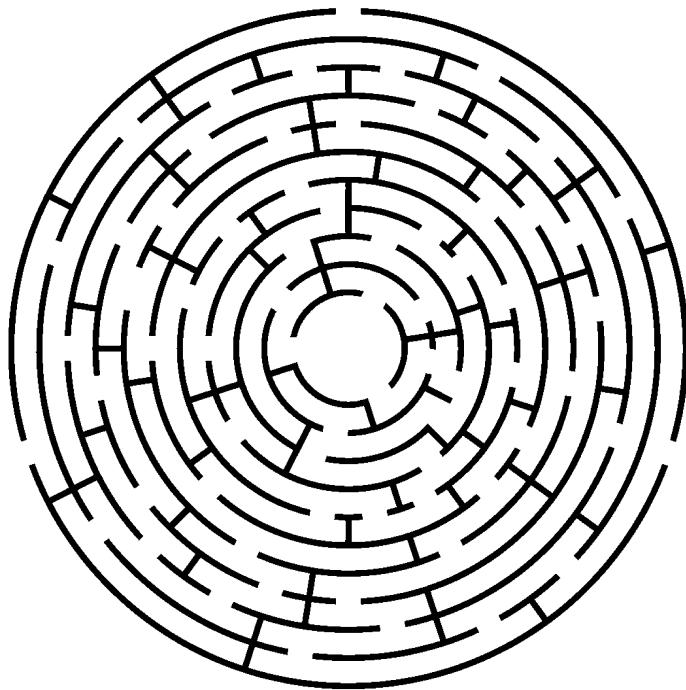
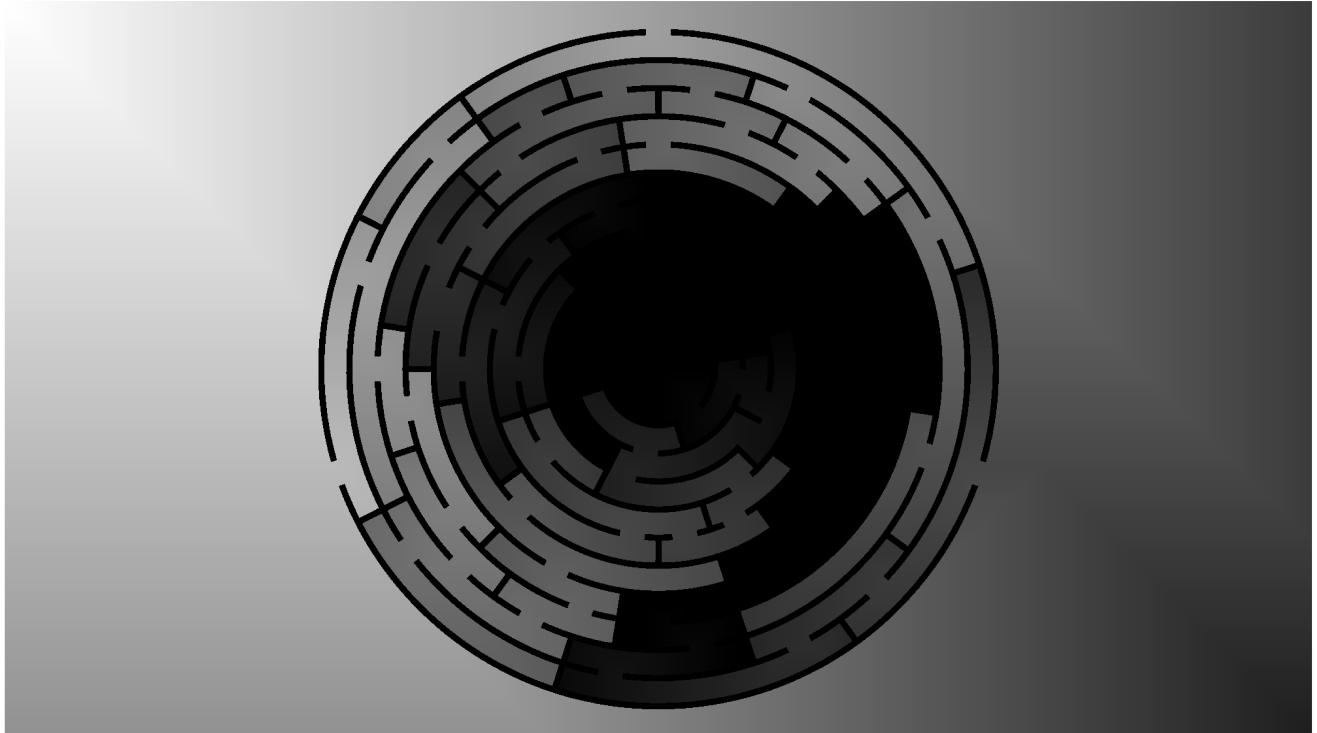


Exercici Laberint

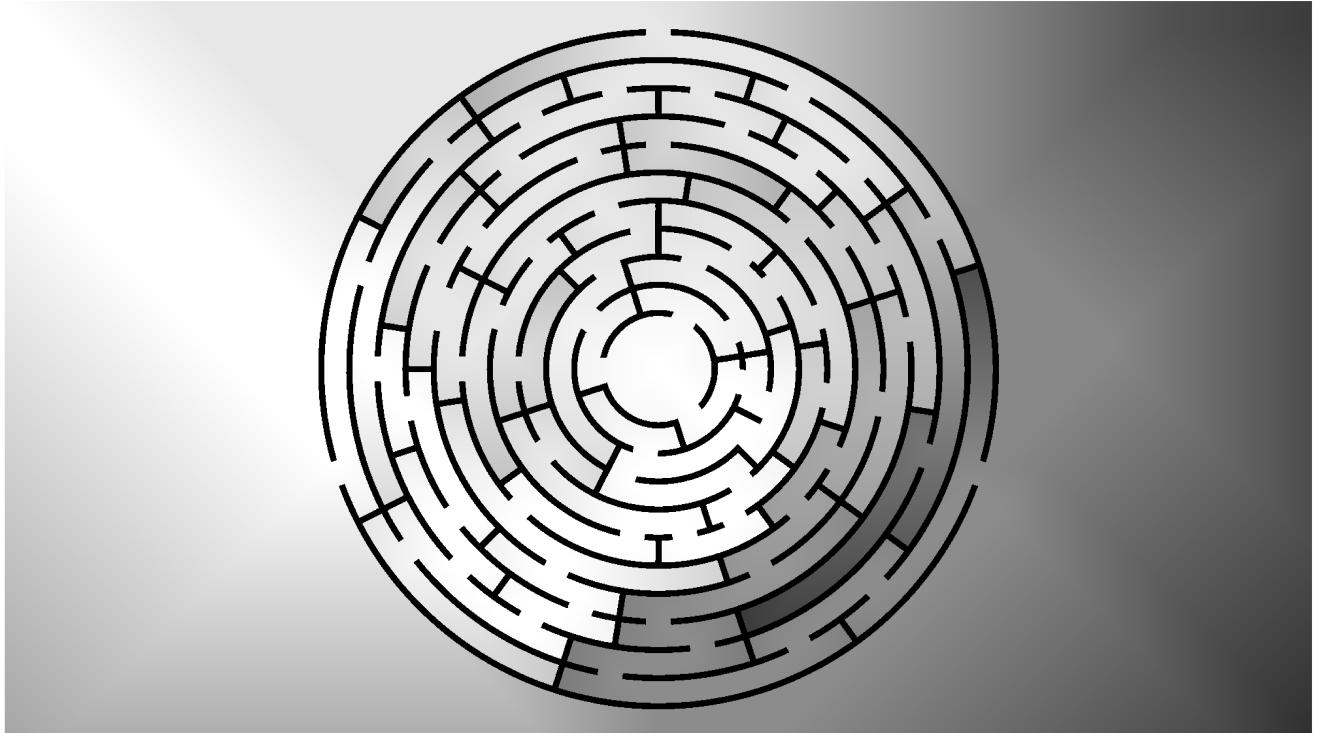
```
I = rgb2gray(imread('maze.png'));
BW = I > 128;
imshow(BW);
```



```
J = false(size(BW));
J(1,1) = 1;
DTG = false(size(BW));
while not(J(562, 1000))
    DTG = DTG + J;
    J = imdilate(J,ones(3,3)) & BW;
end
imshow(DTG, []);
```



```
J = false(size(BW));
J(562,1000) = 1;
fi = false;
DTG2 = false(size(BW));
while not(J(1, 1))
    DTG2 = DTG2 + J;
    J = imdilate(J,ones(3,3)) & BW;
end
imshow(DTG+DTG2, []);
```

