

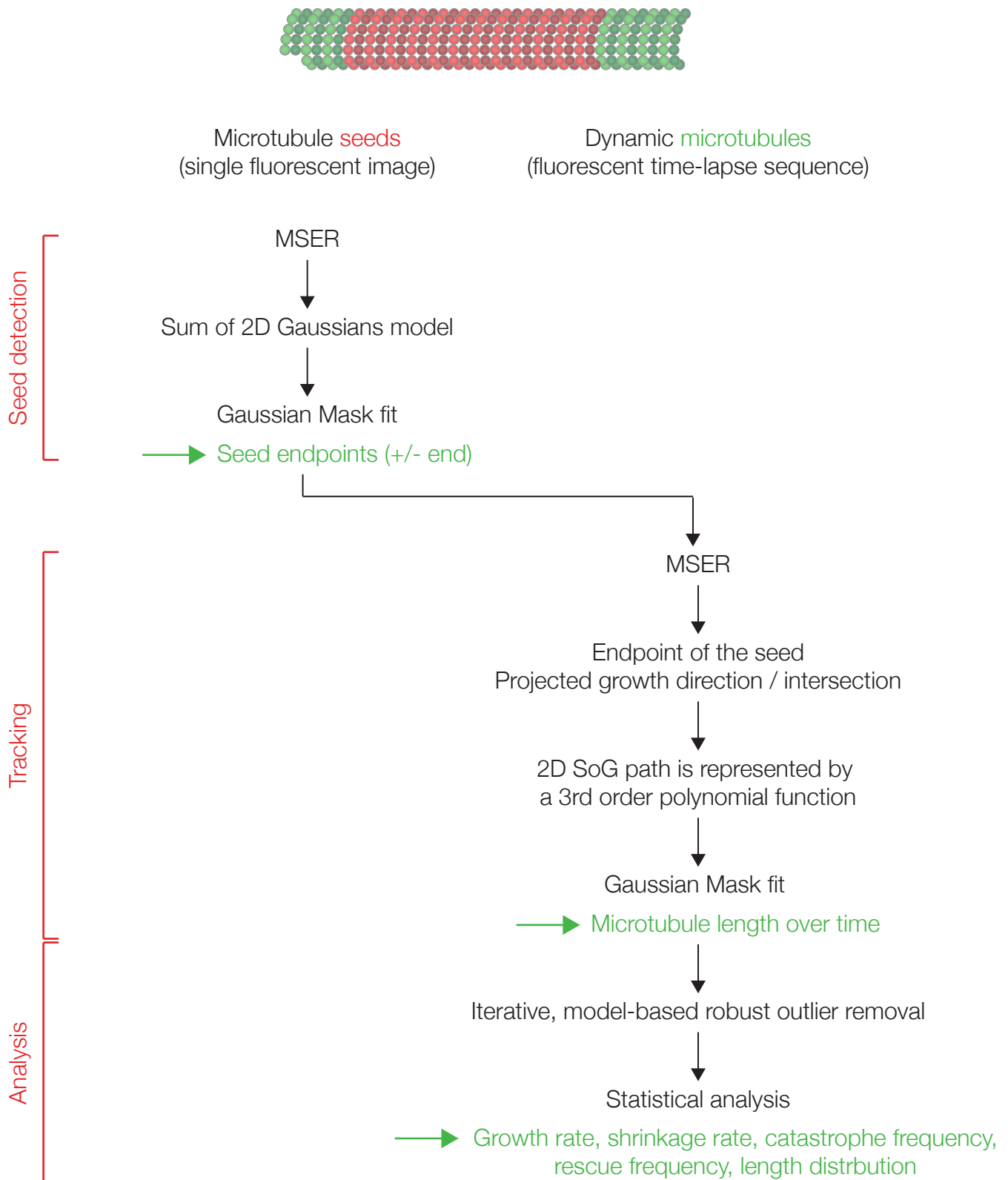
MTrack: Automated Detection, Tracking, and Analysis of Dynamic Microtubules.

