bio 3

11 -10-11

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Exam: due Nov. 22 (Tuesday)

-will be posted to blackboard

-that week, there will not be lab

-though do have lab our next week

-Keep up in reading!

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**Biotechnology** has the potential for improving human health

-biotech based on the ability to manipulate DNA

*Genetic Engineering*: adding/deleting/transplanting genes from one org to another to change org's in useful ways

**Biotech advances in human health:**

-3 categories

**(1.) produce medicines to treat diseases**

-simplest and we are doing this

-ex. treatment of diabetes, use of bacteria to make human insulin

-ex: human growth hormone, use of bact. to create it to help w/undersized children

-ex: erythropoietin (EPO), tells body to make more red blood cells, use of bact to creat it, helps people with cancer

**(2.) curing diseases**

-we are struggling with this

-gene therapy

-ex: bubble-boy, rare genetic disease where child is born w/o an immune system

-cure was to pull marrow out of bones, sterilize, inject w/correct genetic code bone marrow.

-did cure the disease, until they died later of cancer

-**Gene Therapy Difficulty:**

1. problem getting the good gene into the right cells

2.problem getting the good genne into enough cells/right rate to have the right effect

3. problem of the transfer organism getting into the wrong cells

**(3.) preventing diseases in the first place**

-struggling with this

-answering q's at 3 points in time:

-1) set of parents likely to produce child w/genetic disease?

2.) will baby be born w/genetic disease?

**Genetic Engineering:**

-long history = humans started long ago with selective breeding/farming

-selecting for specific characteristics

-difference now: can now isolate the gene we want and take \*just\* those genes

-ex: taking genes of plants that can withstand round-up, put in agriculture

-then can more easily take out the weeds

**Problem w/genetic engineer:**

-question not "can we?", it's "should we?"

**5 Steps of Biotech**

1. chop (the dna from donor)

2. amplify (make more)

3. Insert (the diff. DNA pieces into bacteria)

4. Grow (diff. bacteria colonies, each w/different pieces of DNA)

5. Identify (the bacteria that has the DNA containing the gene you want)