Table S3: Parameters left unconstrained by optimization to the objective function.

Parameter name	Biochemical role	Allowed parameter change
kass21e	p21-cyclin E association rate	$>10^{10}$
kasse	p27-cyclin E association rate	$>10^{10}$
kass21d	p21-cyclin D association rate	$>10^{10}$
kassa	p27-cyclin A association rate	$>10^{10}$
kiwee_pp	rate of cyclin B-promoted Wee1 inactivation	9.93×10^{2}
kdie_pp	rate of cyclin E-promoted p27 degradation	4.49×10^{2}
kdisse	p21-cyclin E dissociation rate	4.53
kdib_pp	rate of cyclin B-promoted p27 degradation	3.02
kdia_pp	rate of cyclin A-promoted p27 degradation	2.92
Kp53a	dissociation constant for p53 repression of cyclin A	2.80
J20	Michaelis-Menten constant for Cdc20 phosphorylation by Cyclin B	2.06