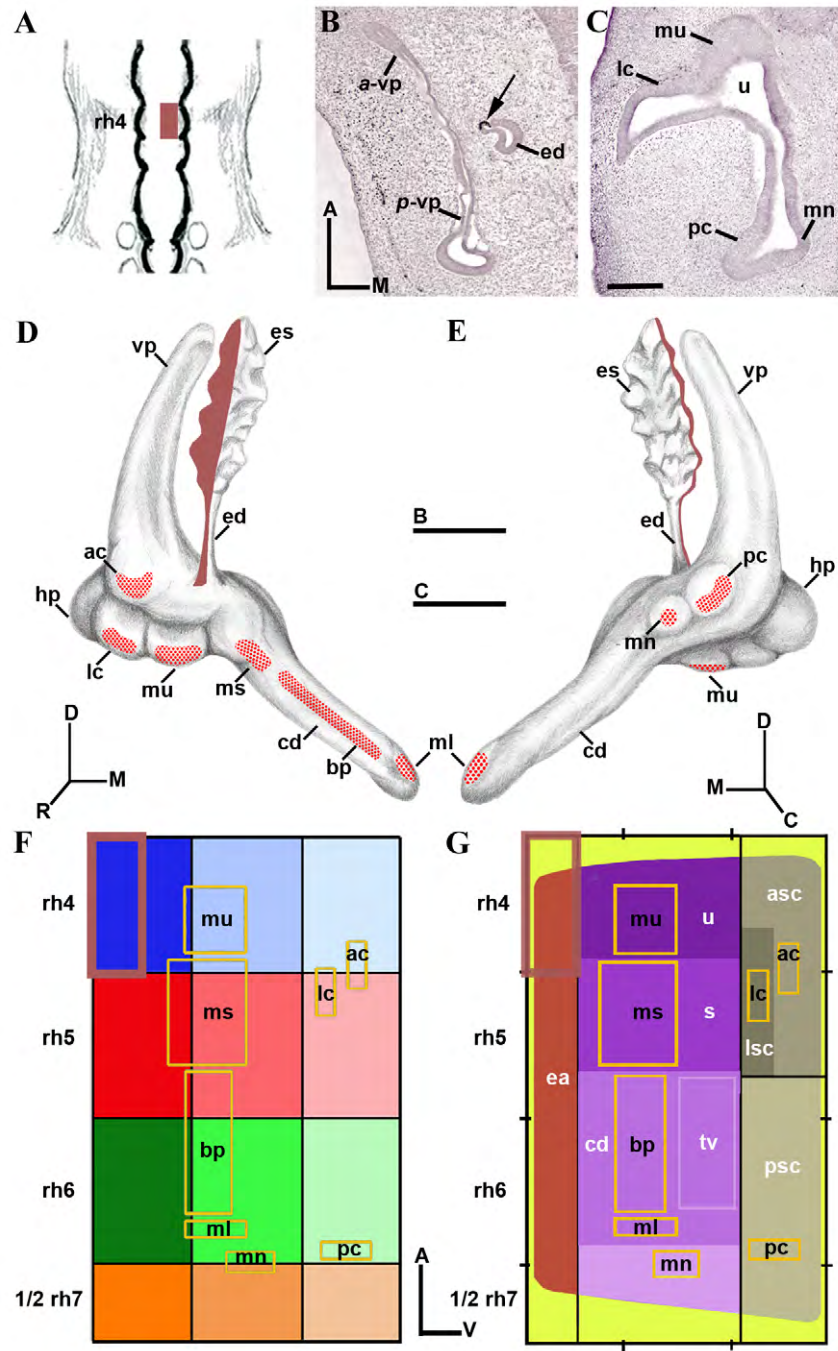
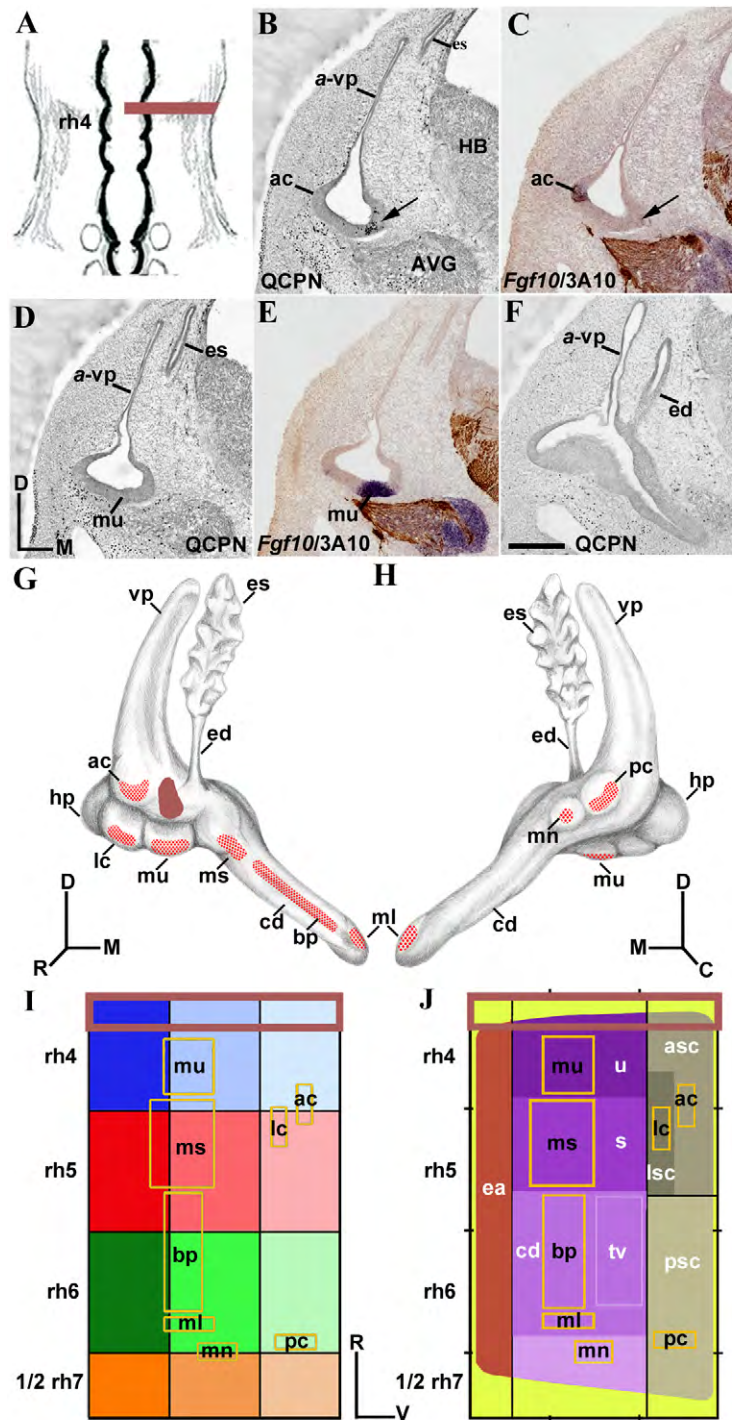


**Fig. S1. Schematic representation of additional grafting experiments at the 10-somite stage.** (A) Dorsal view of an avian embryo showing additional grafts of several portions of the cephalic ectoderm facing each rhombomere (rh) from rh3 to rh8. The horizontal yellow and green lines, and the vertical pink lines, define the graft borders. All these graft types started dorsally at the midline of the embryos (red arrow). (B) Schematic representation of the fate map of the avian otic placode at the 10-somite stage, focusing on the relative positions of the presumptive sensory elements of the chick inner ear. This meticulous method strongly validates our fate mapping study. Abbreviations: ac, anterior crista; bp, basilar papilla; cd, cochlear duct; ed, endolymphatic duct; es, endolymphatic sac; hp, horizontal pouch; lc, lateral crista; ml, macula lagena; mn, macula neglecta; ms, macula sacculi; mu, macula utriculi; pc, posterior crista; vp, vertical pouch. Orientation: R, rostral; V, ventral.