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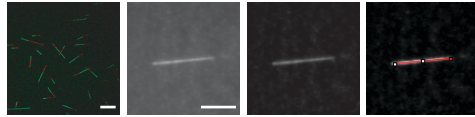
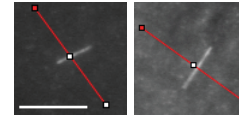
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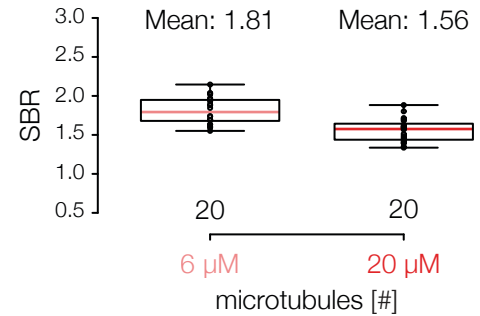
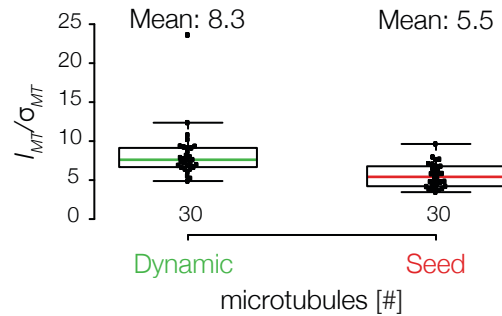
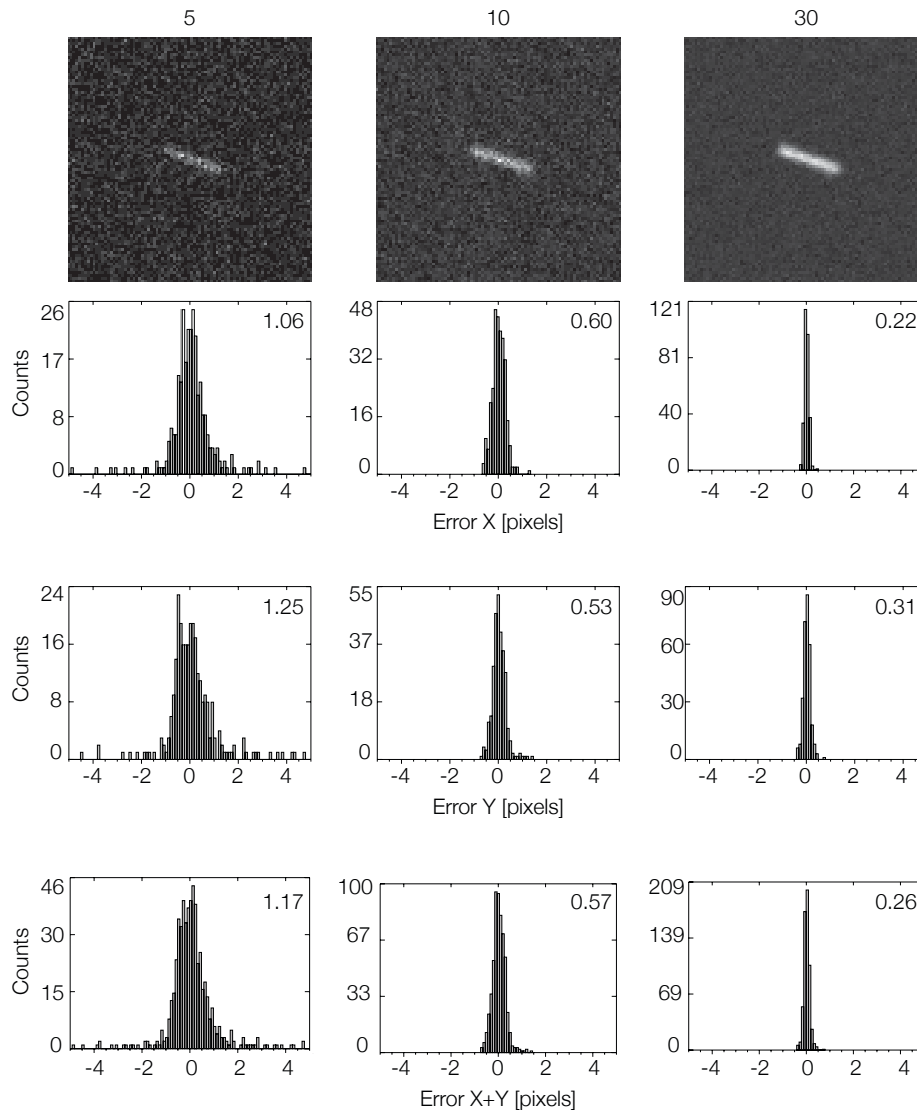
Supplementary Figure 1



Supplementary Figure 1. Flow diagram of MTrack detecting, tracking, and analysing dynamic microtubules.

Supplementary Figure 2**(a) Experimental assessment of SNR**Mean pixel intensity (I_{MT}): 16 1218.12Standard deviation (σ_{MT}): 2 9970.56SNR (I_{MT}/σ_{MT}): 5.38**(b) Experimental assessment of SBR**6 μ M20 μ M

(10% labelled tubulin)

**(c) Signal to noise ratio (SNR)**

Supplementary Figure 2. Microtubule Seed Detection and Tracking Accuracy **(a)** The experimental SNRs of dynamic growing microtubules (green) and seeds (red) has been measured and calculated as described (see also Material and Methods). **(b)** Experimental assessment of the Signal-to-Background Ratio (SBR) of dynamic microtubules at 6 μ M (light red) and 20 μ M (dark red) total tubulin concentration. **(c)** Subpixel accuracy of simulated microtubule seed end point detection depends on SNR. Detection error is normally distributed showing no bias towards microtubules growing in either direction. Scale bars: 10 μ m.

