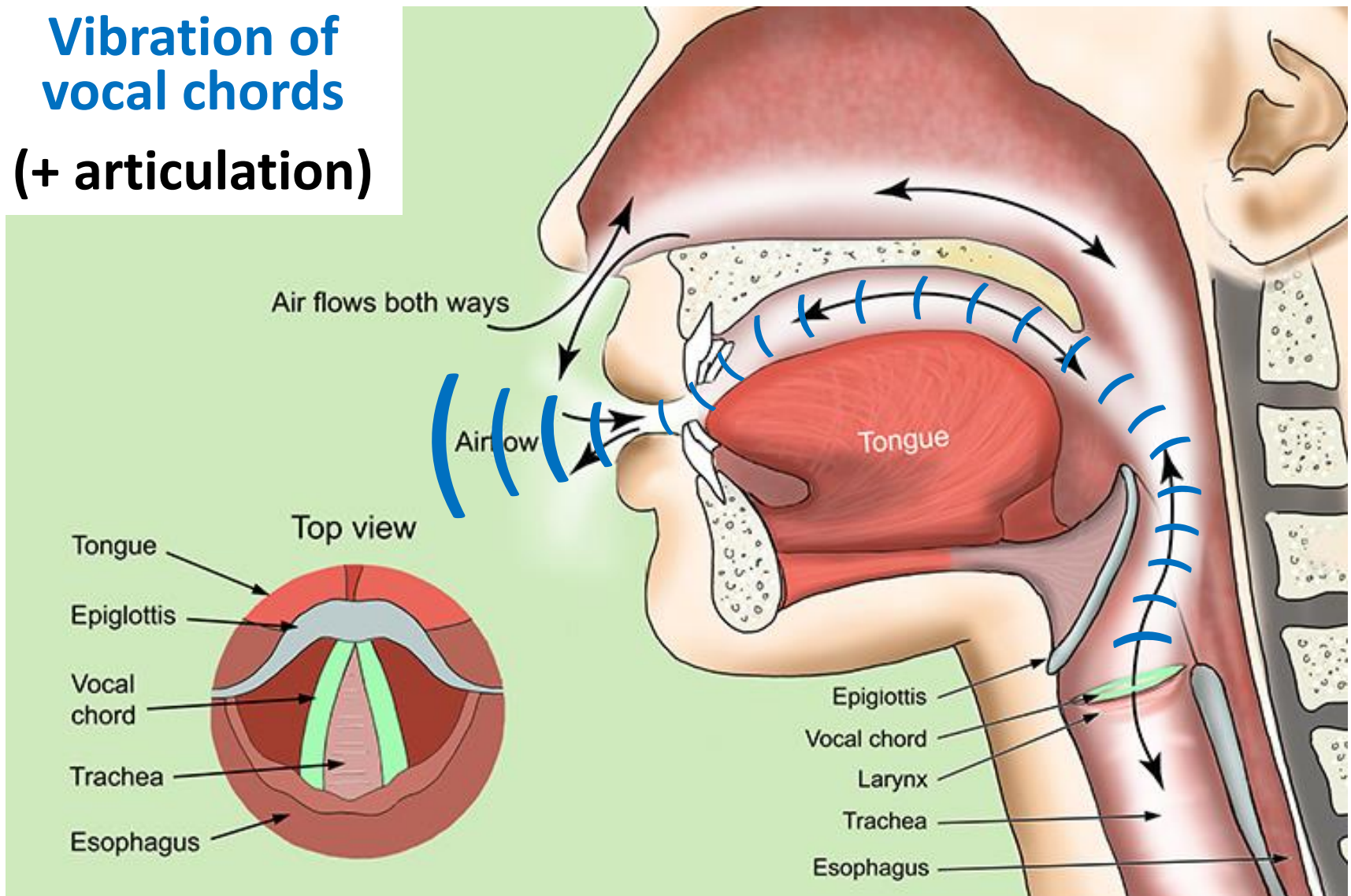
