

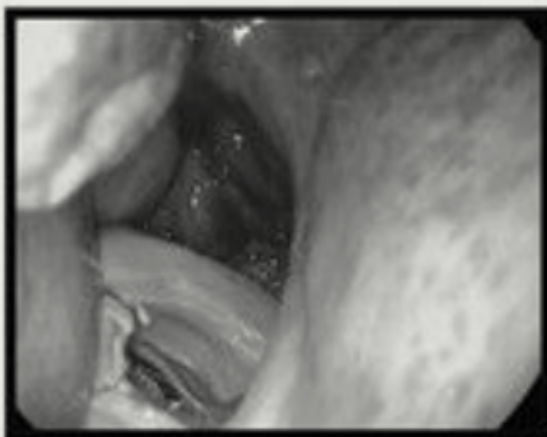
Ex-vivo and replica measurements of nasal tract resonances

Resonance analysis

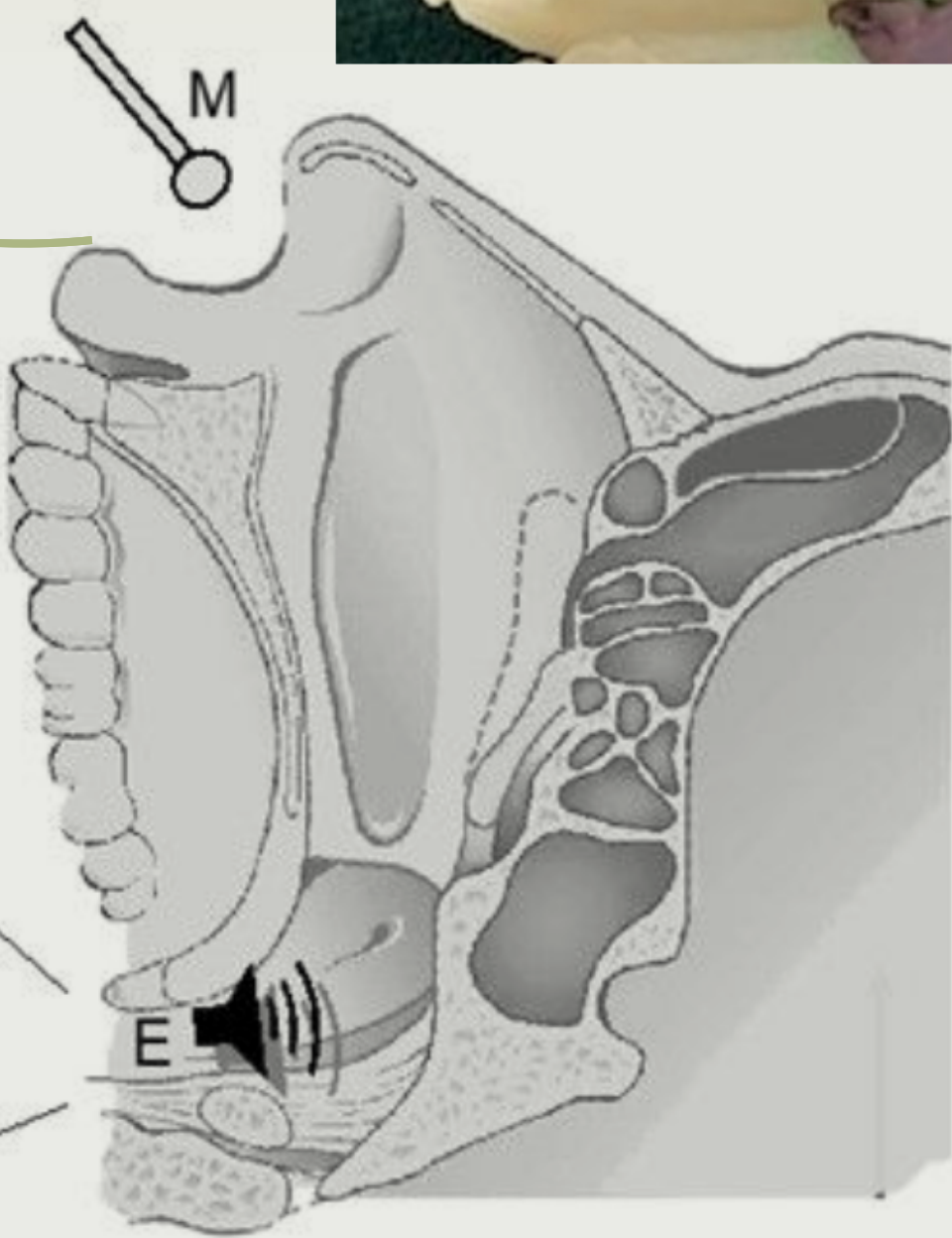
Ex-vivo specimens

3D replicas

Acoustical excitation from earphone (E) in velopharyngeal port recorded by microphone (M) at nostril



