Parameter	μ^* (3 s.f.) s	Proportionality
L_s	971	(-)
$k_{f,4}$	953	(-)
G_d	725	(-)
$K_{d,2}$	630	(+)
$k_{f,5}$	533	(-)
$k_{f,8}$	23.5	(-)
P	19.7	(-)
$k_{r,8}$	13.8	(-)
$k_{f,15}$	11.3	(-)
$k_{f,12}$	10.9	(-)
$k_{f,6}$	10.8	(+)
R_{pc}	10.4	(-)
$k_{f,14}$	9.36	(+)
R	8.60	(+)
$k_{f,1}$	8.54	(-)
$k_{f,10}$	6.62	(-)
$K_{d,11}$	6.43	(-)
$k_{f,11}$	6.24	(-)
$K_{m,14}$	5.36	(-)
Ca	5.34	(-)
$k_{f,9}$	5.28	(-)
P_c	5.15	(-)
$k_{f,7}$	4.14	(-)
$k_{f,13}$	3.81	(-)
R_g	2.73	(+)
$k_{f,16}$	2.43	(-)
$PIP2$	2.41	(+)
$k_{f,2}$	2.29	(-)
$K_{m,15}$	2.19	(+)
$K_{d,4}$	1.53	(-)
$k_{r,10}$	1.42	(-)

Table S3: Model sensitivity analysis results: Time-to-Peak The full list of significant parameters is given. Parameters are ranked by μ^*. Additionally, a column depicting whether the parameter is proportional (+) or inversely proportional (-) to the objective function is supplied. The measure of proportionality is taken from the sign of μ, hence reveals the effect of the parameter on the objective function direction on average across all tests.