Table 17-2. Inner Ear Fluids Composition

	ST Perilymph	SV Perilymph	CSF	Cochlear Endolymph	Saccular Endolymph	Endolymphatic Sac Endolymph
Na^+ (mmol/L)	149	140	146	1	3	108
K^+ (mmol/L)	3.7	8	3.2	158	150	14
Ca^{2+} (mmol/L)	0.7	0.6	1.2	0.02	0.09	0.47
Cl– (mmol/L)	127	125	131	136	119	98
HCO_3^- (mmol/L)	19	18	19	21	—	—
Summed Na, K, Ca, Cl, HCO_3 (mmol/L)	299	292	298	316	293	240
Osmolarity (mOsm)	293	294	—	304	—	—
pH	7.28	7.26	7.28	7.37	—	—
Electrical Potential (mV)	0	5	0	85	5	13

ST indicates the scala tympani; SV, scala vestibuli; and CSF, the cerebrospinal fluid.

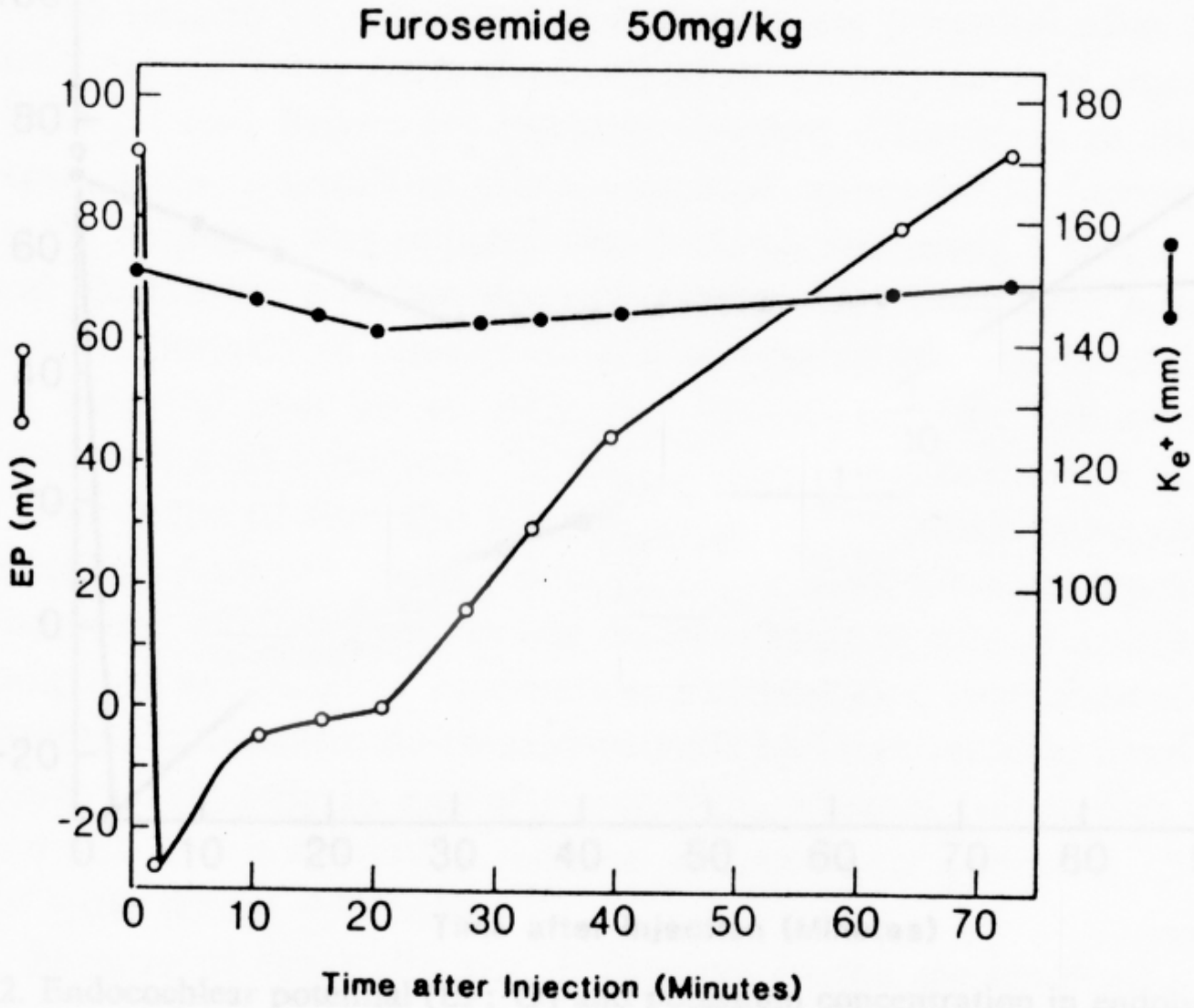


Fig. 1. Endocochlear potential (EP; ○) and potassium concentration in endolymph (Ke^+; ●) measured by microelectrodes in representative chinchilla before (time zero) and following injection of furosemide (50 mg/kg intravenously).

