The Cell Cycle – Interphase and Mitosis

The life of a cell begins with **interphase,** specifically **G1.**
A time of **protein synthesis**, its life has just begun!

Transcription, then **translation,** it does continuously.
Working from the relevant **genes**, copied ploddingly.

The **surface area to volume ratio** begins to get **too low,**
gas exchange is compromised, **diffusion** is too slow!

Cell division is necessary, so **cyclins** urge along conversion.
First **D**, now **E**, then **A**, then **B**; continuous coercion!

DNA replication must occur, here in the **S-phase,**
remember it happens **now**, and **never** in **prophase**!

Helicase unlocks **base pairs**, breaking the **hydrogen bonds.**
DNA polymerase then adds **nucleotides** that **correspond**!

Once **replication** is complete, **G2 phase** can take place.
The cell is **duplicating organelles**, running out of space!

Cyclin B ensures that **mitosis** will shortly commence.
P for **Prophase** is the first step of that sequence.

The **nuclear envelope** must be broken away,
while **spindle microtubules** are forming their array.

Supercoiling sister chromatids are becoming **visible.**
The **centromere** holds them close, but still distinguishable.

In **metaphase**, those **sister chromatids** do **align**,
along the **equatorial plane** – look for this sign!

Spindles are anchored oppositely to the **centromere.**
They pull them apart, et voila! Two **chromosomes** appear!

Anaphase is this dragging through the **cytoplasm.**
They were sisters once, but now there is a chasm.

The pinching of the membrane, **telophase** soon begins,
cytokinesis at last splits the cell, forming nuclear twins :D

×MJ

Revision Questions

1. State the order of the stages of the life cycle of a cell:

   Interphase: _____ , _____, _____
   Mitosis: _____, _____, _____, _____

2. State the order of the cyclins.

3. Name the two processes that are needed for protein synthesis.

4. State the name of the phase when DNA replication occurs:

5. Explain the role of helicase.

6. Explain the role of DNA polymerase.

7. Describe three changes that occur in a eukaryote during prophase.

8. Label the relevant parts on this diagram:

9. Define cytokinesis.

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The life of a cell begins with _____**,** specifically ___**.**
A time of _____ **synthesis**, its life has just begun!

Transcription, then _____**,** it does continuously.
Working from the relevant _____, copied ploddingly.

The **surface area to** _____ _____ begins to get **too low,**
gas _____ is compromised, **diffusion** is too slow!

Cell division is necessary, so **cyclins** urge along conversion.
First **D**, now **E**, then __, then __; continuous coercion!

DNA _____ must occur, here in the __**-phase,**
remember it happens **now**, and **never** in **prophase**!

_____ unlocks _____ **pairs**, breaking the _____ **bonds.**
DNA _____ then adds _____ that **correspond**!

Once _____ is complete, ___ **phase** can take place.
The cell is **duplicating** _____, running out of space!

Cyclin ___ ensures that _____ will shortly commence.
P for _____ is the first step of that sequence.

The **nuclear** _____ must be broken away,
while **spindle microtubules** are forming their array.

Supercoiling _____ **chromatids** are becoming _____**.**
The **centromere** holds them close, but still distinguishable.

In _____, those **sister** _____ do **align**,
along the _____ **plate** – look for this sign!

Spindles are anchored oppositely to the _____**.**
They pull them apart, et voila! Two _____ appear!

_____ is this dragging through the **cytoplasm.**
They were sisters once, but now there is a chasm.

The pinching of the membrane, _____ soon begins,
cytokinesis at last splits the cell, forming nuclear twins :D

×MJ