

**Electronic Supplementary Information for Soft Matter manuscript:**

**Actin and microtubule crosslinkers tune mobility and control co-localization in a composite cytoskeletal network**

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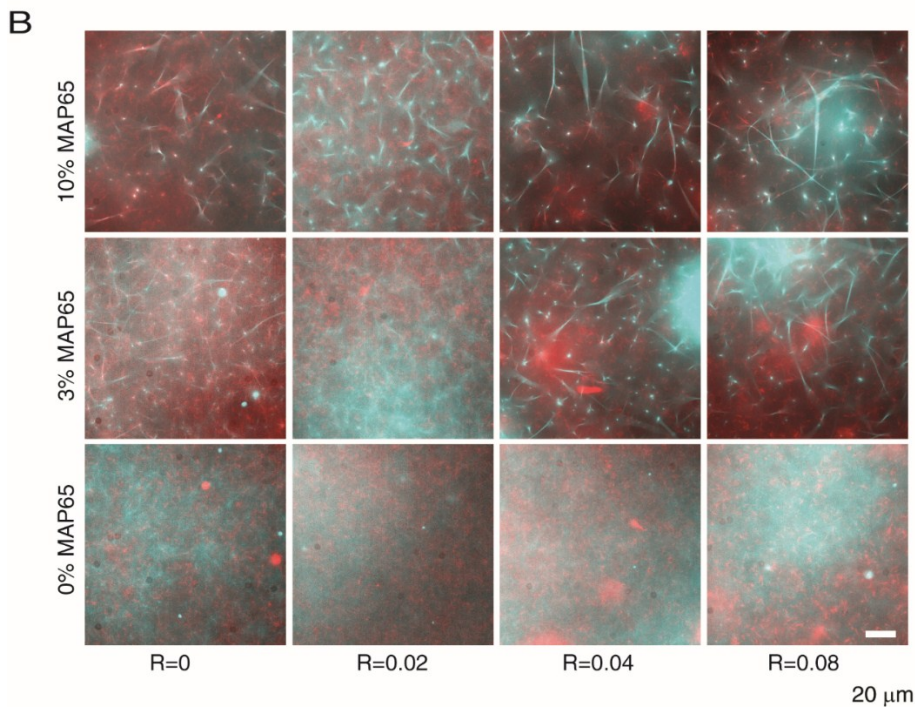
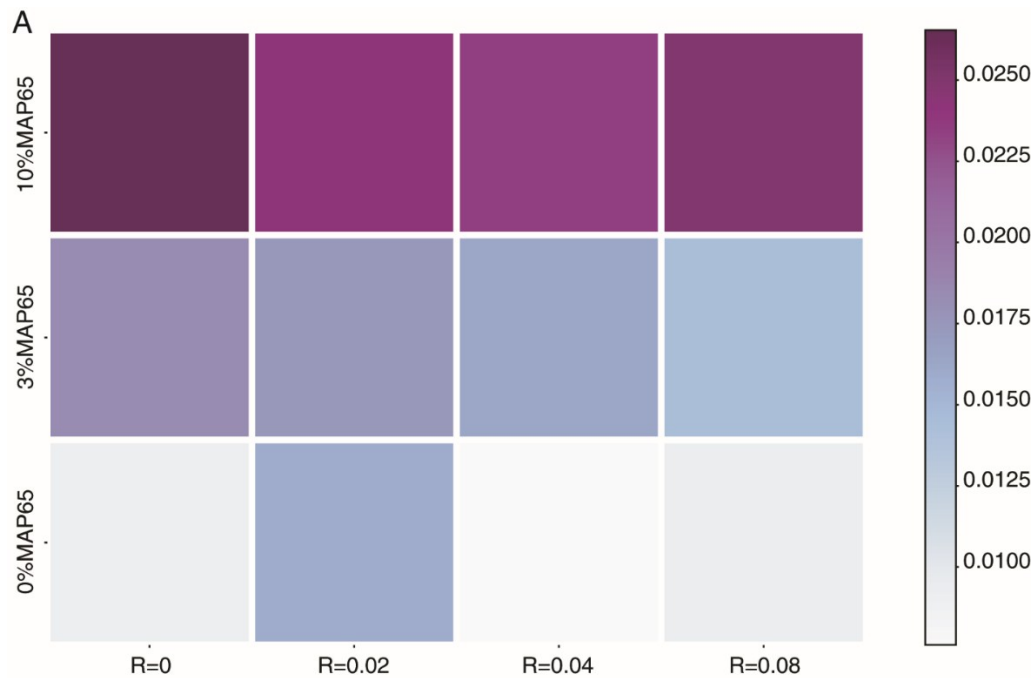
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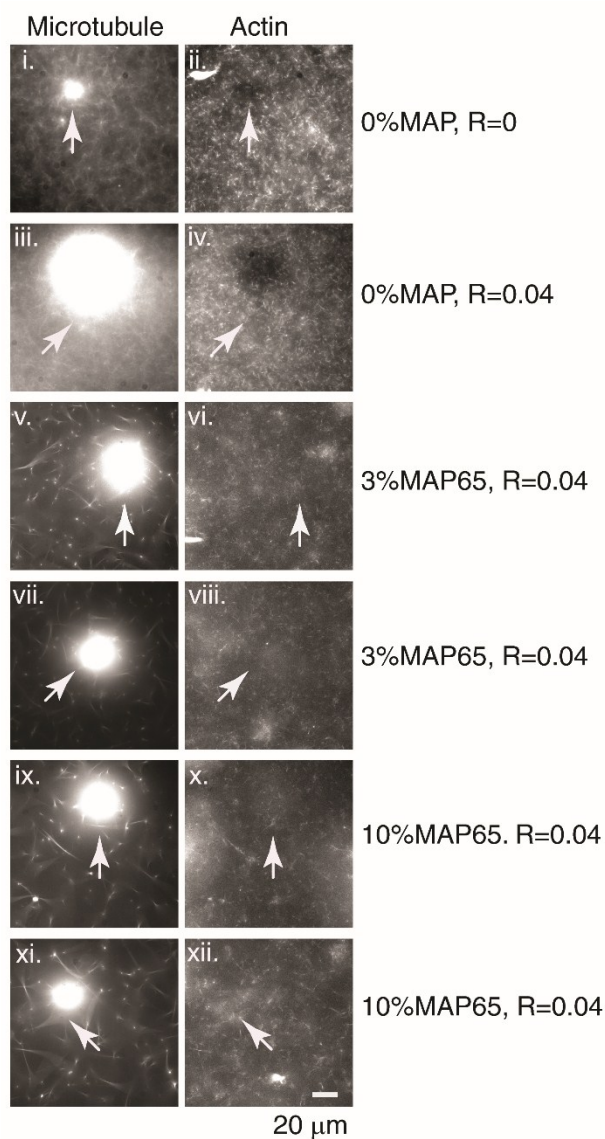
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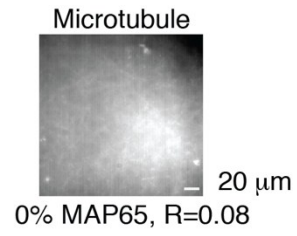
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**Supplemental Figure S1. Cross-correlation between actin and microtubule channels.** (A) Heat map plot shows the mean of normalized cross-correlation values for all composite networks measured with various  $R$  and MAP65 percent bound. Color scale indicates quantitative cross-correlation. (B) Representative merged images of microtubule (cyan) and actin (red) for all experimental parameters with various  $R$  and MAP65 percent bound. Scale bar is  $20 \mu\text{m}$ . ( $N = 8 - 10$  independent measurements)



**Supplemental Figure S2.** High intensity microtubule aggregates do not appear in the actin channels. Representative images of microtubules (i, iii, v, vii, ix, xi) and actin (ii, iv, vi, viii, x, xii) for the same region in the experimental chamber at different percentages of MAP65 and  $R$ . Arrows denote regions where there is high fluorescence in the microtubule channel, which are caused by aggregates, without bleed-through into the actin channel. Scale bar is 20  $\mu$ m.



**Supplemental Figure S3. Microtubules in the presence of actin crosslinkers.** Representative image of microtubules in the presence of actin crosslinkers, NeutrAvidin, at  $R = 0.08$  does not show any structure or any evidence of crosslinking. Scale bar is 20  $\mu\text{m}$ .