Matlab codes for calculating the cell number from the microfluidic chamber

```matlab
clear v en;
mkdir count;
fw=fopen('cell number.txt','wt');
x=0;
pitures=15;
xmin=750;
xmax=1438;
ymin=906;
ymax=1578;
for i1=1:pitures
                k1=num2str(i1);
                c='.jpg';
                n=[k1 c] ；
                path2=[k1 'c' c];
                E=imread(n);
                imwrite(E,path2);
        g=65;
K=10;
index=find(E>=g);
index_2=find(E<g);
E(index)=0;
E(index_2)=255;
E;
E=mat2gray(E);
E=im2bw(E,0.9);


                for iy=ymin:ymax
                  for ix=xmin:xmax
                        E(ix,iy)=0;                %image cropping
                  end
                  end


                se = strel('disk',1);
                E = bwareaopen(E,K);
                E = imclose(E,se);
                E = imopen(E,se);
                E = imfill(E,'holes');
                E = bwareaopen(E,K);
```

```matlab
        [B,L] = bwboundaries(E,'holes');         %Calculate the cell number

        imwrite(E,path2);

        [T,num] = bwlabel(E,8);
        num1 = length(B);

        area(i1)=sum(sum(E));                    % calculate the total area of
microbial cells



        fprintf(fw,'%d',i1);                     % output the cell number into text
file
        fprintf(fw,' ');
        fprintf(fw,'%d',num);
        fprintf(fw,'\n');


end

        fprintf(fw,'\n');
        fprintf(fw,'\n');
        fprintf(fw,'\n');


        for i1=1:pitures

        fprintf(fw,'%d',i1);                     % output the cell area into text file
        fprintf(fw,' ');
        fprintf(fw,'%d',area(i1));
        fprintf(fw,'\n');
        end

        fclose(fw);                              %close the file
```