



Howard Hughes Medical Institute: HHMI Bulletin, March 2002; Student Activity

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Fill in the blanks below by reading the descriptions of a variety of scientific studies.

Choose the Online Feature: 10 Are Stem Cells the Answer?

Douglas A. Melton's single, overriding goal is

_____.

He states that only stem cells have "_____."

This study will impact patients with _____ as well as diabetes. The hardest part of the study will be coaxing primordial ES cells into just the _____ that secrete insulin in response to blood sugar. These cells will have to be _____ into the patients and the researchers will also have to find ways to prevent _____.

Melton has already worked with cells from the _____ and the _____ organisms.

Melton collaborated with the Boston IVF and used _____ that were left over from fertility treatments, with the _____.

The article explains the most recent work as "extremely encouraging," but why is the procedure also described as "not perfect?"

Choose the Online Feature: 26 Microbes vs. Humans: Who's Winning?

Bacteria are constantly _____. Worldwide, infectious diseases remain the single greatest _____. Why is there great optimism among researchers? _____

A *Salmonella enterica* bacteria must:

Survive _____

Then endure _____

Next penetrate _____

Finally _____

The *Legionella pneumophila* avoids the normal defense mechanisms in the lung by producing proteins that allow it _____.

What is the consequence of bacteria multiplying very quickly and introducing genetic changes constantly? The microbes are continually _____.
Many microbes can also acquire DNA _____.

List three ways that bacteria cause "horizontal transfer" of DNA:

DNA travels in _____ or in _____

Bacteria can also absorb DNA from other organisms.

Pathogenicity islands are described as long stretches of DNA that

Describe two virulence factors of the *E.coli* dubbed O157:H7.

The classic _____

DNA that codes for _____

Complete this statement by Finlay. "What has really changed the way that scientists view horizontal transfer of DNA in bacteria was the "recognition of pathogenicity islands, _____"

How do scientists gauge the degree of horizontal gene transfer?

Why do the experts not expect that we'll win the war against infectious diseases anytime soon?