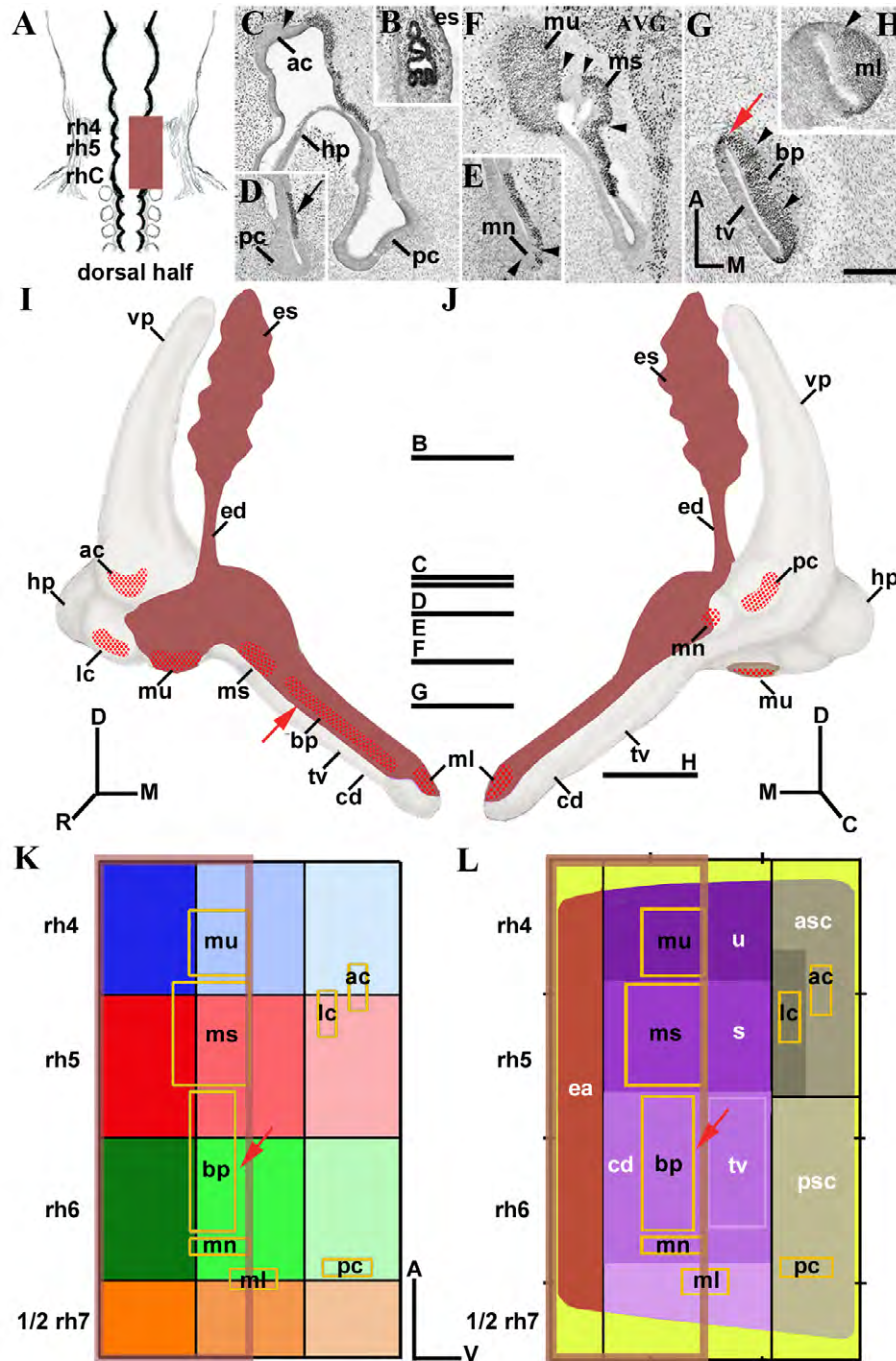


**Fig. S2. Fate map of the dorsalmost anteroposterior band of the ectoderm facing rh4.** (A) Schematic representation of the grafting results at the 10-somite stage concerning the dorsal half of the rh4-ect type 1 experiment (brown). (B,C) Horizontal sections through a chimeric embryo at stage HH29 (E6). The grafted quail cells were detected exclusively in the endolymphatic system (ed; arrow in B,C). (D,E) Three-dimensional diagrams of an E6 chimeric inner ear summarizing these results. The sensory patches are represented by the red-hatched areas. The horizontal section levels are indicated. (F,G) Schematic representation of the fate map of the avian otic placode at the 10-somite stage. The grafted portion is indicated (brown rectangle). Abbreviations: ac, anterior crista; bp, basilar papilla; cd, cochlear duct; ea, endolymphatic apparatus; ed, endolymphatic duct; es, endolymphatic sac; hp, horizontal pouch; lc, lateral crista; ml, macula lagena; mn, macula neglecta; ms, macula sacculi; mu, macula utriculi; pc, posterior crista; tv, tegmentum vasculosum; vp, vertical pouch. Orientation: R, rostral; V, ventral. Orientation: D, dorsal; M, medial; P, posterior; R, rostral; V, ventral. Scale bar in C measures 30  $\mu$ m.



