# R12-14

June 10, 2025



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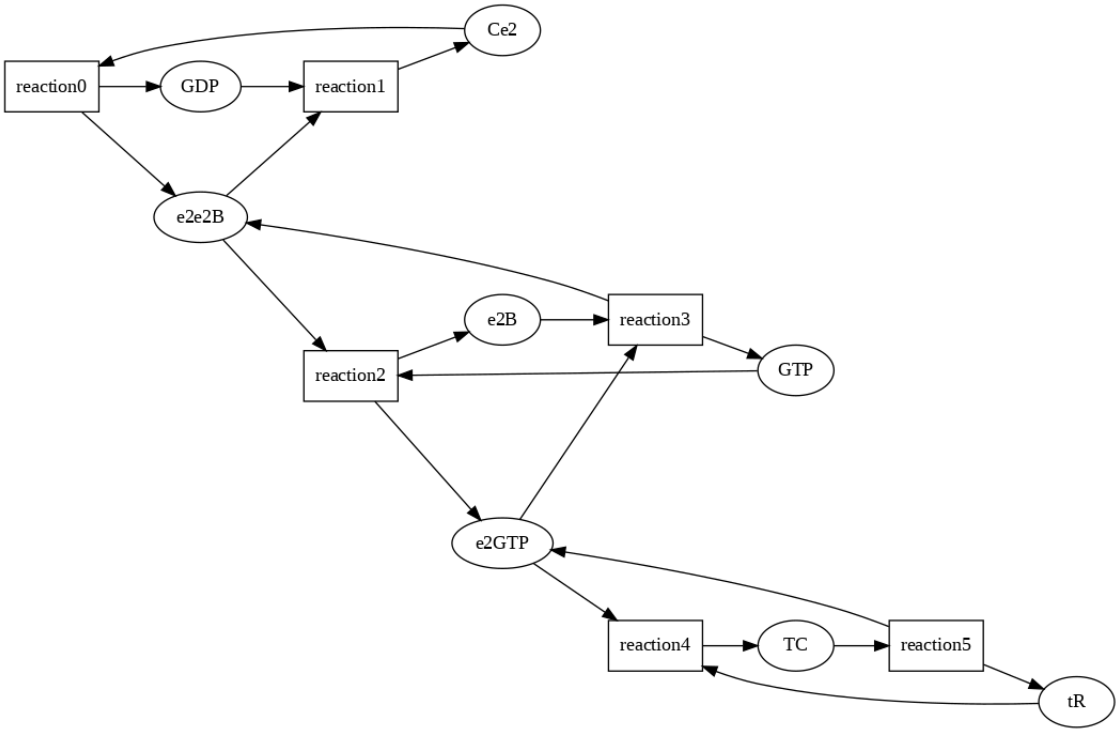
[1]:
```
Ce2 <=> e2e2B + GDP.
e2e2B + GTP <=> e2GTP + e2B.
tR + e2GTP <=> TC.
```

[1]:

[2]:
```
draw_reactions.
```


Ce2
reaction0
GDP
reaction1
e2e2B
e2B
reaction3
reaction2
GTP
e2GTP
reaction4
TC
reaction5
tR

[2]:

[3]:
```
list_ode.
```

$$
\begin{aligned}
tR_0 &= 0 \\
e2GTP_0 &= 0 \\
TC_0 &= 0 \\
e2e2B_0 &= 0 \\
GTP_0 &= 0 \\
e2B_0 &= 0 \\
Ce2_0 &= 0 \\
GDP_0 &= 0 \\
\frac{dtR}{dt} &= TC - e2GTP * tR \\
\frac{de2GTP}{dt} &= TC + GTP * e2e2B - e2B * e2GTP - e2GTP * tR \\
\frac{dTC}{dt} &= e2GTP * tR - TC \\
\frac{de2e2B}{dt} &= Ce2 - GDP * e2e2B - GTP * e2e2B + e2B * e2GTP \\
\frac{dGTP}{dt} &= e2B * e2GTP - GTP * e2e2B \\
\frac{de2B}{dt} &= GTP * e2e2B - e2B * e2GTP \\
\frac{dCe2}{dt} &= GDP * e2e2B - Ce2 \\
\frac{dGDP}{dt} &= Ce2 - GDP * e2e2B
\end{aligned}
$$

[3]:

[ ]:

[ ]: