

<font color="red"><H1>LATEX INFO</H1></font>

In new Jupyter notebooks I have been working you can just type latex in markdown cells and it works.

Example of new way on next line, but won't work in old canopy I have on home computer. (kept old one so far because lets me edit directly in cnaopy whereas new Canopy goes to browser and is a bit annoying in opening and closing.) To see it work, easiest way is to upload to tmpnb.org and use there.

$$\begin{aligned}\nabla \times \vec{B} - \frac{1}{c} \frac{\partial \vec{E}}{\partial t} &= \frac{4\pi}{c} \vec{j} \\ \nabla \cdot \vec{E} &= 4\pi \rho \\ \nabla \times \vec{E} + \frac{1}{c} \frac{\partial \vec{B}}{\partial t} &= \vec{0} \\ \nabla \cdot \vec{B} &= 0\end{aligned}$$

**Easy Equation writing examples**  $c = \sqrt{a^2 + b^2}$  Logarithmic growth of a population of cells can be described mathematically as  $N = N_o e^{ln2(t/t_2)}$  (from page 177 of Methods in Yeast Genetics, 205 Edition) **See here for an awesome reference for MathJax**

"and use single \$ (rather than double \$\$) to keep the equation in-line. [stackoverflow.com/q/19412644/1224255](http://stackoverflow.com/q/19412644/1224255)" - from <http://stackoverflow.com/questions/13208286/how-to-write-latex-in-ipython-notebook> (<---this itself was tricky to write and I had to use minrk's April 18th answer at <https://github.com/ipython/ipython/issues/3197/> as a basis

Based on here I figured out (probably again) how to add hyphen when in math mode in Jupyter notebooks and not have it loolike a minus sign.  $\frac{mito\ purification\ RNA-Seq\ data}{total\ cell\ RNA-seq\ data}$  VS.  $\frac{obs_a - obs_b}{exp_a - exp_b}$

```
[15]: #from JupyterLab demo notebook November 2, 2016
from IPython.display import Latex
Latex(''The mass-energy equivalence is described by the famous equation

$$E=mc^2$$

discovered in 1905 by Albert Einstein.
In natural units ($c$ = 1), the formula expresses the identity

\\begin{equation}
E=m
\\end{equation}'')
```

<IPython.core.display.Latex object>

```
[3]: %%latex
\begin{aligned}
\nabla \times \vec{\mathbf{B}} - \frac{1}{c} \frac{\partial \vec{\mathbf{E}}}{\partial t} &= \frac{4\pi}{c} \vec{\mathbf{j}} \\
\nabla \cdot \vec{\mathbf{E}} &= 4 \pi \rho \\
\nabla \times \vec{\mathbf{E}} + \frac{1}{c} \frac{\partial \vec{\mathbf{B}}}{\partial t} &= \vec{\mathbf{0}} \\
\nabla \cdot \vec{\mathbf{B}} &= 0
\end{aligned}
```

<IPython.core.display.Latex object>

```
[11]: %%latex

$$
\frac{1}{3} \sqrt{z} \left[ I_{-1/3}(\zeta) - I_{1/3}(\zeta) \right] = \pi^{-1} \sqrt{z/3} K_{1/3}(\zeta)
$$

{\bf 10.4.15}
$$ Ai(-z) = \frac{1}{3} \sqrt{z} \left[ J_{1/3}(\zeta) + J_{-1/3}(\zeta) \right] = \frac{1}{2} \sqrt{z/3} \left[ e^{i\pi/6} H_{1/3}^{(1)}(\zeta) + e^{-i\pi/6} H_{1/3}^{(2)}(\zeta) \right]
$$
```

<IPython.core.display.Latex object>