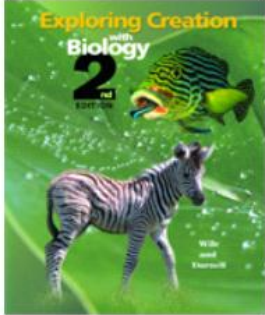



# Genetic Lab

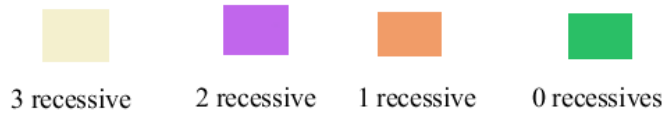
Monday, November 02, 2009  
3:47 PM

VoiceThread <http://voicethread.com/share/1280880/>

Run time in class of about 40 minutes.

Slide	Notes																														
<div data-bbox="347 558 610 871"></div> <div data-bbox="646 596 899 709"><h2>Module 08: Genetics</h2></div> <div data-bbox="295 911 769 1058"><p>Lecture 1: Mendel and His Research Lecture 2: Punnett Squares Pedigrees Sex-linked Genetic Traits Genetic Disorders and Diseases</p></div> <div data-bbox="240 1075 519 1150"><p> Lab Day Interactive Practice</p></div>																															
<div data-bbox="370 1272 799 1356"><h1>Baby Boom</h1></div> <div data-bbox="302 1419 935 1575"><p>The genotype and phenotypes will be set using the DNA from the mother (M) and the father (F) of our alien offspring. As a class, select to have each bar coded as red for dominant or green for recessive. Then carry the information forward to each screen coding the correct traits on a screen by screen basic cummunlating in a finished alien offspring.</p></div> <div data-bbox="220 1709 997 1856"><table border="1"><thead><tr><th></th><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th><th>8</th><th>9</th><th>10</th><th>11</th></tr></thead><tbody><tr><th>M</th><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><th>F</th><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></tbody></table></div>		3	4	5	6	7	8	9	10	11	M										F										<p>Change the black bars to red or green as the class votes between the two colors.</p> <p>Copy/paste the bars as needed on each page.</p>
	3	4	5	6	7	8	9	10	11																						
M																															
F																															

# Skin Color



Red is dominant. Green is recessive.

# Face Shape



## Horns



spiral horns



recessive

## Lip Shape

thick



thin



## Eye Shape

round



oval



## Eye Color

- 0 recessive
- 1 recessive
- 2 recessive
- 3 recessive

## Eyebrows

thick



thin



## Incomplete Dominance Trait: hair type

straight

wavy

curly

# Hair Color

- 0 recessive
- 1 recessive
- 2 recessive
- 3 recessive



Final alien from 2010



From 2010



From 2010



From 2011



# Microarray

<http://learn.genetics.utah.edu/content/labs/microarray/>

With microarray scientists can learn about every gene in one single experiment!

Genomics is a way to study many genes at one time.

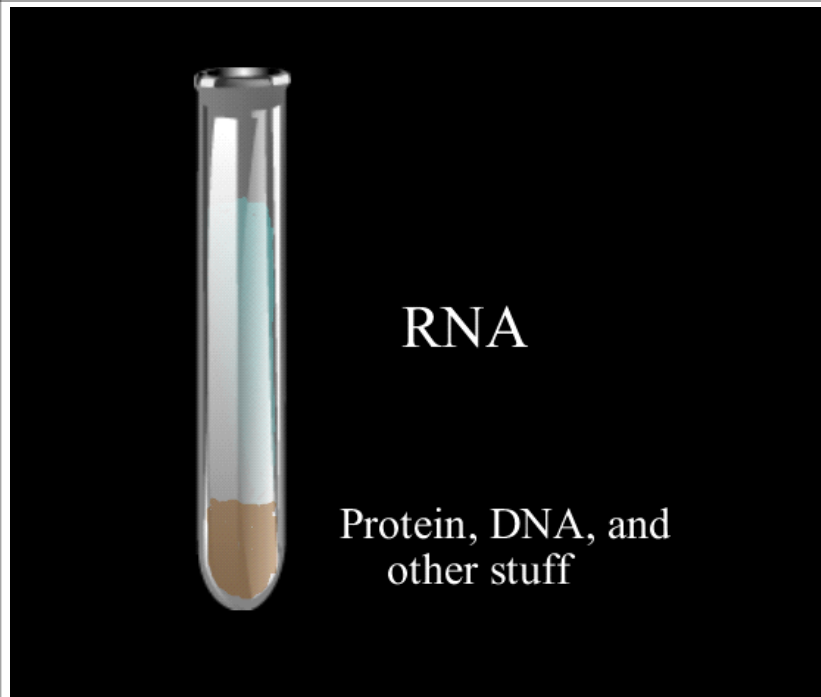
With a few exceptions, every cell in our body contains copies of each of our 20,000 genes.

