
Safe Listening!
How I Enjoy My Music and Avoid a Silent Future:
Discussion at ITU-T Q28/16

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ITU-T Q28/16

- focuses on standardization of multimedia systems to support e-health applications.
- achieve interoperability among systems and to reduce the cost of devices through economies of scale.
- provide the environment for harmonization and coordination of the development of a set of open global standards for e-health applications.

ITU-T Q28/16 (cont.)

- Organized WHO-ITU Joint Stakeholders' Consultation on Safe Listening Devices on 1 October 2015
- Based on the discussion of the above workshop, a new draft Recommendation F.SLD "Guidelines for safe listening devices/systems" was initiated

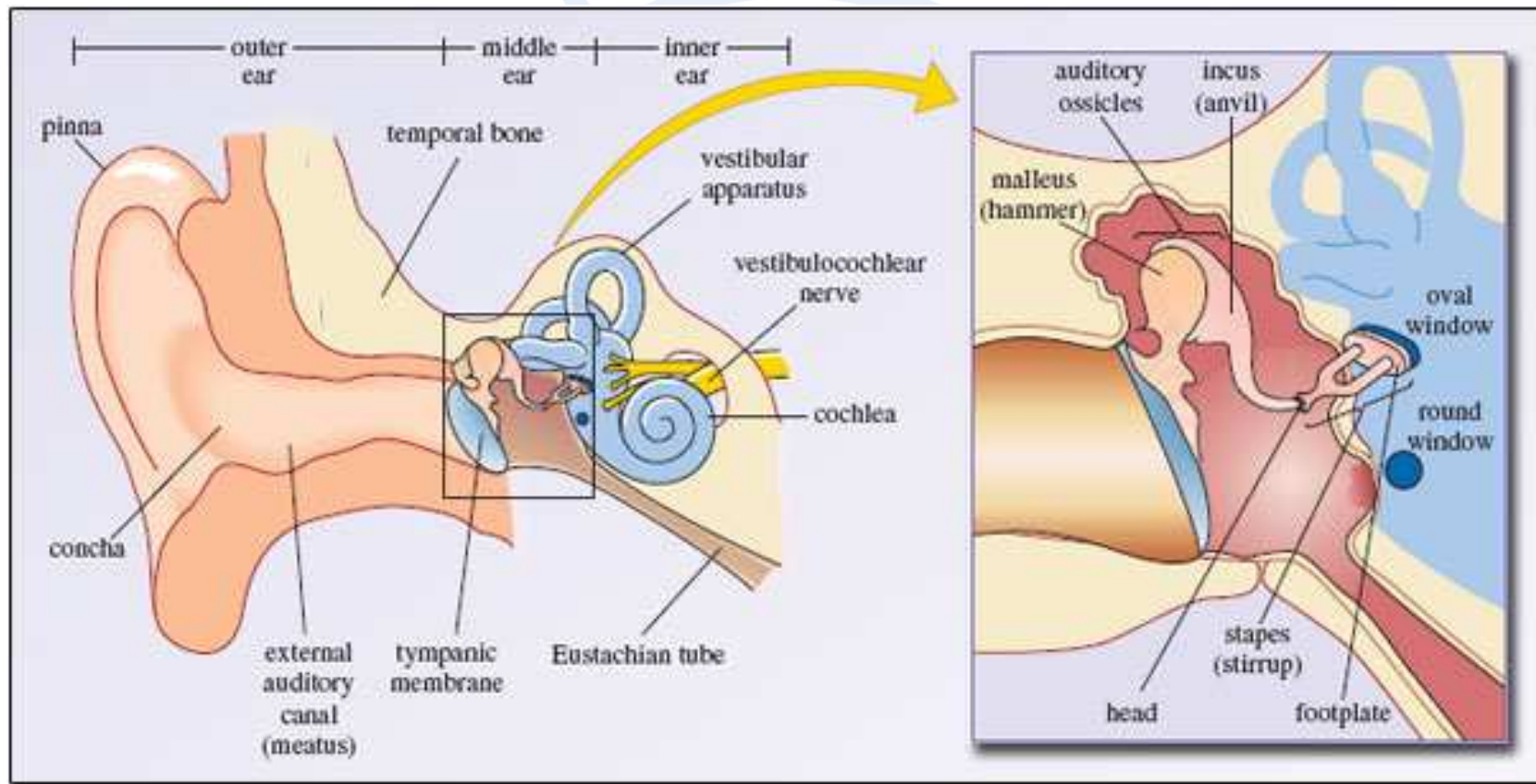
ITU-T Rec. F.SLD: “Guidelines for safe listening devices/systems

