Text S4

1 Simulation of the full ordinary differential equation model

The equations of Modules 1-3 and the following conservation relations are taken together to perform the bifurcation analysis and the numerical integration of the ODE model.

The conservation relations are as follows:

$$MK3 = MK3_{total} - (HHMK3 + HHpMK3 + HHppMK3 + HHpppMK3) \tag{1}$$

$$\begin{aligned} PP5 = {}& PP5_{total} - (HHppppPP5 + HHpppPP5S + HHpppPP5 + HHppPP5 + \\ & HHppPP5S + HHpPP5 + HHpPP5S + HHPP5) \end{aligned} \tag{2}$$

$$\begin{aligned} HSF1 = {}& HSF1_{total} - (HSF1S + HSF12S + HSF13S + HHSP90_{cl} + HH + HHp + \\ & HHpp + HHppp + HHpppp + HHMK3 + HHpMK3 + HHppMK3 + \\ & HHpppMK3 + HHppppPP5 + HHpppPP5 + HHppPP5 + HHppPP5S + \\ & HHpPP5 + HHpPP5S + HHPP5) \end{aligned} \tag{3}$$

$$\begin{aligned} HSE = {}& HSE_{TOT} - (HH + HHp + HHpp + HHppp + HHpppp + HHMK3 + \\ & HHpMK3 + HHppMK3 + HHpppMK3 + HHppppPP5 + HHpppPP5 + \\ & HHpppPP5S + HHppPP5 + HHppPP5S + HHpPP5 + HHpPP5S + HHPP5) \end{aligned} \tag{4}$$