2.1.1 CELL STRUCTURE: EUKARYOTIC CELLS

Cells with membrane bound organelles e.g. animal and plant cells

Cell membrane
- Made of lipids and proteins – controls movement of substances in and out of cell

Lysosome
- Form of vesicles which contain hydrolytic (digestive enzymes)

Centriole
- Vesicle

Golgi apparatus
- Process and package new lipid proteins

Nucleus
- Controls cell activity and contains DNA

RER
- Synthesises and packages proteins

SER
- Lipid and carbohydrate synthesis and storage

Mitochondria
- Site of aerobic respiration

Only plant cells
- Chloroplasts
  - Site of photosynthesis
- Cell wall
  - Made of cellulose, provides strength and support
- Vacuole

Ribosomes
- 80S – site of protein synthesis

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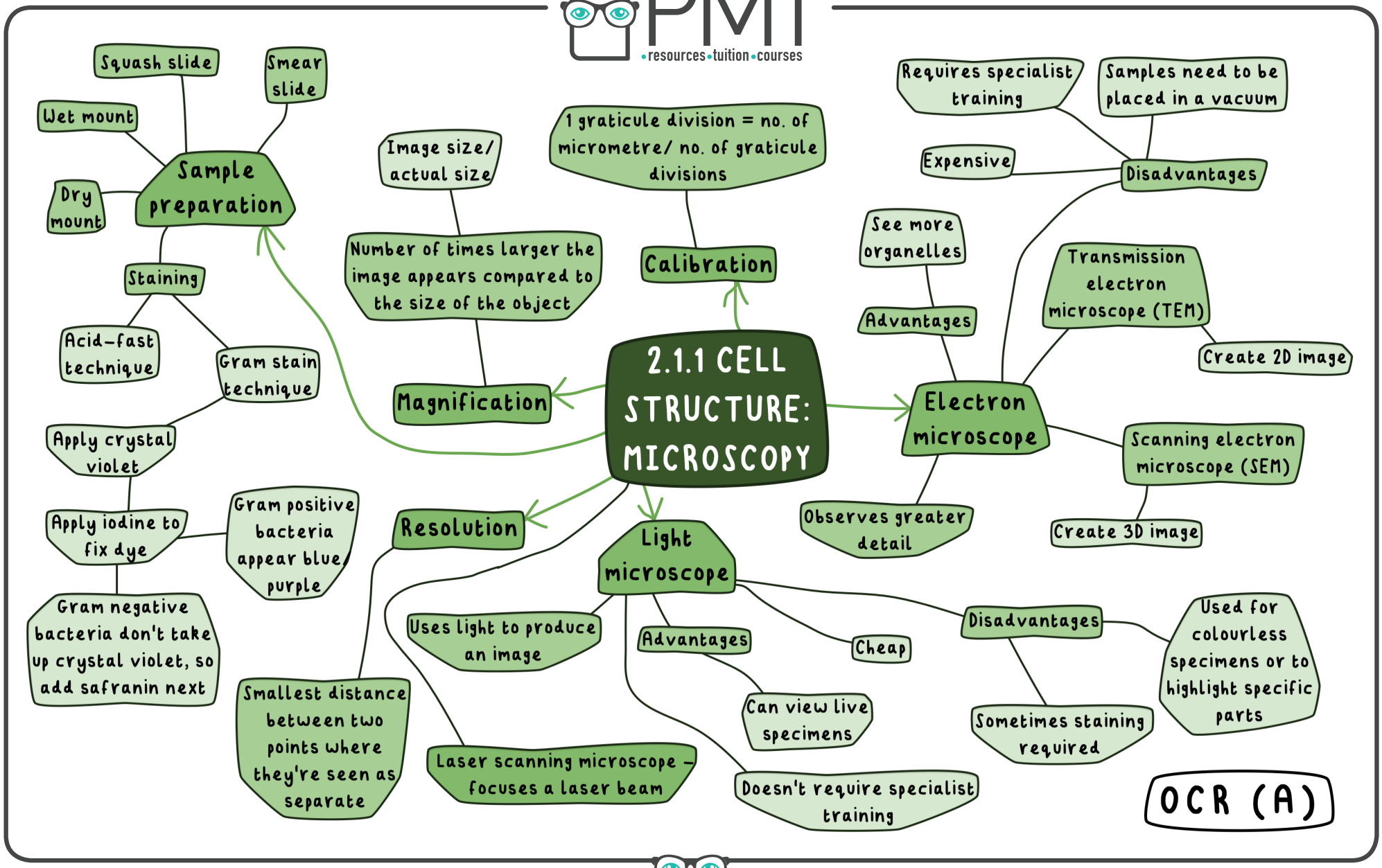
PMT
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2.1.1 CELL STRUCTURE: MICROSCOPY
Sample preparation
Squash slide
Smear slide
Wet mount
Dry mount
Staining
Acid-fast technique
Gram stain technique
Apply crystal violet
Apply iodine to fix dye
Gram positive bacteria appear blue/purple
Gram negative bacteria don't take up crystal violet, so add safranin next
Calibration
1 graticule division = no. of micrometre/ no. of graticule divisions
Image size/ actual size
Number of times larger the image appears compared to the size of the object
Magnification
