

CORRECTION TP REHAUSSEMENT - OPTION I&S

Contents

- 0 - Nettoyage
- 1 - Transformations d'intensités
- 2 - Egalisation d'histogramme
- 3 - Appariement d'histogramme
- 4 - Fonctions annexes

0 - Nettoyage

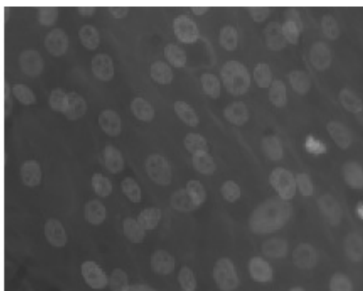
```
clear all;close all;clc
```

1 - Transformations d'intensités

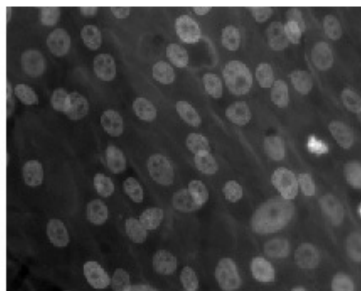
lecture et visualisation de l'image A;

```
A=imread('osteoblaste.tif');
A=double(A);
A=A/255;
% transformations gamma
figure
subplot(2,2,1);viewImage(A);title('originale');
Ar=imadjust(A,[min(min(A)) max(max(A))],[0 1],1);
subplot(2,2,2);viewImage(Ar);title('réhaussée, g=1');
Ar=imadjust(A,[0.25 0.75],[0 1],0.5);
subplot(2,2,3);viewImage(Ar);title('réhaussée, g=0.5');
Ar=imadjust(A,[0.25 0.5],[0 1],2);
subplot(2,2,4);viewImage(Ar);title('réhaussée, g=2');
% étirement de contraste
m=mean(mean(A));
figure
subplot(2,2,1);viewImage(A);title('originale');
Ar=1./(1+(m./(A+eps)).^5);
subplot(2,2,2);viewImage(Ar);title('contraste étiré : E=10');
Ar=1./(1+(m./(A+eps)).^10);
subplot(2,2,3);viewImage(Ar);title('contraste étiré : E=20');
Ar=1./(1+(m./(A+eps)).^1000);
subplot(2,2,4);viewImage(Ar);title('contraste étiré : E=1000');
```