Some genes are turned on while others are turned off.

If a gene is turned on, it will be churning out mRNA (being expressed)

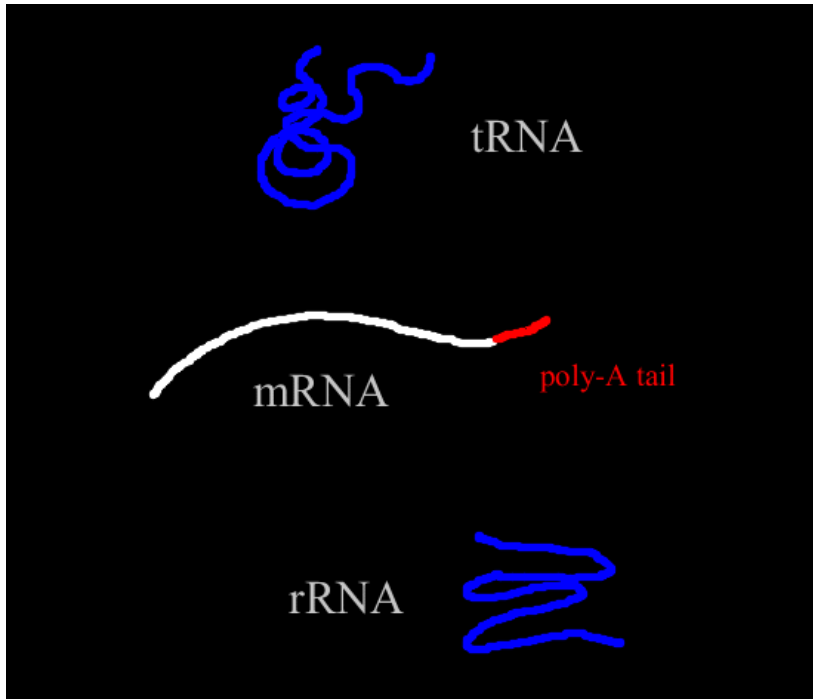


1. Collect tissue sample from normal and a cancerous areas (scrape the area of brown and then regular skin on Sarah's arm and place in the petri dishes).
2. Add solvent and mix well.
3. Centrifuge it



Collect the liquid portion to continue on with.



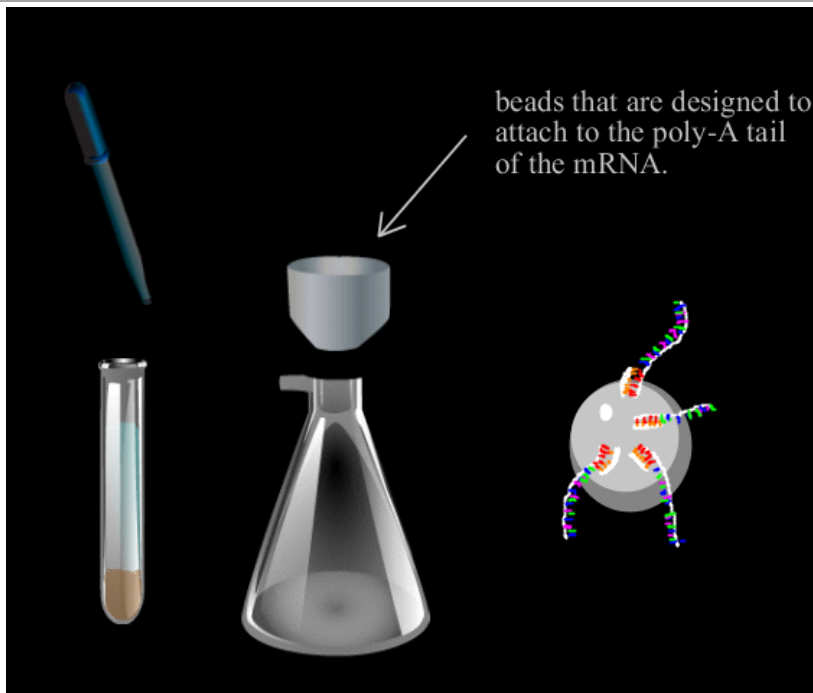


The sample contains several different types of RNA.