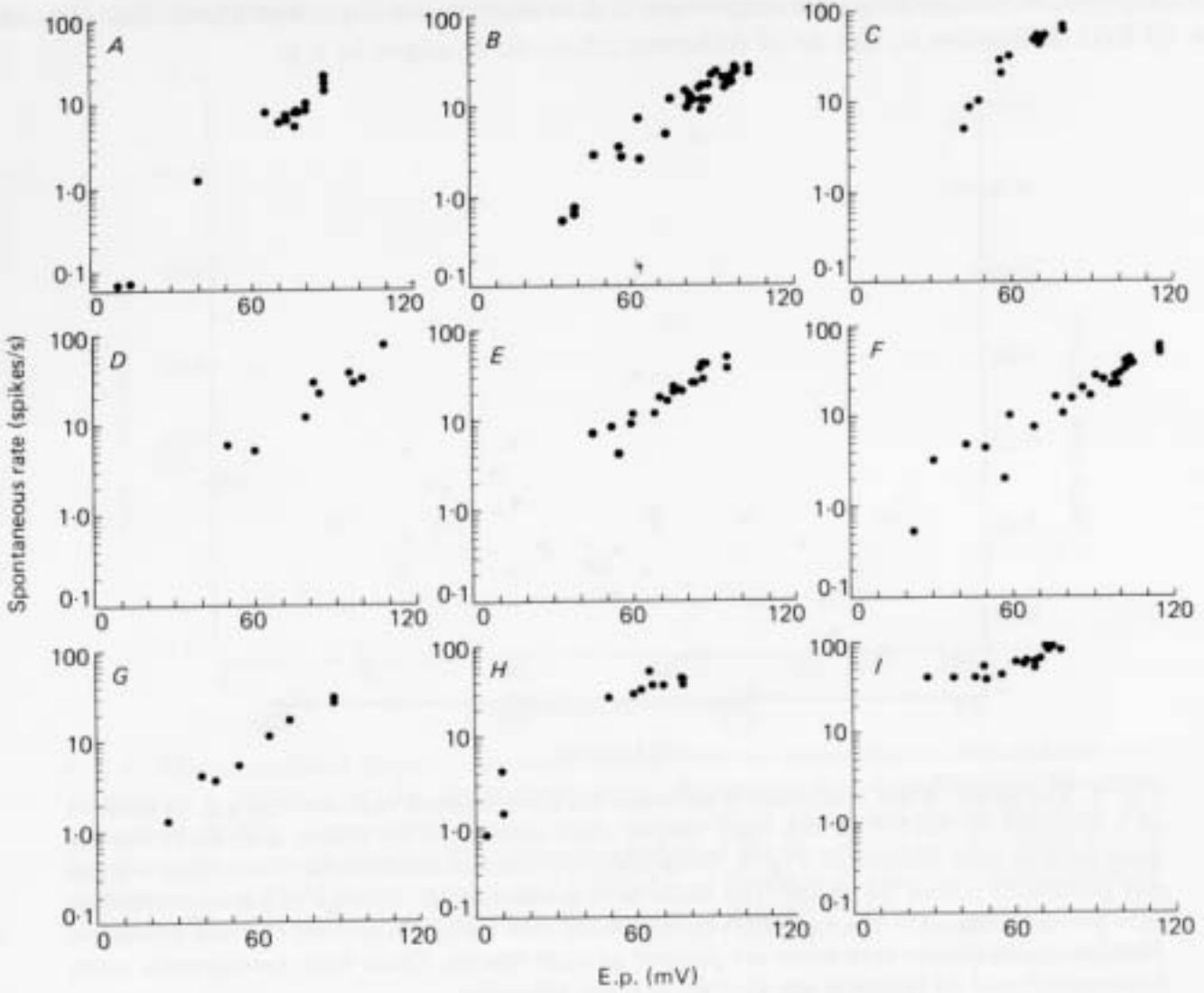


Fig. 4. The relationship between the e.p. and the spontaneous discharge rate of single auditory nerve fibres following furosemide administration. Each panel contains data obtained for a different unit. Different points were obtained as the e.p. and spontaneous rate varied as a function of time following the injection of furosemide. The panels are ordered by the c.f. of the fibre. The c.f. of the fibre in each panel is as follows (kHz): *A*: 26·88; *B*: 24·8; *C*: 11·2; *D*: 7·2; *E*: 4·72; *F*: 3·44; *G*: 2·44; *H*: 1·0; *I*: 0·42.

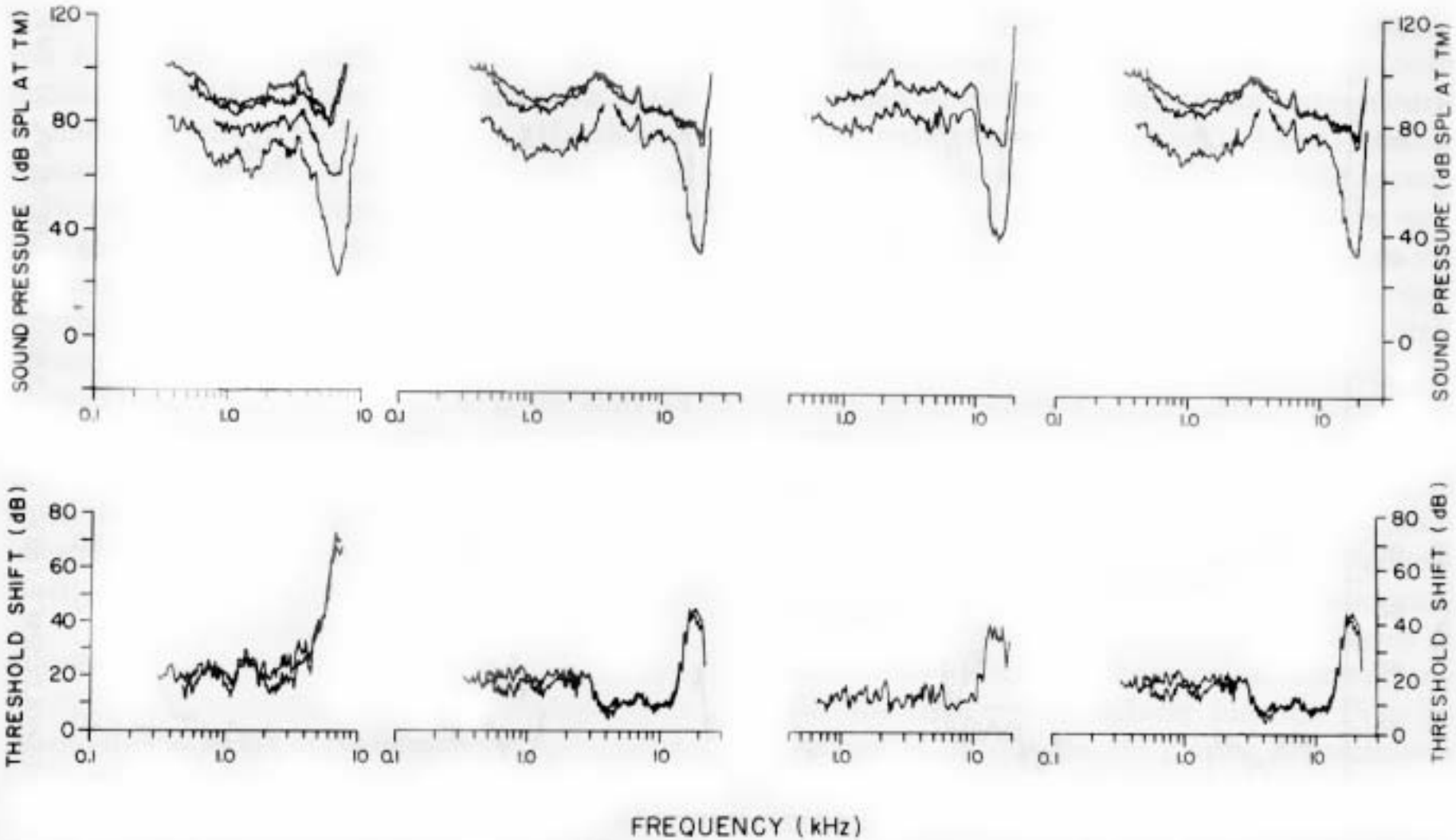


Fig. 5. Representative examples of the changes in single fiber tuning curves following intravenous furosemide administration. In all cases, the preinjection (control) tuning curve is that with the lowest threshold. The lower panels contain plots of the difference between the preinjection tuning curve and those obtained following furosemide administration.

