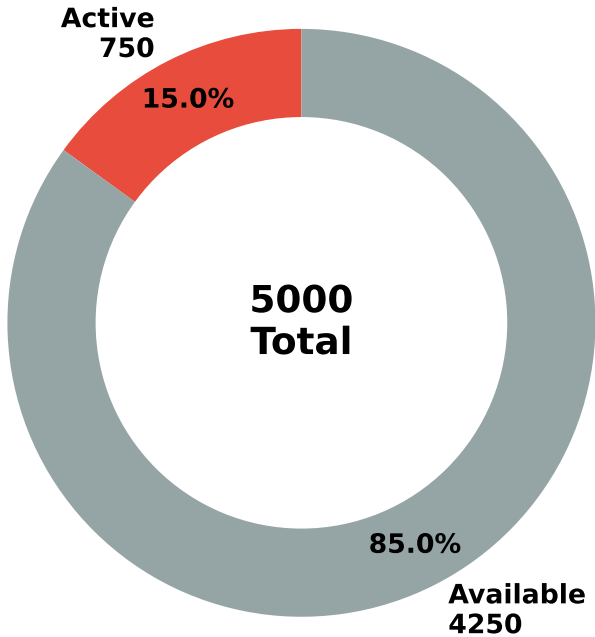
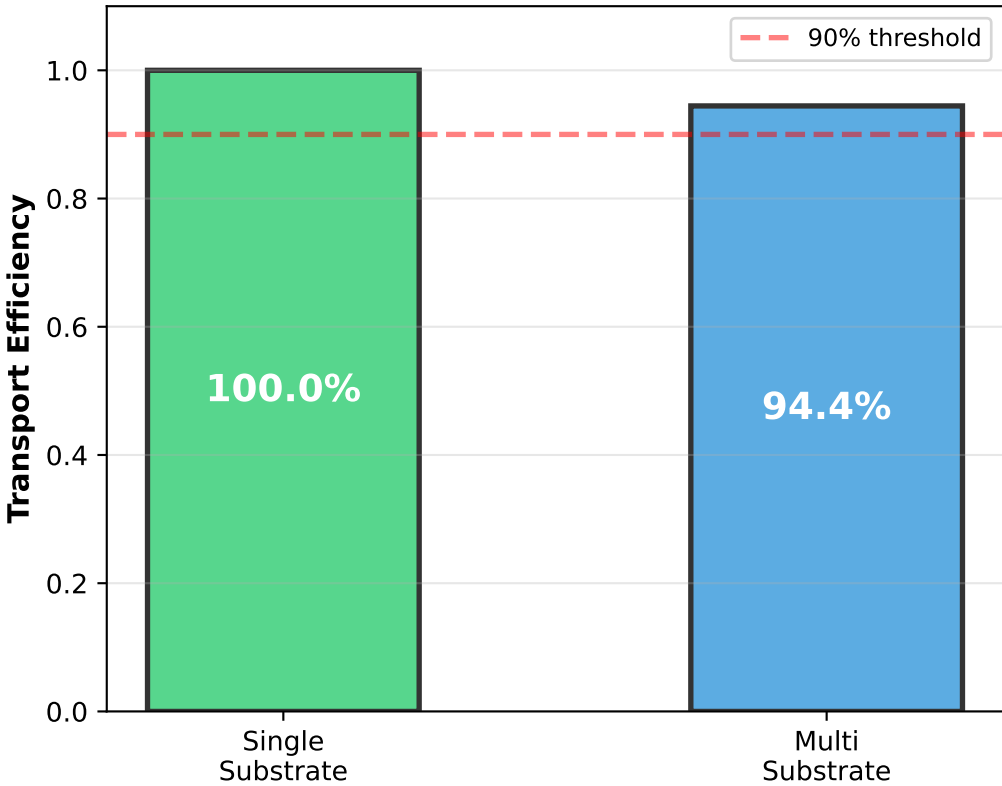


