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| **STEP 1: A Review of the Immune System**   In order for your group to argue effectively in the upcoming debate on Edible Vaccines, each member needs to have some background knowledge of how the human immune system works. Below you will see a chart with a list of various terms related to the immune system. *Copy* "Function" refers to what they do; "Interaction" refers to how they are related to the other components of the immune system. You can find all the information you need to fill in the chart [by looking here](http://gened.emc.maricopa.edu/bio/bio181/BIOBK/BioBookIMMUN.html).   |  |  |  | | --- | --- | --- | | **TERM** | **FUNCTION** | **INTERACTION** | | antigens |  |  | | macrophages |  |  | | B cells |  |  | | helper T cells |  |  | | antibodies |  |  | | memory T cells |  |  | | cytotoxic T cells |  |  | |

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_\_

Health 24-2

Edible Vaccines

Directions: Go to the website:

<http://www.quasar.ualberta.ca/edse456/apt/webquests/vaccines/>

and complete steps one and three below. We will be researching edible vaccines and the controversy surrounding them.

Background information: Imagine that instead of going to the hospital to get a needle you could simply eat a piece of fruit or a vegetable and be vaccinated for any number of communicable diseases. Sound like something from a *Star Trek* episode? Well, scientists are currently working on designing edible vaccines through genetic modification of plants. Their goal is to engineer a plant that can produce antigens for a given pathogen and that can be ingested to induce an immune response. Much research is yet to be done in this field, and the issue still remains controversial, but scientist may one day soon invent a banana or a potato that contains the necessary antigens to be used as a vaccine.  
  
As you can probably imagine, there would be many benefits to such a vaccination process. However, there are also many potentially harmful impacts that this technology could have on people, society, and the environment.

**\*\*Skip Step 2**

STEP 3: A Look at Edible Vaccines

You need to familiarize yourself with the topic of edible vaccines (since this is what the entire debate is about!). Read the selected portion of the Scientific American article titled "Edible Vaccines" by clicking here. Use the information found in this article (as well as your previous knowledge of the immune system and the figure entitled "How Edible Vaccines Provide Protection" found at the end of the article) to write a short paragraph that includes the following elements:

- the purpose of a vaccine in any form

- how a vaccine carries out this purpose (ie. a brief description of the effects on the body's immune system in preparing itself for a disease)

- why some scientists feel that an edible vaccine would increase mucosal response as compared to an injected vaccine