5.3 Cell Splitting Detection

As what is mentioned in Part 4.3 and fig 4.3.1, the cell splitting detection module can successfully detect and point out the general cases in red circle. This is based on the assumption that three properties like area, shape, and cell amount within a certain radius must experience a quite dramatic change, and such change should occur right before splitting action. However, it is possible that all of the three properties will go through a special sequence and confuse the cell splitting detection module.

In this case (fig 5.3.1), although the actual cell splitting action is relatively clear in human eyes, for the program module, this is quite unclear. The main reason behind this is that all of the three properties sequence analysis for cell splitting all failed. More specifically, from the second frame to the third frame, the cell did not experience any dramatic change in neither overall pixel area value nor overall shape. The overall displacement of such cell over this time period time was also minimal, can could not make the tracking module successfully recognize the new cell and the old cell as two different cells. Instead, the tracking module treated them as the same cell moving from one place to another. Such failure result is because that the cell splitting detection module follow a quite strict checking sequence according to the behavior of cell dividing action.

In summary, the performance of current cell splitting detection module is satisfying while handling the general cases where the splitting actions are more common.