



*Tutorials and worked examples for simulation,  
curve fitting, statistical analysis, and plotting.*  
<https://simfit.org.uk>

Sometimes it is required to combine several SVG files together to create a collage, i.e., a single SVG file containing subgraphs arranged into fixed or arbitrary positions. To do this, subsidiary SVG files are input into program **EditSVG**, then rearranged and scaled as necessary. When satisfied, program **EditSVG** can be used to output the composite graph as a SVG file (\*.SVG).

Note that, after constructing a collage, program **EditSVG** also provides the facility to output re-build files (\*.ISVG). These simply contain a list of SVG files used to compose the collage along with positions, scaling, and flags to indicate if white space borders are to be clipped from graphs, etc.

Such collages can be classified into several types as follows.

- **A fixed or strict collage**  
Here all the subgraphs have the same size and shape. For instance, all square, or all in landscape format, or all in portrait aspect ratio.
- **An arbitrary or free-style collage**  
In this case the subgraphs can be of arbitrary size and shape.
- **Using ribbon graphs**  
On occasions graphs created in square, portrait, or landscape, format are too compressed and it is necessary to apply differential stretching into a non standard format. This involves scaling the length of lines without altering the aspect ratio of the fonts used in titles, legends or plot labels. For instance with dendrograms or forest plots.

Several collages from the SIMFIT tutorials section concerning SVG are now shown to illustrate some typical possibilities.

- **Collage 1.**  
Freestyle non-overlapping type showing a collection of arbitrary mathematical equations and chemical formulas.
- **Collage 2.**  
Freestyle inlay type illustrating how to combine  $\LaTeX$  maths with visual display of data.
- **Collage 3.**  
Freestyle inlay type illustrating how to combine a  $\LaTeX$  chemical scheme and graph with data and best-fit curves.
- **Collage 4.**  
Strict type displaying illustrations from the SIMFIT tutorials SVG section.
- **Collage 5.**  
Differential stretching type illustrating how to stretch the  $x$  or  $y$  axes while maintaining constant aspect ratios for characters required for ribbon graphs.

## Collage 1: Miscellaneous L<sup>A</sup>T<sub>E</sub>X examples

$$\begin{matrix} 0 & 1 & (0 & -i) \\ 1 & 0 & (i & 0) \end{matrix}$$

$$\begin{bmatrix} 0 & -1 \\ 1 & 0 \end{bmatrix} \left\{ \begin{matrix} 1 & 0 \\ 0 & -1 \end{matrix} \right\}$$

$$\begin{vmatrix} a & b \\ c & d \end{vmatrix} \quad \left\| \begin{matrix} i & 0 \\ 0 & -i \end{matrix} \right\|$$

$$\sqrt{1 + \sqrt{1 + \sqrt{1 + \sqrt{1 + \sqrt{1 + \sqrt{1 + x}}}}}}}$$

$$\iint_V \mu(v, w) \, du \, dv$$

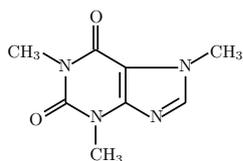
$$\iiint_V \mu(u, v, w) \, du \, dv \, dw$$

$$\int_V \cdots \int \mu(z_1, \dots, z_k) \, dz$$

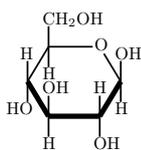
$$\lim_{x \rightarrow 0} \frac{\sin^2(x)}{x^2} = 1$$

$$\varliminf_{n \rightarrow \infty} |a_{n+1}|/|a_n| = 0$$

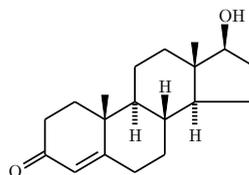
$$\varlimsup (m_i^\lambda \cdot M)^* \leq \varprojlim_{A/p \rightarrow \lambda(A)} A_p \leq 0$$



