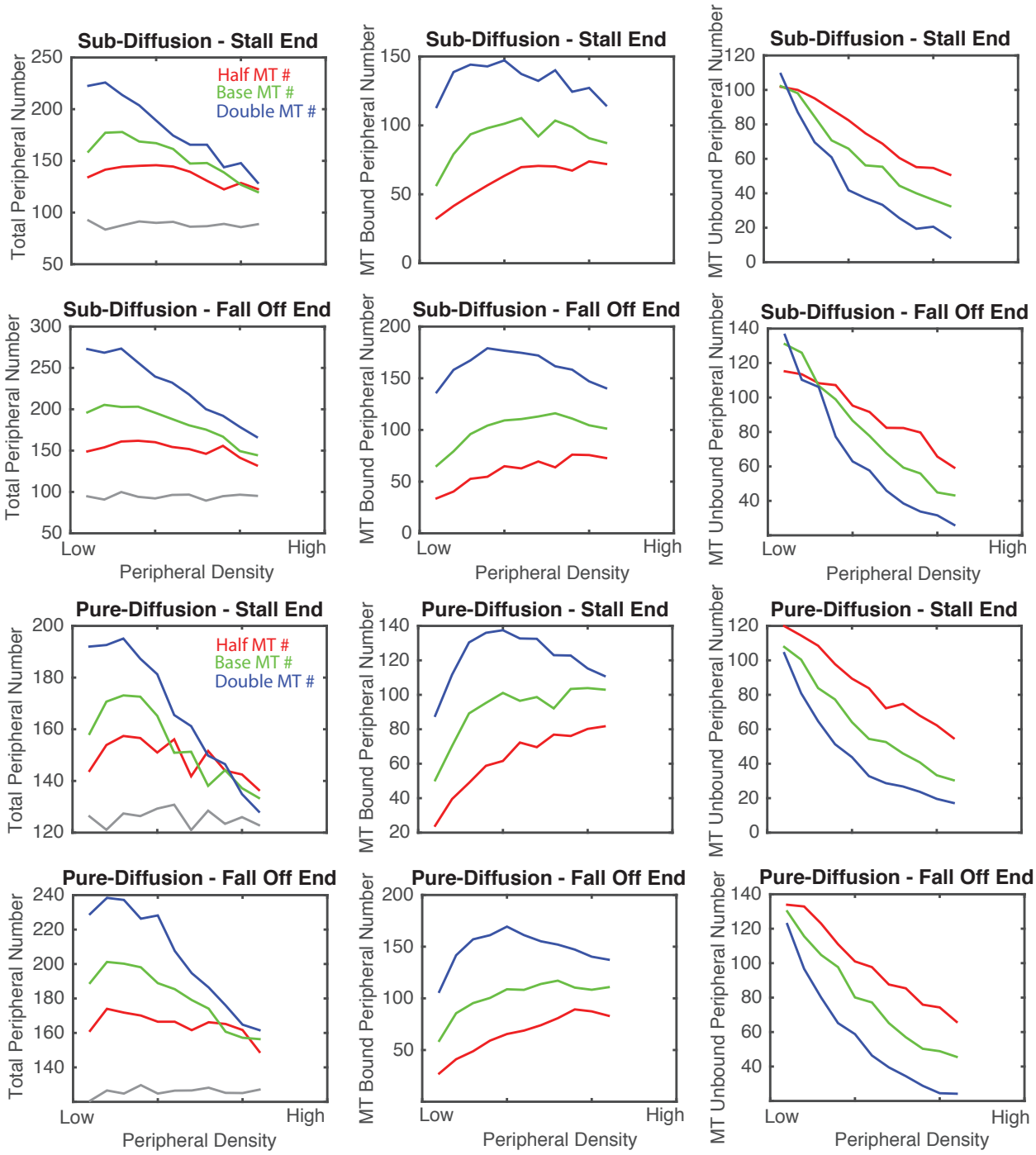
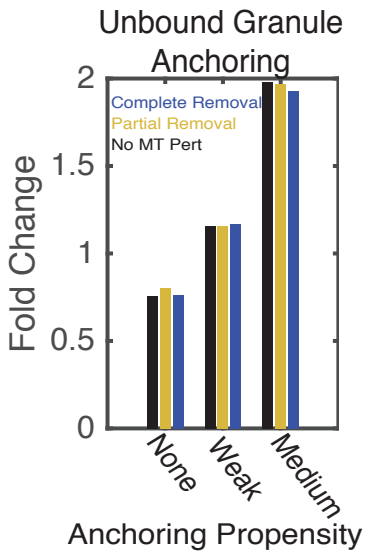
Supplementary Figures



SM Figure 1: Role of motor stalling and type of diffusion on peripheral granule density. Figure 3 A-C assessed the effect of MT dynamics on the peripheral localization of MT bound, unbound, and total insulin granules. The top row here is a reproduction of that data for comparison purposes. The second row shows a similar set of simulations where instead of assuming motors stall when reaching the end of MT, they walk off the end and the granule dis-associates from that MT. The third and fourth rows show similar simulations where granule dynamics are governed

by standard diffusion rather than sub-diffusion. These results show that the type of motion (standard versus sub diffusion) and the assumptions about the dynamics of motors at the end of MTs have little effect on results of this study.



SM Figure 2: Impact of MT lifetime granule density after MT perturbation. Quantification of the fold change in peripheral granule density after MTs are perturbed when MT lifetimes are short (10 sec, compared to 1000 sec in all prior simulations). All plotting conventions are the same as Figure 6B. The horizontal axis corresponds to different anchoring affinities (none = 0, weak = 1/32, strong = 1/8). Results show that if MT lifetimes are short, MT removal has little effect on peripheral granule density.