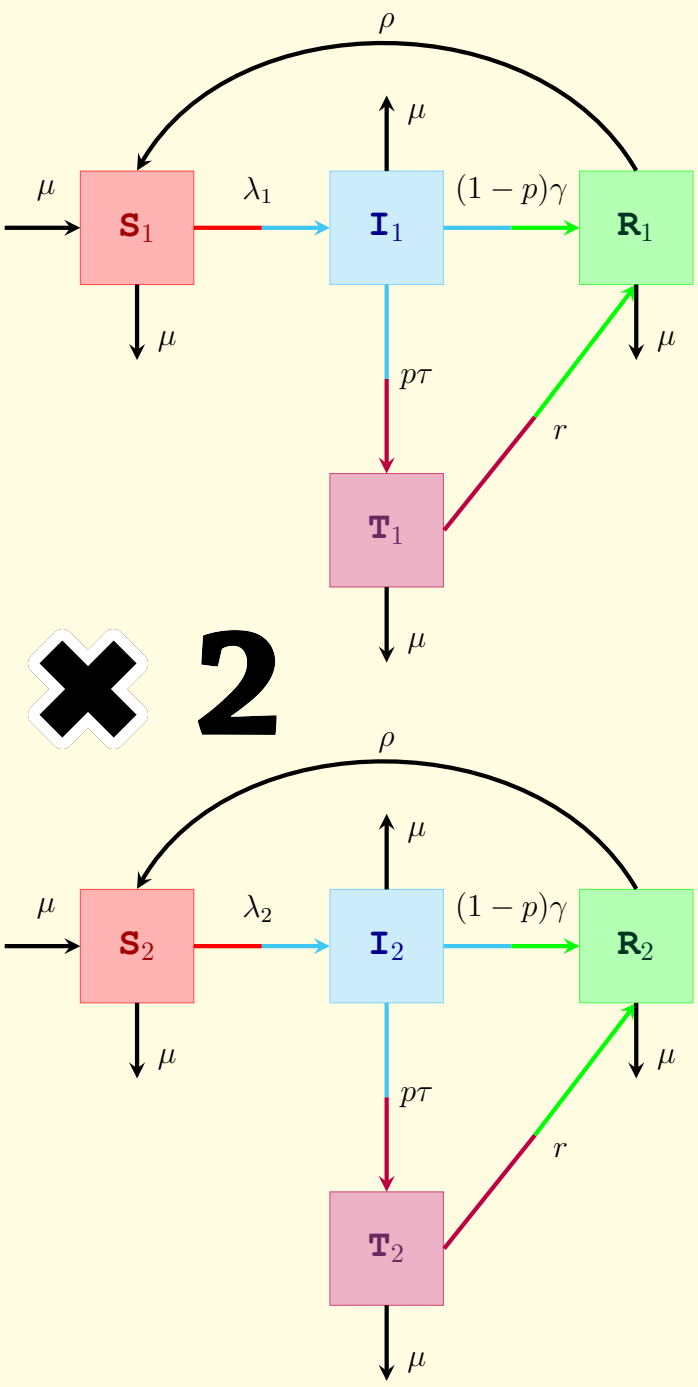

Two Patch Drug Therapy **SITRSBD** Model

System of ODEs

We define the parameter $\mu = d = b$.

$$\frac{d\mathbf{S}_1}{dt} = \mu \mathrm{N}_1 - \beta(\mathbf{I}_1/\mathrm{N}_1)\mathbf{S}_1 - \mu\mathbf{S}_1 + \rho\mathbf{R}_1 \tag{1.1}$$

$$\frac{d\mathbf{I}_1}{dt} = \beta(\mathbf{I}_1/\mathrm{N}_1)\mathbf{S}_1 - p\tau\mathbf{I}_1 - \mu\mathbf{I}_1 - (1-p)\gamma\mathbf{I}_1 \tag{1.2}$$

$$\frac{d\mathbf{T}_1}{dt} = p\tau\mathbf{I}_1 - r\mathbf{T}_1 - \mu\mathbf{T}_1 \tag{1.3}$$

$$\frac{d\mathbf{R}_1}{dt} = r\mathbf{T}_1 - \mu\mathbf{R}_1 - \rho\mathbf{R}_1 + (1-p)\gamma\mathbf{I}_1 \tag{1.4}$$

$$\frac{d\mathbf{S}_2}{dt} = \mu \mathrm{N}_2 - \beta(\mathbf{I}_2/\mathrm{N}_2)\mathbf{S}_2 - \mu\mathbf{S}_2 + \rho\mathbf{R}_2 \tag{1.5}$$

$$\frac{d\mathbf{I}_2}{dt} = \beta(\mathbf{I}_2/\mathrm{N}_2)\mathbf{S}_2 - p\tau\mathbf{I}_2 - \mu\mathbf{I}_2 - (1-p)\gamma\mathbf{I}_2 \tag{1.6}$$

$$\frac{d\mathbf{T}_2}{dt} = p\tau\mathbf{I}_2 - r\mathbf{T}_2 - \mu\mathbf{T}_2 \tag{1.7}$$

$$\frac{d\mathbf{R}_2}{dt} = r\mathbf{T}_2 - \mu\mathbf{R}_2 - \rho\mathbf{R}_2 + (1-p)\gamma\mathbf{I}_2 \tag{1.8}$$