Tracking Data
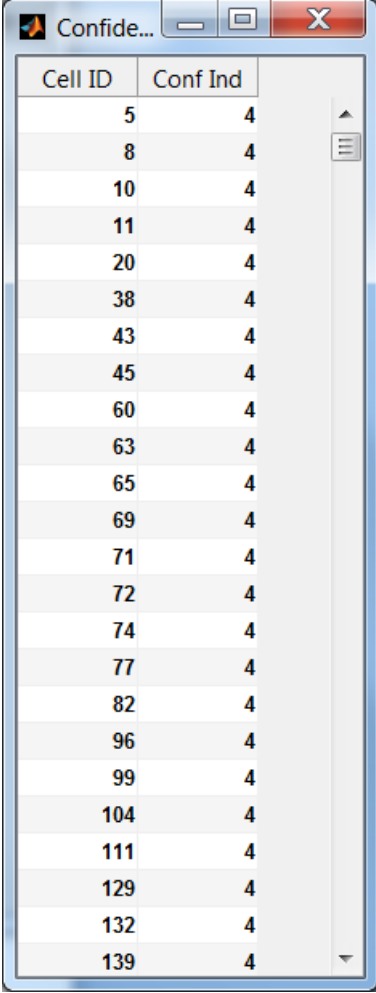
The following Tracking Data buttons will display a table of results: **Confidence index, Birth and Death, Division Matrix, Fusion Matrix** and **Apoptosis**. Note: the *Fusion Matrix* button is dependent upon the *Enable Cell Fusion* checkboxes. If the checkbox is disabled in the *Tracking Parameters Tab* the corresponding button within the *Results Tab* will also be disabled.

A. Confidence index

The confidence index is a matrix of two columns and n rows where n is the total number of cells globally labeled throughout the experiment. The first column is the global cell ID number and the second column is the confidence index of that cell. The matrix is sorted in a descending order with respect to the confidence index. Higher confidence index value corresponds to more trust in the entire track of a cell during its lifetime.

For example: cell number 5 has one of the highest confidence index that is equal to 4.
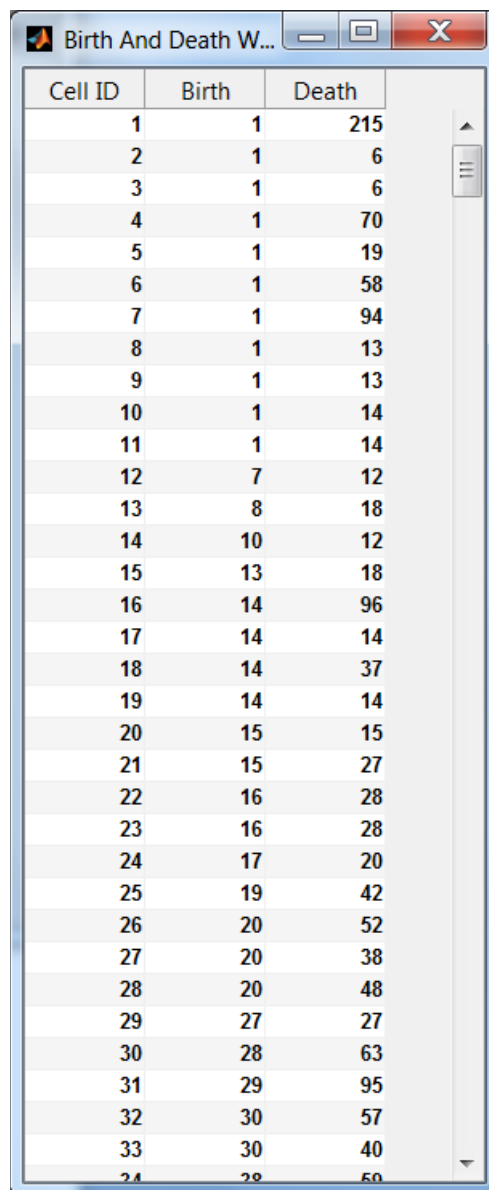
Cell ID	Conf Ind
5	4
8	4
10	4
11	4
20	4
38	4
43	4
45	4
60	4
63	4
65	4
69	4
71	4
72	4
74	4
77	4
82	4
96	4
99	4
104	4
111	4
129	4
132	4
139	4

B. Birth and Death

The Birth and Death is a matrix of three columns and n rows where n is the total number of cells globally labeled throughout the experiment. The first column is the global cell ID number. The second column (Birth) is the frame index where the cell first appeared in the Field of View and the third column (Death) is the frame index where the cell last appeared in the Field of View.

