

## **Introduction**

The folder Code\_and\_Data contains the following two routines (functions) and two datasets. The code is written in Matlab (.m functions), while the datasets are saved in Matlab workspace files (.mat). If any reader wants data in any other format, please contact us and we will try to accommodate her/his request.

The folder contains the following items:

annealing\_model\_fit.m  
model\_dif\_radionuclide\_stochastic.m  
data\_unkel.mat  
data\_iodine.mat

### **model\_dif\_radionuclide\_stochastic.m**

Function containing the implementation of our code. Detailed info about the inputs and outputs of this function can be found in it.

### **annealing\_model\_fit.m**

Function containing the implementation of an annealing method to obtain best fits of our model to experimental data. In particular, in this case it is used to fit experimental data taken from Unkel et al of surviving fractions of different cell lines. Detailed info about the inputs and outputs of this function can be found in it.

### **data\_unkel.mat**

Workspace containing the experimental results taken from Unkel et al of surviving fractions of different cell lines, together to best-fits of such data to the LQ model and to our model.

Experimental data (doses and  $\log(SF)$ ) for each of the 9 cell lines is save in variables C2, DG, FP, HP, L3, MP, P1, PT, and S2, and altogether are also reported in the structure EXPERIMENTAL\_DATA.

Variables named par\_LQ\_”cell\_line” contain best-fitting LQ parameters for each cell-line, and variables SF\_LQ\_”cell\_line” contain best-fitting LQ surviving fractions.

Variables named par\_opt\_”cell\_line” contain best-fitting parameters of our model for each cell-line, and variables SF\_opt\_”cell\_line” contain best-fitting LQ surviving fractions.

### **data\_iodine.mat**

This workspace contains the sets of parameters used to create figures 2 and 3 (par\_1, par\_2, par\_3, par\_4). The variable D contains the simulated dose rate of a radioiodine treatments.