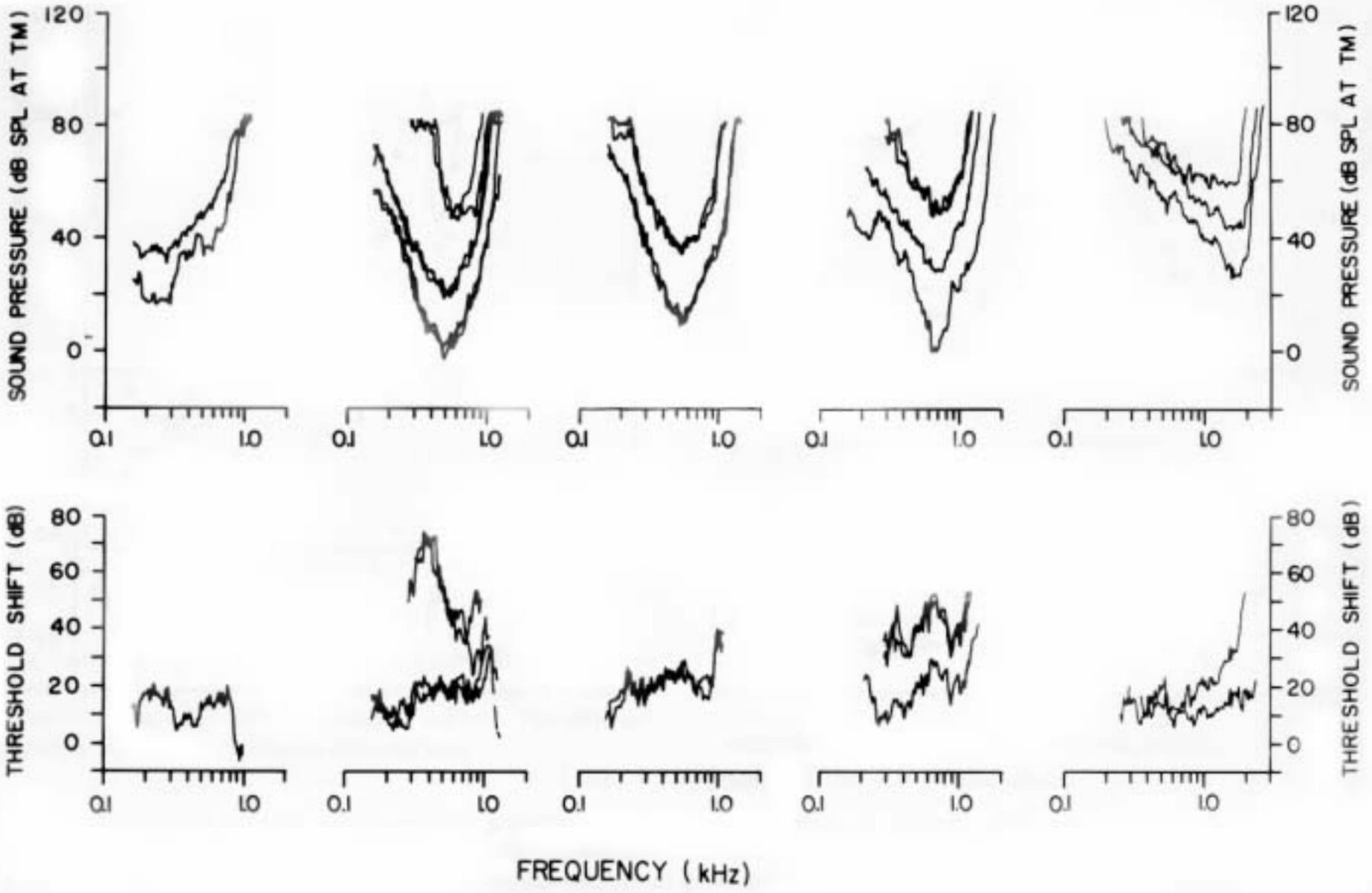
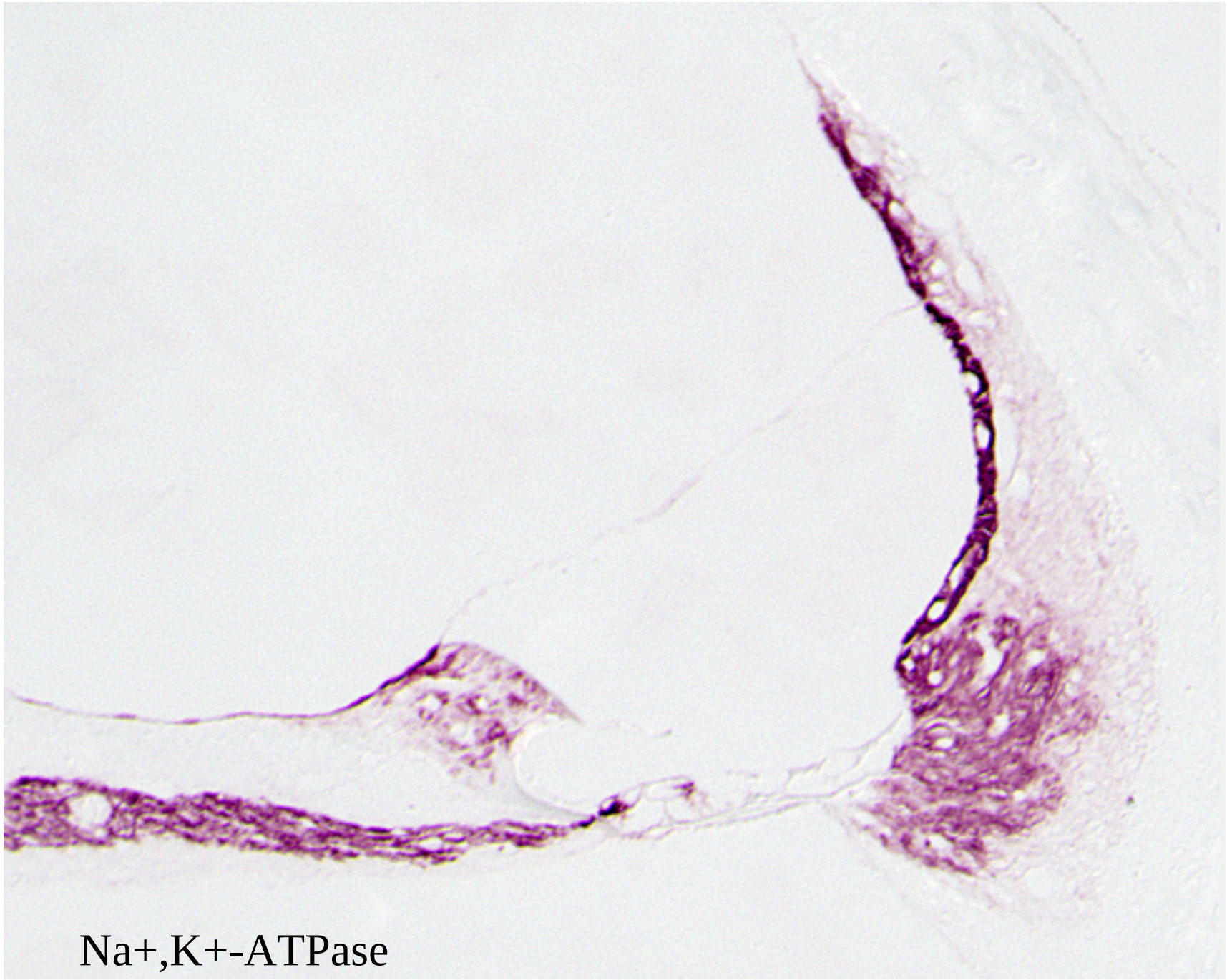
