- Have a large cytosol
- Rapid cell divisions called 'cleavage divisions' •
- Has S and M phase •
- No DETECTABLE G1 and G2

Role of chemicals in cell cycle

Cell fusion experiment 1

- Fuse S and G1 phase
- DNA synthesis initiates in G1 nucleus
- Thus there is something in S that causes DNA synthesis and that these factors can freely diffuse between the nucleus and cytoplasm... (we now know these are cdks!)

Cell fusion experiment 2

- Fuse M phase nucleus with G1 •
- G1 nucleus immediately enters M phase
- Chromosomes were not replicated thus there is no S phase •
- Although the spindle formed and chromatin condensed and nuclear envelope did kreak Thus something in the M phase indices interphase cells to dividee, CO, U <u>I cycle control system</u>

The cell cycle control system

- es in cell division Regulates progression to ackt st 0
- There are 3 main that ition points- see diggrar. These can be described as checkpoints; \circ which check to see if the cell is ready to carry on to e 2 heckpoints-mole D next stage
- If there is DNA damage; stages can be delayed, cell arrest can occur to repair the damagecell can enter long temporary period of non-proliferation known as G0 or permanent damage can result in apoptosis
- There are 3 transition points- G1-S G2-M and Metaphase-Anaphase (see diagram)
- G1 checkpoint is where the restriction point is reached- to ensure cell is destined for M phase
- G2 checkpoint ensures all DNA is replicated and is responsible for proofreading; repair of damaged DNA, enter G0 or apoptosis occurs
- Metaphase-Anaphase checkpoint ensures spindles attach appropriately to kinetochore at centromere of chromosomes

(Phosphorylation- addition of a phosphate group to a molecule)

- Cyclin Dependant Kinase (CDKs)- inactive
- CDK is also known as Maturation Promoting Factor (MPF)
- Note that CDK is a kinase- an enzyme that catalyses the transfer of a phosphate group from • ATP to a specified molecule—it is not a phosphorylase or phosphatase!