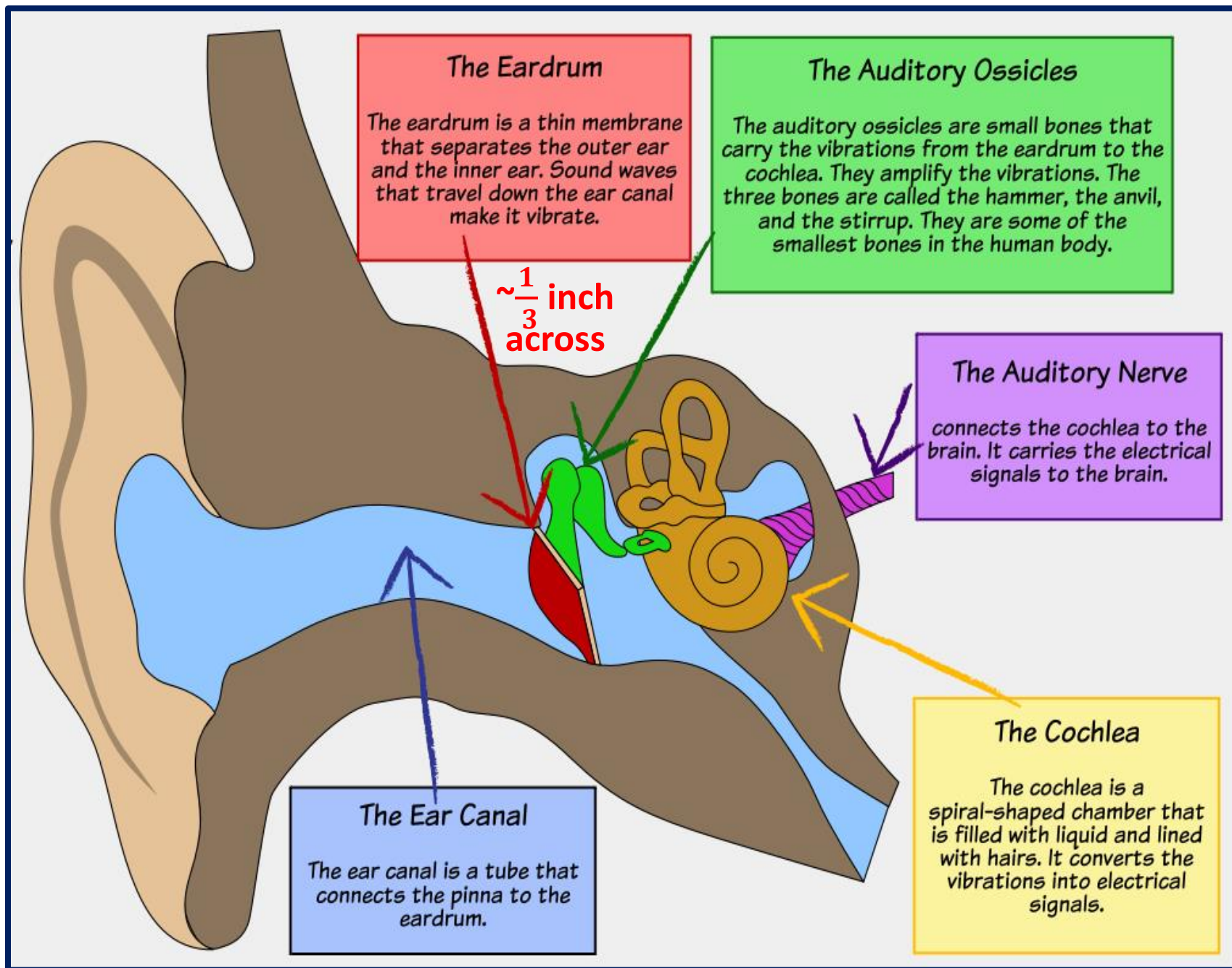


