20.999 DNA and Health in 15 Minutes

Wednesday, August 28, 2012

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Course Overview

Genome

- The Genome
- DNA Structure/Function
- DNA Modifications & Mutations

Genomic Stability

- Mutations & Cancer
- Other Genetic Diseases

Genetic Engineering

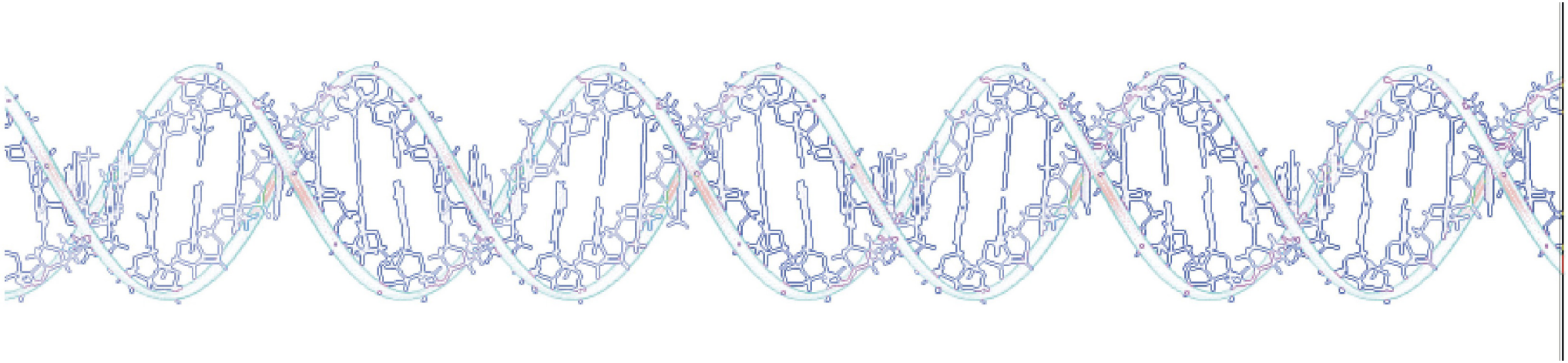
- Gene Manipulation
- Genetic Engineering
- Gene Therapy

Today's Nanolecture:

The Genome
DNA Structure

The Genome

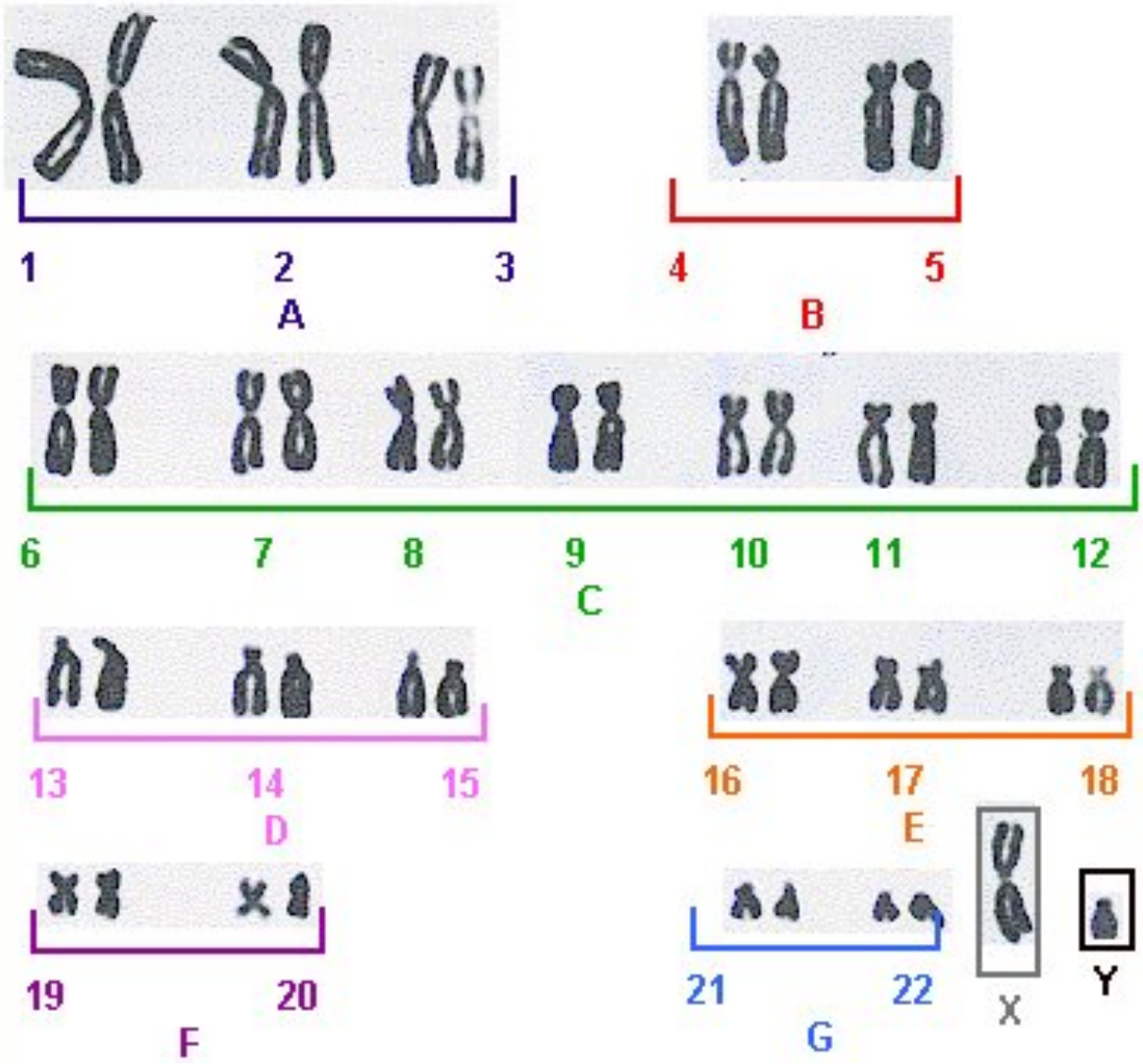
How Did Species Evolve?



