

INKBIOLOGY FLASHCARDS

Cell cycles, reproduction and development

Unit B06 · 15 cards · fronts and backs

Print double-sided, flipping on the long edge, and each answer lands behind its question. Cut along the card borders.

Definitions in mark-scheme wording, and the misconceptions that lose marks. These cards and each lesson's whole-lesson check run on the website with spaced-repetition scheduling, at inkphysics.co.uk/biology/flashcards.

DEFINITION

Define: Chromatid.

THE CELL CYCLE: GROWTH, COPYING, AND ONE DIVISION THAT CHANGES NOTHING. THE CELL CYCLE: GROWTH, COPYING, AND ONE DIVISION THAT CHANGES NOTHING.

DEFINITION

Define: Homologous pair.

DEFINITION

Define: Spindle.

THE CELL CYCLE: GROWTH, COPYING, AND ONE DIVISION THAT CHANGES NOTHING. THE CELL CYCLE: GROWTH, COPYING, AND ONE DIVISION THAT CHANGES NOTHING.

DEFINITION

Define: Mitotic index.

SPOT THE ERROR

Say what is wrong with this claim:

Cells spend most of their lives dividing, and interphase is the resting phase between divisions.

THE CELL CYCLE: GROWTH, COPYING, AND ONE DIVISION THAT CHANGES NOTHING. THE CELL CYCLE: GROWTH, COPYING, AND ONE DIVISION THAT CHANGES NOTHING.

DEFINITION

Define: Stem cell.

DEFINITION

Define: Self-renewal.

STEM CELLS: WHAT A CELL CAN STILL BECOME, AND WHAT FIXES IT. STEM CELLS: WHAT A CELL CAN STILL BECOME, AND WHAT FIXES IT.

DEFINITION

Define: Differentiation.

DEFINITION

Two chromosomes of the same size carrying the same genes at the same loci, one inherited from each parent. Not the same thing as a pair of chromatids.

THE CELL CYCLE: GROWTH, COPYING, AND ONE DIVISION THAT CHANGES NOTHING

DEFINITION

One of the two identical copies of a chromosome, joined to its sister at the centromere after DNA replication.

DEFINITION

The proportion of cells in a sample that are visibly in mitosis.

THE CELL CYCLE: GROWTH, COPYING, AND ONE DIVISION THAT CHANGES NOTHING

DEFINITION

The framework of protein microtubules built across the cell before the chromosomes are moved, running from pole to pole and attaching to every centromere; shortening the fibres is what separates the chromatids.

DEFINITION

An unspecialised cell that can divide repeatedly to produce more cells like itself, and can differentiate into one or more specialised types.

STEM CELLS: WHAT A CELL CAN STILL BECOME, AND WHAT FIXES IT

SPOT THE ERROR

Interphase is the busiest part of the cycle, not a rest. The whole genome is replicated during it and then checked, which is where most of the time goes. Mitosis is the short part at the end.

DEFINITION

The process by which a cell becomes specialised, through transcription of some of its genes and not others.

STEM CELLS: WHAT A CELL CAN STILL BECOME, AND WHAT FIXES IT

DEFINITION

Division that produces at least one daughter cell identical to the parent stem cell, so the population of stem cells is maintained.

DEFINITION

Define: Potency.

STEM CELLS: WHAT A CELL CAN STILL BECOME, AND WHAT FIXES IT

SPOT THE ERROR

Say what is wrong with this claim:

A stem cell can become any kind of cell,
which is what makes it a stem cell.

DEFINITION

Define: Acrosome.

GAMETES AND FERTILISATION: FROM TWO CELLS TO A BLASTOCYST

DEFINITION

Define: Zona pellucida.

DEFINITION

Define: Cortical granules.

GAMETES AND FERTILISATION: FROM TWO CELLS TO A BLASTOCYST

DEFINITION

Define: Polyspermy.

SPOT THE ERROR

Say what is wrong with this claim:

Fertilisation is a race, and the fastest sperm
is the one that gets in.

GAMETES AND FERTILISATION: FROM TWO CELLS TO A BLASTOCYST

SPOT THE ERROR

Very few cells can become anything, and only for a few days. The stem cells in bone marrow are multipotent: they make blood cells and nothing else. Even a pluripotent cell from an embryo cannot build a placenta. Potency comes in four named levels, and totipotent is the one that gets over-claimed.

STEM CELLS: WHAT A CELL CAN STILL BECOME, AND WHAT FIXES IT

DEFINITION

The range of cell types a stem cell is still able to become.

DEFINITION

The glycoprotein coat outside the egg's cell surface membrane, carrying the receptors a sperm binds to.

GAMETES AND FERTILISATION: FROM TWO CELLS TO A BLASTOCYST

DEFINITION

A vesicle at the front of a sperm head containing hydrolytic enzymes, which are released to digest a path through the layers around the egg.

DEFINITION

Fusion of more than one sperm with a single egg, which gives a cell with too many chromosome sets to develop.

GAMETES AND FERTILISATION: FROM TWO CELLS TO A BLASTOCYST

DEFINITION

Vesicles lying just inside the egg's cell surface membrane, whose contents are released at fertilisation and change the zona pellucida.

SPOT THE ERROR

Speed decides nothing. Whichever sperm arrives first still has to bind to a receptor on the zona pellucida and digest a path through it, and what stops the next one is the cortical reaction: fusion alters those receptors and hardens the coat, so no other sperm can bind at all.

GAMETES AND FERTILISATION: FROM TWO CELLS TO A BLASTOCYST