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## Sigmoid fitting in Excel (Excel Solver Add-In)

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Works for me

[dx.doi.org/10.17504/protocols.io.78ihmue](https://dx.doi.org/10.17504/protocols.io.78ihmue)

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### ABSTRACT

This protocol covers how to fit sigmoidal curve to data within Excel, and allows rapid estimation of EC50/IC50 values from experimental dose-response data. Although R or other specialized software is more suitable for detailed analyses, it is sometimes useful to perform sigmoidal fitting within Excel. Note that this is just a simplified version (only sigmoid fitting) of the protocol reported in Gerdi Kemmer & Sandro Keller (2010) Nat. Protocol 5: 267–281, and intended for routine laboratory use.

### BEFORE STARTING

Excel Solver Add-In is currently bundled with Excel by default, but you need to load the add-in for the first time. To load the add-in, select "Excel Add-Ins" from "Tools" menu, check the Solver Add-In, and click OK.

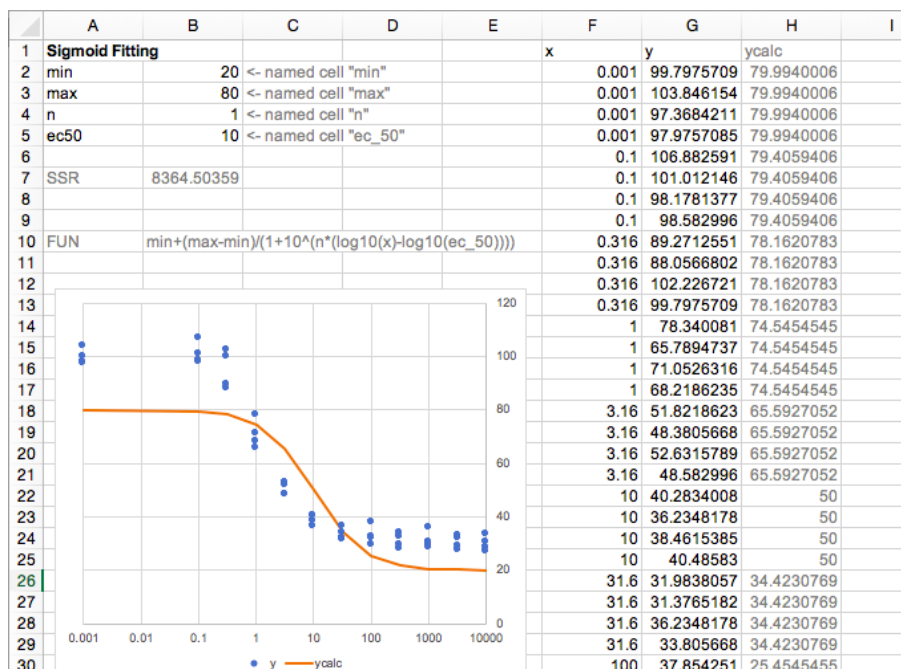
- 1 Download the following excel file. Copy the excel sheet into your excel file if needed.  
The file contains a sheet set up for sigmoidal fitting with an example data set, for which you can test the fitting procedure.

 [ExcelSolver\\_Sigmoid.xlsx](#)

- 2 Open the excel file, and enter your data in the "x" and "y" column. Delete unnecessary data.



The data in the "x" column should be in decreasing or increasing order. Otherwise, the plot will not be correctly displayed.



- 3 Guess initial parameters for the sigmoid (minimum, max, n, and ec50), which can be easily guessed from the plot, and enter the estimated initial values into the cells (B2, B3, B4, B5).



If the initial guess is too far from the real values, the fitting algorithm may not result in reasonable fit.

- 4 Start Excel Solver by selecting "Solver" from "Tools" menu.
- 4.1 Set "Target cells" to "\$B\$7", which contains SSR (Sum of Squared Residuals).

4.2 Set "equal to" section to "Value of 0".



This results in a warning saying "unable to find solution", but you can ignore it.