How do humans create sound?

Vibration of
vocal chords
(+ articulation)



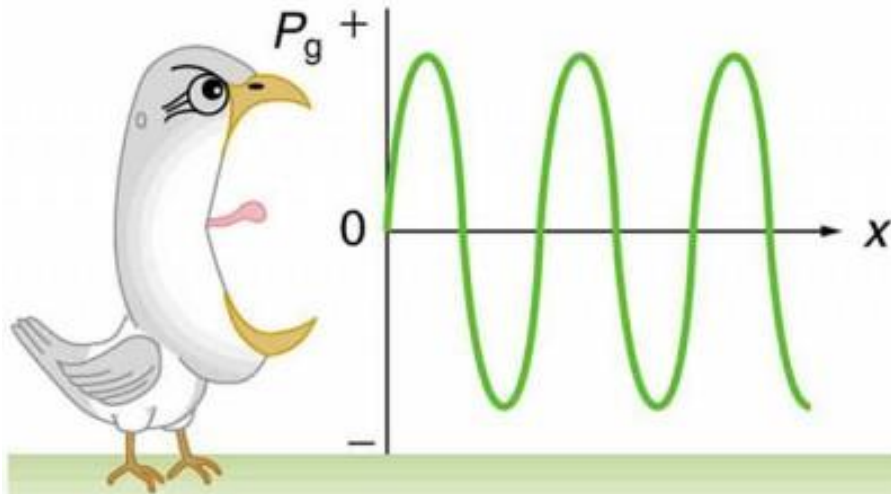
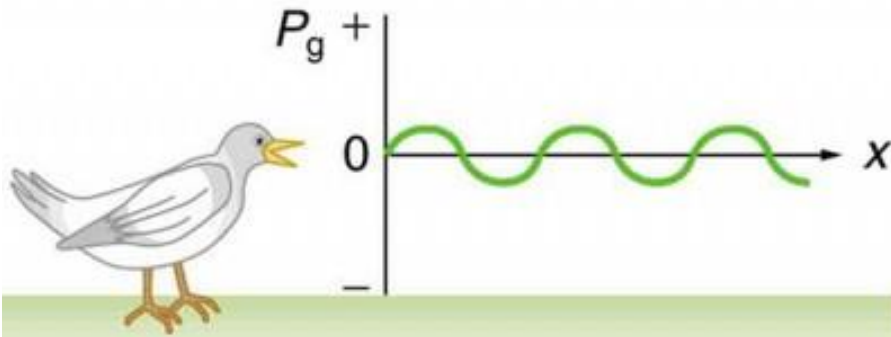
How do we hear?



Sound waves: Intensity

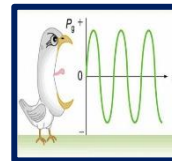
“How loud?”

