

# pyrimidine\_nucleotide\_synthesis\_model

## 1 “global\_variables” component

This component has no equations.

## 2 “Glutamate” component

$$\frac{d(\text{Glutamate})}{d(\text{time})} = \text{delta\_Glutamate\_rxn7}$$

## 3 “Glutamine” component

$$\frac{d(\text{Glutamine})}{d(\text{time})} = (\text{delta\_Glutamine\_rxn7} + \text{delta\_Glutamine\_rxn8})$$

## 4 “Carbamoyl\_phosphate” component

$$\frac{d(\text{Carbamoyl\_phosphate})}{d(\text{time})} = (\text{delta\_Carbamoyl\_phosphate\_rxn8} + \text{delta\_Carbamoyl\_phosphate\_rxn0})$$

## 5 “Aspartate” component

$$\frac{d(\text{Aspartate})}{d(\text{time})} = \text{delta\_Aspartate\_rxn0}$$

## 6 “N\_Carbamoyl\_aspartate” component

$$\frac{d(N\_Carbamoyl\_aspartate)}{d(time)} = (\delta_{N\_Carbamoyl\_aspartate\_rxn0} + \delta_{N\_Carbamoyl\_aspartate\_rxn1})$$

## 7 “Dihydroorotate” component

$$\frac{d(Dihydroorotate)}{d(time)} = (\delta_{Dihydroorotate\_rxn1} + \delta_{Dihydroorotate\_rxn2})$$

## 8 “Orotate” component

$$\frac{d(Orotate)}{d(time)} = (\delta_{Orotate\_rxn2} + \delta_{Orotate\_rxn3})$$

## 9 “Orotidine\_5\_phosphate” component

$$\frac{d(Orotidine\_5\_phosphate)}{d(time)} = (\delta_{Orotidine\_5\_phosphate\_rxn3} + \delta_{Orotidine\_5\_phosphate\_rxn4})$$

## 10 “Phosphoribosyl\_5\_1\_pyrophosphate” component

$$\frac{d(Phosphoribosyl\_5\_1\_pyrophosphate)}{d(time)} = \delta_{Phosphoribosyl\_5\_1\_pyrophosphate\_rxn3}$$

## 11 “Uridine\_5\_phosphate” component

$$\frac{d(Uridine\_5\_phosphate)}{d(time)} = (\delta_{Uridine\_5\_phosphate\_rxn4} + \delta_{Uridine\_5\_phosphate\_rxn5})$$

## 12 “UDP” component

$$\frac{d(UDP)}{d(time)} = (\delta_{UDP\_rxn5} + \delta_{UDP\_rxn6})$$

### 13 “UTP” component

$$\frac{d(UTP)}{d(time)} = \text{delta\_UTP\_rxn6}$$

### 14 “ATP” component

$$\frac{d(ATP)}{d(time)} = (\text{delta\_ATP\_rxn5} + \text{delta\_ATP\_rxn6} + \text{delta\_ATP\_rxn7} + \text{delta\_ATP\_rxn8})$$

### 15 “ADP” component

$$\frac{d(ADP)}{d(time)} = (\text{delta\_ADP\_rxn5} + \text{delta\_ADP\_rxn6} + \text{delta\_ADP\_rxn7} + \text{delta\_ADP\_rxn8})$$

### 16 “H2O” component

$$\frac{d(H2O)}{d(time)} = \text{delta\_H2O\_rxn1}$$

### 17 “Pi” component

$$\frac{d(Pi)}{d(time)} = (\text{delta\_Pi\_rxn0} + \text{delta\_Pi\_rxn3} + \text{delta\_Pi\_rxn7} + \text{delta\_Pi\_rxn8})$$

### 18 “NAD” component

$$\frac{d(NAD)}{d(time)} = \text{delta\_NAD\_rxn2}$$

### 19 “NADH” component

$$\frac{d(NADH)}{d(time)} = \text{delta\_NADH\_rxn2}$$

## 20 “H” component

$$\frac{d(H)}{d(time)} = (\text{delta\_H\_rxn2} + \text{delta\_H\_rxn7})$$

## 21 “CO2” component

$$\frac{d(CO2)}{d(time)} = \text{delta\_CO2\_rxn4}$$

## 22 “NH4” component

$$\frac{d(NH4)}{d(time)} = \text{delta\_NH4\_rxn7}$$

## 23 “HCO3” component

$$\frac{d(HCO3)}{d(time)} = \text{delta\_HCO3\_rxn8}$$

## 24 “Glutamine\_synthetase” component

This component has no equations.

## 25 “Carbamoyl\_phosphate\_synthetase\_II” component

This component has no equations.

## 26 “Aspartate\_transcarbamyase” component

This component has no equations.

## 27 “Dihydroorotase\_dehydrogenase” component

This component has no equations.

## **28 “Orotate\_phosphoribosyl\_transferase” component**

This component has no equations.

## **29 “UMP\_kinase” component**

This component has no equations.

## **30 “Nucleoside\_diphosphate\_kinase” component**

This component has no equations.

## **31 “Dihydroorotase” component**

This component has no equations.

## **32 “Orotidylate\_decarboxylase” component**

This component has no equations.

## **33 “reaction0” component**

This component has no equations.

## **34 “reaction1” component**

This component has no equations.

## **35 “reaction2” component**

This component has no equations.

## **36 “reaction3” component**

This component has no equations.

### **37 “reaction4” component**

This component has no equations.

### **38 “reaction5” component**

This component has no equations.

### **39 “reaction6” component**

This component has no equations.

### **40 “reaction7” component**

This component has no equations.

### **41 “reaction8” component**

This component has no equations.