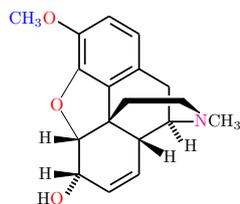
Caffeine



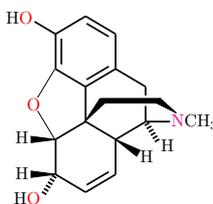
Glucose



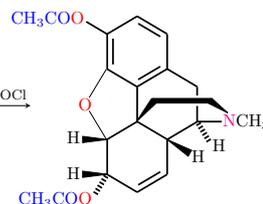
Testosterone



Codeine



Morphine



Heroin

## Collage 2: L<sup>A</sup>T<sub>E</sub>X maths

$$S_n = \sum_{k=1}^n X_i, \quad k = 0, 1, 2, \dots, n$$

Binomial Distribution:  $P(S_n = k) = \binom{n}{k} p^k (1-p)^{n-k}$

$$E(S_n) = np$$

$$V(S_n) = np(1-p)$$

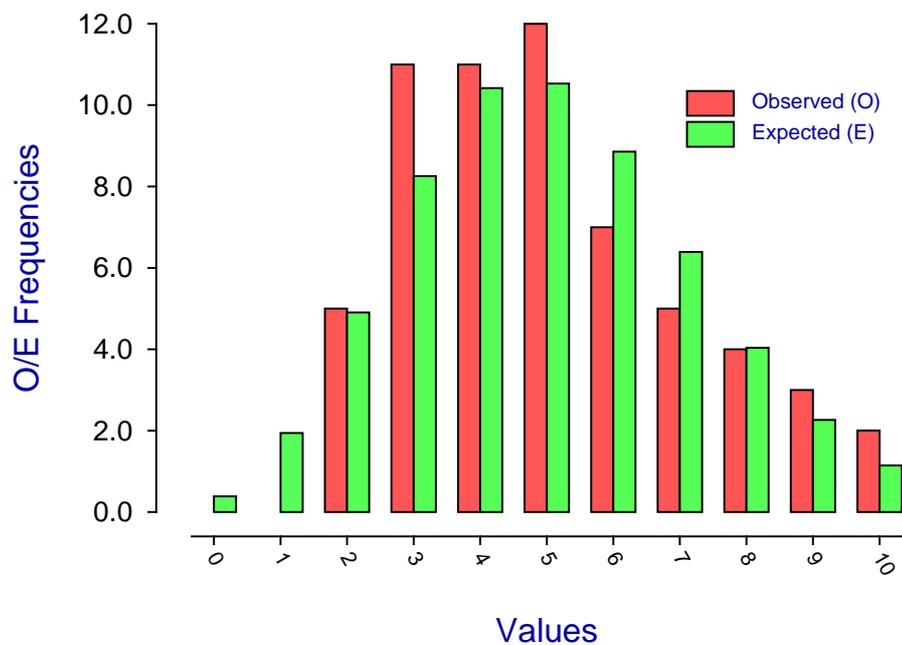
Poisson Distribution:  $P(Y = k) = \frac{\lambda^k}{k!} \exp(-\lambda), \quad y = 0, 1, 2, \dots,$

$$E(Y) = \lambda$$

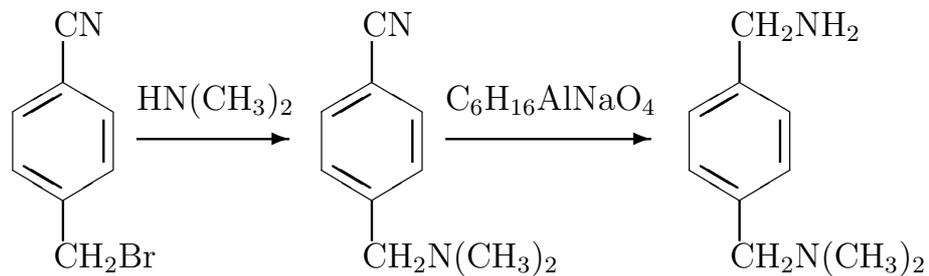
$$V(Y) = \lambda$$

$$\lim_{n \rightarrow \infty, p \rightarrow 0} \binom{n}{k} p^k (1-p)^{n-k} = \frac{(np)^k}{k!} \exp(-np), \quad np > 0$$