**Fig. S3. Fate map of the rostralmost quarter of the ectoderm facing rh4.** (A) Schematic representation of the grafting results at the 10-somite stage (brown). (B-F) The resulting chimeric embryos never showed quail cells in the endolymphatic apparatus (es and ed in B,D,F). A small portion of the vestibule, its most rostral part, showed some QCPN-positive cells (arrows in B,C). A few quail cells were also observed in the anterior semicircular canals (not shown). In this chimeric embryos, the grafted cells were never included in the macula utriculi (mu; D,E). (G,H) Three-dimensional diagrams of an E6 chimeric inner ear summarizing these results. The sensory patches are represented by the red-hatched areas. The horizontal section levels are also indicated. (I,J) Schematic representation of the fate map of the avian otic placode at the 10-somite stage, focusing on the relative positions of the presumptive sensory and non-sensory elements of the chick inner ear. The grafted portion is also indicated (brown rectangle). Abbreviations: ac, anterior crista; bp, basilar papilla; cd, cochlear duct; ea, endolymphatic apparatus; ed, endolymphatic duct; es, endolymphatic sac; hp, horizontal pouch; lc, lateral crista; ml, macula lagena; mn, macula neglecta; ms, macula sacculi; mu, macula utriculi; pc, posterior crista; tv, tegmentum vasculosum; vp, vertical pouch. Orientation: R, rostral; V, ventral. Orientation: D, dorsal; M, medial; P, posterior; R, rostral; V, ventral. Scale bar in F measures 40 μm.





**Fig. S4. Fate map of the dorsalmost half of the otic placodal ectoderm.** (A) Schematic representation of the grafting results at the 10-somite stage (brown). (B-H) Horizontal sections through a chimeric embryo at stage HH29 (E6). In all resulting chimeric embryos, the ventral border of the grafts was coincident with the ventral borders of the macula utriculi (mu), macula sacculi (ms), and macula lagena (ml) (arrowheads in F,H). The ventral border of the basilar papilla (bp) was near the ventral border of the graft, but it was not coincident with it (arrowheads in G). Consequently, the presumptive territory of the basilar papilla was placed slightly more dorsally (red arrows in G,I,K,L). The dorsal half of the macula neglecta was included in the grafted domain, but not its ventral half (arrowheads in E). The presumptive territories of all cristae were located far from the borders of the grafts (C,D). Also, the entire endolymphatic apparatus (ea) was included in the grafted domain (B,I,J,L). (I,J) Three-dimensional diagrams of an E6 chimeric inner ear summarizing these results. The sensory patches are represented by the red-hatched areas. The horizontal section levels are indicated. (K,L) Schematic representation of the fate map of the avian otic placode at the 10-somite stage. The grafted portion is indicated (brown rectangle). Abbreviations: ac, anterior crista; bp, basilar papilla; cd, cochlear duct; ea, endolymphatic apparatus; ed, endolymphatic duct; es, endolymphatic sac; hp, horizontal pouch; lc, lateral crista; ml, macula lagena; mn, macula neglecta; ms, macula sacculi; mu, macula utriculi; pc, posterior crista; tv, tegmentum vasculosum; vp, vertical pouch. Orientation: R, rostral; V, ventral. Orientation: D, dorsal; M, medial; P, posterior; R, rostral; V, ventral. Scale bar in C measures 25  $\mu$ m.