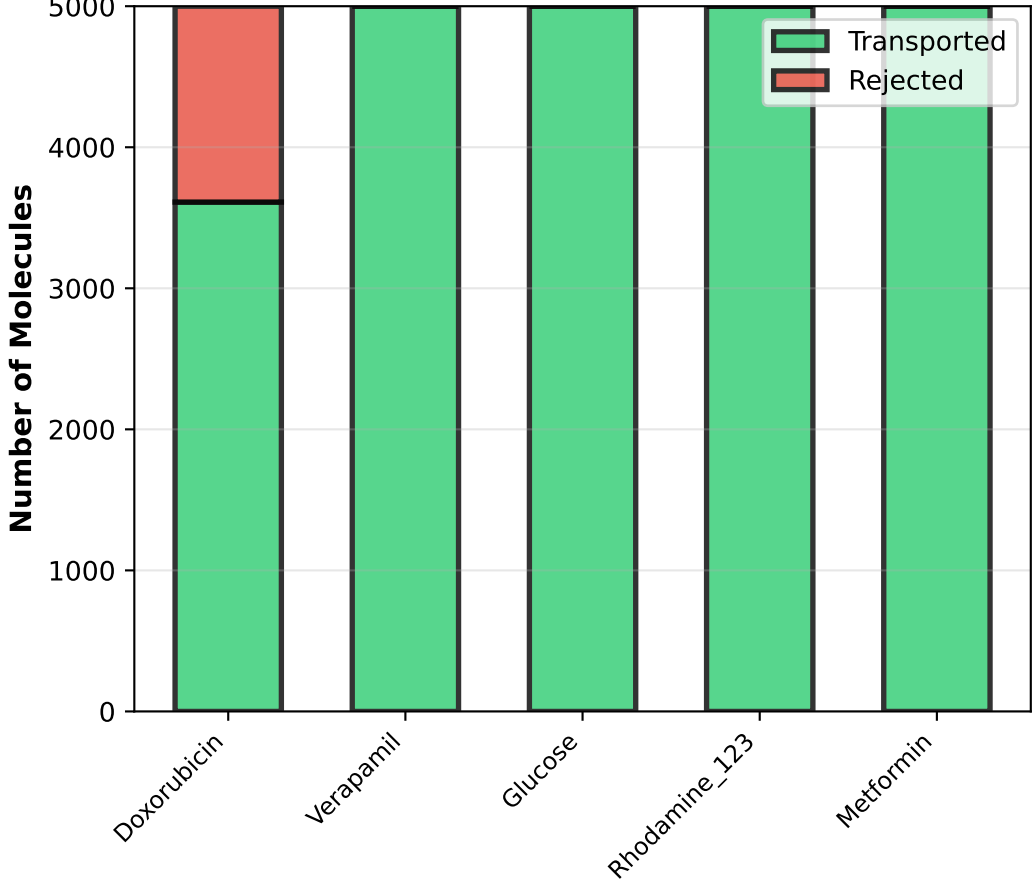
A. Transporter State Distribution



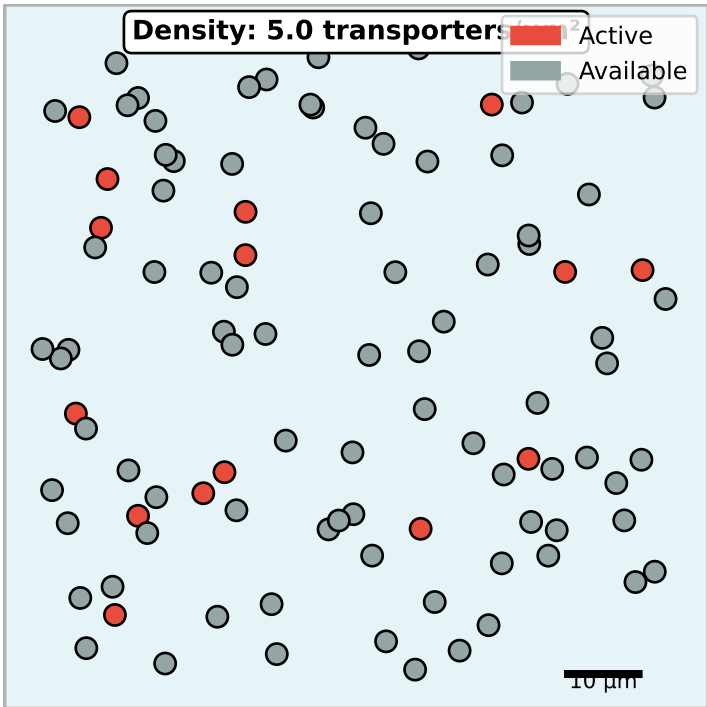
B. Single vs Multi-Substrate Efficiency



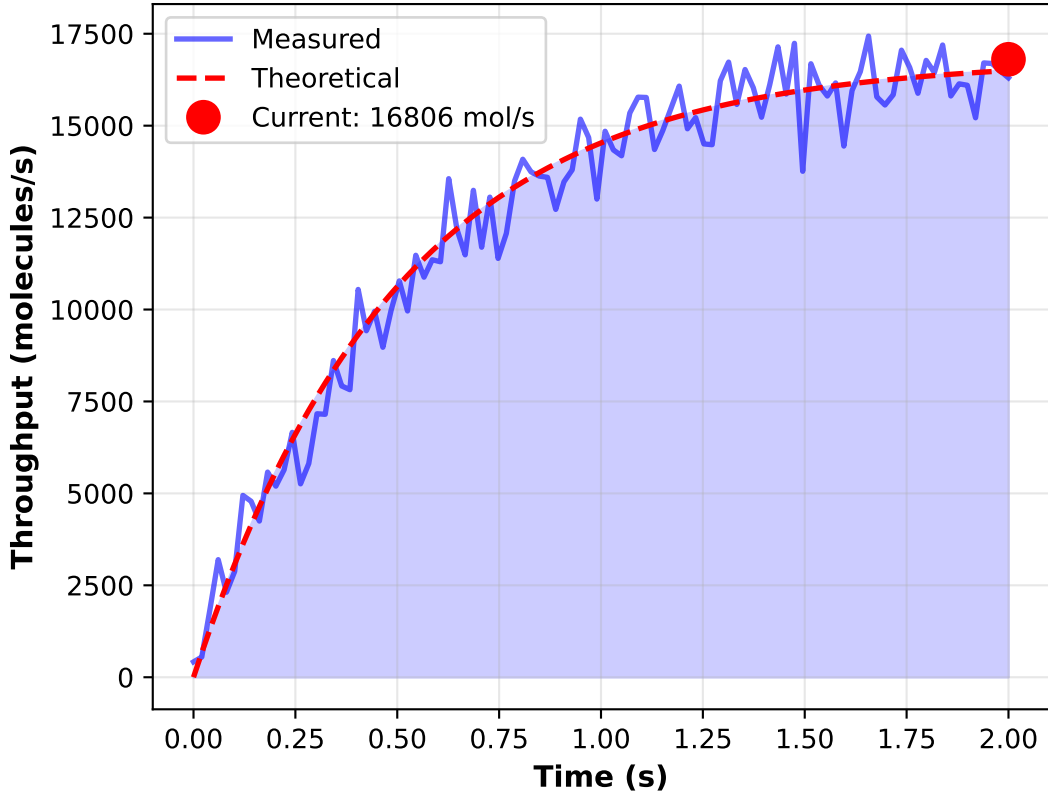
C. Multi-Substrate Competition



D. Membrane Distribution (Sample)



E. Ensemble Throughput Dynamics



F. Comprehensive Statistics

ENSEMBLE DEMON STATISTICS	
TRANSPORTER POPULATION:	
Total Transporters:	5000
Active:	750 (15.0%)
Available:	4250 (85.0%)
Membrane Area:	1000 μm^2
Density:	5.0 / μm^2
TRANSPORT PERFORMANCE:	
Total Transport Events:	33611
Average Cycle Time:	0.10 s
Ensemble Throughput:	16805.5 mol/s
Collective Selectivity:	24.20
Current Time:	2.00 s
SINGLE SUBSTRATE TEST (Verapamil):	
Available:	10000
Transported:	10000
Efficiency:	100%
Phase Lock:	1.000
Transport Rate:	42500 mol/s
MULTI-SUBSTRATE TEST:	
Total Available:	25000
Total Transported:	23611
Overall Efficiency:	94.4%
Collective Selectivity:	1.00e+10