For example: cell number 1 was born at frame 1 and died at frame 215. Cell number 5 was born at frame 1 and died at frame 19.
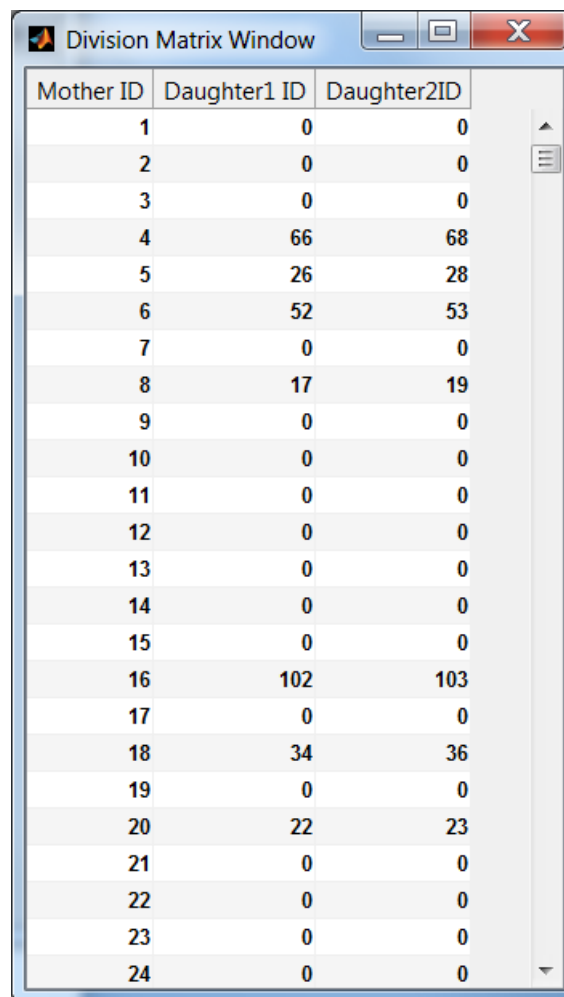
Cell ID	Birth	Death
1	1	215
2	1	6
3	1	6
4	1	70
5	1	19
6	1	58
7	1	94
8	1	13
9	1	13
10	1	14
11	1	14
12	7	12
13	8	18
14	10	12
15	13	18
16	14	96
17	14	14
18	14	37
19	14	14
20	15	15
21	15	27
22	16	28
23	16	28
24	17	20
25	19	42
26	20	52
27	20	38
28	20	48
29	27	27
30	28	63
31	29	95
32	30	57
33	30	40
34	28	50

C. Division Matrix

The Division Matrix is a matrix of three columns and n rows where n is the total number of cells globally labeled throughout the experiment. The first column is the global cell ID number of the mother cell. The second column is the global cell ID number of the one of the daughter cells and the third column is the global cell ID number of the other daughter cell. The Cell Tracker considers mitosis between a mother cell and its two daughter cells.

For example: cell number 5 went into mitosis and divided into two daughter cells 26 and 28. If you look at the Birth and Death matrix, cell 5 died at frame 19 and cells 26 and 28 are born at frame 20.

In that experiment cell 3 for example did not have any daughters (value =0) and hence never went into mitosis throughout the experiment.
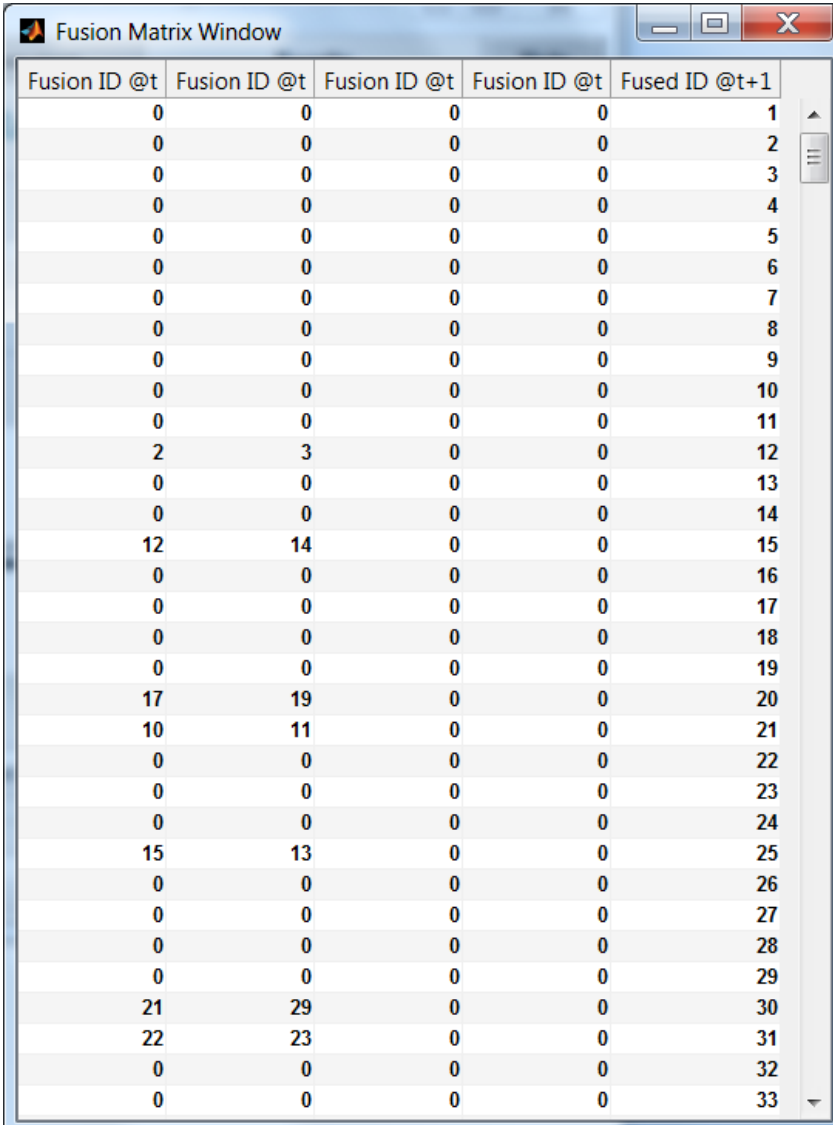
Mother ID	Daughter1 ID	Daughter2ID
1	0	0
2	0	0
3	0	0
4	66	68
5	26	28
6	52	53
7	0	0
8	17	19
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	0	0
15	0	0
16	102	103
17	0	0
18	34	36
19	0	0
20	22	23
21	0	0
22	0	0
23	0	0
24	0	0

