

UNIVERSIDAD DE LOS ANDES

DEPARTAMENTO DE FÍSICA

BIOLOGÍA SINTÉTICA

Proyecto

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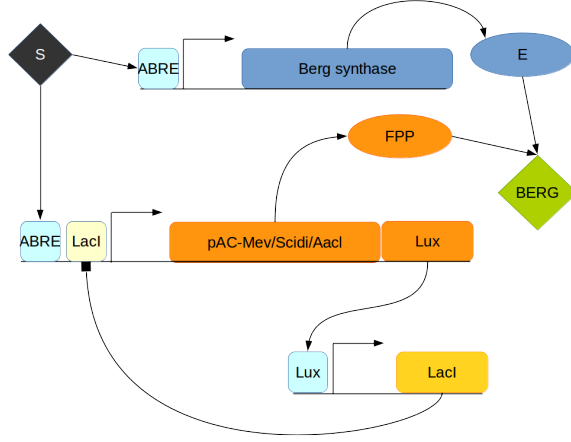


Figura 1: This is a figure caption.

Resumen

Your abstract[8] [2] [10] [9] [7] [6] [5] [3] [4] [1].

1. Introducción

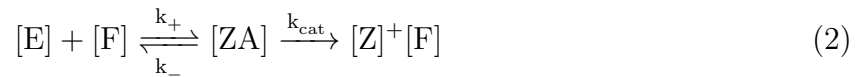
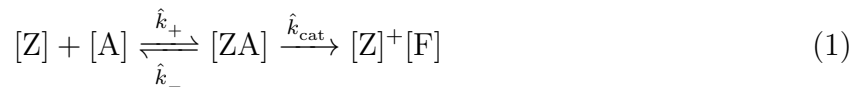
Your introduction goes here! Some examples of commonly used commands and features are listed below, to help you get started.

If you have a question, please use the support box in the bottom right of the screen to get in touch.

2. Modelo

2.1. Ecuaciones de Hill

Para la parte de ... consideramos que el ADN total D_T es constante, es decir



Según las ecuaciones químicas, las ecuaciones diferenciales para $[B]$, $[F]$, $[ZA]$ y $[EF]$ so

$$[\dot{B}] = k_{\text{cat}}[E][F] - \gamma_B B \quad (3)$$

$$[\dot{Z}A] = \hat{k}_+[Z][A] - \hat{k}_-[ZA] - \hat{k}_{\text{cat}}[ZA] \quad (4)$$

$$[\dot{EF}] = k_+[E][F] - k_-[EF] - k_{\text{cat}}[EF] \quad (5)$$

$$[\dot{F}] = -k_+[E][F] + k_-[EF] + \hat{k}_{\text{cat}}[ZA] \quad (6)$$

Asumiendo que los complejos enzima-sustrato están en equilibrio, es decir, $[ZA] = 0$ y $[EF] = 0$ obtenemos de las ecuaciones [?] y [?]

Donde a la ecuación para B se le puso un término de degradamiento, pues en las demás como las tasas de reacciones enzimáticas son mucho mayores a las de degradamiento blabla

$$[D_T] = [D] + [DS] + [DI] + [DIS]$$

, donde [D] representa el ADN libre, [DIS] el ADN unido al represor I y al activador S, [DS] el unido al activador y [DI] el unido al represor.

En equilibrio y utilizando balance detallado obtenemos las siguientes ecuaciones diferenciales para la concentración de la enzima Z y su ARN r_Z , y de igual manera para la enzima E :

$$\begin{aligned} \dot{r}_Z(t) = \alpha_{IS} + & \frac{\beta_{IS_I}}{\left(\frac{K_I}{I}\right)^{n_I} + 1 + \left(\frac{S}{K_S}\right)^{n_S}} + \frac{\beta_{IS_S}}{\left(\frac{K_S}{S}\right)^{n_S} + \left(\frac{I}{K_I}\right)^{n_I} \left(\frac{K_S}{S}\right)^{n_S} + 1 + \left(\frac{I}{K_I}\right)^{n_I}} \\ & + \frac{\beta_{IS_{IS}}}{\left(\frac{K_I}{I}\right)^{n_I} \left(\frac{K_S}{S}\right)^{n_S} + \left(\frac{K_S}{S}\right)^{n_S} + \left(\frac{K_I}{I}\right)^{n_I} + 1} - \gamma_{r_Z} r_Z \quad (7) \end{aligned}$$

$$\dot{Z}(t) = k_Z r_Z - \gamma_Z Z \quad (8)$$

$$r_E(t) = \alpha_S + \frac{\beta_S}{1 + \left(\frac{K_S}{S}\right)^{n_S}} - \gamma_{r_E} r_E \quad (9)$$

$$\dot{E}(t) = k_E r_E - \gamma_E E \quad (10)$$

2.2. Comments

Comments can be added to the margins of the document using the `todo` command, as shown in the example on the right. You can also add inline comments too:

This is an inline comment.

Here's a comment in the margin!

2.3. Tables and Figures

Use the table and tabular commands for basic tables — see Table 1, for example. You can upload a figure (JPEG, PNG or PDF) using the files menu. To include it in your document, use the `includegraphics` command as in the code for Figure 1 below.

| Item | Quantity |
|---------|----------|
| Widgets | 42 |
| Gadgets | 13 |

Cuadro 1: An example table.

2.4. Mathematics

L^AT_EX is great at typesetting mathematics. Let X_1, X_2, \dots, X_n be a sequence of independent and identically distributed random variables with $E[X_i] = \mu$ and $\text{Var}[X_i] = \sigma^2 < \infty$, and let

$$S_n = \frac{X_1 + X_2 + \dots + X_n}{n} = \frac{1}{n} \sum_i^n X_i$$

denote their mean. Then as n approaches infinity, the random variables $\sqrt{n}(S_n - \mu)$ converge in distribution to a normal $\mathcal{N}(0, \sigma^2)$.

2.5. Lists

You can make lists with automatic numbering ...

1. Like this,
2. and like this.

... or bullet points ...

- Like this,
- and like this.

We hope you find writeL^AT_EX useful, and please let us know if you have any feedback using the help menu above.

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