PLATINUM-BASED CHEMO-RADIATION Scala vestibuli Scala media OHCs HCs IPhCs IPC OPC Scala tympani Increased reactive oxygen species Inflammation DNA crosslinking **OUTER EAR** Cell cycle disruption MIDDLE EAR **INNER EAR** Mitochondrial damage Damage to: Dryness, pruritus, erythema Otitis media Tinnitus with effusion Outer and/or inner hair cells Ear canal stenosis Sensorineural Chronic perforation hearing loss Spiral ganglion Osteoradionecrosis Eustachian tube dysfunction Stria vascularis Tympanosclerosis Middle ear fibrosis Conductive hearing loss Ossicular necrosis Conductive hearing loss Mixed hearing loss

Figure 1. Diagram of the key mechanisms responsible for hearing loss in the oncologic population. The close-up image illustrates the primary impact of cisplatin on the inner ear.

Abbreviations: inner sulcus cell (ISC), inner border cell (IBC), inner hair cell (IHC), tectorial membrane (TM), outer hair cell (OHC), Hensen's cell (HC), Claudius' cell (CC), basilar membrane (BM), Boettcher's cell (BC), Deiters' cell (i.e., outer phalangeal cell) (DC), outer pillar cell (OPC), inner pillar cell (IPC), inner phalangeal cell (IphC), piral ganglion neuron in the spiral canal of Rosenthal (SGN).