### Fitting a Poisson Distribution



Collage 3:  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$  chemistry

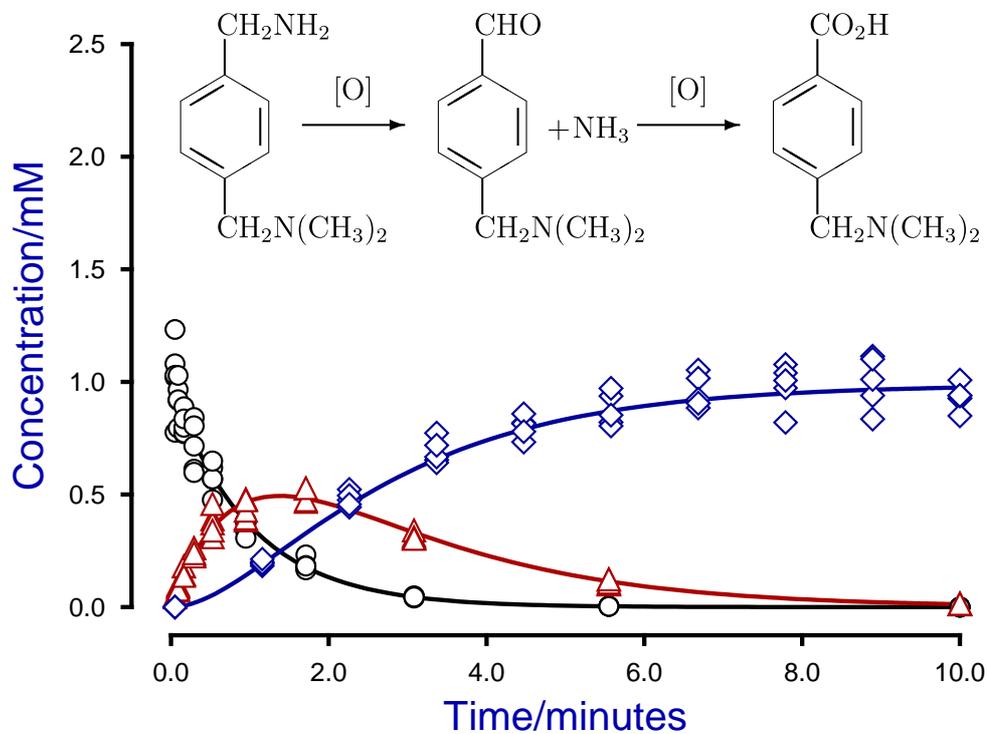


**Chemical synthesis of p-dimethylaminomethylbenzylamine**

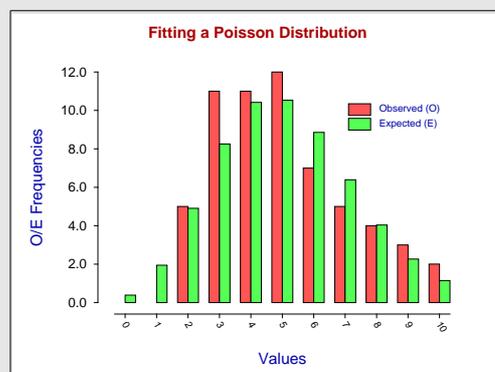
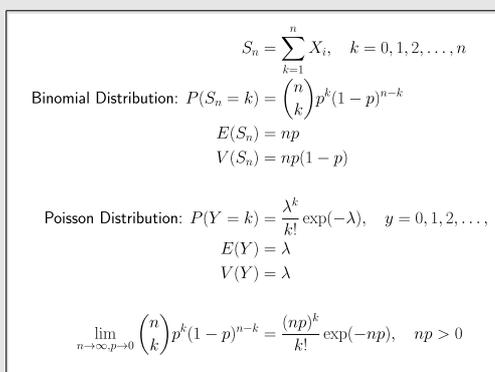
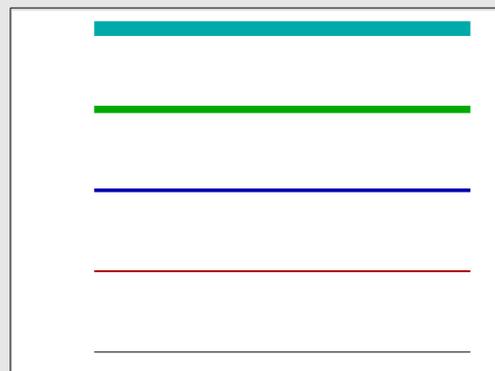
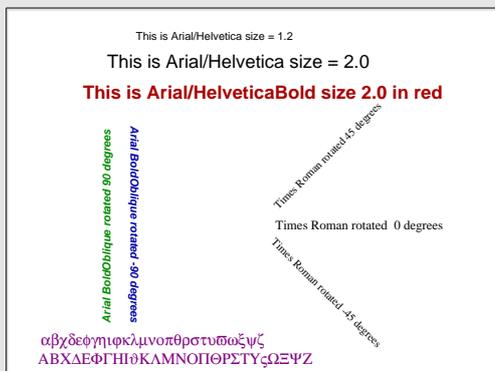
