**\*ANATOMY \* DEVELOPMENT OF HEAD AND NECK \* LEC.24**

* **Introduction:**- sperms🡪 male  
  - oocytes🡪 female  
  - about 300 million of sperms will reach the ovum after it’s ovulated at day #14  
  - ovulation of the ovum is **under the influence of LH**   
   🡪 At day #14, the amount of LH reaches the max. to help in ovulation  
  - the ovum accept only the sperm that has the capacitating ability 🡪 capacitation  
  - after specific sperm is accepted by the ovum, the layer that enclose the acrosome must be removed in oreder to be able to penetrate 2 layers by the acrosome of it’s head through the digestive enzyme “**acrosine**”:  
   1. Zona pellucid  
   2. Cell membrane of the oocyte  
  - so we conclude that the capacitation’s aim is to penetrate these 2 layers   
  - when it becomes within the ovum , it’s tail becomes degenerated

🡪**Note:**  
 - Depolarization occurs at the cell membrane when the sperm enters by the head, therefore, the cell membrane must undergoes repolarization in order to prevent other one to enter.  
  
 - this reaction between the head of the sperm and the cell membrane called 🡪 capacitation

- the cell membranes of each of the sperm and the oocyte becomes fused, forming one cell with 23 pair of chromosomes contributed from each 🡪 “ZYGOTE”  
 🡪 note: the head of the sperm has been removed after capacitation  
 - then, the nuclear membrane of the sperm will appear surrounding it’s chromosomes forming 🡪 **proneucleus**,,, “same for the oocyte :  
 \*\* male prnucleus  
 \*\* female pronucleus   
 - After that, the 2 nuclear membranes become fused forming 23 double chromosomes within one nucleus  
 🡪 this is the real zygote  
 - now this zygote undergoes mitotic divisions/cleavage (1🡪2🡪4🡪8🡪16🡪32)  
 - between day 4 and 5 “from 14”, it becomes at the end or entrance of the uterine tube  
 - at this end, it consists of 16 cells 🡪 **early morulae**  
 - as the morulae continue it’s journey, it will face the uterus that is full with fluid 🡪 **uterine mucous**  
 - Note: the presence of mucous indicates the phase of the endometrium which is 🡪 **secretory phase**  
 - after the morula swims in that fluid, it’s become 🡪 **wondering morula**  
 - the mucous of this fluid will dissolve the zona pellucid of the morulae, preparing for impluntation  
 - after **disappearance of zona pellucid**, the mucous fluid continue penetrating between the cells of the morula, therefore, there will be a cavity containing fluid, and at this time, the structure is called 🡪 **Blastocyst** : 🡪 basket like structure containing fluid  
 - the fluid deviates parts of these cells peripherally resulting in : 🡪embryonic pole  
 🡪 another pole  
  
   
 🡪so it will settle in the heavy region above the endometrium  
 🡪 Note: the implantation occurs at day **#6**   
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 \*\*Slides #1:  
 - the cavity related to the ectoderm 🡪 amniotic ccavity (lined by ectoderm)  
 - the cavity related to the endoderm 🡪 yolk sac (lined by endoderm)  
 - the whole structure called 🡪 bilaminar disc at the beginning of second week  
   
 \*\* Slide #2:  
 - the reason behind the trilaminar disc is the formation of the primitive streak  
   
 \*\* Slide #3:  
 - head end starts to appear at day #18,,, bulging to the pericardium  
  
 \*\* Slide #4:  
 - at day #19, somites appear at the dorsal aspect  
 - somites will develop dorsoventrally, looking like the 8a6ayif   
 - somites are closed as 3 :  
 1. Linae alba “down ward”  
 2. Sternum  
 3. Symphysis menti  
  
 - primitive gut is formed by roof infoldong insude the embryo  
 - the rostral part/cephalic part of the foregut is 🡪 pharynx to be  
   
 \*\* Slide #6:   
 - same principle of the buccopharyngeal membrane, the cloacal membrane at the anus region  
 will be between the endo and ecto derms “saperating them”  
 - there shouhdn’t be MESODERM between the endo and ecto derms at these membrans of :  
 🡪 cloacal  
 🡪 baccopharyngeal   
  
 \*\* Slide #7:   
 - stomodium is lined from outside by ectoderm  
 - ant. 2/3 of the mouth is differnt from the post. 1/3 Develpmentally   
  
 \*\* Slide #8:  
 - stomodium is a dimple like on the rostral part of the buccopharyngeal membrane  
 - This dimple is surrounded by 5 prominances, AT 4th week:  
 🡪 frontonasal   
 🡪 maxillary  
 🡪 mandibular   
 - At 5th week, the buccopharyngeal membrane perforated  
 - the dimple is the first sign that related to the formation of the face  
  
  
  
  
  
  
 \*\* Slide #9:   
 - the primitive pharynx becomes surrounded by:  
 🡪 ectoderm from outside “covered”  
 🡪 endoderm from inside “lined”  
  
 - so it becomes softened/flaccid, and it should be strengthened which is from the mesoderm  
  
 \*\* Slide #10:  
 - pharyngeal arch lined from outside by ectoderm and from inside by endoderm  
 - I t has it’s own:  
 🡪 Artery  
 🡪 cranial nerve  
 🡪 cartilage  
 🡪 muscles  
 - each pharyngeal arch is separated from a membrane that is covered from outside by ectoderm and lined from inside by endoderm 🡪 pharyngeal membrane  
  
 - later on the mesoderm wil proliferate, bringing with it the related nerve supply  
 - inside it we have the cartilage that will give bone and ligaments  
 - arches are separated from out side by 🡪 clefts  
 - arches are separated from inside by🡪 pouches  
 - first cleft is 🡪 eustachuan tube  
 - first pouch 🡪 in the mouth !  
 - so the cleft gives :  
 🡪 Eustachian tube, external auiditory meatus  
 🡪 outer side of ear drum  
  
 - 1st pouch gives :  
 🡪 middle ear, auditory tube  
 🡪 internal side of ear drum  
  
 - Eustachian arch “1st” is related to the nasopharynx  
 - oro pharynx 🡪 second pharyngeal arch 🡪 we have palatine tonsils  
 - 4th week is the first time of missed period 🡪 sign of pregnancy  
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 🡪 How many arches we have? 5  
 🡪 How many clefts? 4  
 🡪 How many pouches ? 5  
 🡪 nerve supply of 1st pharyngeal arch? Trigeminal nerve  
 🡪 arterial supply of 1st pharyngeal arch ? maxillary artery  
 🡪 There is overlapping between arches 1st and 2nd 🡪 overlap bet. Trigeminal and facial, one for muscles and on for sensation   
  
  
  
  
  
  
  
 🡪 Second pharyngeal arch:  
 - cleft: will go down til the thorax as a scarf representing 🡪 platysma that mask and covers all  
 clefts  
 - innervated by facial nerve  
   
 🡪 the first 2 arches are the only ones that contributes in the shape of the human  
  
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 # Done by : Dana Ayman**