```matlab
I = imread('cell.tif');
figure, imshow(I), title('original image');

[~, threshold] = edge(I, 'sobel');
fudgeFactor = .5;
BWs = edge(I,'sobel', threshold * fudgeFactor);
figure, imshow(BWs), title('binary gradient mask');

se90 = strel('line', 3, 90);
se0 = strel('line', 3, 0);

BWsdil = imdilate(BWs, [se90 se0]);
figure, imshow(BWsdil), title('dilated gradient mask');

BWdfill = imfill(BWsdil, 'holes');
figure, imshow(BWdfill);
title('binary image with filled holes');

BWnobord = imclearborder(BWdfill, 4);
figure, imshow(BWnobord), title('cleared border image');

seD = strel('diamond',1);
BWfinal = imerode(BWnobord,seD);
BWfinal = imerode(BWfinal,seD);
figure, imshow(BWfinal), title('segmented image');

BWoutline = bwperim(BWfinal);
Segout = I;
Segout(BWoutline) = 255;
figure, imshow(Segout), title('outlined original image');
```
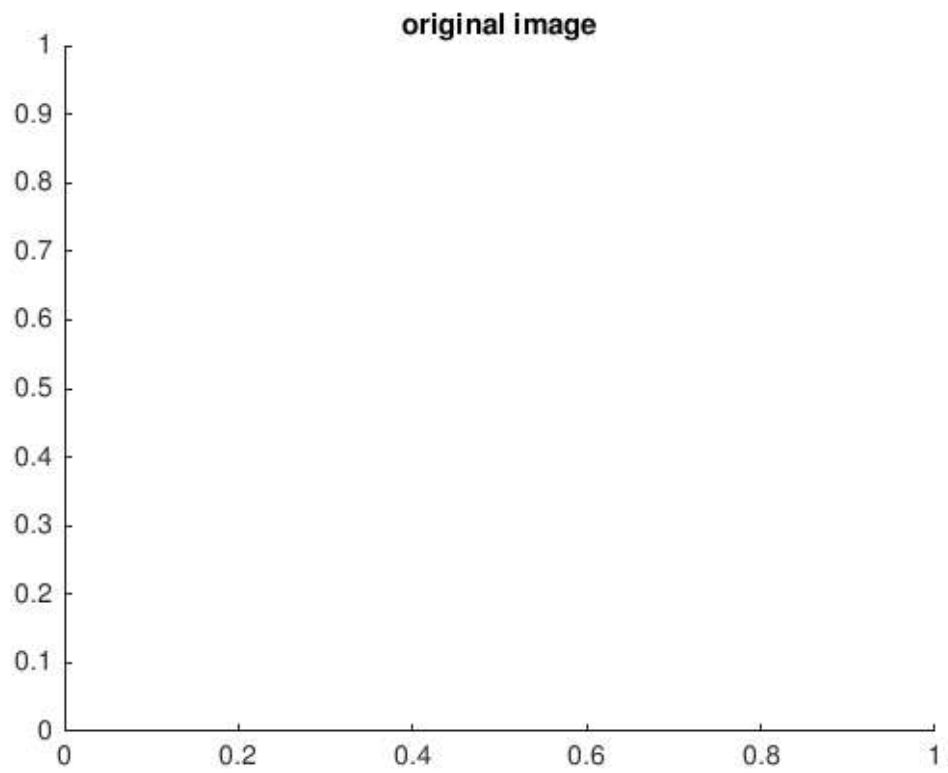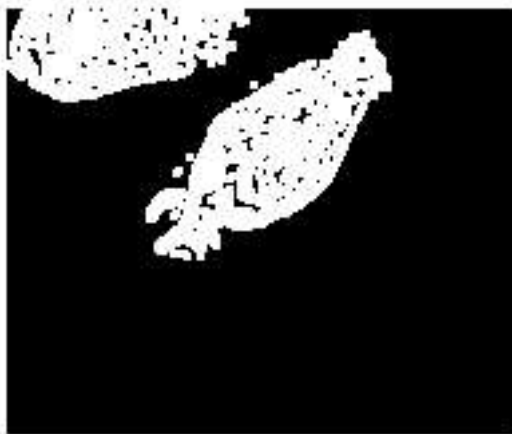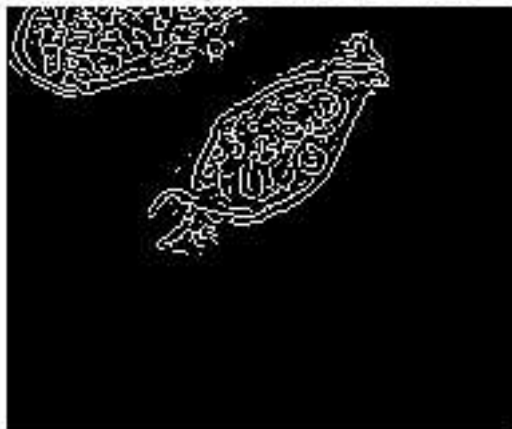
original image
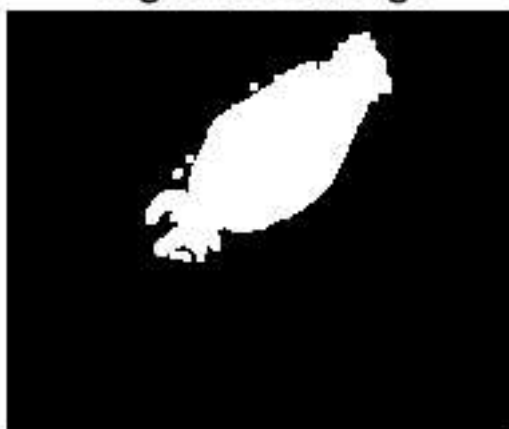

binary gradient mask
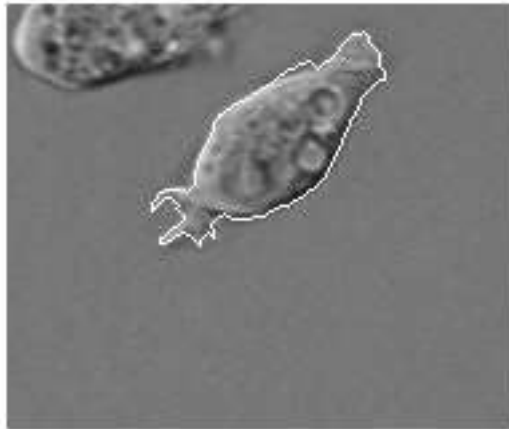
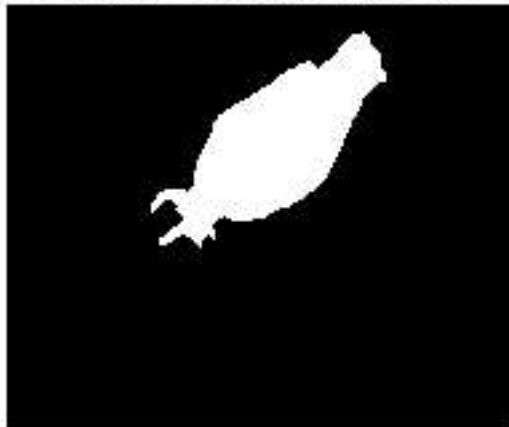dilated gradient mask

cleared border image

segmented image

outlined original image

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