Earphone in situ



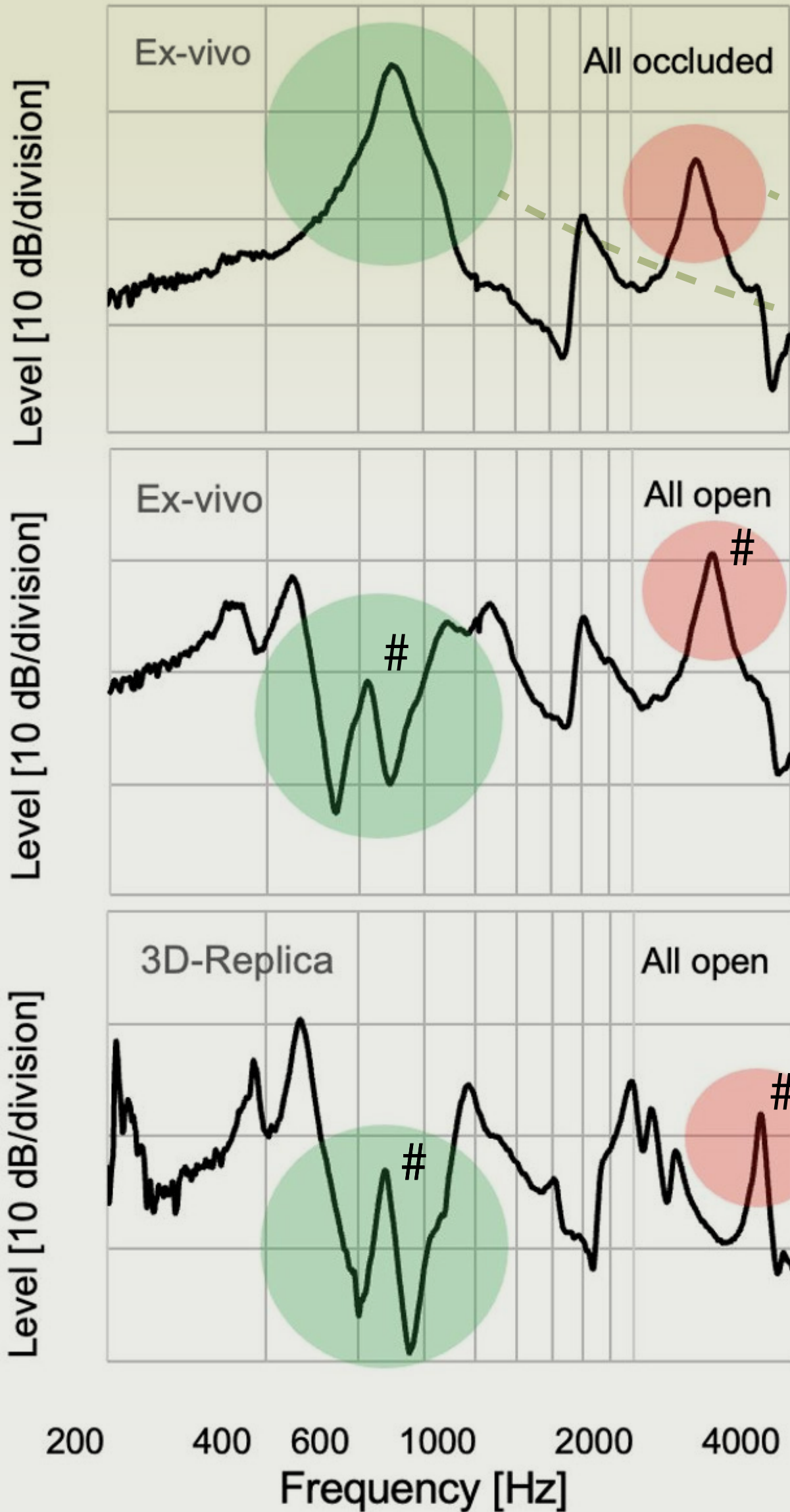
Measurements taken with:



Sinus ostia open



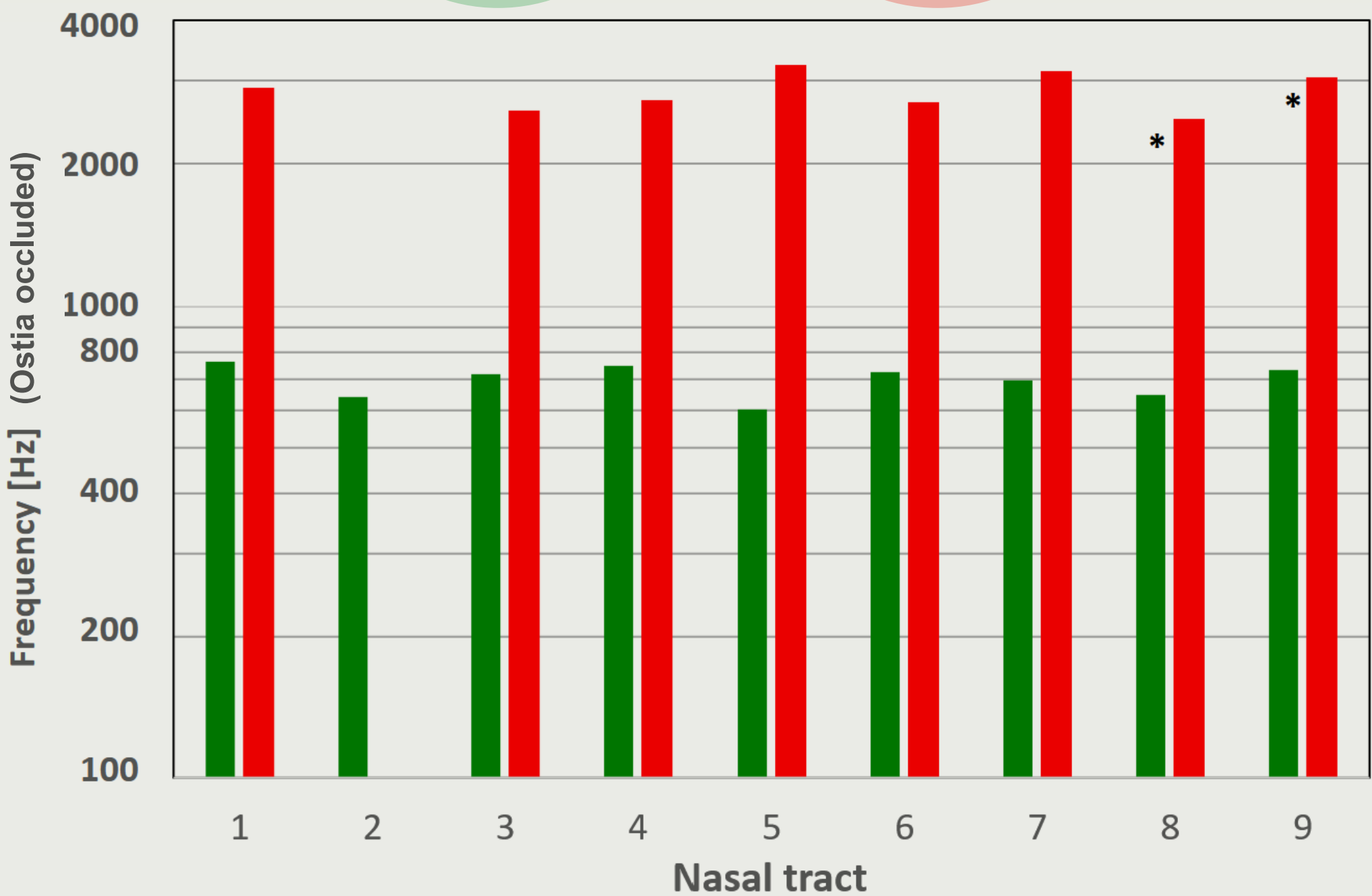
Sinus ostia reversibly occluded (maltodextrin-mass)



Two main resonances

~700 Hz

2000-3000 Hz



*Data sets previously published (Bjuggren & Fant, 1964)

- The paranasal cavities absorb sound energy at their resonance frequencies, causing splitting or shifting of the resonance peak (#)
- Depending on degree of sinus pneumatization and its effect on shape, these frequencies vary inter- and intra-individually

3-D replicas provide realistic models of acoustic properties of nasal tracts, offering means to predict how nasal resonance can affect vocal tract resonance