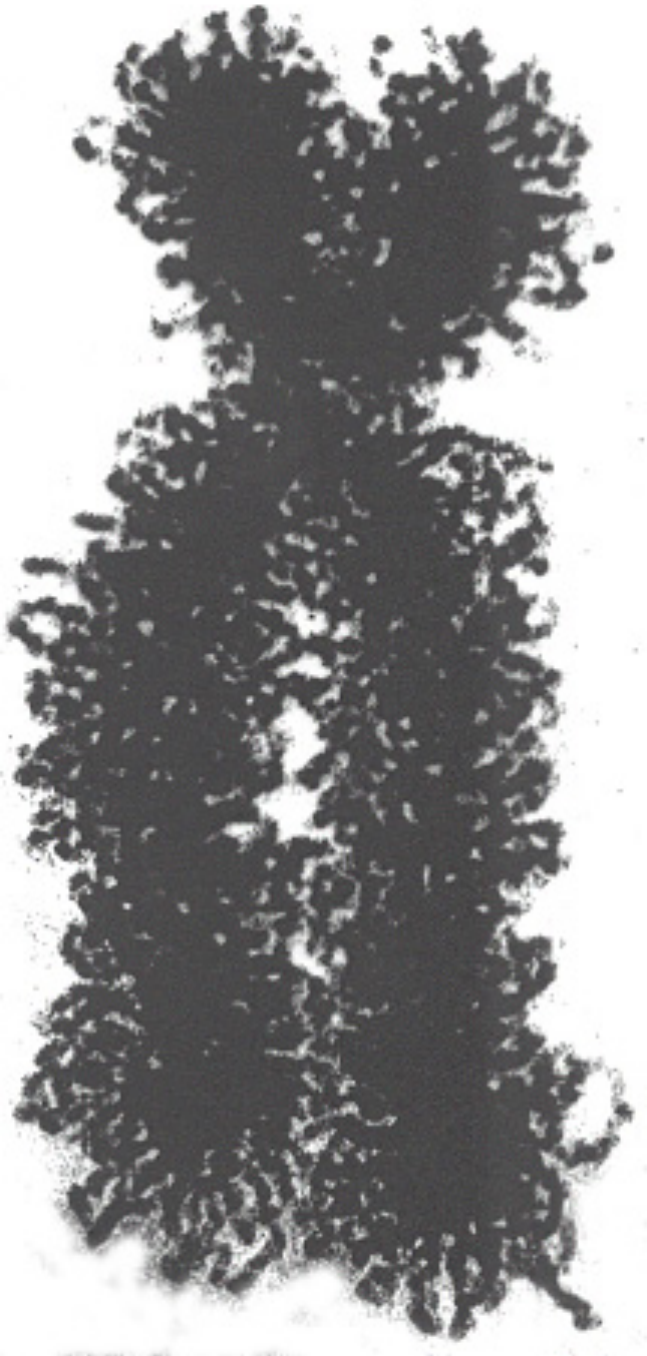
Ability to reproduce.

