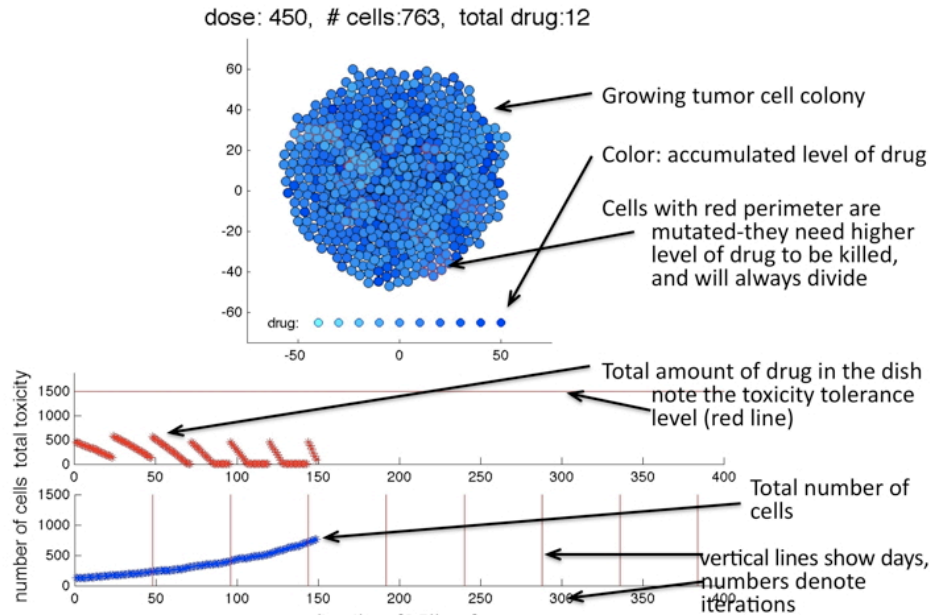Matlab routine *CellColonyDrug* will read files *CellCluster.txt* and *CellClusterParameters.txt* and the following information will be shown on the screen:

dose: 450, # cells:763, total drug:12

Growing tumor cell colony

Color: accumulated level of drug

Cells with red perimeter are mutated-they need higher level of drug to be killed, and will always divide

Total amount of drug in the dish note the toxicity tolerance level (red line)

Total number of cells

vertical lines show days, numbers denote iterations

Description of the problem:
1. given is a growing colony of tumor cells in a dish,
2. drug is supplied to the medium (at the dose *DoseTox*), is assumed to be well mixed with the medium (no gradient), and all cells have equal access to the drug,
3. cell will absorb the drug (at the rate *cellDose*) and upon drug accumulation (cell color will change from cyan to dark blue) above the prescribed threshold (*cellThrs*) cells will die (with 75% probability),
4. some cells may acquire mutations (shown with a red perimeter) that will make them more resistant to the drug (need to accumulate a higher level of drug to die, and that threshold will increase with time), and more likely to proliferate (however, upon division each daughter cell inherits only half od the accumulated drug, so they can survive longer).

After initiation of the program, there are five options of drug scheduling:
```
disp(' possible treatment schedule: ')
disp('    1. bi-weekly  ')
disp('    2. daily       ')
disp('    3. twice daily')
disp('    4. hourly      ')
disp('    5. continuous ')
```
Choose one of the scheduling schemes and specify the drug dose to be applied.
Then specify what percentage of cells [0-10] will be initially mutated.

Goal:
1. For each scheduling scheme, find a dose that will lead to tumor eradication (observe the maximal tolerance level for the drug).
2. Then find the minimal percentage of mutated cells that will lead to continuing tumor growth for this drug dose.
3. Can you kill all these mutated cells by increasing the dose of treatment?