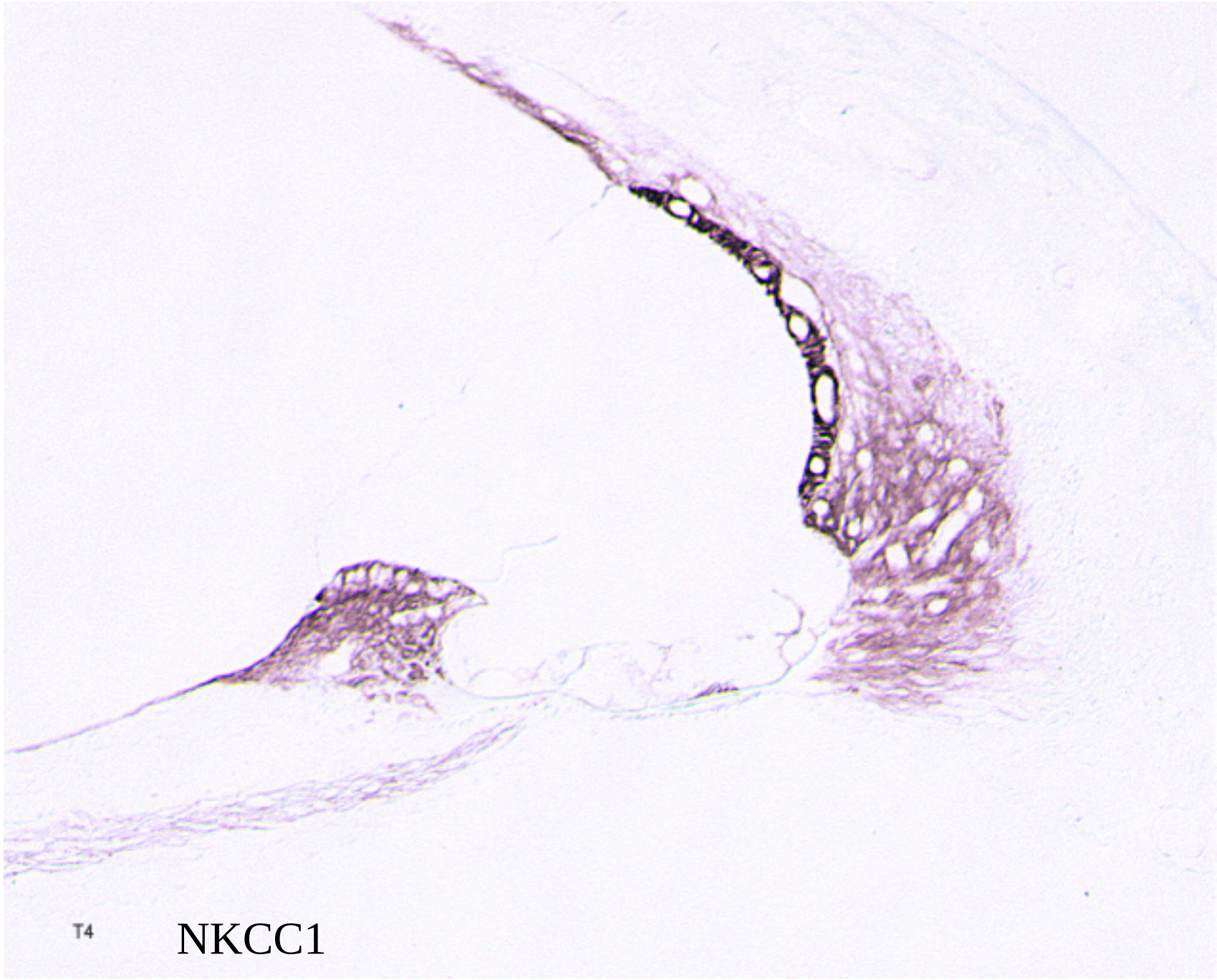
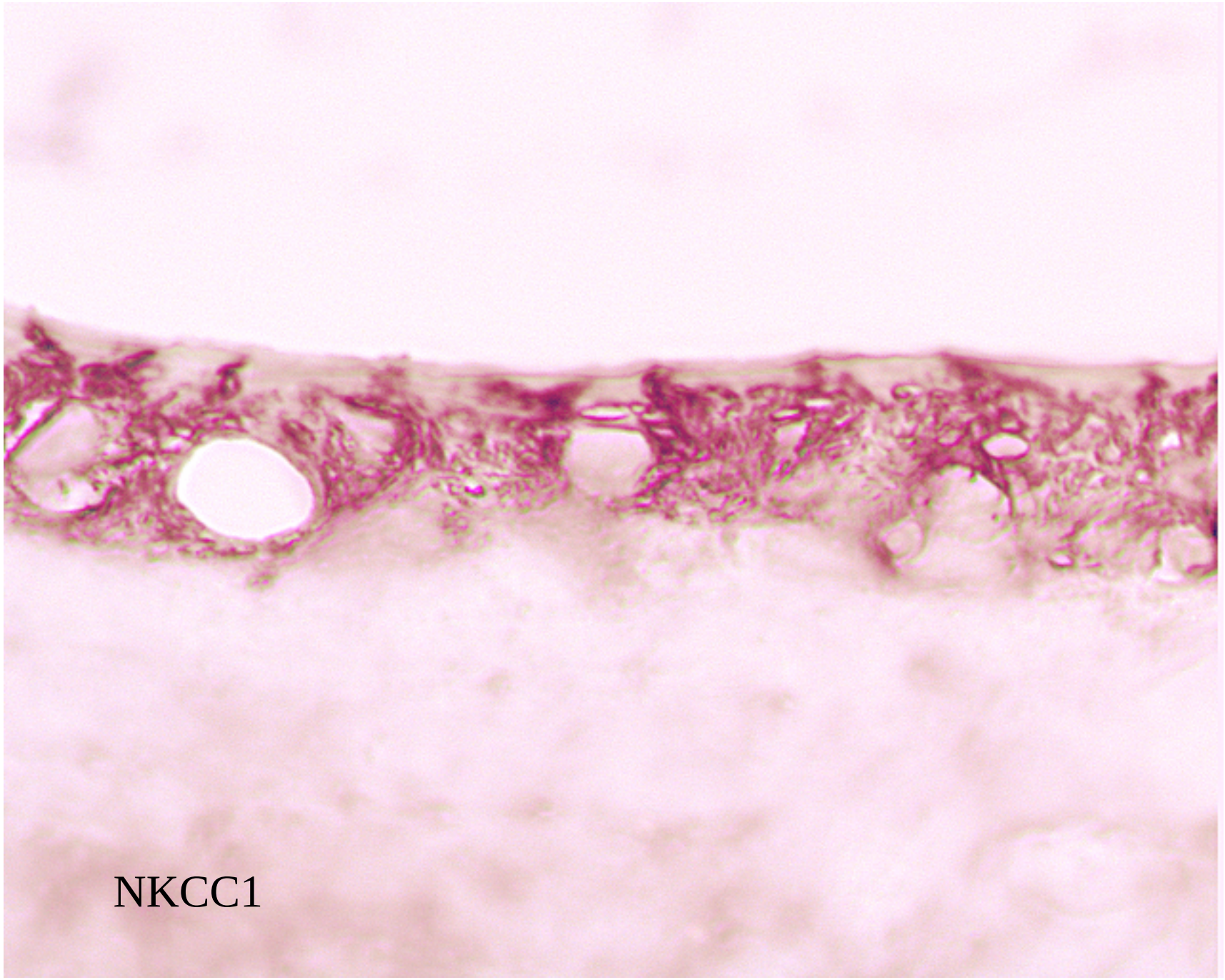


