**\*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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