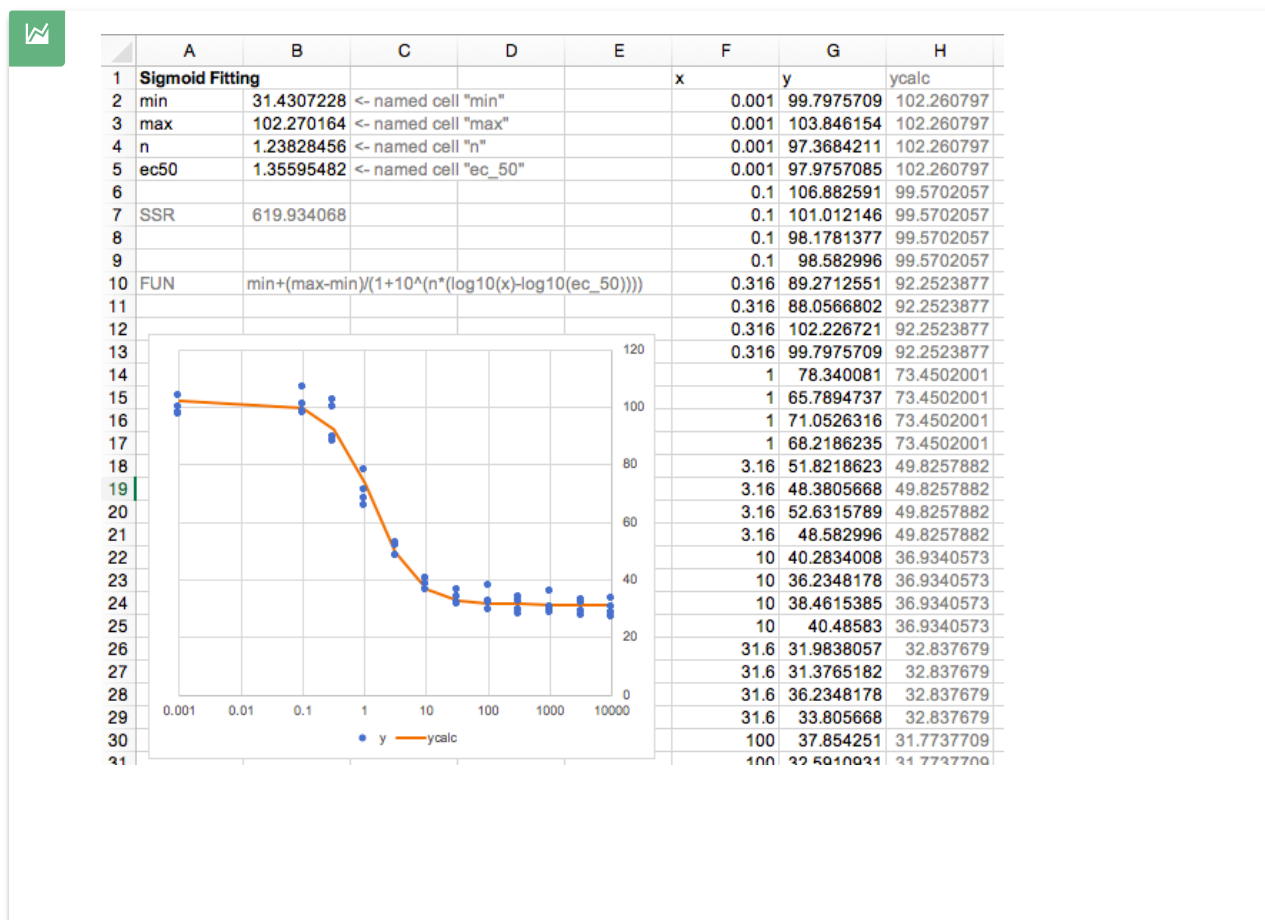
4.3 Set "Changing cells" to the cells that contains initial values ("B\$2:B\$5").

4.4 Add constraints if needed. We recommend to add "ec\_50 >= 0.000001" etc., to avoid EC50 becoming negative values or zero.

4.5 Uncheck "Assume non-negative", if checked.

4.6 Basically, no need to change the other options.

5 Click "Solve" to run the Solver, wait several seconds. Close the Solver window when the calculation finished. Then you can get fitted parameters and a curve overlaid over the raw data points. Check if the sigmoid curve is reasonably fitted over the data.



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