1. **What can be done with DeepKymoTracker**

**(User Guide)**

The DeepKymoTracker software was built to track and segment T cells in cell movies, with the ultimate purpose of building the lineage trees of the cells in each movie, along with extracting the numerical information about each cell, like area, perimeter, circularity, bounding box, and average intensity of a cell body in each channel (the brightfield, the green, and the red fluorescent).

Apart from these two fundamental tasks, there are common bottlenecks : divisions, occlusions, dying or disappearing from the field of view cells, and finally, new cells.

Here is the description of how DeepKymoTracker deals with each of these tasks.

1. **Tracking: automatic + manual correction.**

Both approaches are provided in STEP-3: TRACK AND CORRECT.

Once the program is launched, the user is supposed to watch the frame-by-frame progress and, if a tracking error is spotted, they are supposed to stop the algorithm, make manual corrections, and re-launch the program once again.

1. **Segmentation: automatic + manual correction.**

Automatic segmentation happens in STEP-3:TRACK AND CORRECT, simultaneously with tracking. However, manual correction cannot be done during this step , a sit was designed to make only tracking error corrections on the fly. It can be done later: the whole STEP-4: SEGMENTATION CORRECTION is devoted to this task.

1. **Division detection: automatic + manual correction.**

Automatic division and the possibility to manually correct missed divisons are both incorporated in STEP-3: TRACK AND CORRECT. Just like for tracking errors, the user needs to watch the progress and, if missed divisions are spotted, they need to pausethe algoeithm, make the necessary manual correction with the tools provided, and re-start the algorithm again.

1. **Occlusions: automatic + manual correction.**
2. **Dying and disappearing cells: manual only.**

The tools for this kind of corrections are provided in STEP-3: TRACK AND CORRECT. Again, you need to pause the algorithm to be able to do the correction in the frame where it happened.

1. **New cells: manual only.**

The same approach as for the previous case – the tools are provided in STEP-3: TRACK AND CORRECT.