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**General description -** Students will draw out a multi-step process and add captions based on OpenStax Biology - Chapter 5 - Structure and Function of Plasma Membranes section 5.4 (bulk transport).

**OpenStax book used -** Biology

[https://cnx.org/contents/GFy\_h8cu@10.137:rZudN6XP@2/Introduction](https://cnx.org/contents/GFy_h8cu%4010.137%3ArZudN6XP%402/Introduction)

**Active learning technique used -** “Draw a summary of a concept, process, or article”

**Compatible technology tools -** any kind of photo sharing mechanism, such as Mural (<https://mural.co/>) or padlet (<https://padlet.com/>) or Screecast-o-matic (<https://screencast-o-matic.com/screen_recorder>)

**Activity instructions to the student -**

1. Read the following scenario
	1. *Imagine you are an immune cell, a white blood cell. You are circulating around your body, monitoring the conditions, and have detected a bacterial invader in your midst. Quick! You must react to protect your body! You proceed with engulfing the offending microbe in an attempt to neutralize the threat.*
2. Use the following template to draw a representation cartoon-style (step by step) of the process alluded to in the scenario
	1. You must depict at least 3 steps and can include up to 6 steps
3. Add short captions (not more than one sentence long) to each of your cartoon panels describing what it is you have drawn in that particular step
4. If done by hand, take a picture of your drawing and make sure it is of sufficient resolution so that I can zoom in to view if necessary.
	1. If drawn using computer software, save as a PDF
5. Submit your picture and justification to XX (collaborative platform of instructor’s choice)

**References and Attributions**

Kneafsey, J. “Active Learning Across the Disciplines” Presentation at OpenStax CreatorFest 2018, Houston TX.

OpenStax, Biology. OpenStax CNX. Mar 21, 2018 [http://cnx.org/contents/185cbf87-c72e-48f5-b51e-f14f21b5eabd@10.137](http://cnx.org/contents/185cbf87-c72e-48f5-b51e-f14f21b5eabd%4010.137)

Inspired by:

<https://teachcreate.org/>

**Cartoon Template**

|  |  |  |
| --- | --- | --- |
| *Step 1 depiction* | *Step 2 depiction* | *Step 3 depiction* |
| *Step 1 caption* | *Step 2 caption* | *Step 3 caption* |
| *Step 4* | *Step 5* | *Step 6* |
| *Step 4 caption* | *Step 5 caption* | *Step 6 caption* |