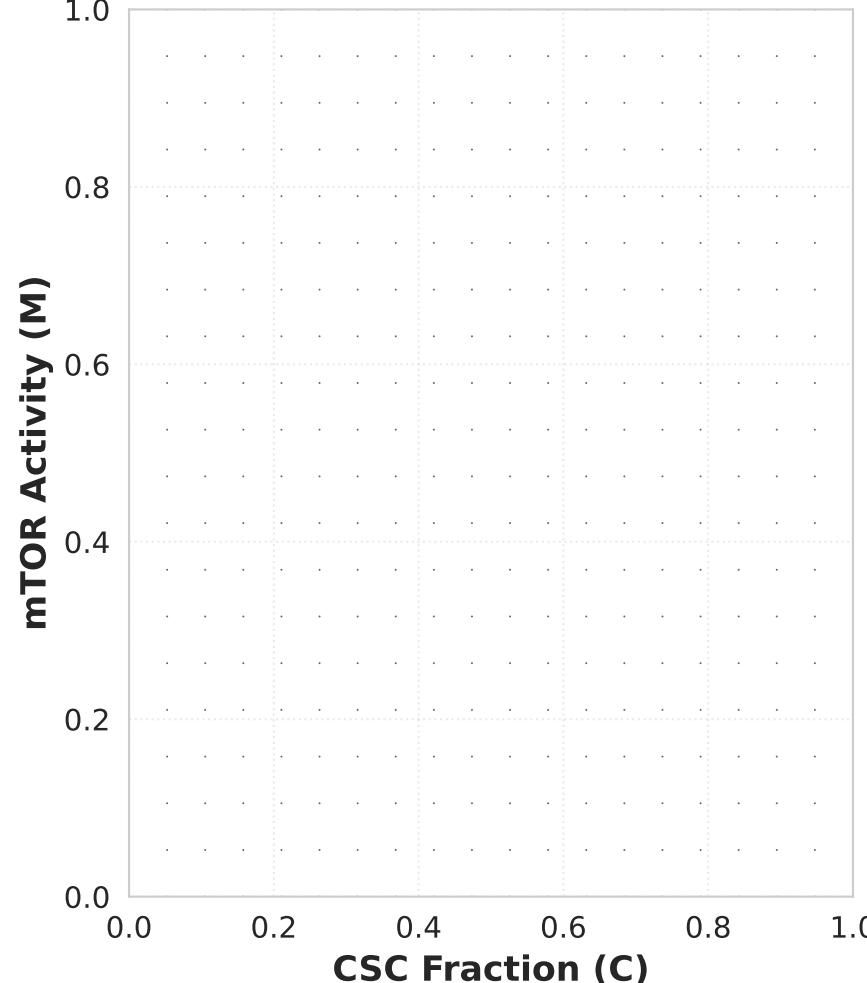
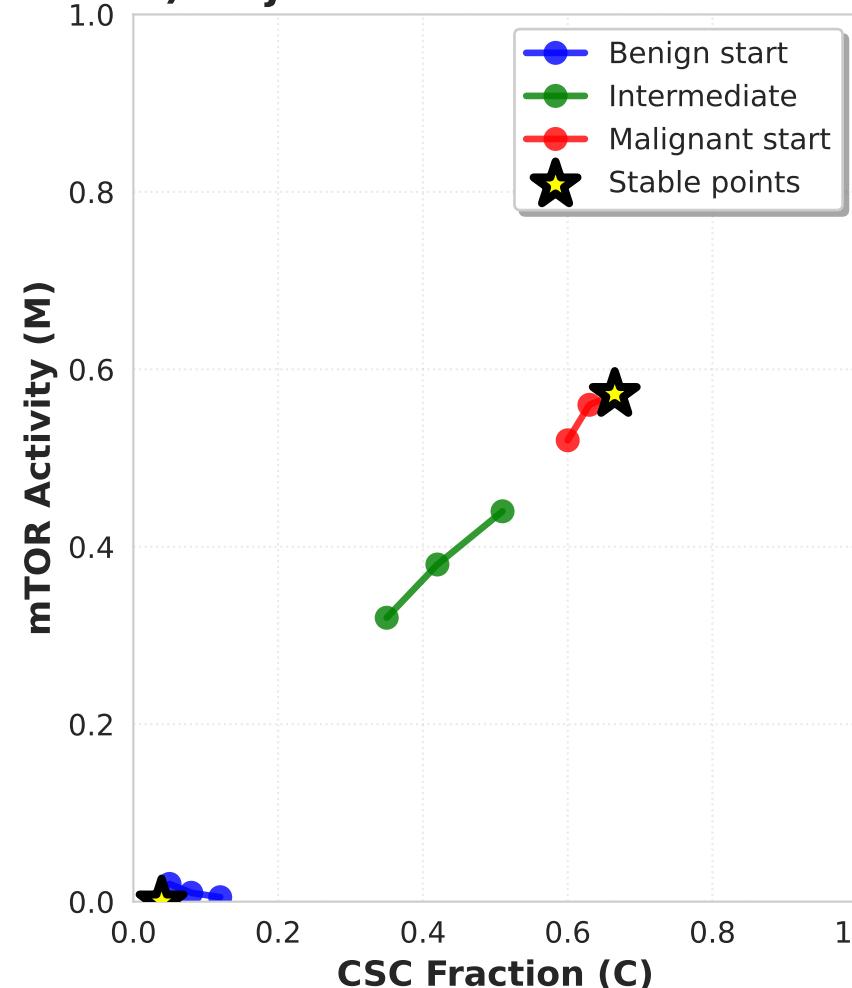


Figure 7: Phase Plane Analysis (C-M Space)

A) Vector Field (C-M Phase Plane)



B) Trajectories to Attractors



C) Interpretation

PHASE PLANE ANALYSIS

STABLE POINTS (Attractors):

1. Benign attractor:
 $C = 0.039$, $M \approx 0$
Basin of attraction: $C < 0.3$
Characteristics: Low CSC, low mTOR

2. Malignant attractor:
 $C = 0.665$, $M = 0.572$
Basin of attraction: $C > 0.5$
Characteristics: High CSC, high mTOR

DYNAMICS:

- Two stable fixed points (bistability)
- Trajectories converge to nearest attractor
- No limit cycles (no oscillations)
- Unstable intermediate region ($0.3 < C < 0.5$)

FEEDBACK STRUCTURE:

- Positive feedback: $M \rightarrow C$
- mTOR reinforces CSC state
- Creates self-sustaining loop
- Stabilizes malignant state

THERAPEUTIC IMPLICATIONS:

- Need to push system below $C \approx 0.3$
- mTOR inhibition disrupts feedback
- Reduces basin of malignant attractor
- Enables transition to benign state