Division Matrix Window

D. Fusion Matrix

The Fusion Matrix is a matrix of (m+1) columns where m is the maximum number of cells that fused together at frame *t* to form one object at frame *t+1*. There are n rows where n is the total number of cells globally labeled throughout the experiment. The first m column is the global cell ID number of the cells that fused together and the last column is the global ID number of the area that these m cells formed at frame *t+1*.

For example: cells number 2 and 3 fused together and formed cell 12. Cell 12 is a fused area so are cells 20 and 21 for example. If you look at the Birth and Death matrix, cell 2 and 3 died at frame 6 and cell 12 is born at frame 7.
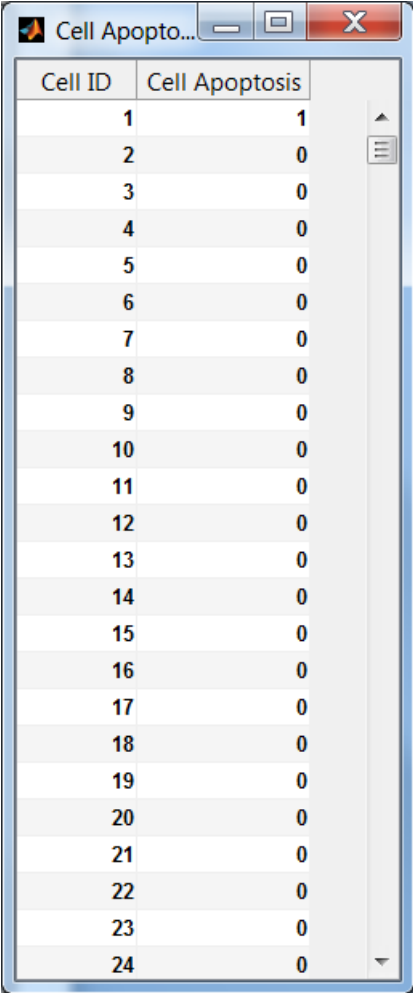
In that experiment cell numbers 1 to 11, 13,14, 16 to 19, etc are not born from fusion. All of the fused cells at time *t* have a value = 0.

Fusion Matrix Window

Fusion ID @t	Fusion ID @t	Fusion ID @t	Fusion ID @t	Fused ID @t+1
0	0	0	0	1
0	0	0	0	2
0	0	0	0	3
0	0	0	0	4
0	0	0	0	5
0	0	0	0	6
0	0	0	0	7
0	0	0	0	8
0	0	0	0	9
0	0	0	0	10
0	0	0	0	11
2	3	0	0	12
0	0	0	0	13
0	0	0	0	14
12	14	0	0	15
0	0	0	0	16
0	0	0	0	17
0	0	0	0	18
0	0	0	0	19
17	19	0	0	20
10	11	0	0	21
0	0	0	0	22
0	0	0	0	23
0	0	0	0	24
15	13	0	0	25
0	0	0	0	26
0	0	0	0	27
0	0	0	0	28
0	0	0	0	29
21	29	0	0	30
22	23	0	0	31
0	0	0	0	32
0	0	0	0	33

E. Apoptosis

Apoptosis refers to cell death. The Cell Tracker will analyze the movement and size of each cell through its entire lifetime and if they are similar throughout, it will be reported in matrix of two columns and n rows where n is the total number of cells globally labeled throughout the experiment. The first column is the global cell ID number and the second column is a binary indicator (1 is dead). For example: cell number 1 is declared dead.

Cell ID	Cell Apoptosis
1	1
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0
22	0
23	0
24	0