Ability to create progeny similar to self.

Human Chromosomes

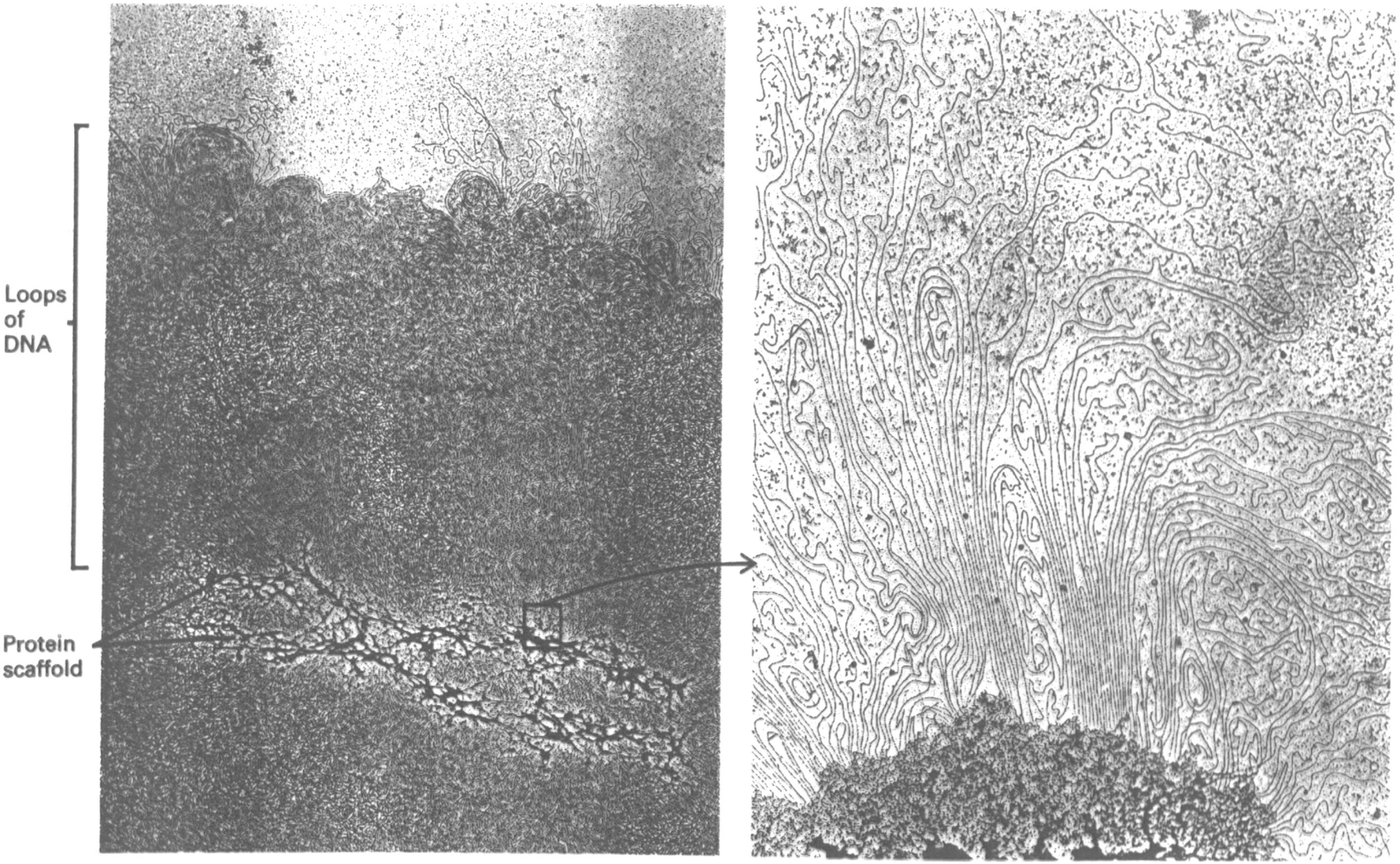


http://homepages.uel.ac.uk/V.K.Sieber/human.htm



Samdberg

Decondensing the Genome



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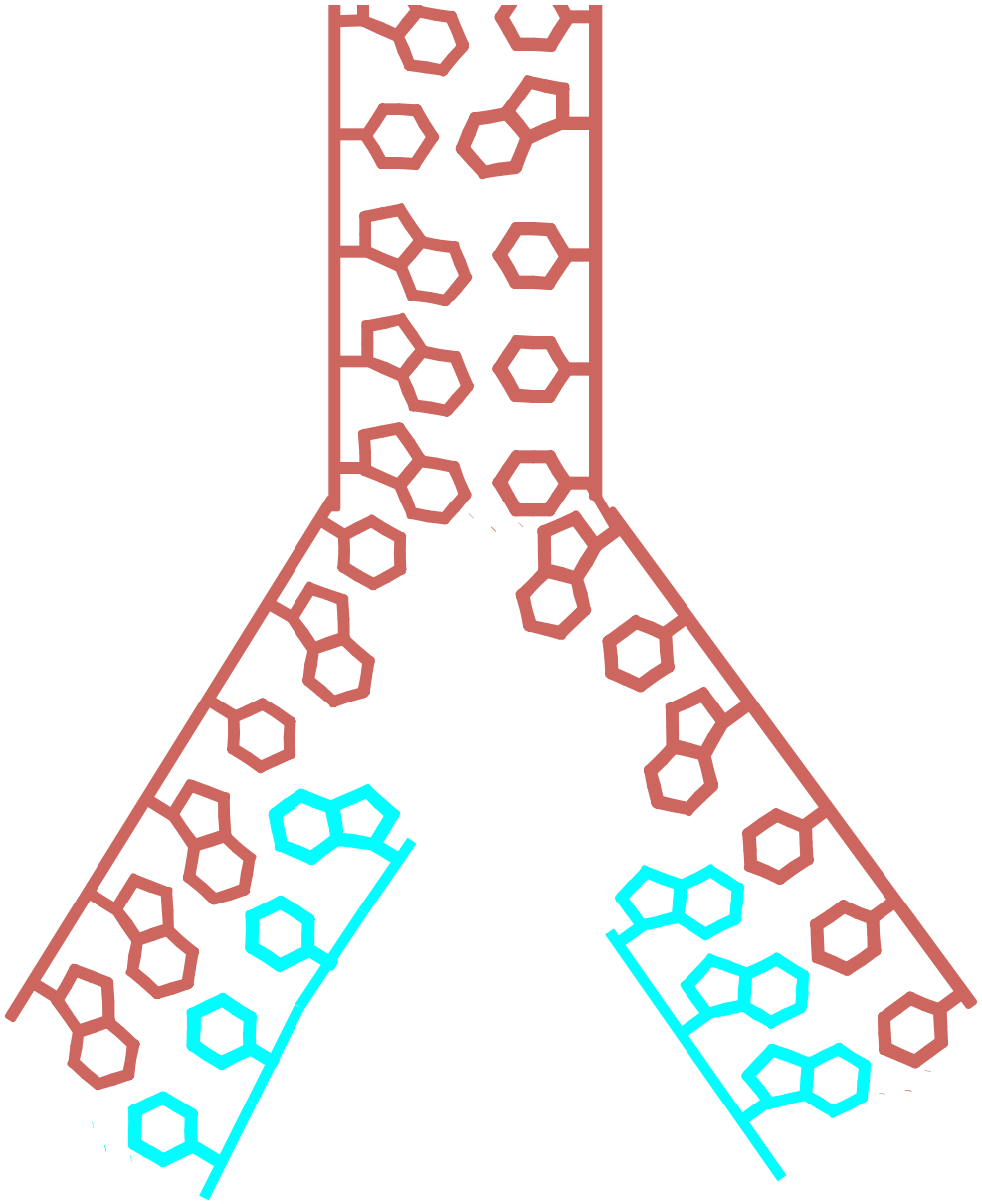
Semi-Conservative Replication



Replication Fork

Howard Hughes Video on DNA Replication

http://www.youtube.com/watch?v=gL3aigv7w4A&feature=player_detailpage

DNA Structure

Knowledge about structure will help you to understand how modifications to DNA impact:

-cellular function
-genomic instability
-disease

First Step: Knowing DNA Structure

On the blackboard:

Draw Guanine

First Step: Knowing DNA Structure

In class exercise:

Draw the DNA bases

Take-Home Messages

The Genome

-transmission of genetic information

-immense size

-semiconservative replication

DNA Structure

-rules for drawing the DNA bases

Knowledge about structure will help you to understand how modifications to DNA impact:

-cellular function

-genomic instability

-disease

Start with a context slide for the class

Put the materials you will cover into context with a course outline

Tell them what you will cover

Remind them why what you are covering is important

Provide a biological framework for the subject

When appropriate, use multimedia

Incorporation of learn/apply

Summary - reemphasis