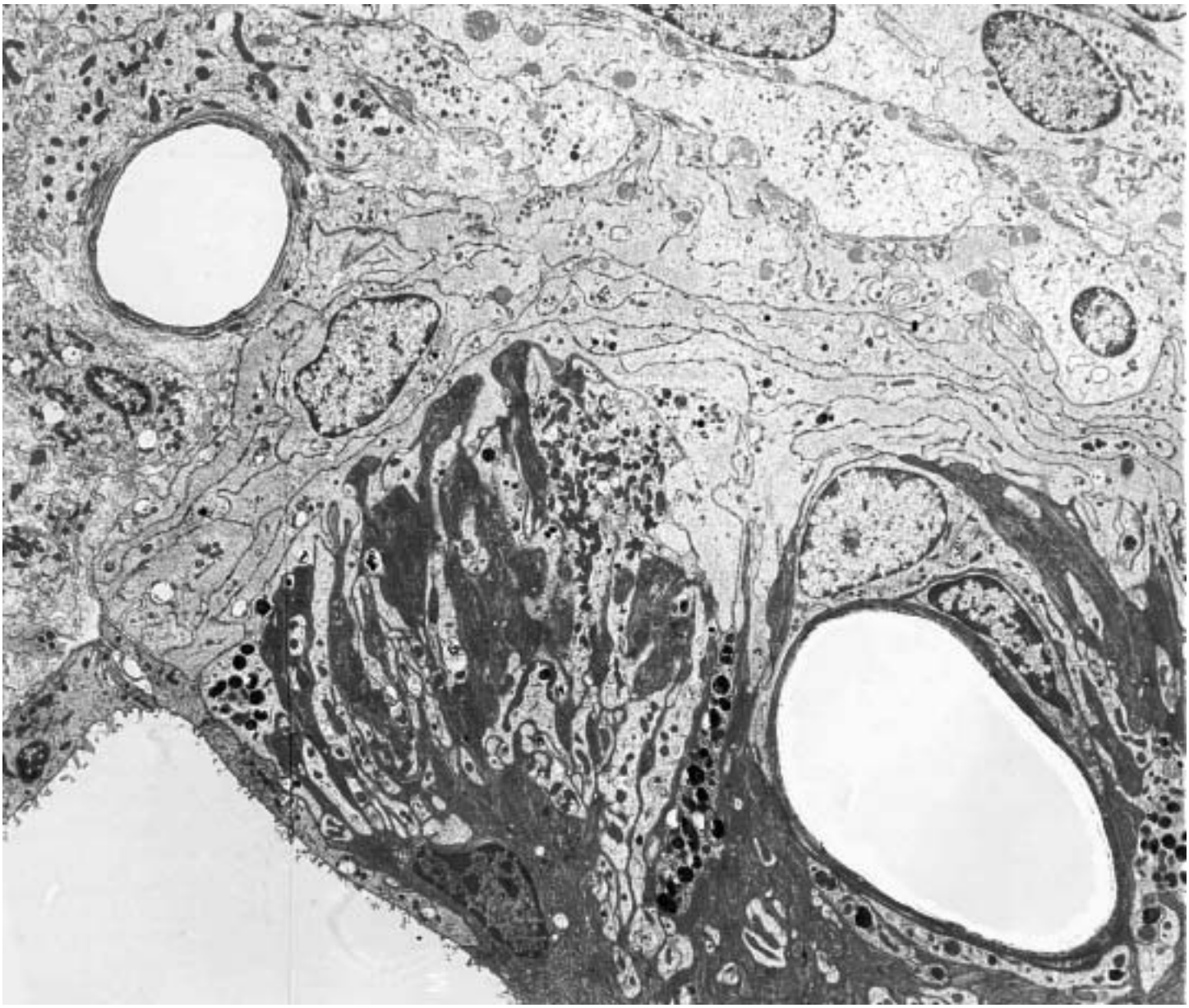
Fig. 7. Representative changes in the tuning curves of lower CF units following furosemide administration. The preinjection tuning curves are those with the lowest thresholds. The lower plots represent the difference between the tuning curves plotted above.

