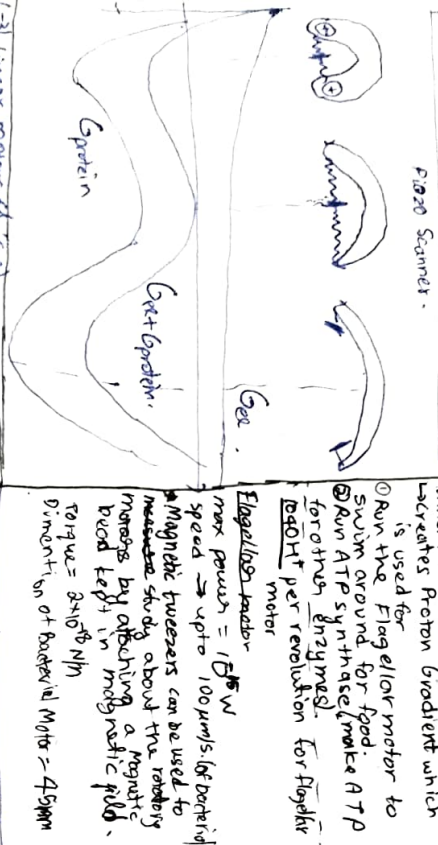
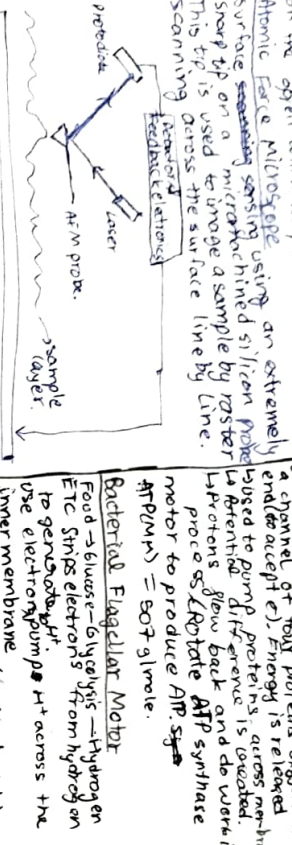


Optical Microscopy
 Use a beam of laser light, focused through a microscope objective lens to trap microscopically illuminated areas to microscopic resolution. When a laser beam passes through an object, it produces changes in direction. A photodiode is placed on the object which keeps it in place.

Atomic Force Microscope
 An extremely sensitive scanning probe. A silicon probe is scanned tip on a microscopically thin sample. This tip is used to trace a sample by raster scanning across the surface line by line.

Fluorescence Microscopy
 A laser beam is focused through a microscope objective lens to trap microscopically illuminated areas to microscopic resolution. When a laser beam passes through an object, it produces changes in direction. A photodiode is placed on the object which keeps it in place.



Linear Motors
 Use of genetic information (genomes) to make proteins (ribosomes).
 Protein → moving things in cells (myosin, kinesin, dynein).
 Myosin → 12 protein domains, 1 cross-bridge, 1 tubulin, 1 tubulin relevant across.
 Kinesin (out) dynein (in).
 Kinesin dimer: initially, then go on. Kinesin dimer: initially, then go on. Kinesin dimer: initially, then go on.

Microscopy
 Use of a beam of laser light, focused through a microscope objective lens to trap microscopically illuminated areas to microscopic resolution. When a laser beam passes through an object, it produces changes in direction. A photodiode is placed on the object which keeps it in place.

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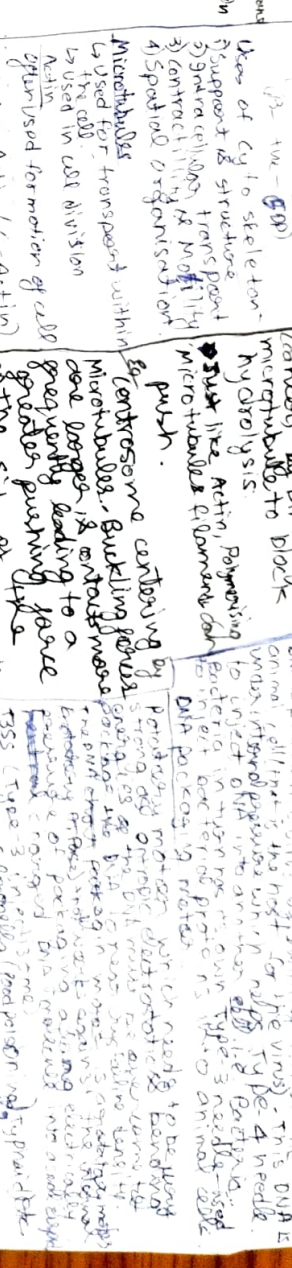
Fluorescence Microscopy
 A laser beam is focused through a microscope objective lens to trap microscopically illuminated areas to microscopic resolution. When a laser beam passes through an object, it produces changes in direction. A photodiode is placed on the object which keeps it in place.

