Ch. 6 Notes

Chromosomes and Cell Division

Understand and be able to describe the different types of cell division and shat is the difference between

* Fission
* Mitosis
* Meiosis

6.3 PROKARYOTIC CELL DVIISION: CAUSED BY BINARRY FISSION

- COPY DNA and cuts itself in half

EUKARYOTIC CELLS

2 kinds of cell division

In somatic cells

* mitosis

IN GAMETES

* MEIOSIS – 2 copies of DNA to 1 copy

6.10 Sexual reproduction requires special cells made by meiosis.

Meiosis generates sperm and eggs and a great deal of variation

* Meiosis has two important features:

It reduces the amount of genetic material in gametes

* It produces gametes that all differ from

Outcome of Meiosis

Cellular fission

* Who , why? Result?
* Mitosis
* Who? Eukaryotic Cells. Why? Growth / repair Where? All cells. When? All the time. Results? Identical cells
* Meiosis
* Who Where? Testicals or ovaries Why? Result? Produce sperm or egg

What controls Cell Division?

* How does a cell know when it is time to stop dividing or start?

Uncontrolled Cell Division.

* IS A PROBLEM
* A BIG PROBLEM
* YOU CALL IT CANCER

Area of Research!

WE DON’T FULLY UNDERSTAND THESE PROCESSES!

But we do know of 2 ways Cell Division is controlle!

* 1. Contact Inhibition
* 2. Cell Senescence

We are just beginning to understand the process of Cell Senescence

CELL SENESCENCE

MOST CELLS KEEP TACK OF HOW MANY TIME THEY DIVIDE.

* Essentially they are tming their lives!
* When they reach the pre-planned # of divisions they off themselves

TELOMERES – human telomeres contain thousands of repeats of the six nucleotide sequence

* The telomere is like a protective cap at the end of the DNA
* Every time a cell divides, the telomere gets a bit shorter

Apoptosis

When you clip off all of your repeats, what happens then?

Continued cell division would then start cutting off bits of functional DNA

So the cell could not function

What happens if the tie r does not work?

What happens if the cell just keeps dividing?

Cell division out of control is caner

CANCER

* Unrestrained cell growth and division
* Can lead to tumors
* The second leading cause of death in the United States!

Tumor Growth

* Unregulated cell division

Take home messages:

Cell division is an ongoing process in most organisms and their tissues; disruptions to normal cell deivision can have serious consequences.

In eukaryotic cells, a protective section of DNA called the telomere, at each end of every chromosome, plays a role in keeping track of cell division, getting shorter every time the cell divideds.

Asexual reproduction ca be fast and efficient.

But, asexual reproduction leads to genetically identical offspring.

Sexual reproduction advantages?

Sexual reproduction lead to offspring that are all genetically different from each other and from either parent in three different ways