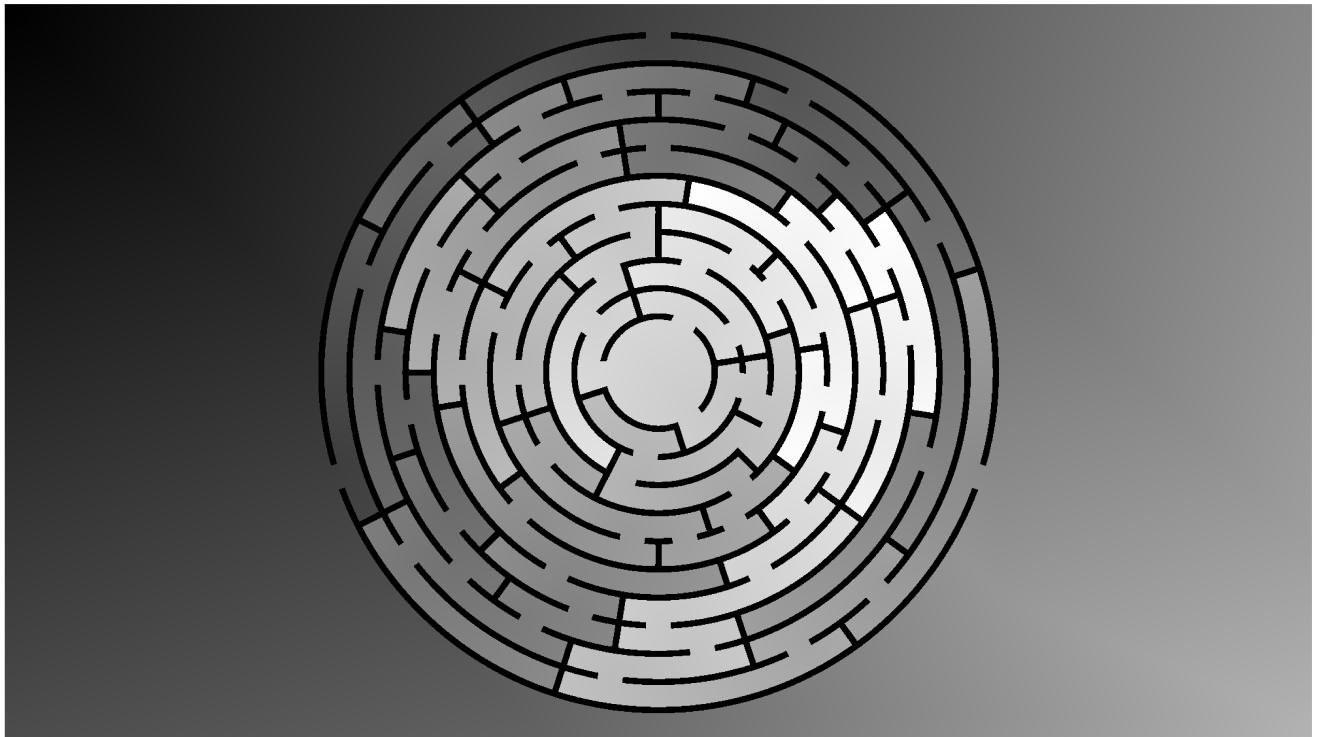


```
R = (DTG+DTG2) > (DTG(1,1)) - 1;  
imshow(R);
```

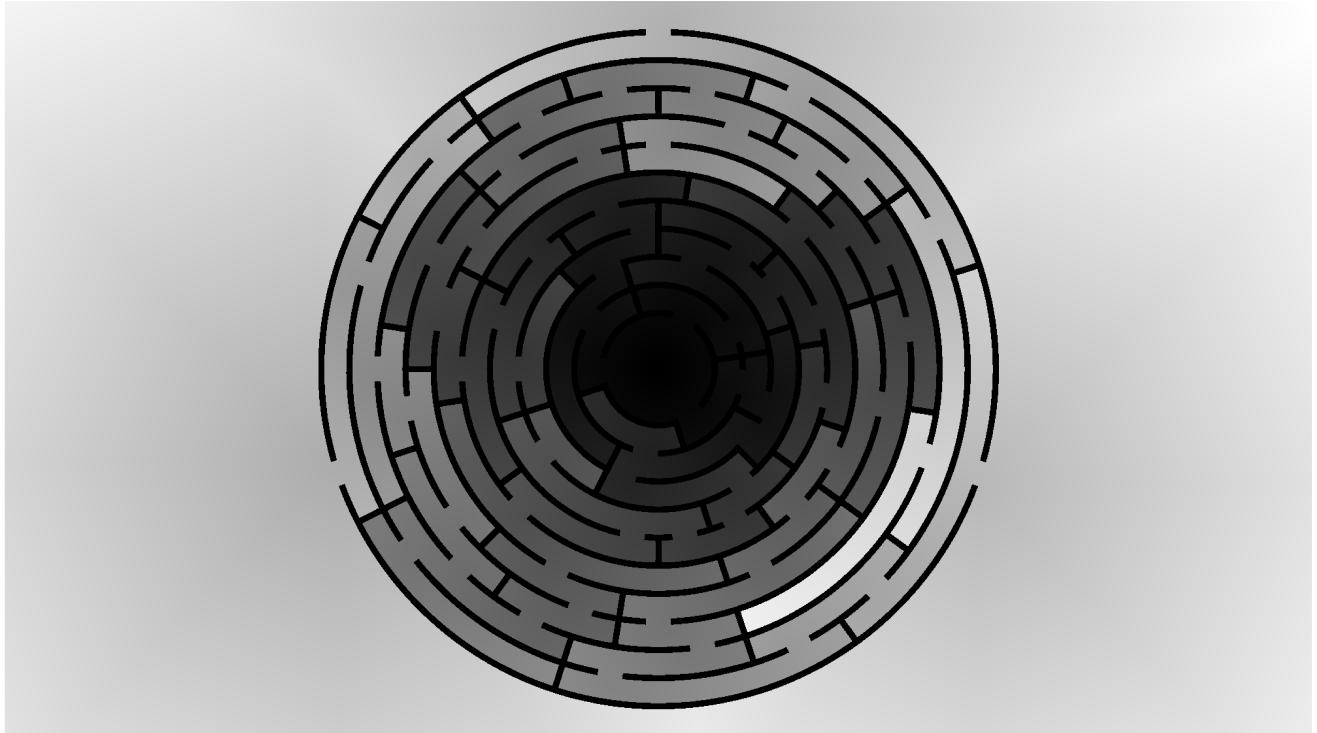


Mitjançant distància geodèsica ja implementada

```
L = I > 128;  
[f,c] = size(L);  
D = false(size(L));  
D(1,1) = 1;  
DTG = bwdistgeodesic(L,D,'quasi-euclidean');  
imshow(DTG, []);
```



```
D = false(size(L));  
D(562,1000) = 1;  
DTG2 = bwdistgeodesic(L,D,'quasi-euclidean');  
imshow(DTG2, []);
```

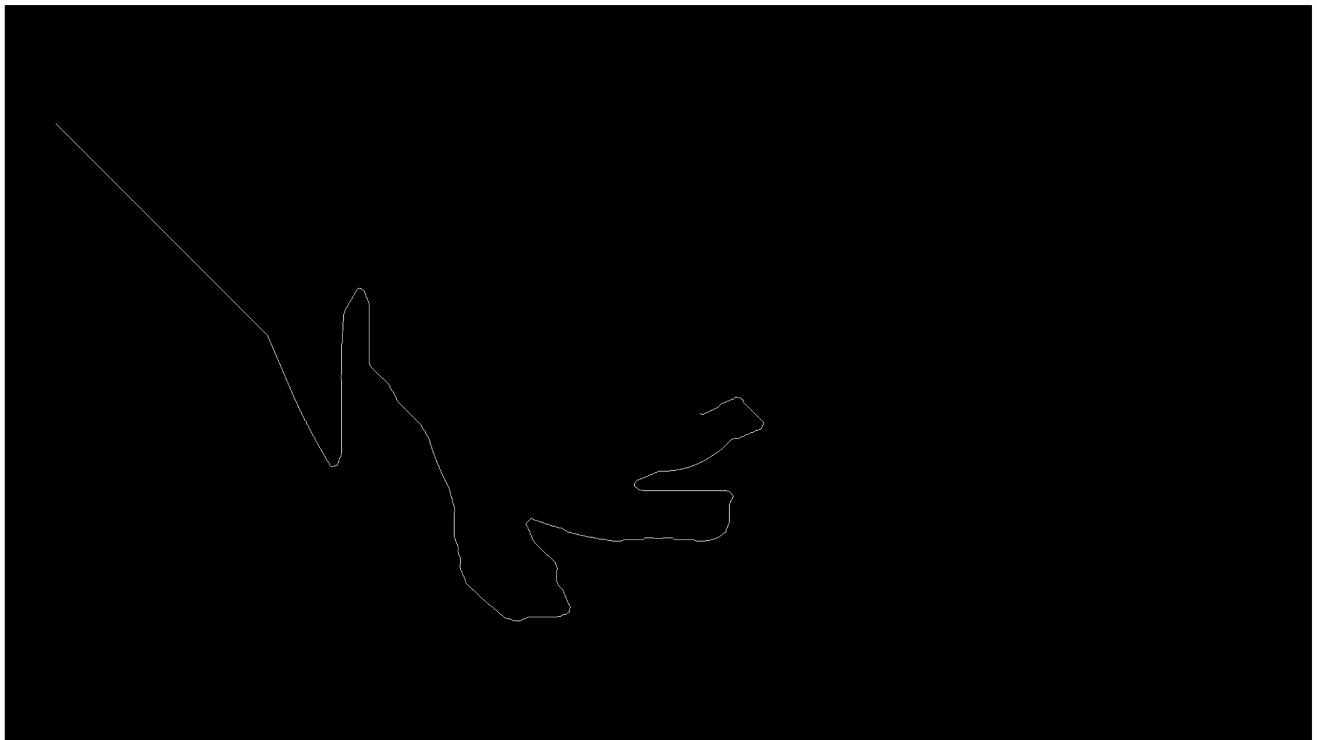


```
R = (DTG+DTG2 -DTG2(1,1)) < 1;  
imshow(R,[ ]);
```



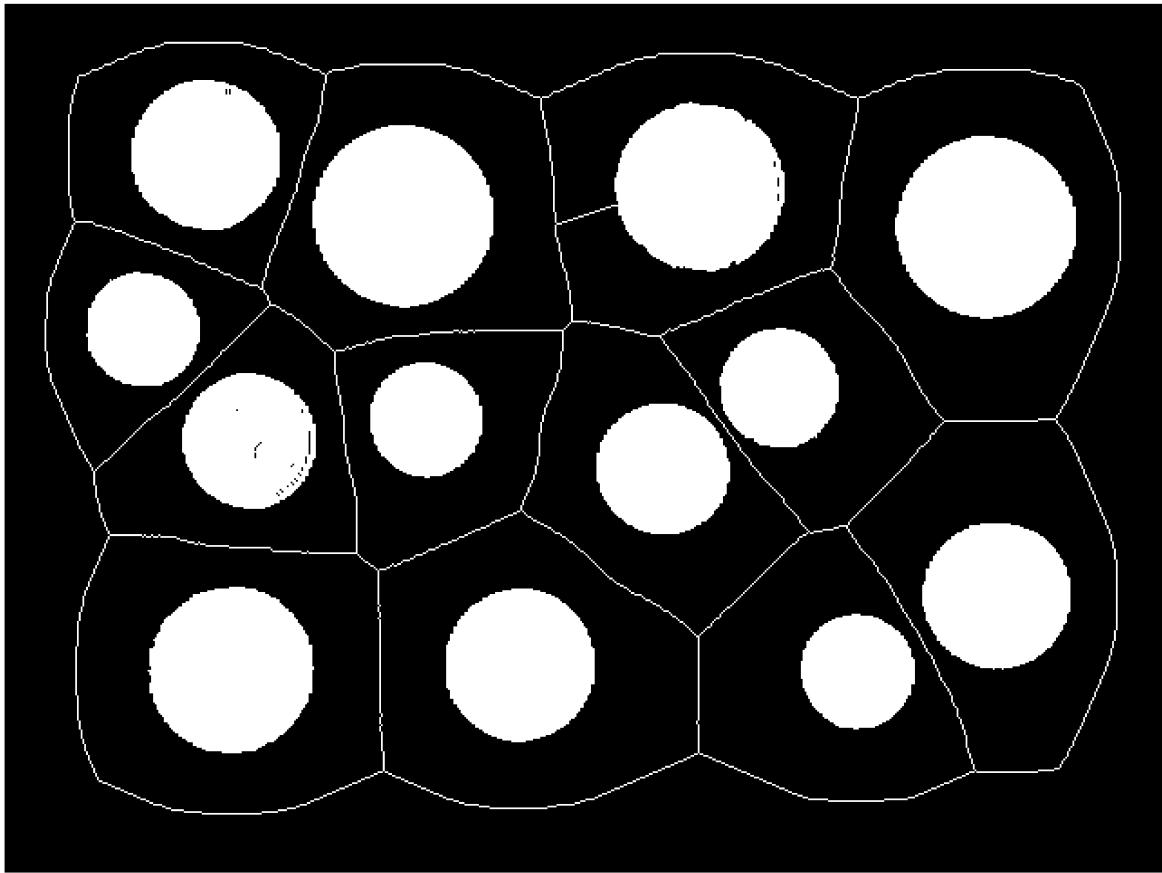
Transformació esquelet

```
SK = bwske1(R);  
imshow(SK, []);
```

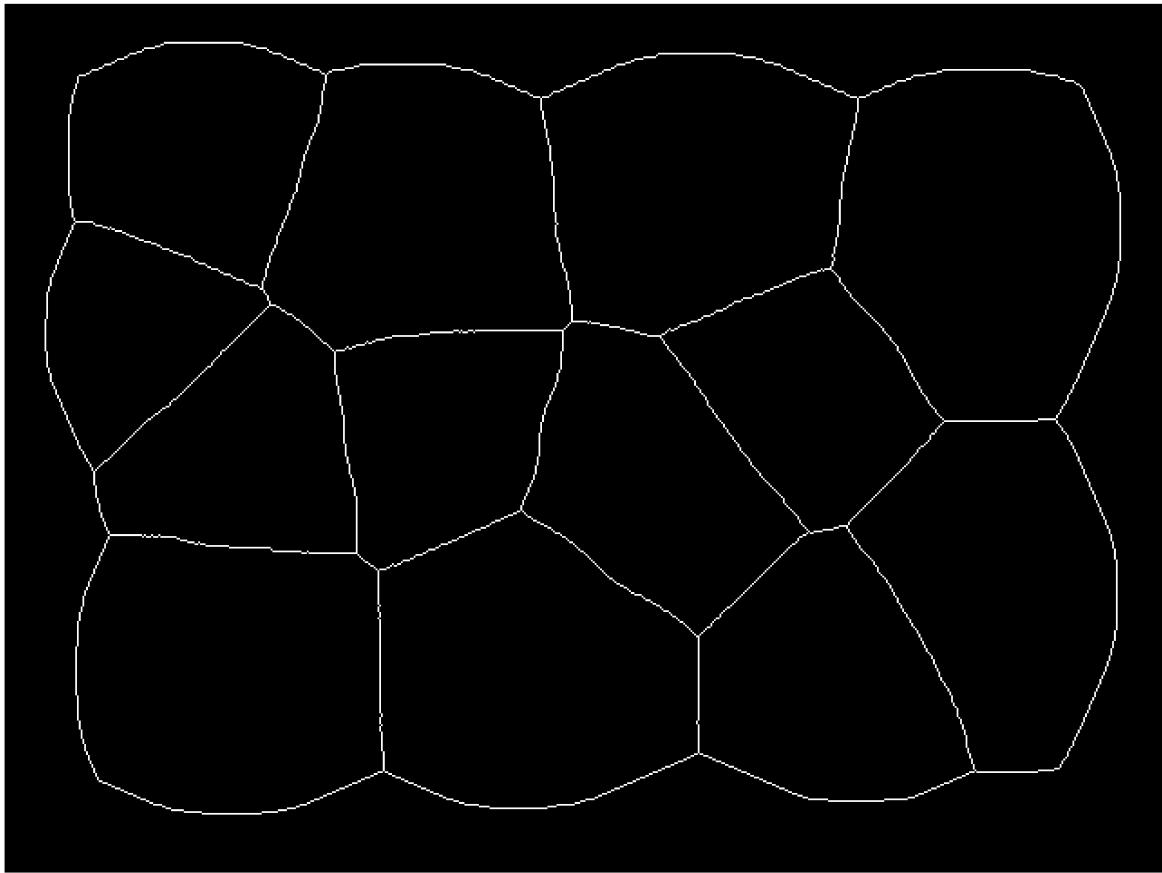


Transformació skiz

```
I = imread('money.tif');  
BW = I > 100;  
%BW = I > 90;  
%BW = imclose(BW, ones(5,5));  
SK = bwske1(not(BW));  
imshow(SK | BW);
```

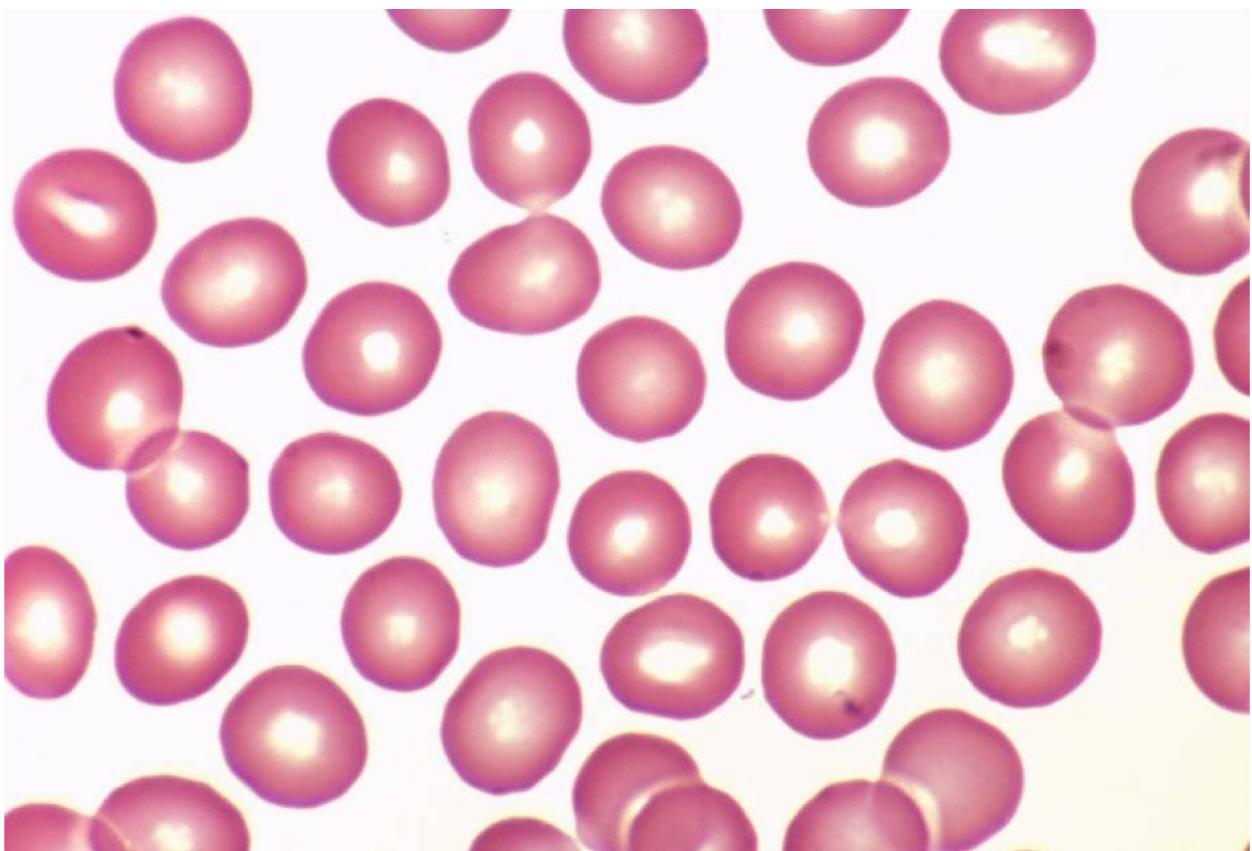


```
SKIZ = bwmorph(SK, 'spur', Inf); % purgar branques  
SKIZ = SKIZ & not(bwhitmiss(SKIZ, [-1,-1,-1;-1,1,-1;-1,-1,-1])); % eliminar pixels aïllats  
imshow(SKIZ);
```

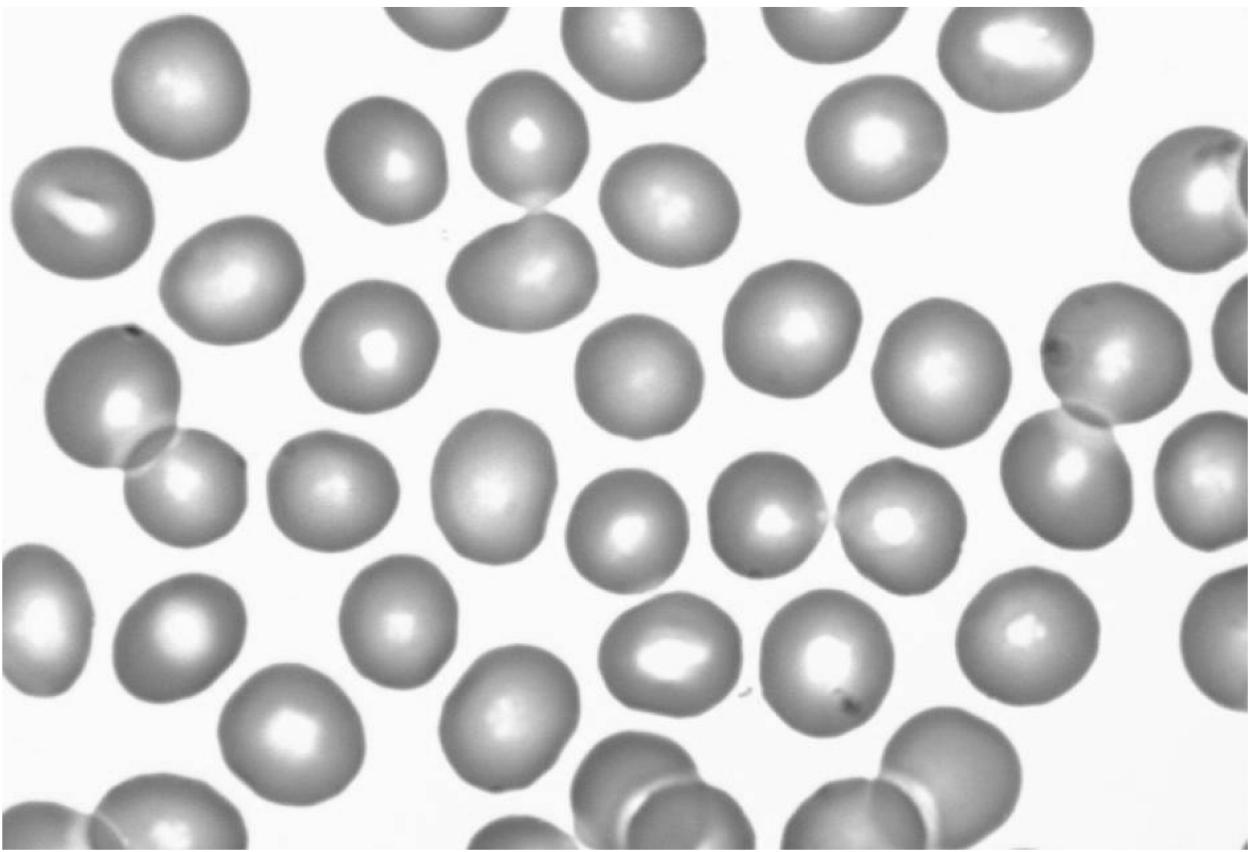


Exercici trobar cèl·lula més distant respecte les altres (fora de la vora)

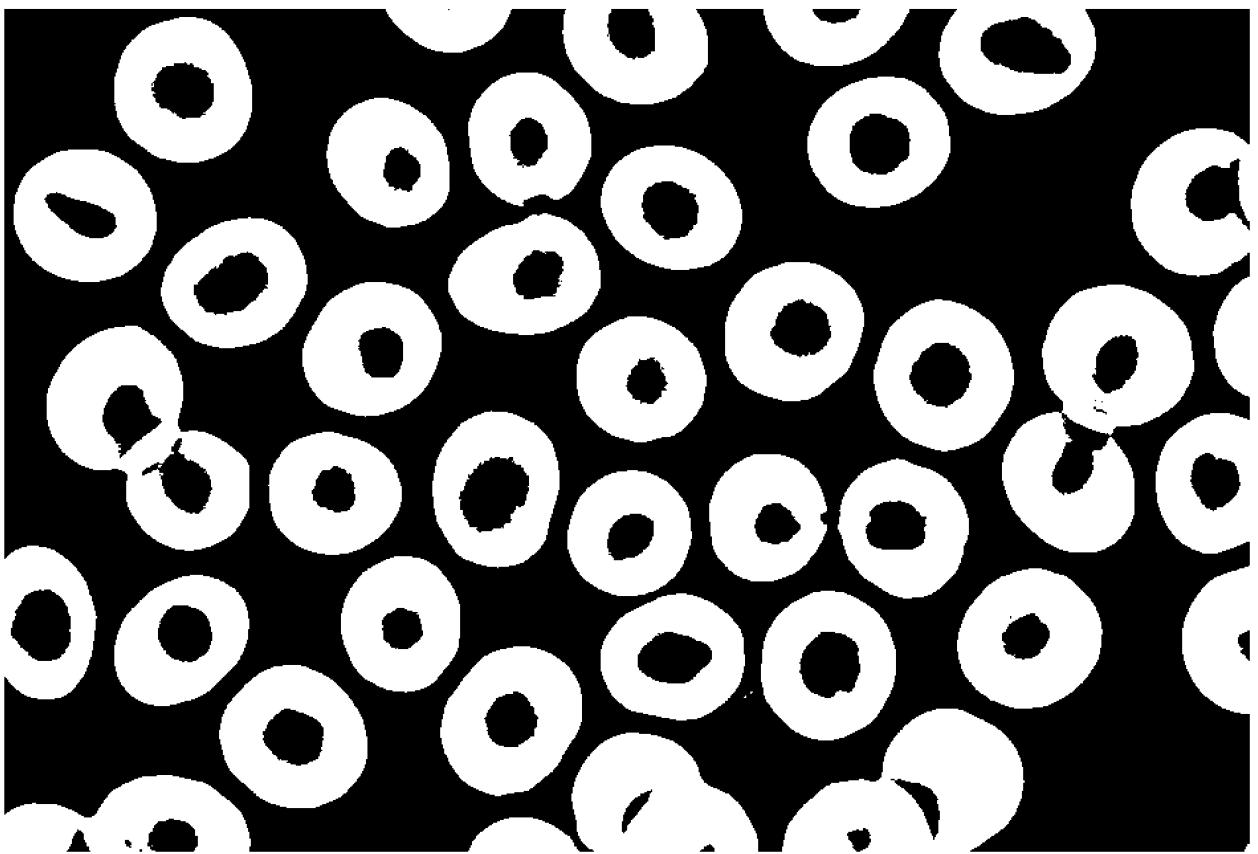
```
RGB = imread('normal-blood1.jpg');
imshow(RGB);
```



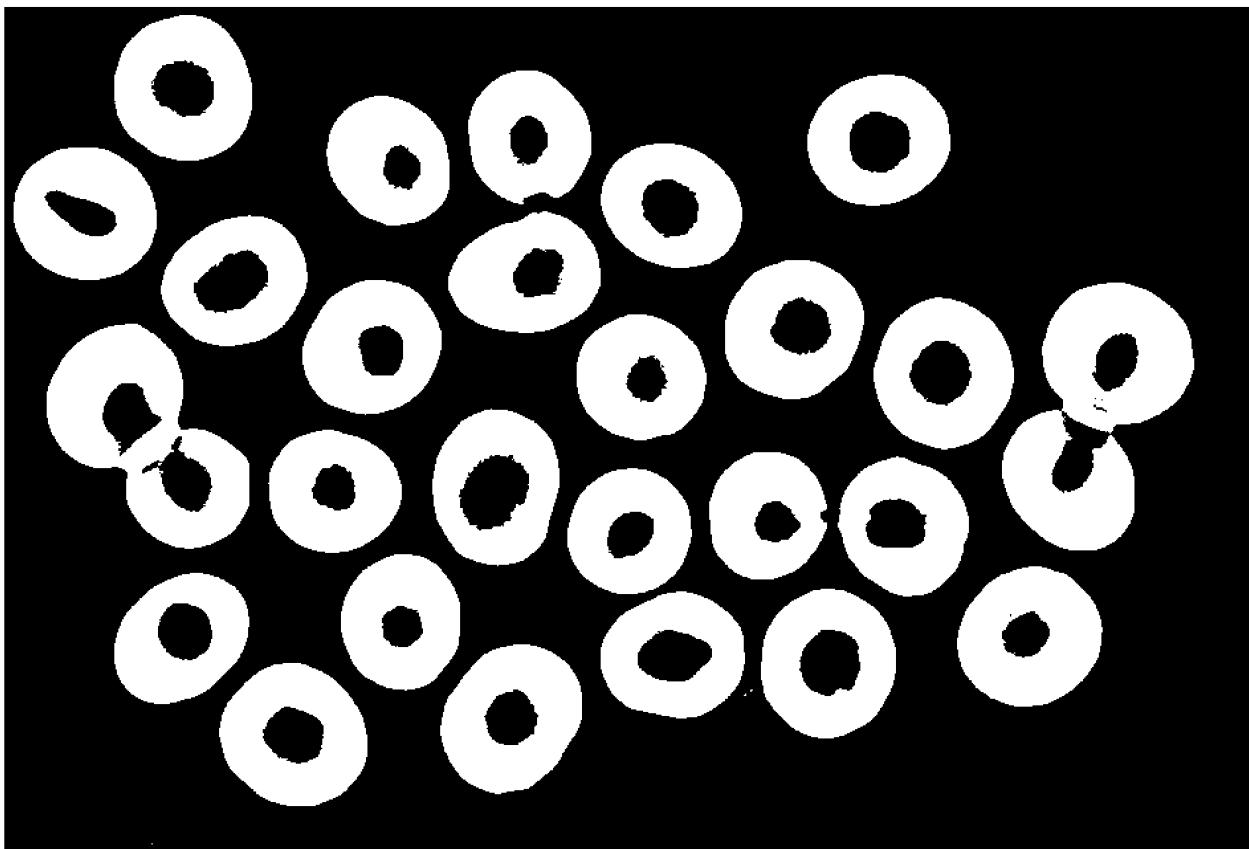
```
% binarització  
BW = rgb2gray(RGB);  
imshow(BW);
```



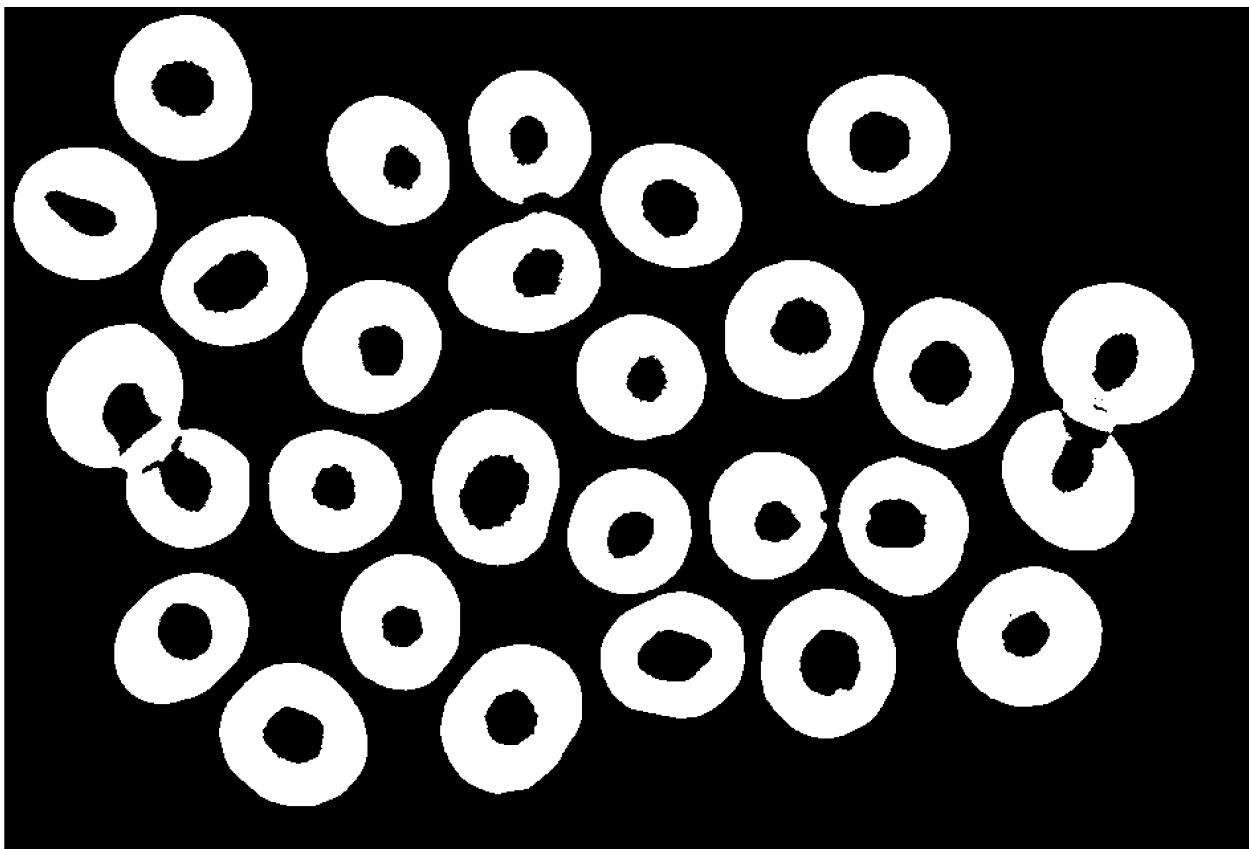
```
llindar = graythresh(BW);
B = BW < 255*llindar;
imshow(B);
```



