Ideas for New Versions of MIRDcell

Don’t allow and put in warning when maximum cluster radius is exceeded **(done for 3d will do 2d later)**

Tally self-doses and cross-doses for each type of radiation (so RBE or other parameter can be applied).

Scale window to screen size. **(why would you make the gui like that!!!!! Scaling this will be like 50x harder than it should be)**

Problem with histograms for normal distribution have returned. There is a version problem. Behrooz had made it so that negative activity was not allowed. **(in the code I have this seems to be fixed)**

Surviving fraction cannot be plotted when 0 survive. Currently is plots as flat line of survivors which is not acceptable. **(This is because you are attempting to plot 0 on a graph that can never show 0 as it is a logarithmic graph decreasing from 1)**

X-ray and gamma-ray dosimetry

Enable change in radial distribution of activity (exponential, linear, etc). **(done, needs more testing)**

Enable importing of activity distributions (i.e. from flow cytometry data)

If number of cells in cluster is less than imported number of cells, use only part of imported data **(why not just get the # from the imported data…….?)**

intensity of agent in cell <conversion factor> molecules of agent in cell <specific activity of agent> activity of agent in cell

Provide distribution of doses – self, cross, total **(where do you want this information, shouldn’t be too hard)**

Provide distribution of equivalent doses – self, cross, total **(how is this different from the above)**

Dose volume histogram **(need to explain what this is. Otherwise probably won’t be that difficult)**

Beta spectra from latest MIRD book. **(need to explain what this is.)**

Provide distribution of BED (EQD0), EQD2 **(need to explain what this is.)**

Assign colors in a dose dependent manner **(This will likely be a LOT more difficult than it wounds due to how the way the 3d graph works. Will look into it more. )**

Allow view of slices through the 3D geometry (like a CT scan) **(again harder than it sounds)**

Allow activity to be distributed among all target regions according to percentages **(regions as in cytoplasm and nucleus?)**

Allow addition of a background Low LET dose – use cross-dose parameters

Allow user to select decay chain or combination of radionuclides **(super easy if don’t the slow way. Don’t know about the fast way.**

Add bystander response term

Depends on percentage labeled

Type of radiation

Allow user to use decimal values for radii

Allow cell membrane to be a target. Use 10 nm thick envelope. This reprogramming will also allow for non-integer values of the cell radii

Output box should contain cell doses, cell survival data, and other details that may be useful for user.

Allow user to assign specific activity as per Jordan’s

1. Mean and histogram of self-doses to labeled cells
2. Mean and histogram of cross-doses to labeled cells
3. Mean and histogram of cross-doses to unlabeled cells
4. Mean and histogram of self-doses to all cells
5. Mean and histogram of cross-doses to all cells
6. Mean and histogram of total dose to all cells

Version three improvements (not critical but helpful) – allow for entry using exp notation (e.g., 1.4e-5), **(fairly easy actually even if java doesn’t have a function for it)**

Allow decimals in the shape radius field, **(where?)**

list SF on the live/dead cell pic **(easy enough I think)**

Let user know that things will be re-calculated when option changes on SF plot window. **(shouldn’t really need to be recalculated)**

Consider changing TIAC units to be “s” so that they match Bq

Consider giving user option of entering disintegrations per cell (Bq-s) in place of TIAC and activity per cell

-George