## **Chemical Reaction Network**

$$M+ MKK \stackrel{k_1}{\Longrightarrow} C_{M\_MKK}$$

$$C_{M\_MKK} \stackrel{k_2}{\longrightarrow} Mp + MKK$$

$$Mp+ MKK \stackrel{k_3}{\Longrightarrow} C_{Mp\_MKK}$$

$$C_{Mp\_MKK} \stackrel{k_{-3}}{\longrightarrow} Mpp + MKK$$

$$Mpp+ MKP \stackrel{h_1}{\Longrightarrow} C_{Mpp\_MKP}$$

$$C_{Mpp\_MKP} \stackrel{h_{-1}}{\longrightarrow} Mp + MKP$$

$$Mp+ MKP \stackrel{h_3}{\Longrightarrow} C_{Mp\_MKP}$$

$$Mp+ MKP \stackrel{h_{-3}}{\Longrightarrow} C_{Mp\_MKP}$$

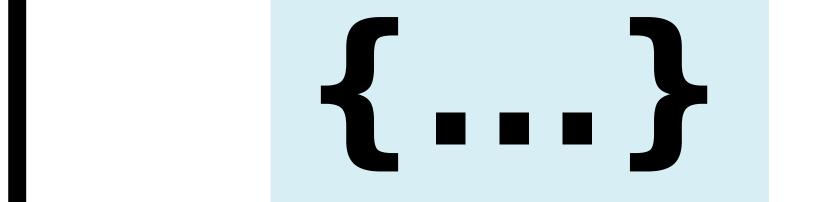
$$C_{Mp\_MKP} \stackrel{h_{-3}}{\longrightarrow} M + MKP$$

## DSL-based model declaration

```
erk_model = @reaction_network begin
   (k_1, k_{-1}), M + MKK \leftrightarrow C_M_MKK
   k_2, C_M_KK \rightarrow Mp + MKK
   (k_3, k_{-3}), Mp + MKK \leftrightarrow C_Mp_MKK
   k_4, C_Mp_MKK \rightarrow Mpp + MKK
   (h_1, h_{-1}), Mpp + MKP \leftrightarrow C_Mpp_MKP
  h_2, C_Mpp_MKP \rightarrow Mp + MKP
   (h<sub>3</sub>, h<sub>-3</sub>), Mp + MKP \leftrightarrow C_Mp_MKP
  h4, C_Mp_MKP \rightarrow M + MKP
end k1 k-1 k2 k3 k-3 k4 h1 h-1 h2 h3 h-3 h4
```



-ReactionSystem IR-



**Analysis Methods**