
```

function fig_2a
clear;clc;close all;

%initialize physiology
beta = 1.1;
gamma = beta;
kinit= 2;
bs=10;

%initialize simulation settings
nCells = 1e5;
rng(floor(log(4815162342)));
S = [bs 0; -1 1; 0 -1];
nT = 4;
kpar = [kinit,beta,gamma];
Time_max = 1.2;
tvec = linspace(0,Time_max,nT);
t_matrix = repmat(tvec,nCells,1);

tic
X = gg_200110_gillespie_geom_1(kpar,t_matrix,S,nCells);
toc

%initialize range of approximation settings
Tmax = 8;
Lmax = 4;

f=figure;
set(f,'Position',[636 590 604 230]);

for NN = 1:(Tmax*Lmax)
    N_approx_taylor = mod(NN-1,Tmax)+1;
    N_approx_laurent = floor((NN-1)/Tmax)+1;

    tvec(end) = 1.2;

    %plot simulation results (mature marginal)
    figure(1)
    subplot(Lmax,Tmax,NN)

    histogram(X(:,end,2),'BinMethod','integers','Normalization','pdf',...
        'FaceColor',0.5*[1 1 1],'EdgeColor','none'); hold on;
    set(gca,'xtick',[],'ytick',[],'box','off');

    M = max(X(:,end,1))+1;
    N = max(X(:,end,2))+1;

    %compute approximation results
    Pa_marg =
    gg_200325_analyt_geom_tdep_vec_31(kinit,bs,gamma,M,N,tvec(end),...
        'mature',N_approx_taylor,N_approx_laurent);

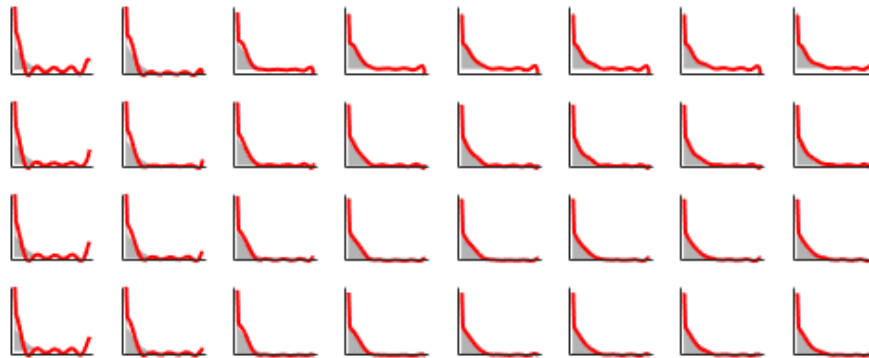
```

```
%plot approximation results
plot(0:(N-1),Pa_marg,'r-','LineWidth',1.5);

%if desired, output approximation order as title of each plot
%   title(sprintf('T=%i, L=%i',N_approx_taylor,N_approx_laurent),...
%           'FontWeight','normal');
end

return
```

Elapsed time is 1.343109 seconds.



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