

**Table S1.** Model enzyme concentrations ( $\mu\text{M}$ ) adjusted to match mass spectra of glycans from low and high passage human prostate LNCaP cells while constraining enzyme concentration ratios to values derived from microarray expression levels.

Enzyme	Low passage LNCaP cells ( $\mu\text{M}$ )	High passage LNCaP cells ( $\mu\text{M}$ )	Model predicted ratio	Expression Ratio from microarray
ManI	3.41	4.28	1.25	
ManII	1.89	1.36	0.72	0.72
a6FucT	1.89	1.97	1.04	1.04
GnTI	0.86	1.05	1.22	1.22
GnTII	5.10	4.59	0.9	0.9
GnTIII	0.00	0.00		
GnTIV	0.64	0.49	0.76	0.76
GnTV	1.23	1.02	0.82	
iGnT	0.01	0.01	0.82	0.82
b4GalT	12.78	12.27	0.96	0.96
a3SiaT	0.0032	0.0027	0.81	0.81
IGnT	1.18	1.00	0.85	0.85
a6SiaT	0.00	0.11		
b3GalT	0.00	0.00		
FucTLe	0.00	0.00	1.5	1.5
FucTH	0.019	0.032	1.72	1.72
a3FucT	0.032	0.034	1.07	1.07
GalNAcT-A	0.00	0.00		
GalT-B	0.00	0.00		