Mitosis!

View it at www.sciencemusicvideos.com

Glenn Wolkenfeld © 2012

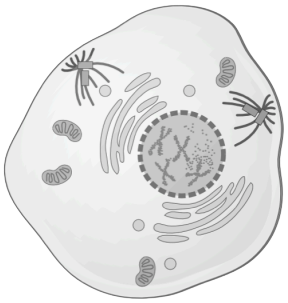
Interphase is cell division's longest part,
Nuclear membrane's intact as it starts,
The cell's growing, cytoplasm flowing,
Chromosomes get duplicated, DNA gets replicated

Interphase

Chromosomes are spread out so they can't be seen distinctly
But note the nucleolus, the ribosome factory
Outside the nucleus are two centrosomes,
They later make a spindle which will pull apart the chromosomes.

Prophase follows, the chromosomes condense,
Each is made of two sister chromatids, like an "X"
Each sister is a clone, the closest of kin,
And a centromere connects them like Siamese twins,

Doubled Chromosome (Two sister chromatids)



Prophase (early)

The nucleolus disappears it melts away,
As the cell takes a ribosome production holiday,
The centrosomes separate, start spindle formation
For separating chromatids and cell elongation.

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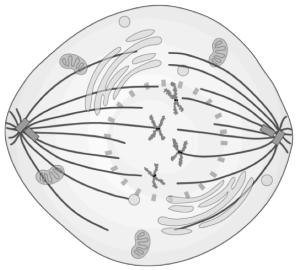
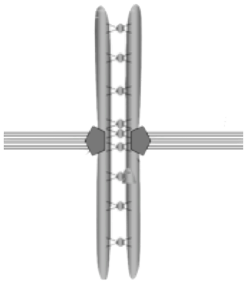
Mitosis, chromosomal ride
Inter-, pro-, meta-, ana-, telophase, divide
Eukaryotes go from one cell to two,
Mitosis, how cells renew.



Late prophase (prometaphase)

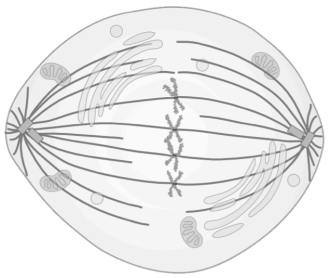
In late **prophase** (**prometaphase)**,
The nuclear membrane disintegrates,
The centrosomes migrate to the cell's opposing sides,
And between them the fibers of the spindle wend and wind,

The spindle's made of microtubule fibers which attach
To chromosomes at kinetochores, a protein patch
That serves like a handle that the fibers can grasp,
When they pull apart the chromosomes, splitting them in half,



Sister chromatids. Kinetochores visible on outside with spindle fibers.

The spindle moves the chromosomes with nudges so fine,
Into linear formation on the 50 yard line
A location equatorial defining **metaphase**,
Where the chromosomes are lined up on that middle place



Metaphase

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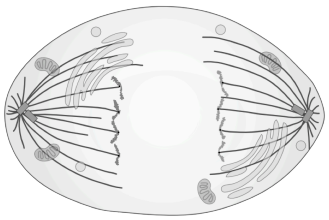
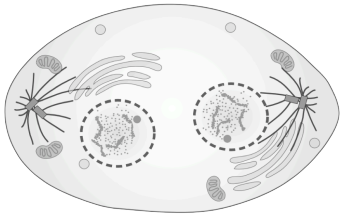
The spindle fibers pull on the kinetochores,
A cellular molecular mitotic tug of war,
The centromere snaps, sisters get separated,
Now these chromatids are chromosomes, they've been upgraded



Anaphase

This snapping separation defines **anaphase**
The "A" for "apartness", for moving different ways,
Kinetochore spindle fibers separate the sisters
See 'em waving goodbye, calling out "I'm gonna miss ya,"

And the other spindle fibers push and grapple like felons
Makes the cell elliptical like a watermelon,
In **telophase** membranes form 'round the chromosomes
Which spread out as the nucleoli come on home



Telophase

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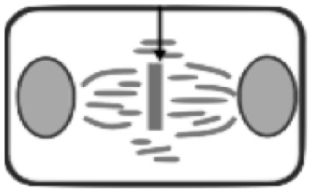
In animal cells there's a ring of micofilaments
That form at the equator and they cinch themselves in
Tighter, tighter, tighter, tighter 'til the cell is in two pieces,
Yeah in animals, that's **cytokinesis**

Cytokinesis (Animal)

But it's different in plants in them the cell divides
By building a new cell wall from the inside
As the Golgi sends vesicles with cellulosic goo,
Which makes a plate, then a wall, divides the cell in two



Cytokinesis (Plant), showing cell plate formation

And instead of one mother cell we now have daughters two
Identical twins, kind of old but kind of new,
From your single celled beginning this is how you grew
And for single celled eukaryotes it's reproductive too!