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Laboratory Number 2 Dissection of the avian inner ear Donna Fekete

Dissection of the chicken basilar papilla, appropriate for embryonic day 10 - postnatal week 1 (Ulrike Sienknect and Donna Fekete):

- remove lower jaw (work from a ventral view)
- hold embryo head with forceps between the eyes
- clip off the left and right jaw joints
- remove all soft tissue in a superficial, horizontal plane manner beginning at the palate moving towards the spinal cord
- this way get to the point where the plain cartilage housing the cochlear duct is exposed with no soft tissue left on its surface
- at this point the lagena should be visible on each side of the midline
- clean up soft tissue form this view laterally, following the cochlear duct until seeing the base and the outer ear meatus
- don't touch the temporal bone (cartilage at all at this time to keep the ear safe as long as possible)
- remove the tympanic membrane carefully to expose the columella
- grab the columella (softly to not break it) and pull it off to remove the footplate from the oval window
- now remove carefully (piece by piece) the cartilage layer to expose the cochlear duct
- start with the either apical or basal ends. At the basal end, begin, by removing the cartilage covering the lagena region (keep on removing tissue in a superficial way to make sure not to disturb the cochlear duct itself)
- work also from the lateral (apical) side (middle ear region) by removing the limbus around the oval window
- don't stop until the complete cochlear duct is exposed with no covering tissue left
- remove cochlea by pulling carefully holding the neural limbus (make sure that the cochlea moves as a whole piece and is not attached anywhere, except of the nerve)
- don't pull hard, the tissue should not at all get stretched, if it is not "free to move" lay it back and work on that particular area where the tissue is still attached

Optional, remove the brain (from dorsally or by cutting the head in half) to have a better transparency and being able to work from medial and ventral sides. Note: this protocol is helpful for removing the entire cochlear duct quickly, as might be appropriate for getting alot of tissue for RT-PCR experiments.

- remove the scalp (be careful at the ear openings to not pull out the ear accidentally)
- cut the skull at the median line
- use blunt forceps to remove the brain (in big chunks preferable)
- cut the auditory nerve (without pulling it) at the foramen (this is important for the next step to avoid pulling the nerve and ear when removing the membranes)
- pull off brain membranes to expose temporal bone (cartilage)
- once having a clear view on the entire inner ear, start to remove the surrounding cartilage piece by piece to dissect the inner ear