%% A: case II: a steady-state exists, RS(0)=0.8, S10=1e3

r0 = [0.12; 0.1]; % population reproduction rates, per hour

at = 0.05; % avg. consumption values (fmole per cell); alpha\_ij: population i, resource j

bt = 0.1; % avg. production rates (fmole per cell per hour); beta\_ij: population i, resource j

K1 = 1e5; % K\_C1S2, Michaelis-Menten coefficient for influence, fmole/ml

K2 = 1e5; % K\_S2C1, Michaelis-Menten coefficient for consumption, fmole/ml

S10=1e5 % initial number of S1 cell

S20=0.8e5 % initial number of S2 cell

%% B: case II: a steady-state exists, RS(0)=4, S10=1e5

r0 = [0.12; 0.1]; % population reproduction rates, per hour

at = 0.05; % avg. consumption values (fmole per cell); alpha\_ij: population i, resource j

bt = 0.1; % avg. production rates (fmole per cell per hour); beta\_ij: population i, resource j

K1 = 1e5; % K\_C1S2, Michaelis-Menten coefficient for influence, fmole/ml

K2 = 1e5; % K\_S2C1, Michaelis-Menten coefficient for consumption, fmole/ml

S10=1e5 % initial number of S1 cell

S20=4e5 % initial number of S2 cell

%% C: case II: a steady-state exists, RS(0)=0.2, S10=1e5

r0 = [0.12; 0.1]; % population reproduction rates, per hour

at = 0.05; % avg. consumption values (fmole per cell); alpha\_ij: population i, resource j

bt = 0.1; % avg. production rates (fmole per cell per hour); beta\_ij: population i, resource j

K1 = 1e5; % K\_C1S2, Michaelis-Menten coefficient for influence, fmole/ml

K2 = 1e5; % K\_S2C1, Michaelis-Menten coefficient for consumption, fmole/ml

S10=1e5 % initial number of S1 cell

S20=0.2e5 % initial number of S2 cell

%% D: case II: a steady-state exists, RS(0)=0.8, S10=1e3

r0 = [0.12; 0.1]; % population reproduction rates, per hour

at = 0.05; % avg. consumption values (fmole per cell); alpha\_ij: population i, resource j

bt = 0.1; % avg. production rates (fmole per cell per hour); beta\_ij: population i, resource j

K1 = 1e5; % K\_C1S2, Michaelis-Menten coefficient for influence, fmole/ml

K2 = 1e5; % K\_S2C1, Michaelis-Menten coefficient for consumption, fmole/ml

S10=1e3 % initial number of S1 cell

S20=0.8e3 % initial number of S2 cell

%% E: case III, no steady-state exists, RS(0)=1, S10=5e4

r0 = [0.1; 0.09]; % population reproduction rates, per hour

at = 0.05; % avg. consumption values (fmole per cell); alpha\_ij: population i, resource j

bt = 0.1; % avg. production rates (fmole per cell per hour); beta\_ij: population i, resource j

K1 = 1e5; % K\_C1S2, Michaelis-Menten coefficient for influence, fmole/ml

K2 = 1e5; % K\_S2C1, Michaelis-Menten coefficient for consumption, fmole/ml

S10=5e4 % initial number of S1 cell

S20=5e4 % initial number of S2 cell

%% F: case III, no steady-state exists, RS(0)=10, S10=1e4

r0 = [0.1; 0.09]; % population reproduction rates, per hour

at = 0.05; % avg. consumption values (fmole per cell); alpha\_ij: population i, resource j

bt = 0.1; % avg. production rates (fmole per cell per hour); beta\_ij: population i, resource j

K1 = 1e5; % K\_C1S2, Michaelis-Menten coefficient for influence, fmole/ml

K2 = 1e5; % K\_S2C1, Michaelis-Menten coefficient for consumption, fmole/ml

S10=1e4 % initial number of S1 cell

S20=1e5 % initial number of S2 cell

%% G: case III, no steady-state exists, RS(0)=0.25, S10=8e4

r0 = [0.1; 0.09]; % population reproduction rates, per hour

at = 0.05; % avg. consumption values (fmole per cell); alpha\_ij: population i, resource j

bt = 0.1; % avg. production rates (fmole per cell per hour); beta\_ij: population i, resource j

K1 = 1e5; % K\_C1S2, Michaelis-Menten coefficient for influence, fmole/ml

K2 = 1e5; % K\_S2C1, Michaelis-Menten coefficient for consumption, fmole/ml

S10=8e4 % initial number of S1 cell

S20=2e4 % initial number of S2 cell

%% H: case III, no steady-state exists, RS(0)=10, S10=1e2

r0 = [0.1; 0.09]; % population reproduction rates, per hour

at = 0.05; % avg. consumption values (fmole per cell); alpha\_ij: population i, resource j

bt = 0.1; % avg. production rates (fmole per cell per hour); beta\_ij: population i, resource j

K1 = 1e5; % K\_C1S2, Michaelis-Menten coefficient for influence, fmole/ml

K2 = 1e5; % K\_S2C1, Michaelis-Menten coefficient for consumption, fmole/ml

S10=1e2 % initial number of S1 cell

S20=1e3 % initial number of S2 cell