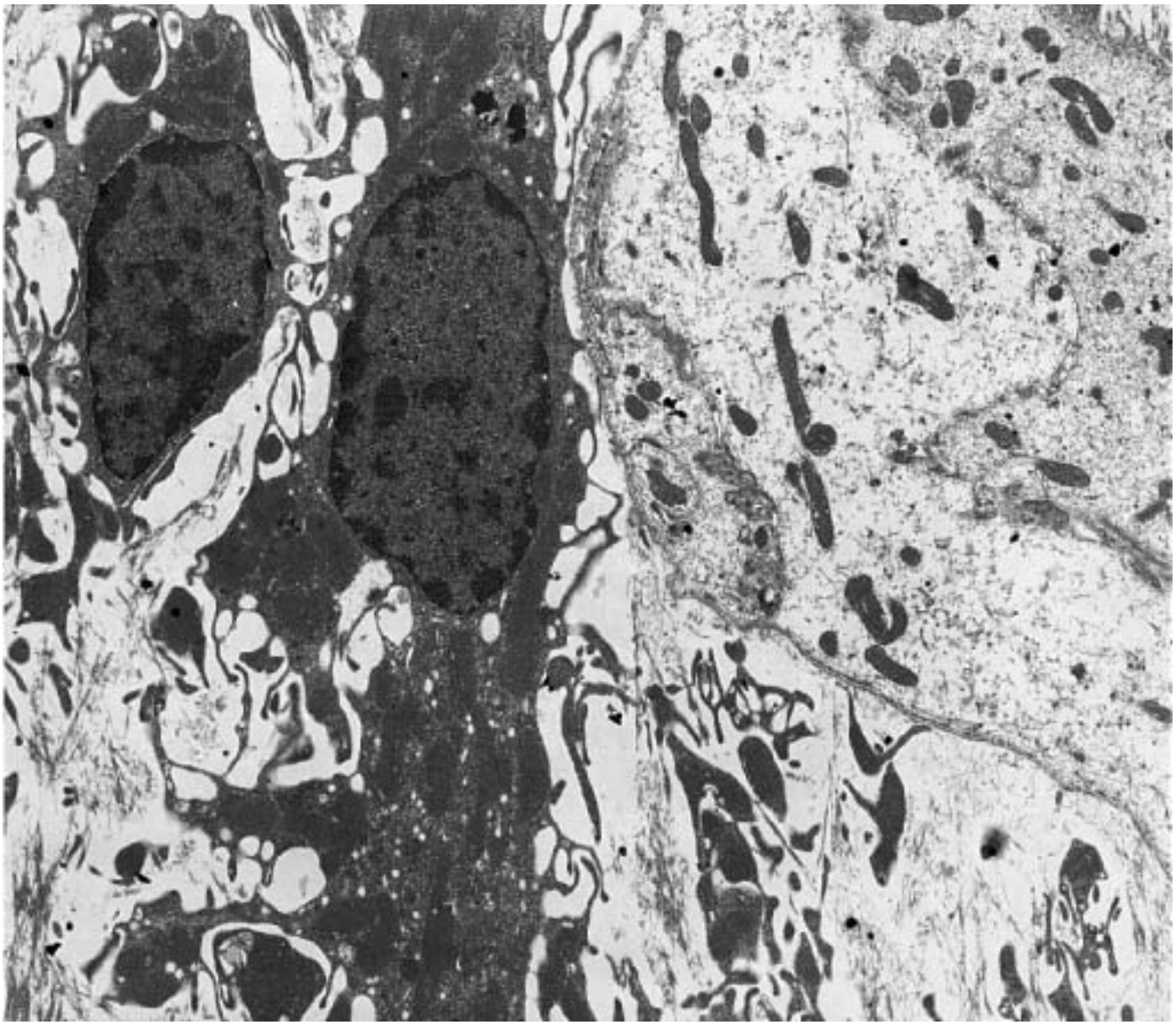

Na+,K+-ATPase

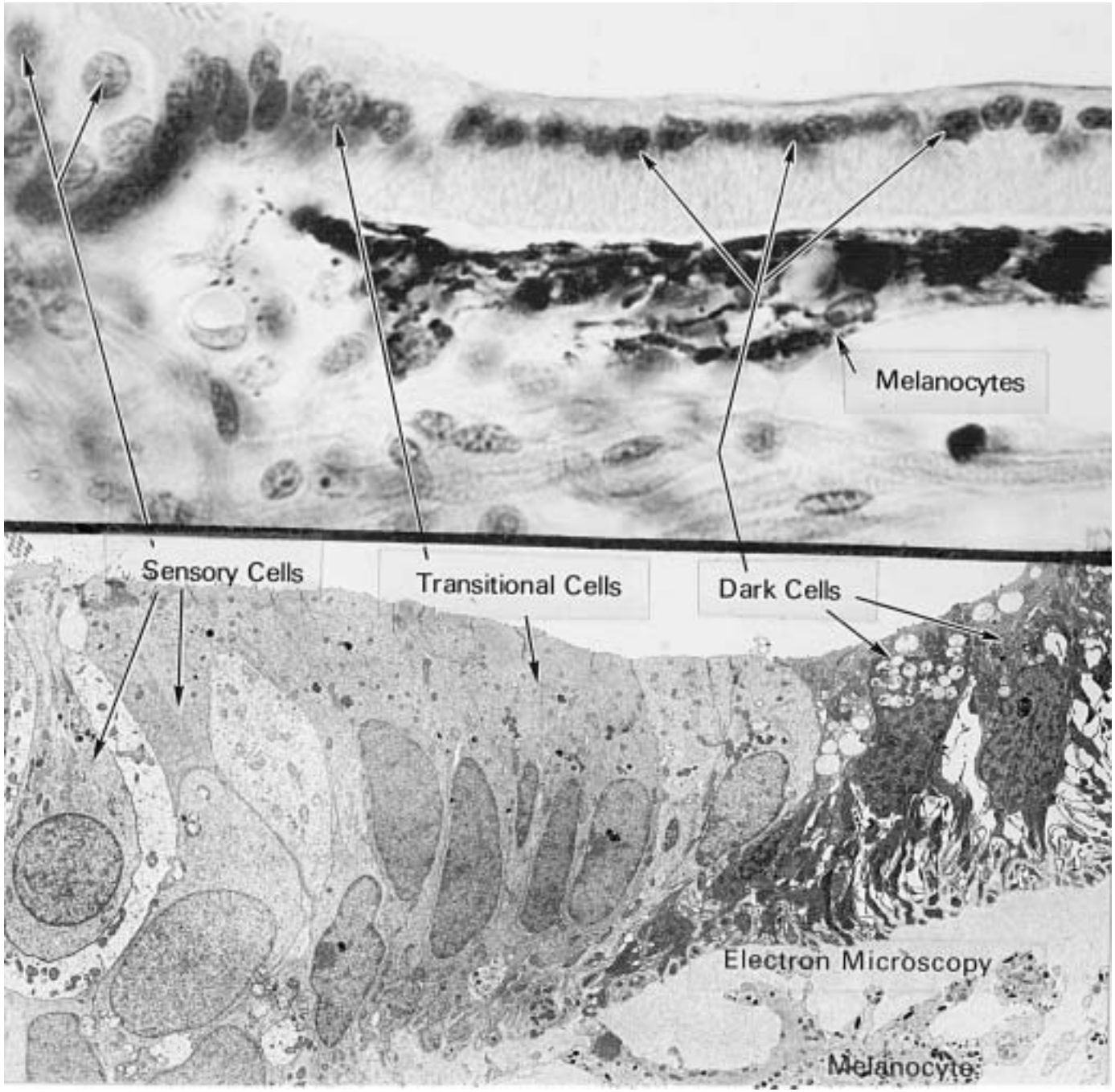

Na+,K+-ATPase


T4
NKCC1


NKCC1






Melanocytes
Sensory Cells
Transitional Cells
Dark Cells
Electron Microscopy
Melanocyte

