7A: Anaerobic Respiration in Mammals:

1. <u>LACTATE FERMENTATION</u>:
    - Pyruvate from glycolysis is converted to ***lactate*** & ***H+ ions*** with the help of ***NADH***
        - A small amount of ***ATP*** is produced

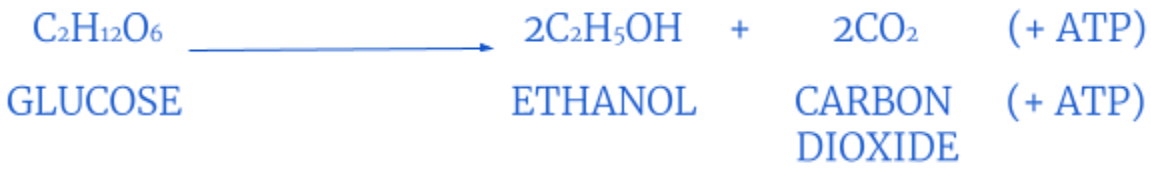
2. <u>PROCESSING LACTATE</u>:
    - Lactate is oxidised back to ***pyruvate*** when in the liver
        - It moves through the blood
            - Causes pH to fall
                - Muscle tissue becomes ***acidic***

3. <u>OXIDATION OF LACTATE</u>:
    - Lactate is oxidised back to ***pyruvate***
        - Needs extra oxygen
            - Causes an oxygen debt due to lactate being ***toxic***

4. Pyruvate goes back to the Krebs Cycle to be respired anaerobically

7A: Anaerobic Respiration in Plants & Fungi:

- Yeast respires anaerobically to produce ***CO_2*** + ***ethanol*** as waste products
- Plants respire anaerobically in root cells & waterlogged soil
    - Waste products are also ***CO_2*** + ***ethanol***



7A: Ultrafiltration: A Passive Process:

1. The blood in the glomerulus (in the Bowman's capsule) is at high pressure
    - The ***afferent arteriole*** (entering the glomerulus) is wider than the ***efferent arteriole*** (leaving the glomerulus)
        - This increases the blood pressure of the blood flowing through the glomerulus

2. The high pressure forces small molecules in the blood out of the capillaries of the glomerulus & into the Bowman's capsule
    - Results in a fluid called ***glomerular filtrate***

3. Large molecules such as proteins remain in the blood & don't pass into the filtrate
    - SO, EVERYTHING EXCEPT PROTEINS PASS THROUGH

7A: Selective Reabsorption:

MOLECULES ABSORBED BY THE PROXIMAL TUBULE:

- ***Na^+***: transported via ***ACTIVE TRANSPORT***
- ***Cl^-***: transported by ***DIFFUSION*** due to an electrical gradient present as a result of Na^+
- ***Sugars & amino acids***: transported into surrounding tissues by ***CO^- TRANSPORTER PROTEINS***
- ***Urea***: moves out of proximal tubule from high to low concentrations by ***DIFFUSION***

LOOP OF HENLE:

1. <u>Descending Limb</u>:
    - ***Na^+*** and ***Cl^-*** enter by ***DIFFUSION***
    - ***Water*** leaves
        - The volume of the ***filtrate*** is reduced; the concentration is greater
    - Freely permeable to water

2. <u>Hairpin Bend:</u>
    - The ***filtrate*** is at its highest concentration

3. <u>Ascending Limb:</u>
    - ***Cl^-*** and ***Na^+*** is pumped out
        - Causes an increase in ***NaCl*** concentration in the medulla tissue

- **ONCE THE VISUAL PIGMENT IS BLEACHED, THE ROD CANNOT BE STIMULATED AGAIN UNTIL THE RHODOPSIN IS RESYNTHESISED**
- **IT TAKES ENERGY TO CONVERT TRANS-RETINAL → CIS-RETINAL WHICH THEN JOINS TO OPSIN & FORMS RHODOPSIN**

8A: Habituation:

THE DIMINISHING OF AN INNATE RESPONSE TO FREQUENT STIMULATION OF STIMULI

1. With repeated stimulation, Ca^{2+} channels become less responsive
    - Less Ca^{2+} crosses the presynaptic membrane
2. Less neurotransmitter is released
3. Less depolarisation of the postsynaptic membrane
    - No action potential is triggered in the motor neurone

8B: Spinal Reflexes:

1. A stimulus is received by a sensory receptor
2. An impulse travels up the sensory neurone through the dorsal root ganglion & into the grey matter of the spinal cord
3. It synapses with a relay neurone
    - Then it synapses with a motor neurone within the grey matter
4. The impulse passes along the motor neurone, leaving the spinal cord through the ventral root
    - It travels down to the effector organ
        - Typically a muscle
5. The motor end plate in the muscle transfers the stimulus to the muscle which contracts
    - This causes the body to move the body part away from danger

8B: Cranial Reflexes: AKA. Pupil Reflex:

1. Light falling on the sensory cells of the retina causes impulses to travel along the neurones in the optic nerve to the brain
    - The brighter the light, the larger the frequency of action potentials
2. The impulse is detected in a control centre in the midbrain
3. The impulse travels along 2 neurones to further control centres