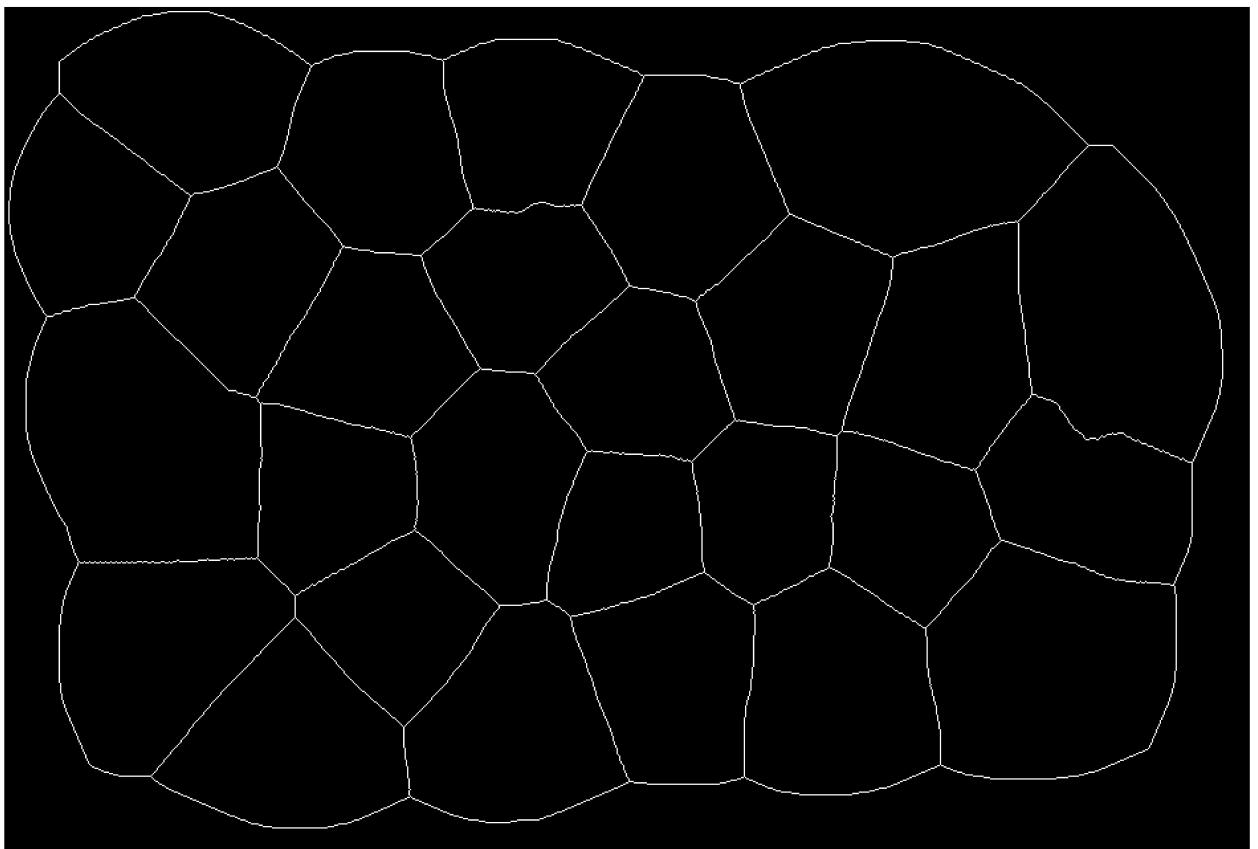
```
% eliminar cèl·lules de la vora
MARK = false(size(BW));
MARK(1,:) = 1;
MARK(:,1) = 1;
MARK(end,:) = 1;
MARK(:,end) = 1;
REC = imreconstruct(MARK,B,8);
C = B & not(REC);
imshow(C);
```



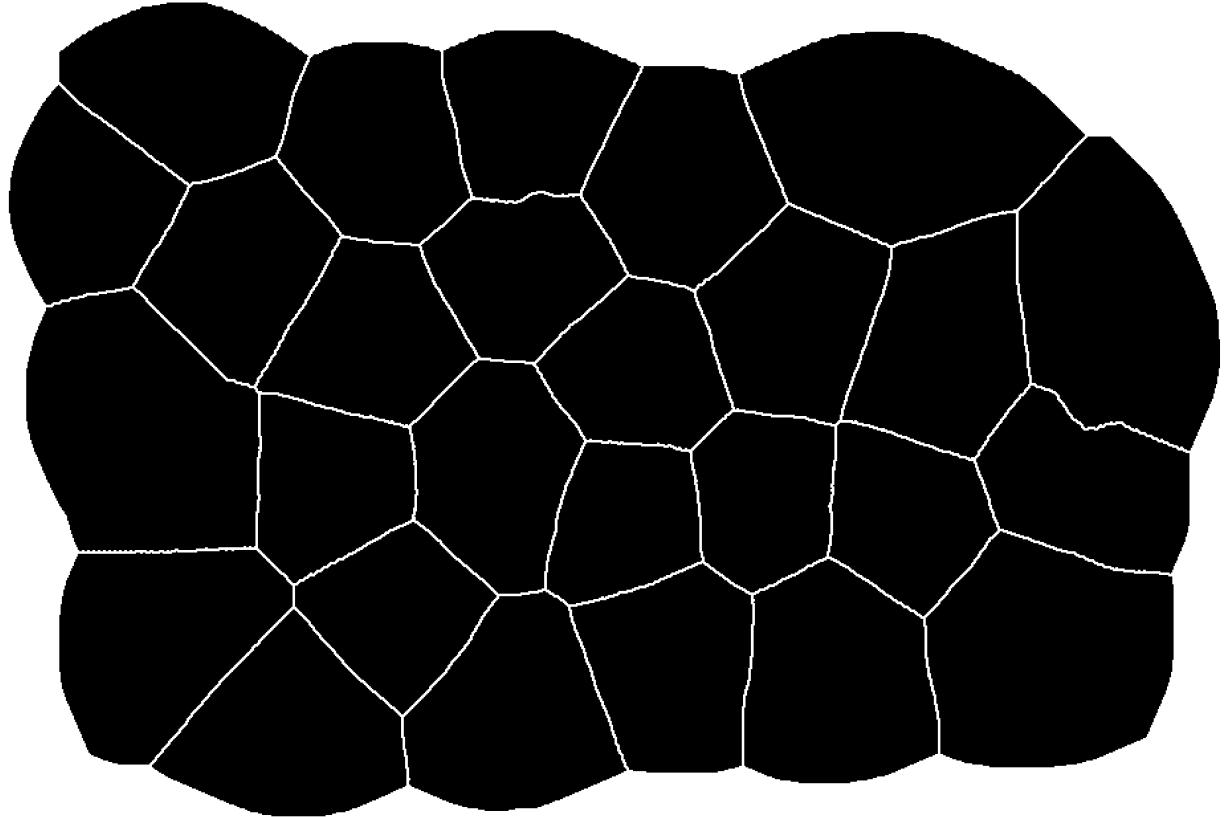
```
% eliminar soroll
D = bwareaopen(C,10);
% emplenar cèl·lules
ES = strel('disk',1);
E = imopen(D,ES);
imshow(E);
```



