

There are hardly any raw experimental data which is easily available in the field of low dose hyper-radiosensitivity and induced radioresistance research. This is especially important in the case of mathematical modelling, where researchers usually do not perform experiments, but they would like to compare their results to the actual behaviour of the cells. The aim of this study is to collect datasets featuring experiments with various cell cultures showing hyper- radiosensitivity and induced radioresistance from published articles. The data are collected by manually reading each data point from the figures of the articles.

If you publish your research using this database, please cite the following reference: Polgár, Sz., Schofield, P.N., Madas, B.G., 2022. Datasets of *in vitro* clonogenic assays showing low dose hyper-radiosensitivity and induced radioresistance. *Sci Data* 9, 555. <https://doi.org/10.1038/s41597-022-01653-3>

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The second version of the database contains 101 datasets collected from 46 articles. The oldest article was published in 1993, and the newest in 2021. In each case, an identification number, the authors, the title, the year of publication, the digital object identifier (DOI), and the exact figure where the data was acquired from is given in column A. One dataset contains the surviving fraction of the cell culture (column C) at a given dose in Gy (column B) and the minimum (column D) and maximum value (column E) of the whiskers of the uncertainty of the surviving fraction. The parameters of the fitted function are also recorded if they are given in the article, either parameters of the Linear-Quadratic (LQ) model or the Induced Repair (IR) model or both. The fit type is given in column G. From column H to column X, different parameters (columns H, L, P, Q, U) are given with their standard deviations (columns I, M, R, V) or confidence limits (columns J, K, N, O, S, T, W, X). In column H, α refers to the LQ fit, while α_r to the IR fit. If there are parameters or values which are not given in the articles (or no fits were made), then it is indicated with an 'X' symbol. If the parameters has no meaning for the given fit (for example the LQ model has only two parameters, α and β , so the others are not applicable), a '-' symbol is used. Red colour denotes those parameter values which we could not reproduce by fitting the models to the data collected. Properties of the cell line and characteristics of the irradiation are recorded in column Z and column AA, respectively.

The following articles were used to create the second version of the database:

<https://doi.org/10.1080/09553009314450831>

<https://doi.org/10.2307/3578255>

<https://doi.org/10.2307/3578779>

<https://doi.org/10.2307/3579043>

<https://doi.org/10.2307/3579302>

[https://doi.org/10.1016/S0027-5107\(96\)00118-2](https://doi.org/10.1016/S0027-5107(96)00118-2)

<https://doi.org/10.1080/095530099139214>
<https://doi.org/10.1080/095530099139908>
[https://doi.org/10.1016/S0360-3016\(00\)01471-1](https://doi.org/10.1016/S0360-3016(00)01471-1)
<https://doi.org/10.1080/09553000210166606>
<https://doi.org/10.1093/oxfordjournals.rpd.a006772>
<https://doi.org/10.1093/oxfordjournals.rpd.a006777>
<https://doi.org/10.1667/RR3013>
<https://doi.org/10.1080/0955300021000045646>
<https://doi.org/10.1667/RR3060>
<https://doi.org/10.1002/ijc.11033>
<https://doi.org/10.1667/RR3130>
<https://doi.org/10.1016/j.ijrobp.2003.09.053>
<https://doi.org/10.1016/j.nimb.2005.11.120>
<https://doi.org/10.1667/RR3553.1>
<https://doi.org/10.1667/RR0776.1>
<https://doi.org/10.1269/jrr.07093>
<https://doi.org/10.1186/1748-717X-3-19>
<https://doi.org/10.1007/s00411-007-0145-9>
<https://doi.org/10.1667/RR1717.1>
<https://doi.org/10.3109/09553000903242107>
<https://doi.org/10.1007/s11596-009-0122-4>
<https://doi.org/10.1016/j.ijrobp.2010.01.028>
<https://doi.org/10.1259/bjr/33201506>
<https://doi.org/10.3109/09553002.2012.646046>
<https://doi.org/10.3109/09553002.2012.643274>
<https://doi.org/10.1093/jrr/rrs024>
<https://doi.org/10.1667/RR13358.1>
<https://doi.org/10.3109/09553002.2013.825061>
<https://doi.org/10.1016/j.ijrobp.2013.10.031>
<https://doi.org/10.7860/JCDR/2015/14120.6074>
<https://doi.org/10.1080/09553002.2016.1206235>
<https://doi.org/10.1016/j.dnarep.2015.12.001>
<https://doi.org/10.1158/1078-0432.CCR-18-0533>
<https://doi.org/10.1667/RR14208.1>
<https://doi.org/10.1016/j.dnarep.2021.103113>
<https://doi.org/10.1016/j.ijrobp.2009.04.088>
<https://doi.org/10.3389/fcell.2021.650819>
<https://doi.org/10.1016/j.nimb.2005.11.120>
[https://doi.org/10.1667/0033-7587\(2000\)154\[0406:EOLDNA\]2.0.CO;2](https://doi.org/10.1667/0033-7587(2000)154[0406:EOLDNA]2.0.CO;2)
<https://doi.org/10.1080/09553002.2017.1237057>

Changes in the second version of the database compared to the first version:

An identification number between 1 to 101 has been added to each dataset in column A.

The information on the cell line has been extended with species, organ, and cancer type (if applicable) in column Z.

One-one copy of two duplicated datasets collected from the following publication has been removed:

Jin, X. *et al.* The hyper-radiosensitivity effect of human hepatoma SMMC-7721 cells exposed to low dose γ -rays and ^{12}C ions. *Nucl. Instrum. Methods Phys. Res. Sect. B Beam Interact. Mater. At.* **245**, 310–313 (2006)

Some inaccuracies in the author names have been corrected in case of the following three publications:

Böhrnsen, G., J. Weber, K. & Scholz, M. Low Dose Hypersensitivity and Induced Resistance of V79 Cells after Charged Particle Irradiation using 100 MeV/u Carbon Ions. *Radiat. Prot. Dosimetry* **99**, 255–256 (2002)

Short, S. C., Mitchell, S. A., Boulton, P., Woodcock, M. & Joiner, M. C. The response of human glioma cell lines to low-dose radiation exposure. *Int. J. Radiat. Biol.* **75**, 1341–1348 (1999).

Short, S., Mayes, C., Woodcock, M., Johns, H. & Joiner, M. C. Low dose hypersensitivity in the T98G human glioblastoma cell line. *Int. J. Radiat. Biol.* **75**, 847–855 (1999).

Parameter values which we could not reproduce by fitting the models to the data collected have been denoted by red colour in case of datasets 51, 65, 70, and 87.

Some cells in column AA have been rearranged in order to show radiation type in the top row of the dataset.