Ordered Double Site Phosphorylation

Ordered Triple Site Phosphorylation

System 1: Common Kinase Common Phosphatase

System 2 : Separate Kinase Common Phosphatase

System 3 : Separate Kinase Separate Phosphatase

Mixed-Random 1 : Common Kinase Common Phosphatase

Mixed-Random 2 : Separate Kinase Common Phosphatase

A00 + K1
$$\xrightarrow{k_{1}}$$
 A00K1 $\xrightarrow{k_{1}}$ A01 + K1 A01 + K2 $\xrightarrow{k_{2}}$ A01K2 $\xrightarrow{k_{2}}$ A11 + K2

A11 + P $\xrightarrow{k_{03}}$ A11P₁ $\xrightarrow{k_{3}}$ A01P $\xrightarrow{k_{4}}$ A00 + P

A00 + K2 $\xrightarrow{a_{07}}$ A00K2 $\xrightarrow{a_{1}}$ A10 + K2 A10 + K1 $\xrightarrow{a_{02}}$ A10K1 $\xrightarrow{a_{2}}$ A11 + K1

A11 + P $\xrightarrow{a_{03}}$ A11P₂ $\xrightarrow{a_{3}}$ A10P $\xrightarrow{a_{4}}$ A00 + P

Mixed-Random 2a: Separate Kinase Unsaturated Phosphorylation