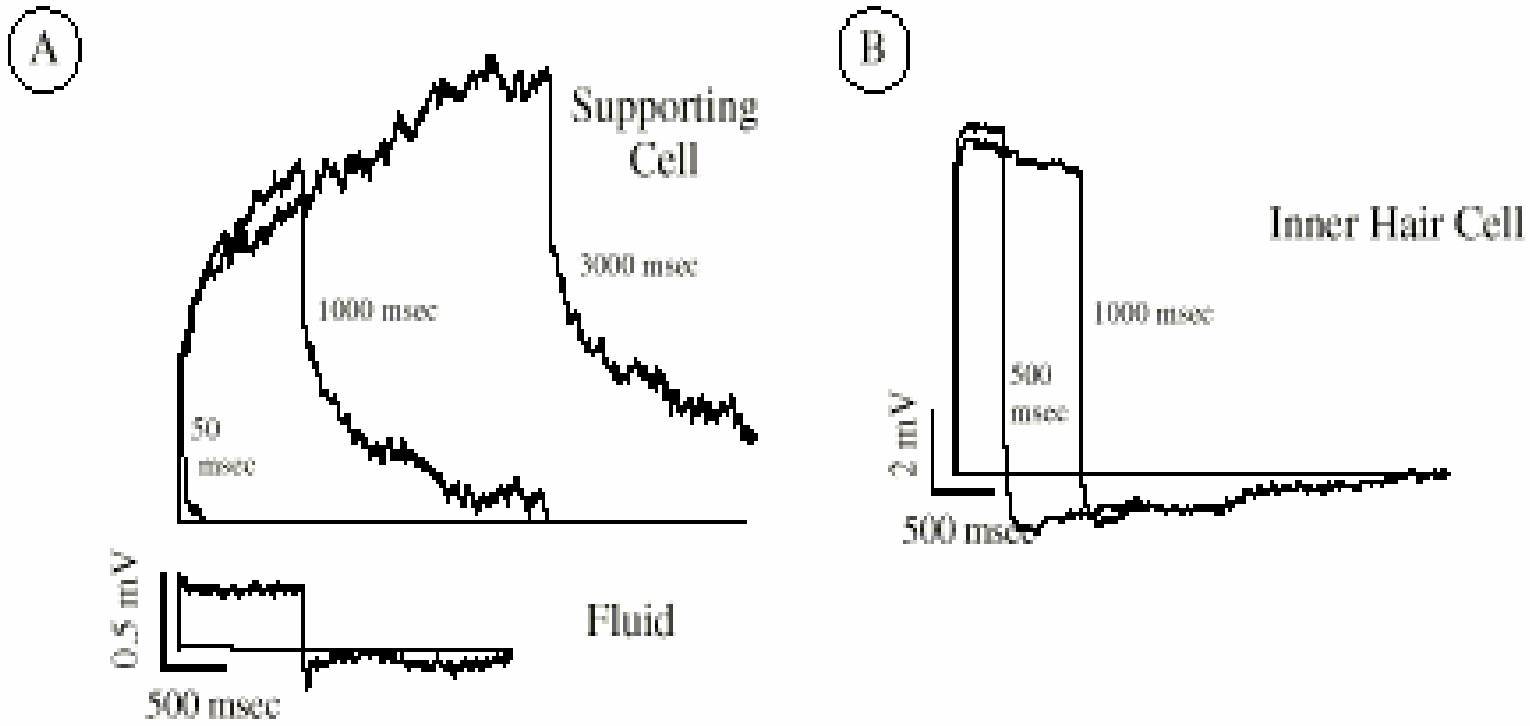
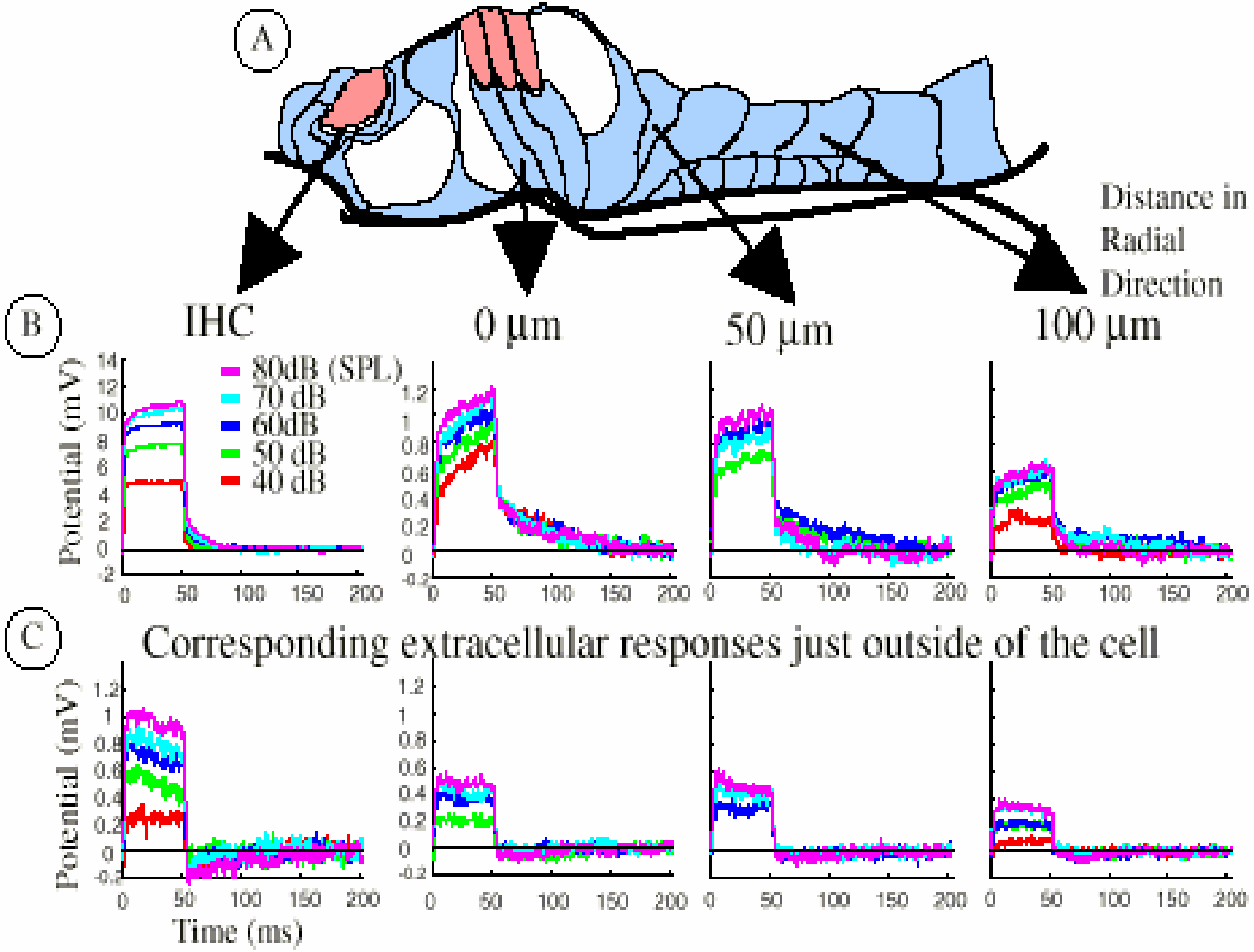