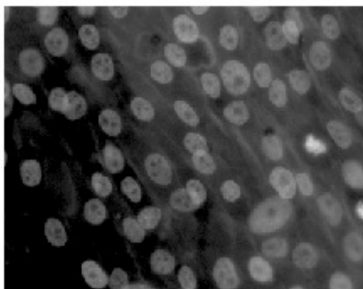
originale



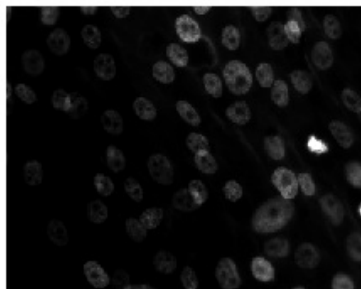
réhaussée, g=1



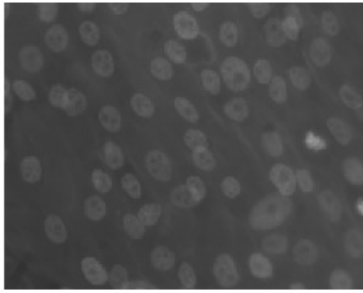
réhaussée, g=0.5



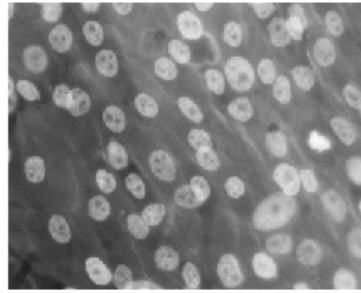
réhaussée, g=2



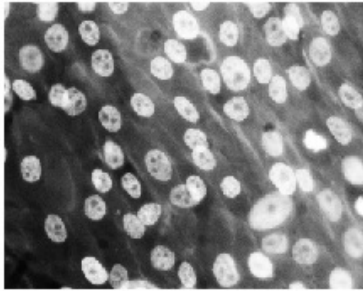
originale



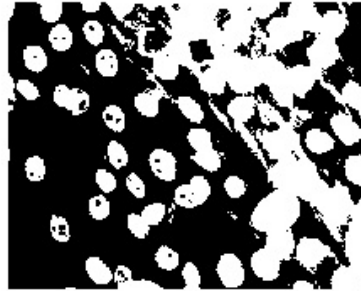
contraste étiré : E=10



contraste étiré : E=20



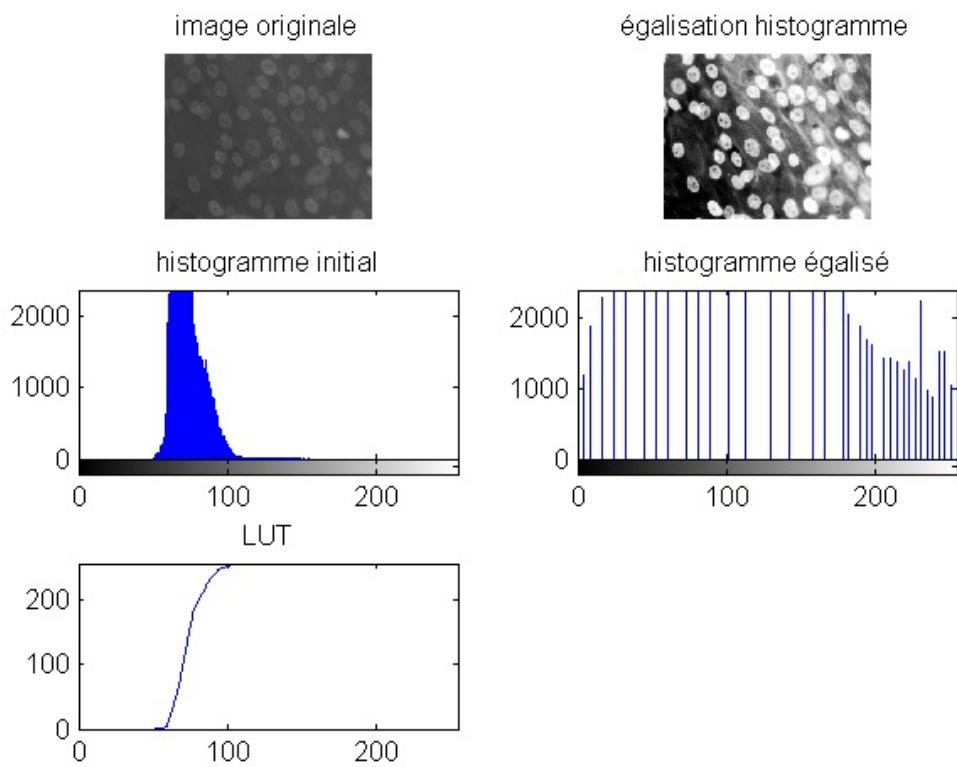
contraste étiré : E=1000



2 - Egalisation d'histogramme

égalisation d'histogramme

```
A=imread('osteoblaste.tif');
Ar=histeq(A);
figure
subplot(3,2,1);viewImage(A);title('image originale');
subplot(3,2,2);viewImage(Ar);title('égalisation histogramme');
subplot(3,2,3);imhist(A);title('histogramme initial');
subplot(3,2,4);imhist(Ar);title('histogramme égalisé');
hnorm = imhist(A)./numel(A);
cdf=255.*cumsum(hnorm);
subplot(3,2,5);plot(1:1:256,cdf);title('LUT');
axis([0 255 0 255]);
```