Supplementary Figure 3

User 1

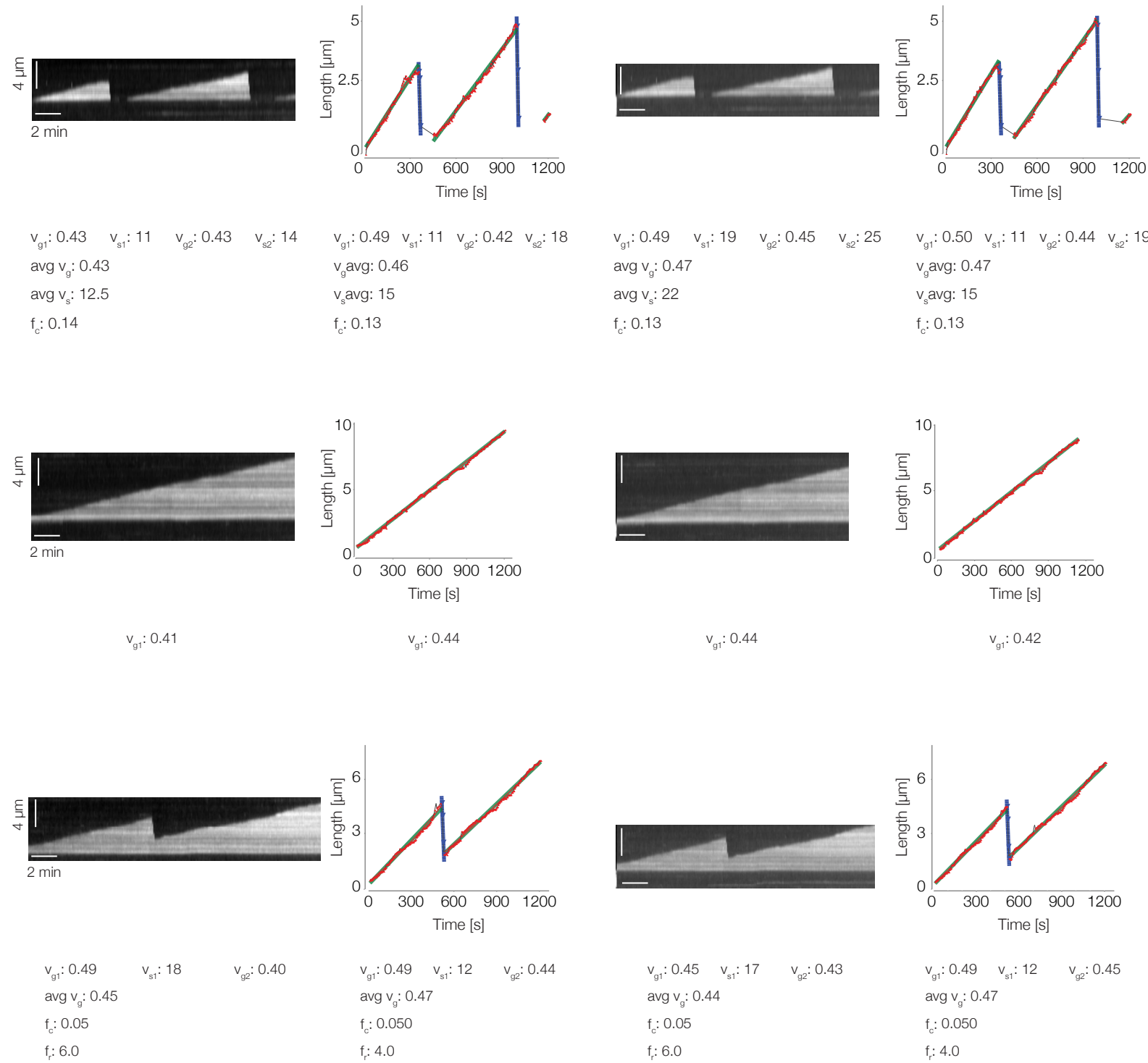
User 2

Classic Analysis
(Zanic et al., 2016)

MTrack

Classic Analysis
(Zanic et al., 2016)

MTrack



Supplementary Figure 3. Comparison between manually analyzed and computer-inferred microtubule dynamics. Polymerization velocity (v_g) and depolymerization velocity (v_s) are given in $\mu\text{m}/\text{min}$, catastrophe frequency (f_c) and rescue frequency (f_r) in s^{-1} .