Resolution
Smallest distance between two points where they're seen as separate
Light microscope
Uses light to produce an image
Advantages
Cheap
Can view live specimens
Doesn't require specialist training
Laser scanning microscope – focuses a laser beam
Disadvantages
Used for colourless specimens or to highlight specific parts
Sometimes staining required
Electron microscope
Advantages
See more organelles
Disadvantages
Requires specialist training
Samples need to be placed in a vacuum
Expensive
Transmission electron microscope (TEM)
Create 2D image
Scanning electron microscope (SEM)
Create 3D image
Observes greater detail
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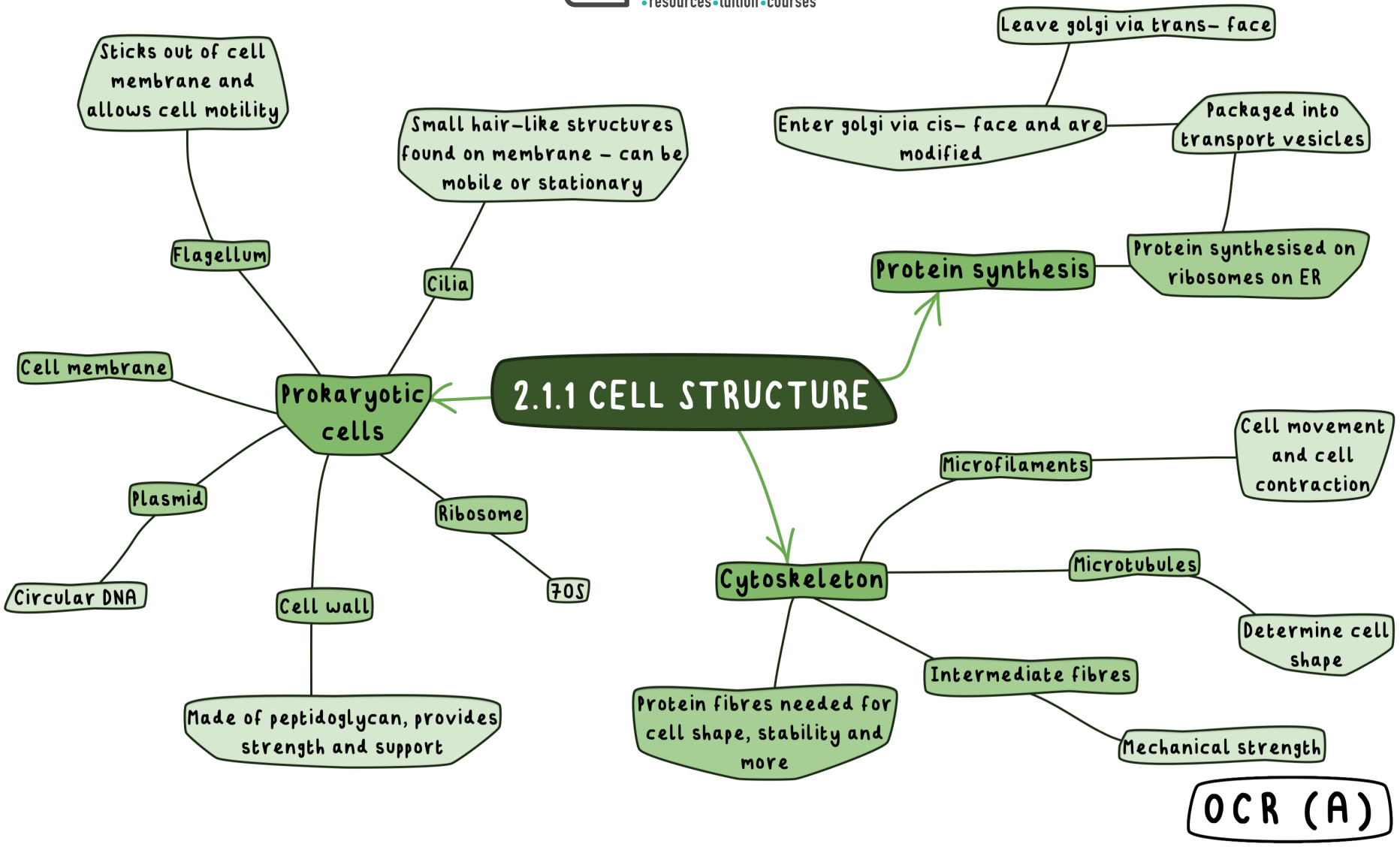
2.1.1 CELL STRUCTURE
Prokaryotic cells
Sticks out of cell membrane and allows cell motility
Flagellum
Small hair-like structures found on membrane – can be mobile or stationary
Cilia
Cell membrane
Plasmid
Circular DNA
Cell wall
Made of peptidoglycan, provides strength and support
Ribosome
70S
Protein synthesis
Leave golgi via trans- face
Enter golgi via cis- face and are modified
Packaged into transport vesicles
Protein synthesised on ribosomes on ER
Cytoskeleton
Microfilaments
Cell movement and cell contraction
Microtubules
Determine cell shape
Intermediate fibres
Mechanical strength
Protein fibres needed for cell shape, stability and more
OCR (A)