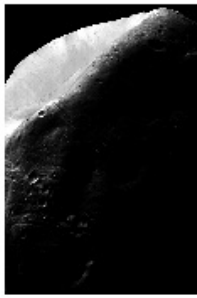


3 - Appariement d'histogramme

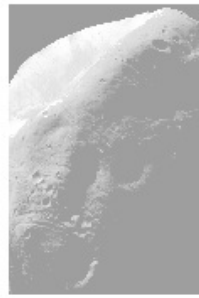
égalisation d'histogramme

```
A=imread('phobos.tif');
%A=double(A);
Ar=histeq(A,256);
figure
subplot(2,2,1);viewImage(A);title('image originale');
subplot(2,2,2);viewImage(Ar);title('égalisation histogramme');
subplot(2,2,3);imhist(A);title('histogramme initial');
subplot(2,2,4);imhist(Ar);title('histogramme égalisé');
% histogramme modèle
p=twomodegauss(0.05,0.1,0.8,0.2,0.04,0.01,0.002);
% appariement
Ar=uint8(histeq(A,p));
figure
subplot(3,2,6);plot(p);title('histogramme bi-modal modèle');
xlim([0 255])
subplot(3,2,1);viewImage(A);title('image originale');
subplot(3,2,2);viewImage(Ar);title('image résultante');
subplot(3,2,3);imhist(A,256);title('histogramme initial');
subplot(3,2,4);imhist(Ar,256);title('histogramme apparié');
```

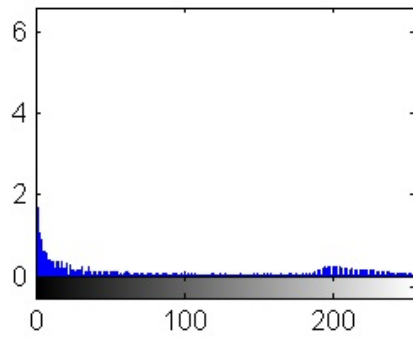
image originale



égalisation histogramme



$\times 10^4$ histogramme initial



$\times 10^4$ histogramme égalisé

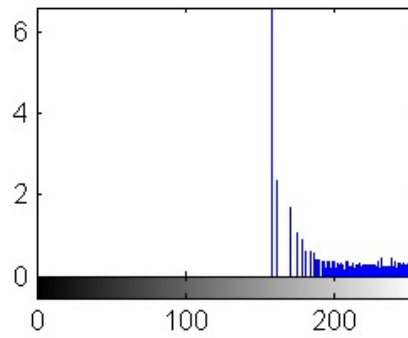
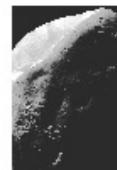


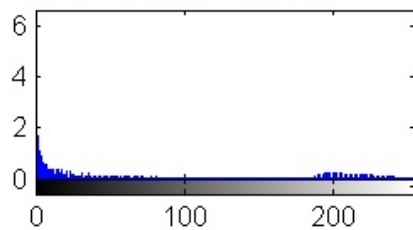
image originale



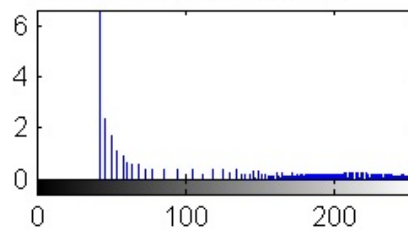
image résultante



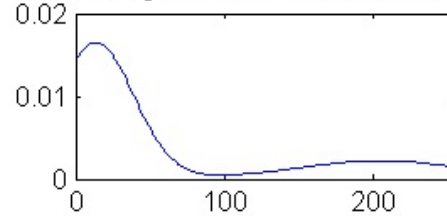
$\times 10^4$ histogramme initial



$\times 10^4$ histogramme apparié



histogramme bi-modal modèle



4 - Fonctions annexes

```
readfile('twomodegauss.m')
readfile('viewImage.m')
```

Undefined function 'readfile' for input arguments of type 'char'.

Error in script_enhancement (line 70)
readfile('twomodegauss.m')

