1 Rate Laws

1.1 Reaction: re1

$$v_1 = \mathtt{vmaf\_re1} \cdot \frac{\left([\mathtt{s1}] \cdot \mathrm{vol}\left(\mathtt{c1}\right)\right)^{\mathtt{hic\_re1\_s1}}}{\left([\mathtt{s1}] \cdot \mathrm{vol}\left(\mathtt{c1}\right)\right)^{\mathtt{hic\_re1\_s1}} + \mathtt{ksp\_re1\_s1}^{\mathtt{hic\_re1\_s1}}} \tag{1}$$

1.2 Reaction: re2

$$v_2 = [\mathtt{s3}] \cdot \mathrm{vol}\left(\mathtt{c1}\right) \cdot \frac{\mathtt{kcrf\_re2\_s3} \cdot \frac{[\mathtt{s4}] \cdot \mathrm{vol}(\mathtt{c1})}{\mathtt{kmc\_re2\_s4\_s3}} \cdot \frac{[\mathtt{s5}] \cdot \mathrm{vol}(\mathtt{c1})}{\mathtt{kmc\_re2\_s5\_s3}} - \mathtt{kcrr\_re2\_s3} \cdot \frac{[\mathtt{s6}] \cdot \mathrm{vol}(\mathtt{c1})}{\mathtt{kmc\_re2\_s6\_s3}}}{\left(1 + \frac{[\mathtt{s4}] \cdot \mathrm{vol}(\mathtt{c1})}{\mathtt{kmc\_re2\_s4\_s3}}\right) \cdot \left(1 + \frac{[\mathtt{s5}] \cdot \mathrm{vol}(\mathtt{c1})}{\mathtt{kmc\_re2\_s5\_s3}}\right) + \frac{[\mathtt{s6}] \cdot \mathrm{vol}(\mathtt{c1})}{\mathtt{kmc\_re2\_s6\_s3}}} \tag{2}$$

1.3 Reaction: re3

$$v_3 = [\mathtt{s8}] \cdot \mathrm{vol}\left(\mathtt{c1}\right) \cdot \frac{\frac{\mathtt{kcrf\_re3\_s8}}{\mathtt{kmc\_re3\_s6\_s8}} \cdot [\mathtt{s6}] \cdot \mathrm{vol}\left(\mathtt{c1}\right) - \frac{\mathtt{kcrr\_re3\_s8}}{\mathtt{kmc\_re3\_s7\_s8}} \cdot [\mathtt{s7}] \cdot \mathrm{vol}\left(\mathtt{c1}\right)}{1 + \frac{[\mathtt{s6}] \cdot \mathrm{vol}(\mathtt{c1})}{\mathtt{kmc\_re3\_s6\_s8}} + \frac{[\mathtt{s7}] \cdot \mathrm{vol}(\mathtt{c1})}{\mathtt{kmc\_re3\_s7\_s8}}} \tag{3}$$

$$\vdots$$