

Table 2. Model Reactions

Type of Reaction	ID	Reactant	Products	Modifiers	Math	Description
TRANSPORT	re1	s5	s1		$s5 * k1$	Transport of the chloroplastic SA to the cytosol
REDUCED_TRIGGER	re5	s51	s13		$k1 / (\text{pow}(k2 / s51, 2) + 1)$	Trigger of PCD by the signaling peptide Pep
STATE_TRANSITION	re8	s42	s2	s7	$k1 * s42 / (1 + s7 / k2)$	Production and transport of chloroplastic ROS to the cytosol under the negative control of TOP1
STATE_TRANSITION	re12	s7	s19	s5	$k1 * s7 * s5 / (s7 + k2)$	Dimerization of TOP1 under positive control of chloroplastic SA
STATE_TRANSITION	re13	s15	s20	s2	$k1 * s2 * s15 / (s15 + k2)$	Dimerization of TOP2 under positive control of hydrogen peroxide
STATE_TRANSITION	re15	s19	s7	s35	$k1 * s19 * s35 / (s19 + k2)$	Dissociation of TOP1 dimer to monomers under positive control of Antioxidants (AOX)
STATE_TRANSITION	re16	s20	s15	s35	$k1 * s35 * s20 / (s20 + k2)$	Dissociation of TOP2 dimer to monomers under positive control of Antioxidants (AOX)
TRANSLATION	re19	s24	s15		$v1 * s24 / (k2 + s24)$	Translation and maturation of TOP2 from the <i>mTOP2</i> .
TRANSLATION	re20	s23	s25		$v1 * s23 / (k2 + s23)$	Translation and maturation of TOP1
TRANSPORT	re22	s25	s7		$s25 * k1$	Import of precursor TOP1 in the chloroplast
STATE_TRANSITION	re29	s29	s3	s2	$k1 * s2 * s29 / (s29 + k2)$	Reversible protein oxidation under the positive control of hydrogen peroxide

STATE_TRANSITION	re31	s43	s5	s7,s2	$s43 * k1 * (s2 / (s2 + k2)) * (k4 + s7 / (s7 + k3))$	SA synthesis from precursors (preSA) via <i>ICS1 (Isochorismate synthase1)</i> pathway
STATE_TRANSITION	re33	s2	s32	s35,s49	$k1 * s2 * (s35 / (s35 + k3)) * (1 / (1 + s49 / k2))$	Hydrogen peroxide detoxification to water under the negative regulation of SA, via a signaling pathway involving X component.
STATE_TRANSITION	re37	s3	s51		$k1 * s3$	Cleavage of oxidized proteins (ProteinOx) to form peptide (Pep) as part of the proteasomal pathway.
STATE_TRANSITION	re41	s3	s29	s35	$k1 * s3 * s35 / (s3 + k2)$	Reduction of oxidized proteins driven by antioxidants
STATE_TRANSITION	re42	s48	s35	s3,s50	$k1 * s48 * (s50 / (s50 + k2)) + s3 / (s3 + k3)$	Antioxidant synthesis under positive regulation of SA via signaling pathway containing Y element and a pathway dependent on <i>redox</i> protein sensors.
STATE_TRANSITION	re43	s1	s49		$k1 * s1$	SA drives hydrogen peroxide detoxification via X
STATE_TRANSITION	re44	s1	s50		$k1 * s1$	SA drives antioxidant synthesis via Y
TRIGGER	re46	s1	s13		$k1 / (\text{pow}(k2 / s1, 2) + 1)$	Antioxidant-dependent pathway triggers PCD
STATE_TRANSITION	re47	s51	s34	s15	$k1 * s15 * s51 / (k2 + s51)$	Pep degradation catalyzed by TOP2 monomer
STATE_TRANSITION	re48	s35	s52		$k1 * s35 / (k2 + s35)$	Antioxidant degradation
STATE_TRANSITION	re49	s15	s53		$s15 * k1$	TOP2 degradation
STATE_TRANSITION	re50	s7	s54		$s7 * k1$	TOP1 degradation
STATE_TRANSITION	re51	s29	s55		$s29 * k1$	Protein degradation
TRANSLATION	re52	s56	s29		$s56 * k1$	Protein translation