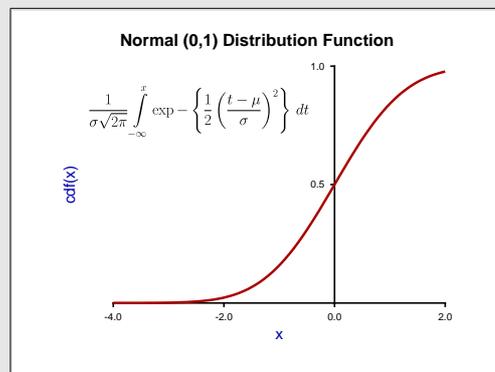
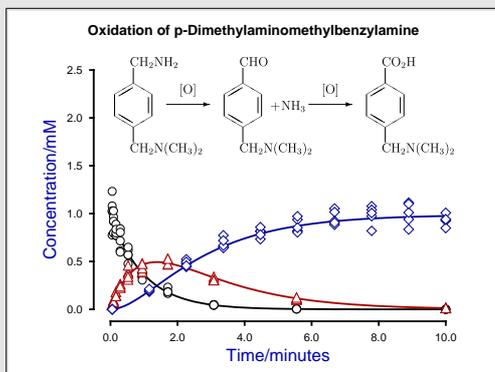
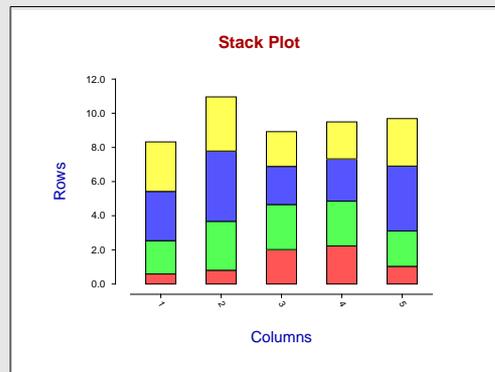
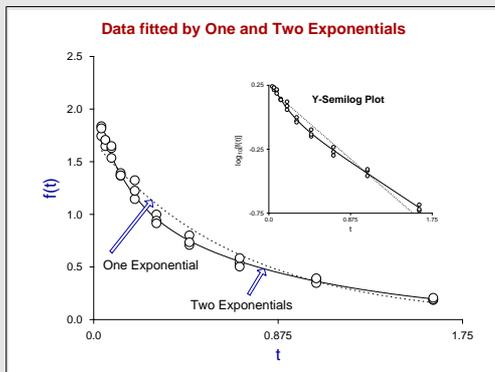
using

p-cyanobenzyl bromide, dimethylamine and Red-Al

**Oxidation of p-Dimethylaminomethylbenzylamine**



## Collage 4: Tutorial examples



### Collage 5: Differential scaling to create ribbon graphs