Actin
 A dimeric protein consisting of two subunits. The actin monomer is a globular protein. The actin dimer is a dimeric protein. The actin monomer is a globular protein. The actin dimer is a dimeric protein.

Microtubules
 A hollow tube composed of tubulin subunits. The microtubule is a hollow tube. The microtubule is a hollow tube. The microtubule is a hollow tube.

Centrosome
 A region of the cell where microtubules are organized. The centrosome is a region of the cell. The centrosome is a region of the cell. The centrosome is a region of the cell.

Microtubule Polymerization
 The process by which microtubules are formed. Microtubule polymerization is the process by which microtubules are formed. Microtubule polymerization is the process by which microtubules are formed.



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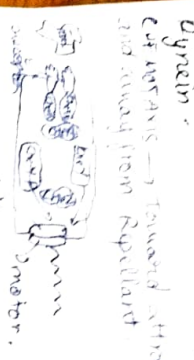
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Leakage of Ca^{2+} from the sarcoplasmic reticulum (SR) driven by ATP. Ca^{2+} is pumped back into the SR by Ca^{2+} -ATPase. Ca^{2+} is released from the SR by Ca^{2+} release channels (CICR) and Ca^{2+} is released from the SR by Ca^{2+} release channels (CICR).



1. Ca^{2+} release channels (CICR) are located in the SR membrane. 2. Ca^{2+} is released from the SR by CICR. 3. Ca^{2+} is released from the SR by CICR. 4. Ca^{2+} is released from the SR by CICR.

LECTURE 10
Cilia -> locomotory fluid plane (e.g. lungs, mucus cilia and flagella). Flagella -> contractile motion of cells (swimming). Cilia/Flagella in Eukaryotes: 9+2 microtubule arrangement, 2 singlets at the periphery.

Types of cilia: 1. Primary cilia: sensory. 2. Secondary cilia: motile. 3. Tertiary cilia: motile. 4. Quaternary cilia: motile.

Immotile cilia -> defects: dynein arms. Male infertility: sperm flagellum. Female infertility: fallopian tube. On the outside, cilia transport mucus down the fallopian tube. Patients cannot transport mucus: cilia are not working properly.

Chronic sinusitis: mucus in the sinuses. Mucus is not being cleared. Mucus is not being cleared. Mucus is not being cleared.

1. Cilia: 9+2 microtubule arrangement. 2. Flagella: 9+2 microtubule arrangement. 3. Cilia: 9+2 microtubule arrangement. 4. Flagella: 9+2 microtubule arrangement.

LECTURE 11
Muscle -> many fascicles (bundles of muscle fibers). Fascicles are surrounded by blood vessels and nerves. Muscle fibers are surrounded by sarcolemma. Muscle fibers are surrounded by sarcolemma.

1. Muscle fibers are surrounded by sarcolemma. 2. Muscle fibers are surrounded by sarcolemma. 3. Muscle fibers are surrounded by sarcolemma. 4. Muscle fibers are surrounded by sarcolemma.

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LECTURE 12
Cardiac muscle: 1. Striated. 2. Branched. 3. Intercalated discs. 4. Gap junctions. 5. Desmosomes. 6. Hemidesmosomes. 7. Tight junctions. 8. Lateral hemidesmosomes. 9. Hemidesmosomes. 10. Hemidesmosomes.

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4. Cardiac muscle: 1. Striated. 2. Branched. 3. Intercalated discs. 4. Gap junctions. 5. Desmosomes. 6. Hemidesmosomes. 7. Tight junctions. 8. Lateral hemidesmosomes. 9. Hemidesmosomes. 10. Hemidesmosomes.

5. Cardiac muscle: 1. Striated. 2. Branched. 3. Intercalated discs. 4. Gap junctions. 5. Desmosomes. 6. Hemidesmosomes. 7. Tight junctions. 8. Lateral hemidesmosomes. 9. Hemidesmosomes. 10. Hemidesmosomes.

6. Cardiac muscle: 1. Striated. 2. Branched. 3. Intercalated discs. 4. Gap junctions. 5. Desmosomes. 6. Hemidesmosomes. 7. Tight junctions. 8. Lateral hemidesmosomes. 9. Hemidesmosomes. 10. Hemidesmosomes.

7. Cardiac muscle: 1. Striated. 2. Branched. 3. Intercalated discs. 4. Gap junctions. 5. Desmosomes. 6. Hemidesmosomes. 7. Tight junctions. 8. Lateral hemidesmosomes. 9. Hemidesmosomes. 10. Hemidesmosomes.