Low **Amplitude** = Soft



High **Amplitude** = Loud

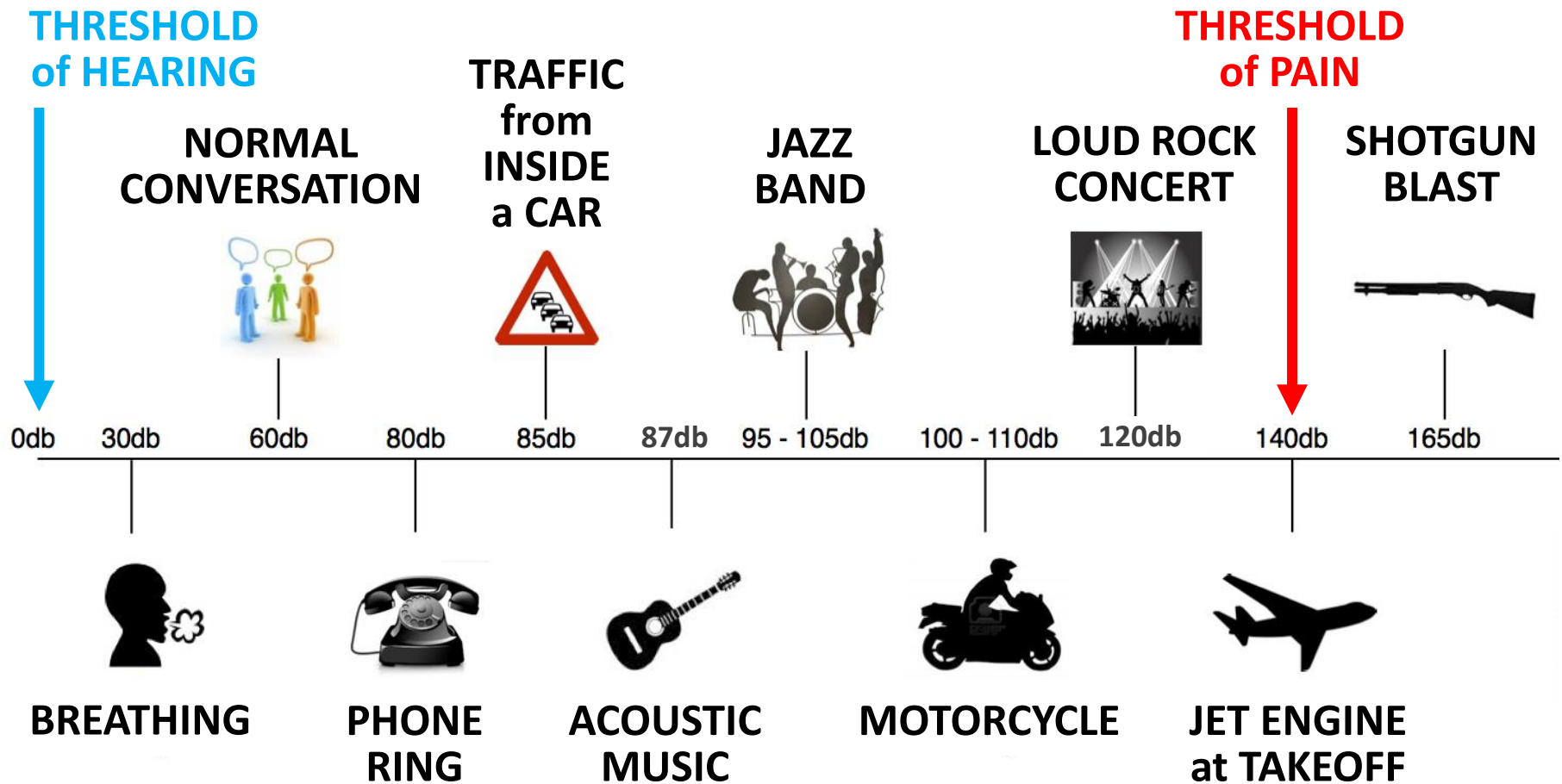
- Sound intensity is a measure of **the amount of energy** in sound waves.
- Intensity results from two factors:
 - ✓ the **amplitude** of the sound waves
 - ✓ and **how far they have traveled from the source of the sound.**



- The **unit** of intensity is the **decibel (dB)**.

Typical sound levels

The decibel scale is *non-linear*: for every 10-decibel *increase* in the intensity of sound, *energy is 10 times greater*.



1. Compare the *intensity* of sound you hear during a jazz band performance and a rock concert.

- Jazz band is about 100 dB
- Rock concert is about 120 dB

Sound level at a rock concert is 20 dB greater.

2. What is the corresponding difference in sound *energy*?

- for every 10-decibel *increase* in the intensity of sound, energy is 10 *times* greater
- 20-decibel increase means $10 \cdot 10$ times energy increase

Sound energy at a rock concert is 100 times greater.