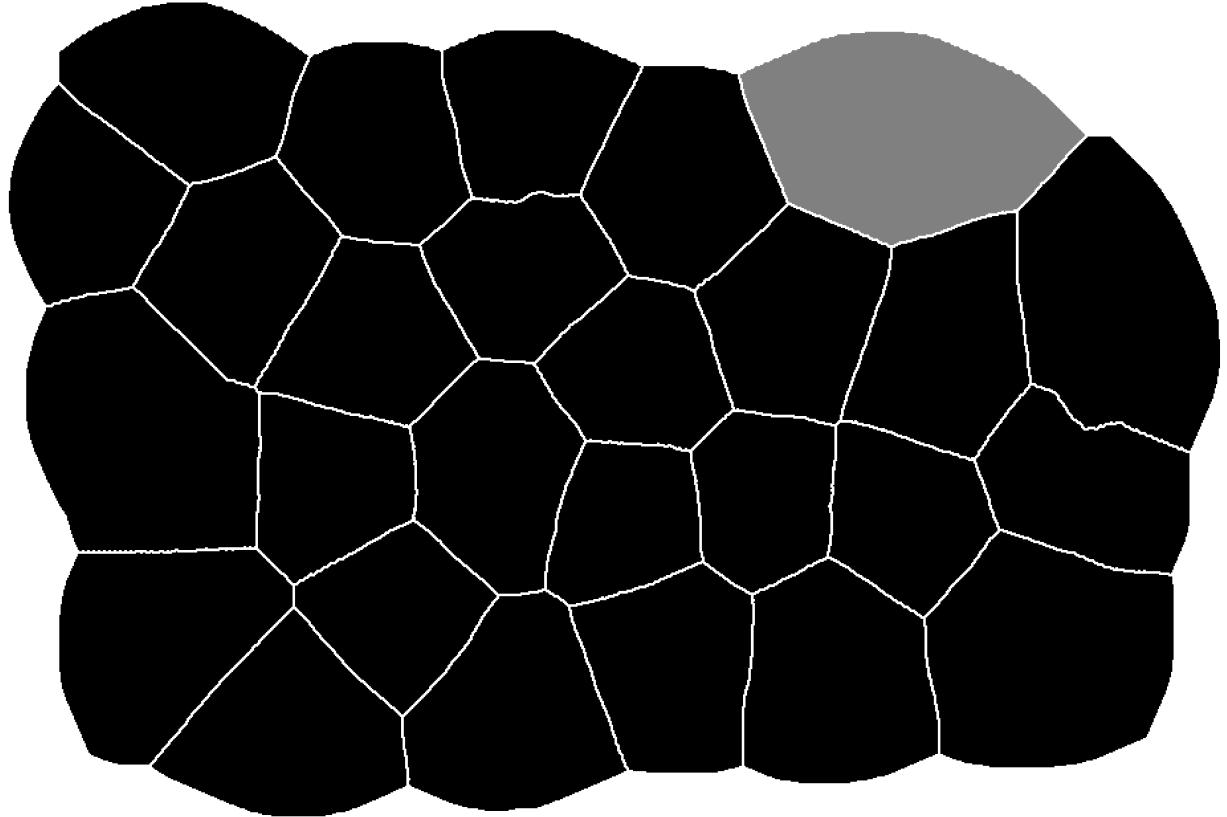
```
% skiz, per detectar fronteres
SK = bwskel(not(E));
SKIZ = bwmorph(SK, 'spur', Inf);
SKIZ = SKIZ & not(bwhitmiss(SKIZ, [-1,-1,-1;-1,1,-1;-1,-1,-1]));
imshow(SKIZ);
```



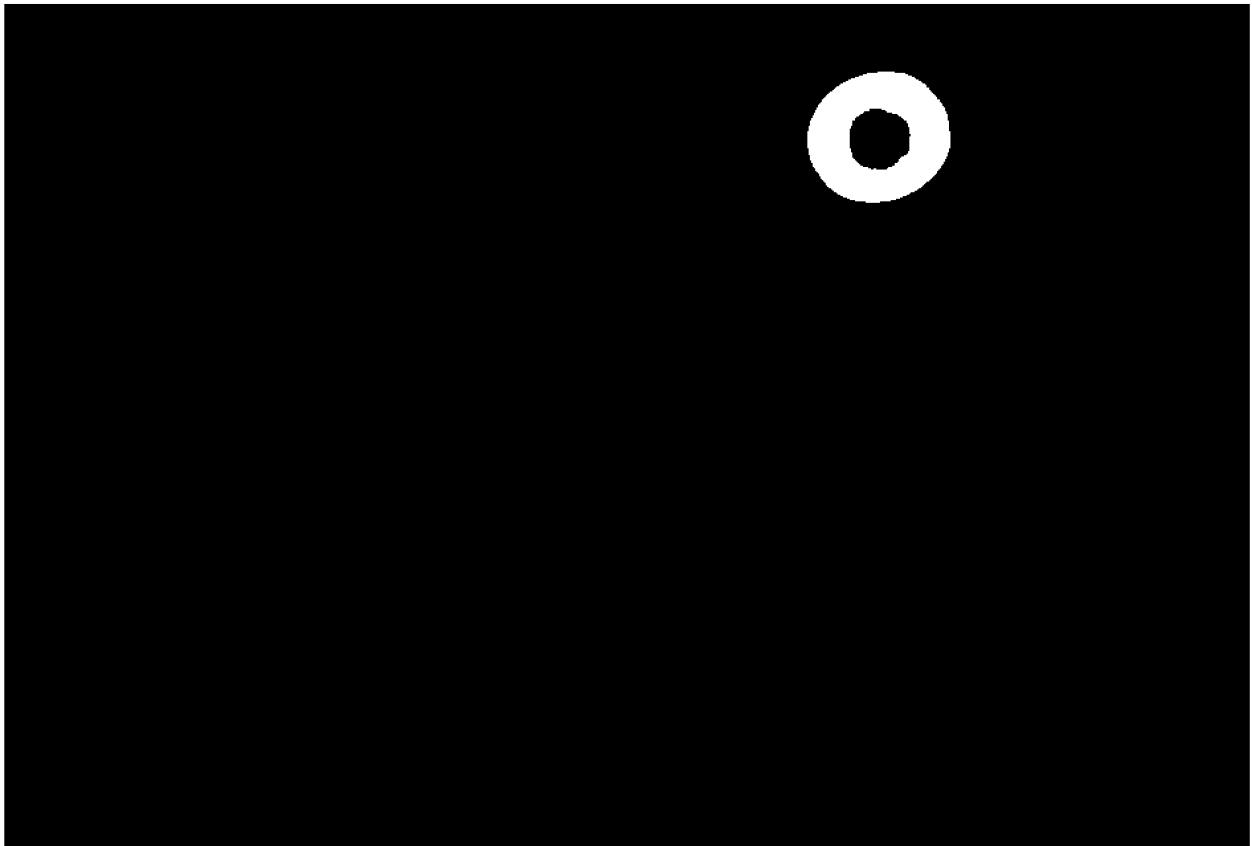
```
% detectar zona amb més àrea  
ES = ones(2,2);  
F = imdilate(SKIZ, ES);  
REC = imreconstruct(MARK,not(F),8);  
F = REC | F;  
imshow(F);
```



```
G = bwconncomp(not(F));
n_pixels = cellfun(@numel,G.PixelIdxList);
[npix, pos] = max(n_pixels);
IC = double(F);
IC(G.PixelIdxList{pos}) = 0.5;
imshow(IC);
```



```
% pintar zona
K = false(size(IC));
K(IC == 0.5) = 1;
cell = K & D;
imshow(cell);
```



```
RGB(cell == 1) = 0;  
imshow(RGB);
```