- Still in its embryonic stage
- Comments from other SDOs are expected
- Some contributions have been made to add text
- “Gap analysis” is expected to be added (?)

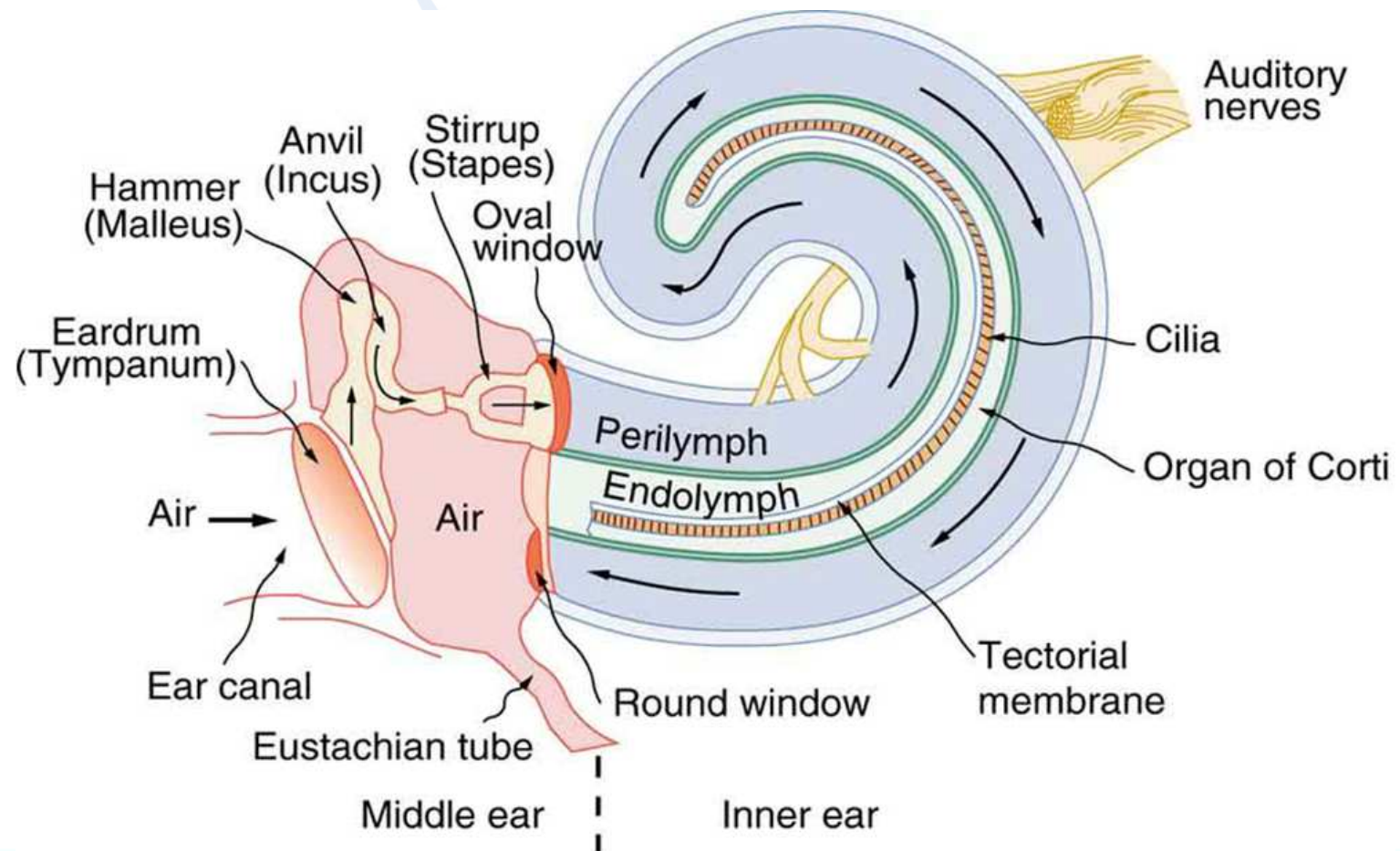
F.SLD: Discussion on Stapedius Muscle Reflex (SMR)