Transfer RNA

Messenger RNA - always ends in a poly A Tail

Ribosomal RNA



We will wash the RNA sample over special beads that bind to poly A Tails.

The waste will be in the flask and what we want will be in the filter.

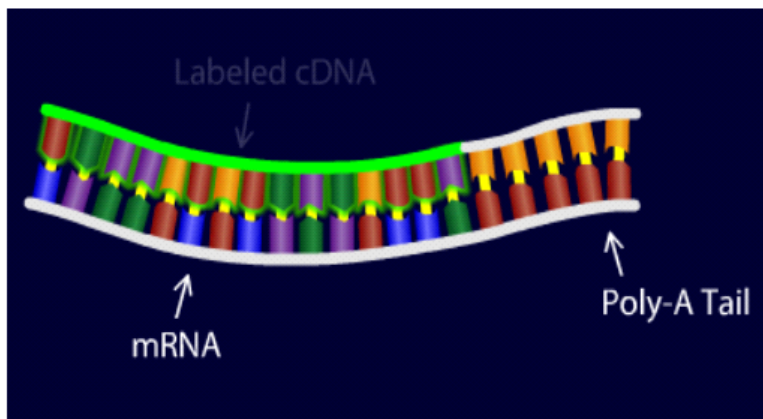


Now we will wash the buffer solution over the two columns to detach the mRNA from the beads

Flasks contain the mRNA we want.

Add a color code to code between the cancer and the healthy tissue.

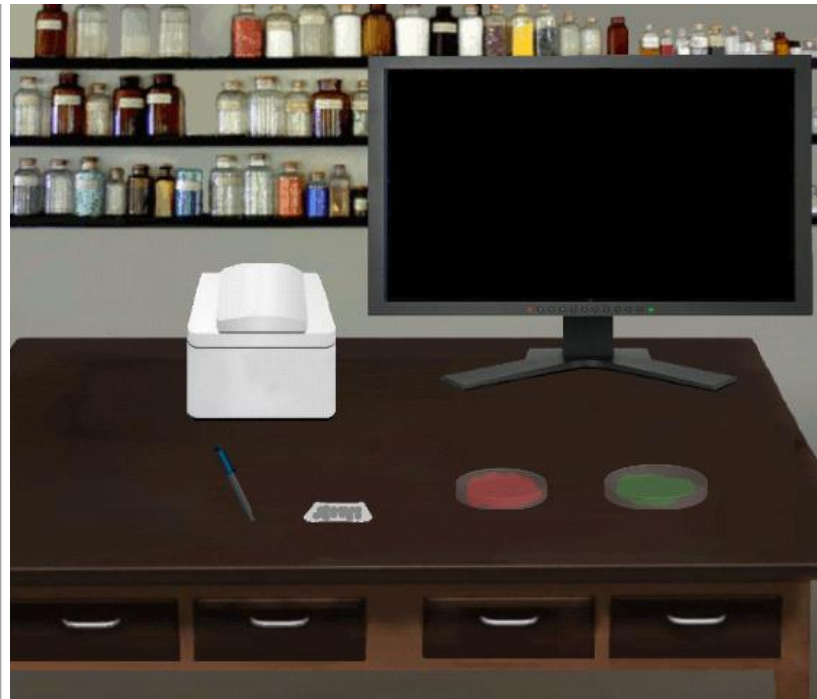
Stick to the microarray are little piles of single stranded DNA. A single spot contains many copies of the same strand.



Each nucleotide will come in to place with a special labeling system .

Then the mRNA is degraded leaving only the DNA.

We no longer have mRNA.  
We now have DNA pieces  
the size of individual genes.



Both the red and green is placed on the microarray.

Our computer database has a list for what gene is in each spot on the microarray.

Washing solution to clear the un-hybridized DNA away.

Scan -

**TEACHER NOTE: The black screen on the monitor pulls away to reveal the color code.**

Red and green = yellow (on just the same so not a key to cancer)

Green - genes turned down in cancer

Red are genes turned up in cancer cells.

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Gene 4263 is a gene turned up in cancer. It produces a protein whose job it is to turn down the expression of several other genes.

In cancer the gene is defective