

```
% Simulation parameters

% To import the data upload the excel file to the command window of matlab

% Using import window of matlab, select the data as numeric matrix with the following ✓
conditions (in that specific order):

% Replace -- Blanks with -- 10000
% Replace -- unimportable cells with -- NaN

data=MutantsIhog; % Name of the loaded data file.

cases=8; % Number of genotypes to study.

TM=30; % Time of movies (in min).
% This value is the one consider as static in the final graph for data > TM

bw=1; % band width = precicion of the violin plots.

%% Script
format shortE

d=NaN(1,cases);
for i=1:cases
    %Size per phenotype
    temp=find(data(:,i)==10000,1);

    if isempty(temp)==1
        d(i)=size(data(:,i),1);
    else
        d(i)=temp-1;
    end
end

% Definition of lifetimes group per genotype
Times=cell(1,cases);
for i=1:cases
    Times{i}=data(1:d(i),i);
end

% To consider static cases for representation purposes the times bigger than TM (NaN ✓
values) are fixed to TM.
Ttot=Times;
for j=1:cases
    for l=1:d(j)
        if isnan(Times{j}(l))==1
            Ttot{j}(l)=TM;
        end
    end
end
end
```

```
%% Statistical analysis
```

```
% Study of normality of the data.
```

```
% Shapiro-Wilk test is not implemented in Matlab code, for the statistical study of  
normality we used the scrip developed by: ✓
```

```
% Copyright (c) 17 March 2009 by Ahmed Ben Saïda,
```

```
% Department of Finance, IHEC Sousse - Tunisia
```

```
% https://es.mathworks.com/matlabcentral/fileexchange/13964-shapiro-wilk-and-shapiro- ✓  
francia-normality-tests
```

```
SW=NaN(1,cases);
```

```
for n=1:cases
```

```
    SW(n)=swtest(Times{n},0.05);
```

```
end
```

```
% Depend on the results of SW test a Ttest or Wilcoxon test is used for  
% the satitistical analysis:
```

```
PValues=NaN(cases);
```

```
if sum(SW)==0
```

```
    for i=1:cases
```

```
        for j=i+1:cases
```

```
            [temp,temp2]=ttest2(Times{i},Times{j});
```

```
            PValues(i,j)=temp2;
```

```
        end
```

```
    end
```

```
else
```

```
    for i=1:cases
```

```
        for j=i+1:cases
```

```
            PValues(i,j)=ranksum(Times{i},Times{j});
```

```
        end
```

```
    end
```

```
end
```

```
if sum(SW)==0
```

```
    disp('P values of statistical study (T-test) for lifetimes: ');
```

```
else
```

```
    disp('P values of statistical study (Wilcoxon test) for lifetimes: ');
```

```
end
```

```
disp(PValues);
```

```
%% Graphical script
```

```
% Violin plot function is not implemented in Matlab code, for the the representation ✓  
of the data we used the scrip developed by:
```

```
% Hoffmann H, 2015: violin.m - Simple violin plot using matlab default kernel density  
estimation. INRES (University of Bonn), Katzenburgweg 5, 53115 Germany.  
% https://es.mathworks.com/matlabcentral/fileexchange/45134-violin-plot
```

```
figure % Plots Violin of the data  
    Violin(Times, 'bw', bw);  
    ylabel('Time (min)', 'FontSize', 18)  
    title('Violins of cytoneme lifetimes')
```

```
figure % Plots a Violin considering the statical phenotype  
    Violin(Ttot, 'bw', bw);  
    ylabel('Time (min)', 'FontSize', 18)  
    title('Violins of cytoneme lifetimes (including static cytonemes)')
```