- Human has mechanism called “Stapedius Muscle Reflex”, expected to contract when a sound excessive of 85 dB SPL enters the ears.
- This can be taken as “evidence” that the SPL exceeding this level is “too loud”
- as the latency of the acoustic reflex is 40 ms – 160ms, the cochlea may be unprotected from short-duration, unanticipated impulsive sounds.

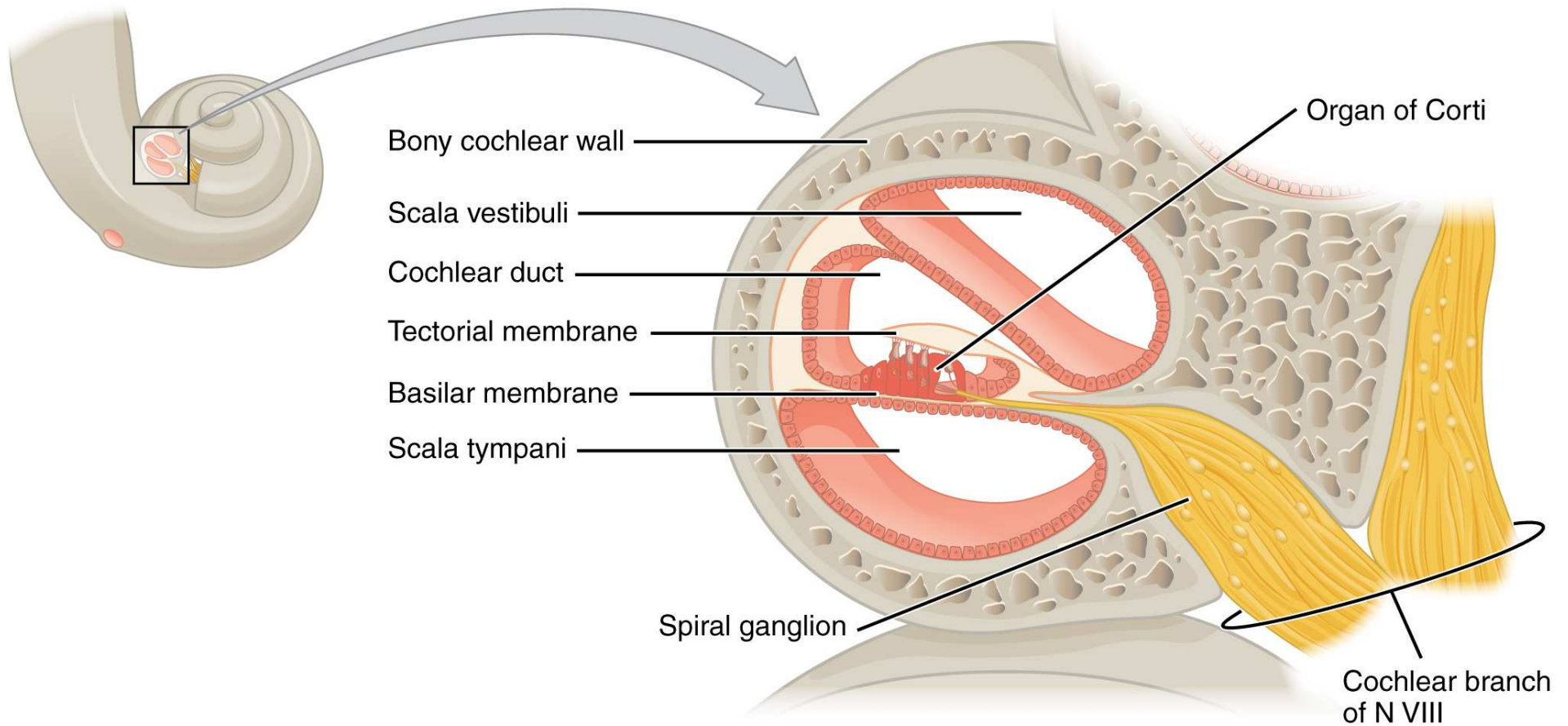
Middle Ear and Ossicles



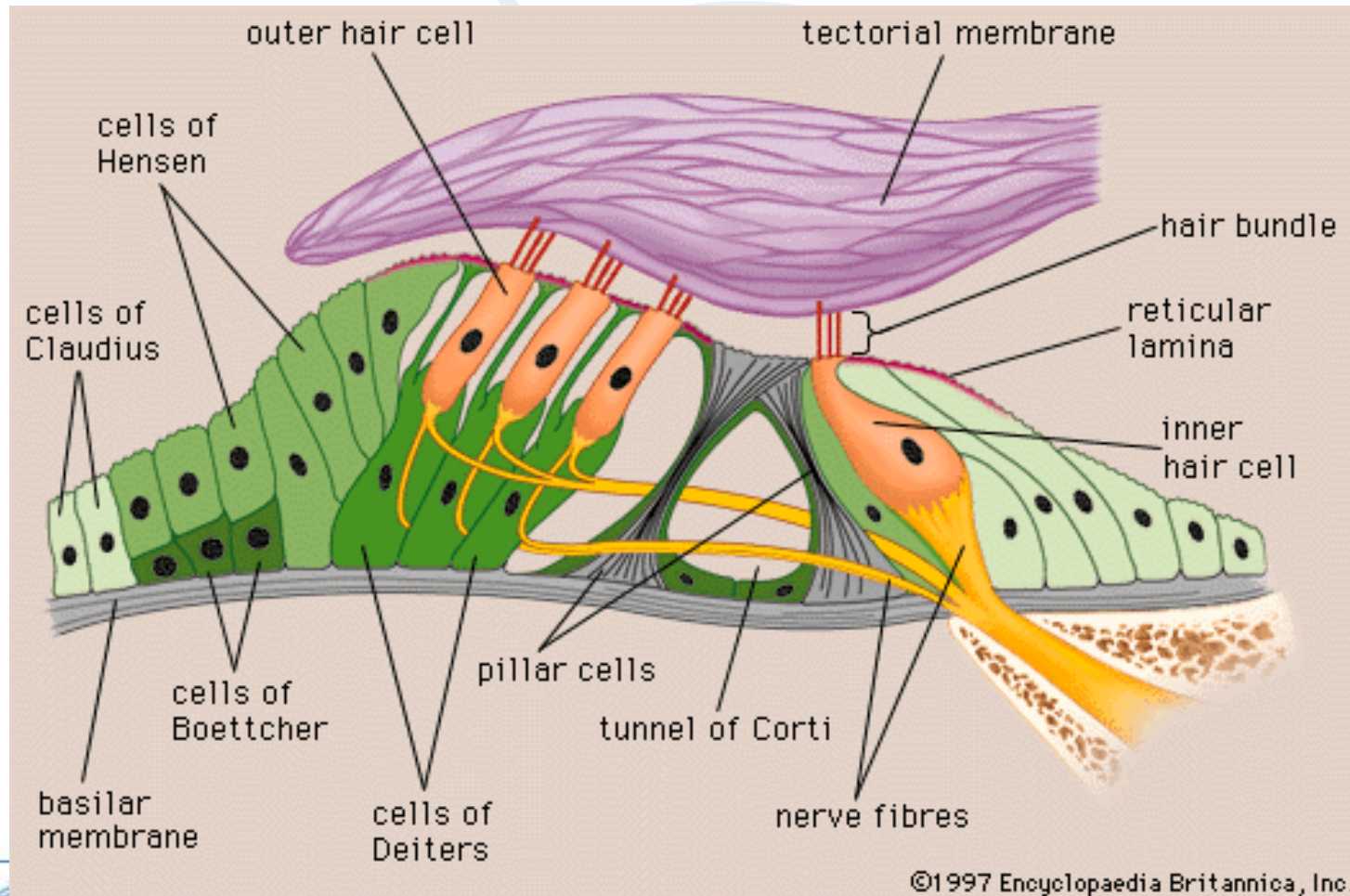
Inner Ear and Cochlea



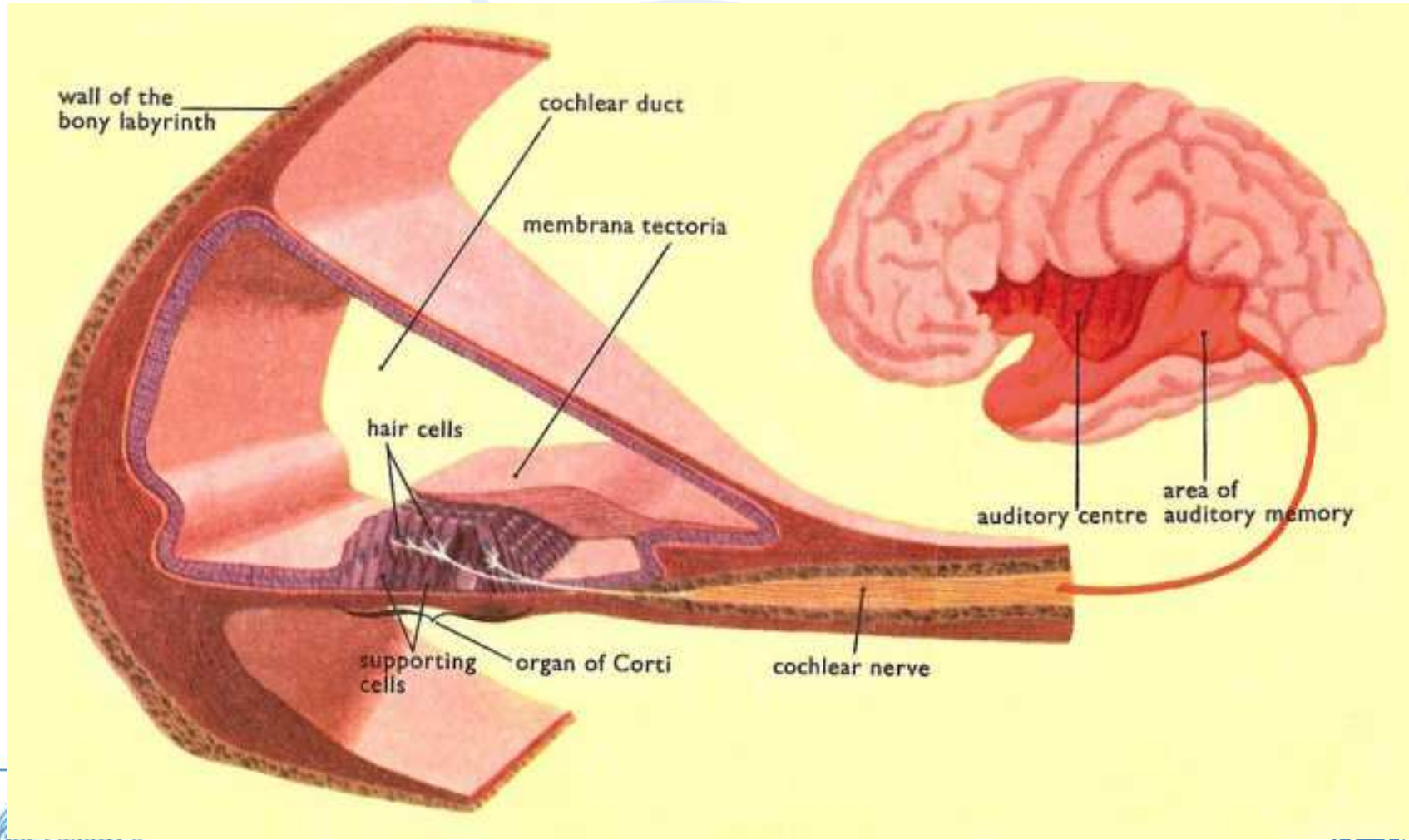
Cochlea and Organ of Corti



Organ of Corti and Hair Cells



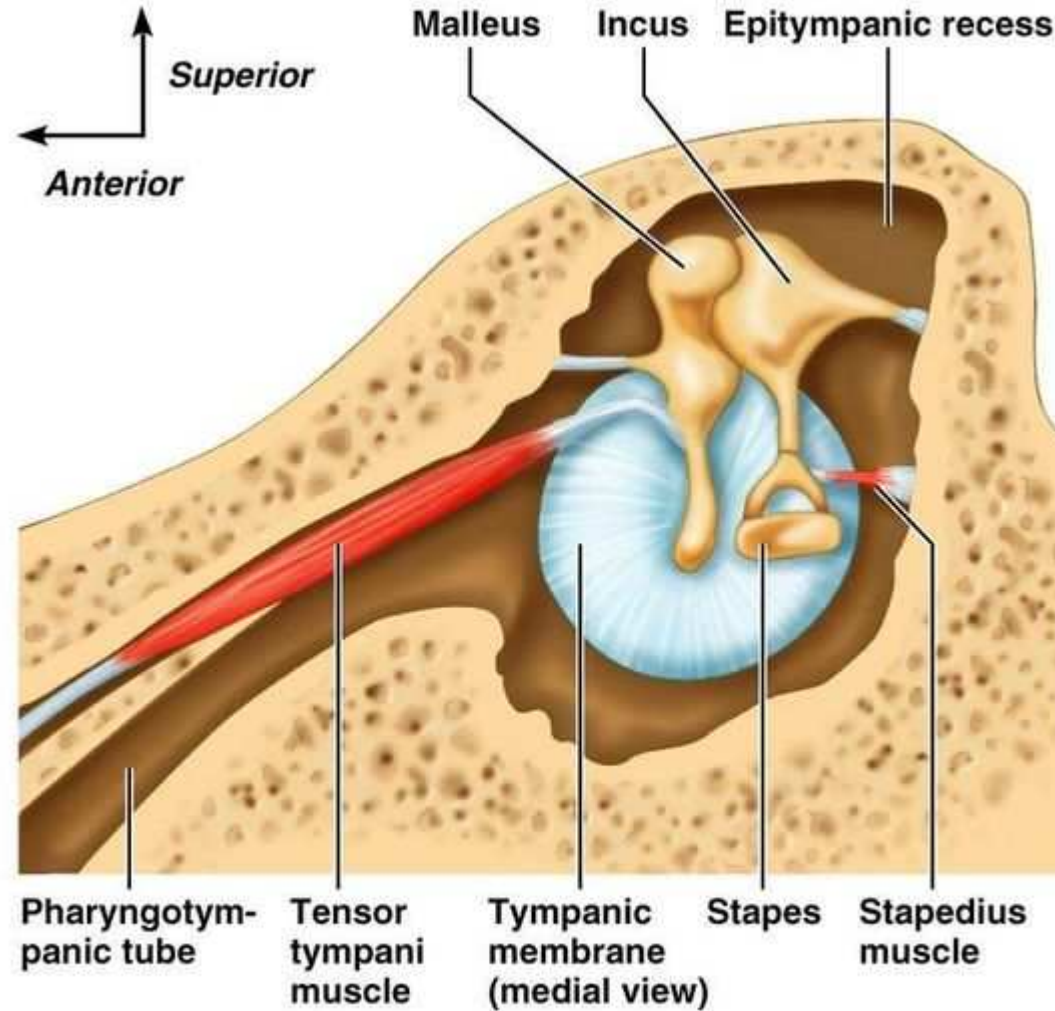
Hair Cells to Brain



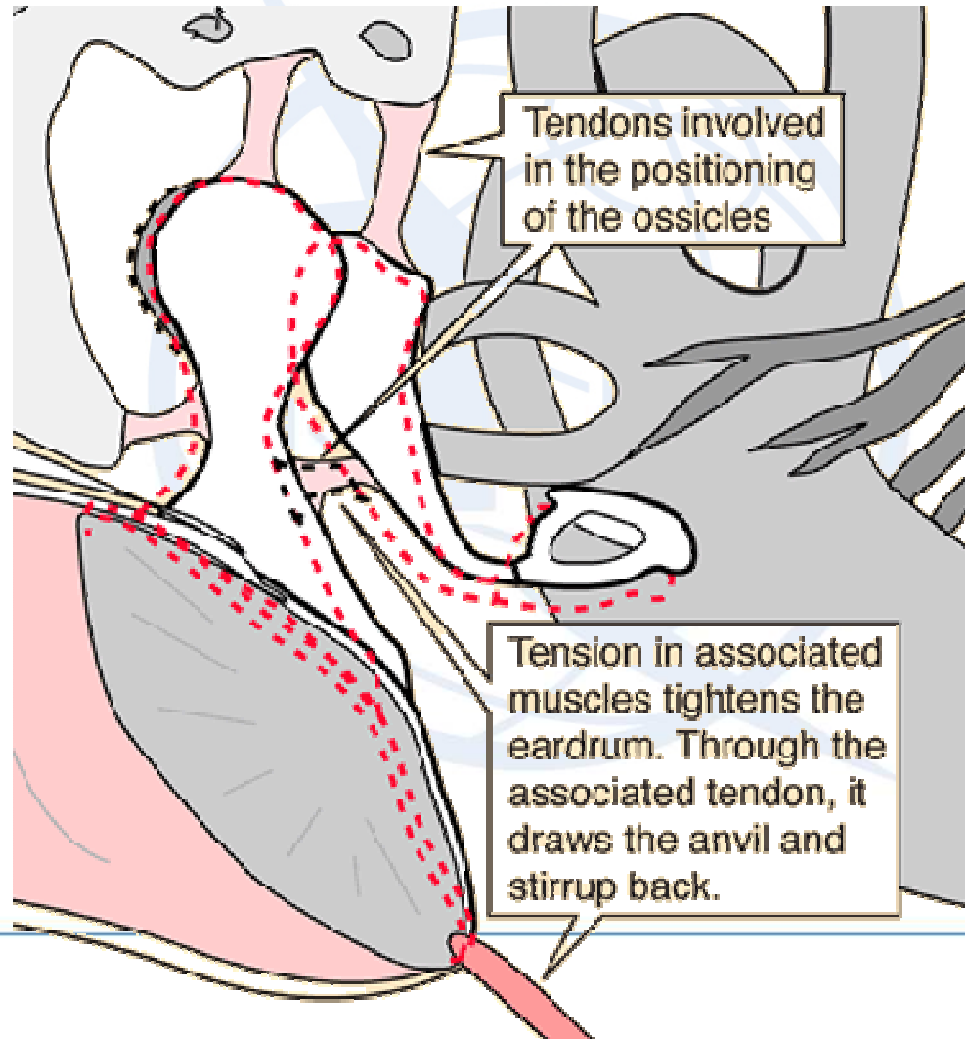
Stapedius Muscle Reflex (SMR)

- When sounds louder than approximately 85 dB SPL are presented monaurally or binaurally, consensual (bilateral) reflex contraction of the stapedius muscle occurs.
- As the latency of the acoustic reflex is about 40 to 160 ms, the cochlea may be unprotected from short-duration, unanticipated impulsive sounds.

Stapedius Muscle



Mechanism of SMR



One example of guideline based on SMR

- The sound is recommended not to exceed the SPL of 90dB, the intensity which may incur SMR
- If the incoming sound exceeds the SPL of 90dB, it should not have a steep rise
- Exposure to sound with the intensity higher than the SPL of 90dB for a long period of time, where SMR occurs continuously is recommended to be avoided.

More work to be done

- Contributions welcome
 - Next Q28/16 is in the week of 24-26 May
- Experts will gather to discuss how to harmonize and proceed
 - Workshop will be held on 6 June 2016 in Geneva

For more info.

- If you are interested,
- Please visit ITU-T SG16 website:
 - <http://www.itu.int/en/ITU-T/e-health>
- Or contact:
 - tsbsg16@itu.int

Thank you