Post Cluster Recognition

Monday, January 17, 2022 11:12 AM

General overview:

This should run very similarly to the currently widely used post spot recognition code used in the lab. The use for this code is just to group all of the individual data files from each image and to group them into a single data structure with cluster information. Additionally, it will make another data set on a whole cell level, similar to the spatzcell workflow. There are some figures that can be made, but to use this code for figure making is up to the user.

How to run the code:

As a reminder, to run this code all that should be needed (after running cluster recognition) is to change files names and directories.

What to expect as outputs:

Here we see the cluster information output:

```
if ~isempty(clusterdata_low)
    spots_in_group1 = [spots_in_group1 ; ...
        clusterdata_low(:,2) ...            % Z-slice  (1)
        [1:size(clusterdata_low,1)]' ...    % vector with a list of spot numbers for the frame (2)
        clusterdata_low(:,[3 4 5]) ...      % SpotInt area AvgSpotInt(3 4 5)
        clusterdata_low(:,1) ...    % cellnum (6)
        clusterdata_low(:,[6]) ... % frame (7)
        clusterdata_low(:,[9]) ... % low cluster number (8)
        clusterdata_low(:,[7 8])] ; % average x y position (9 10)
end

load([sr.output 'clusterdata_high' num2str(n_frame,'%03d') '.mat'],'clusterdata_high');

if ~isempty(clusterdata_high)
    spots_in_group2 = [spots_in_group2 ; ...
        clusterdata_high(:,2) ...         % Z-slice  (1)
        [1:size(clusterdata_high,1)]' ...  % vector with a list of spot numbers for the frame (2)
        clusterdata_high(:,[3 4 5]) ...   % SpotInt area AvgSpotInt(3 4 5)
        clusterdata_high(:,1) ...  % cellnum (6)
        clusterdata_high(:, 6) ... % frame (7)
        clusterdata_high(:, 9) ... % low cluster number (8)
        clusterdata_high(:,[7 8])] ; % average x y position (9 10)
end
```

Here we see the whole cell information output:

```
% Number of spots recognized in the cell.
cells_in_group(end,3) = sum(clusterdata_low(:,1)==n_cell) ;
cells_in_group(end,4) = sum(clusterdata_high(:,1)==n_cell) ;

% Total spots intensity of the cell.
cells_in_group(end,5) = sum(clusterdata_low(clusterdata_low(:,1)==n_cell,3)) ;
cells_in_group(end,6) = sum(clusterdata_high(clusterdata_high(:,1)==n_cell,3)) ;
if isnan(cells_in_group(end,6))
    disp('stop !');
end

% Total cell fluorescence intensity per pixel.
cells_in_group(end,7) = AvgCellFluor(n_cell) ;
% cell's background subtracted fluor
cells_in_group(end,8) = backgroundfluor(n_cell) ;

% Cell area in pixels.
cells_in_group(end,9) = CellArea(n_cell) ;

% Cell length in pixels.
cells_in_group(end,10) = CellLength(n_cell) ;

% Total DAPI intensity per pixel.
cells_in_group(end,11) = DAPIpp(n_cell) ;

% Total spot intensity/pix in the cell
try
    cells_in_group(end,12) = sum(clusterdata_low(clusterdata_low(:,1)==n_cell,3)) ...
        ./ sum(clusterdata_low(clusterdata_low(:,1)==n_cell,4));
catch E
    cells_in_group(end,12) = -1;
      disp(E);
      disp('Setting to 0');
end
try
    cells_in_group(end,13) = sum(clusterdata_high(clusterdata_high(:,1)==n_cell,3)) ...
        ./ sum(clusterdata_high(clusterdata_high(:,1)==n_cell,4));
catch E
    cells_in_group(end,13) = -1;
      disp(E);
      disp('Setting to 0');
end
```