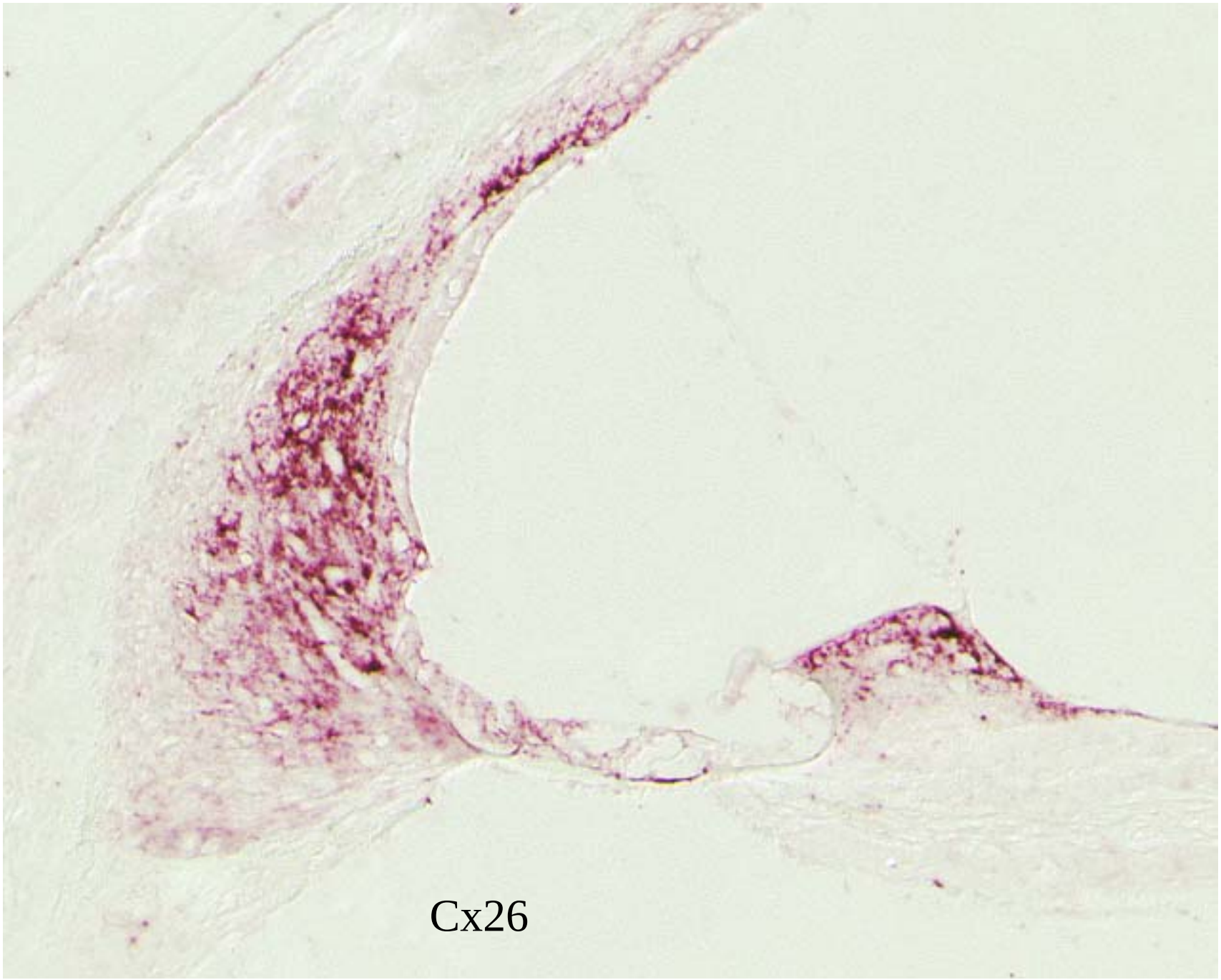
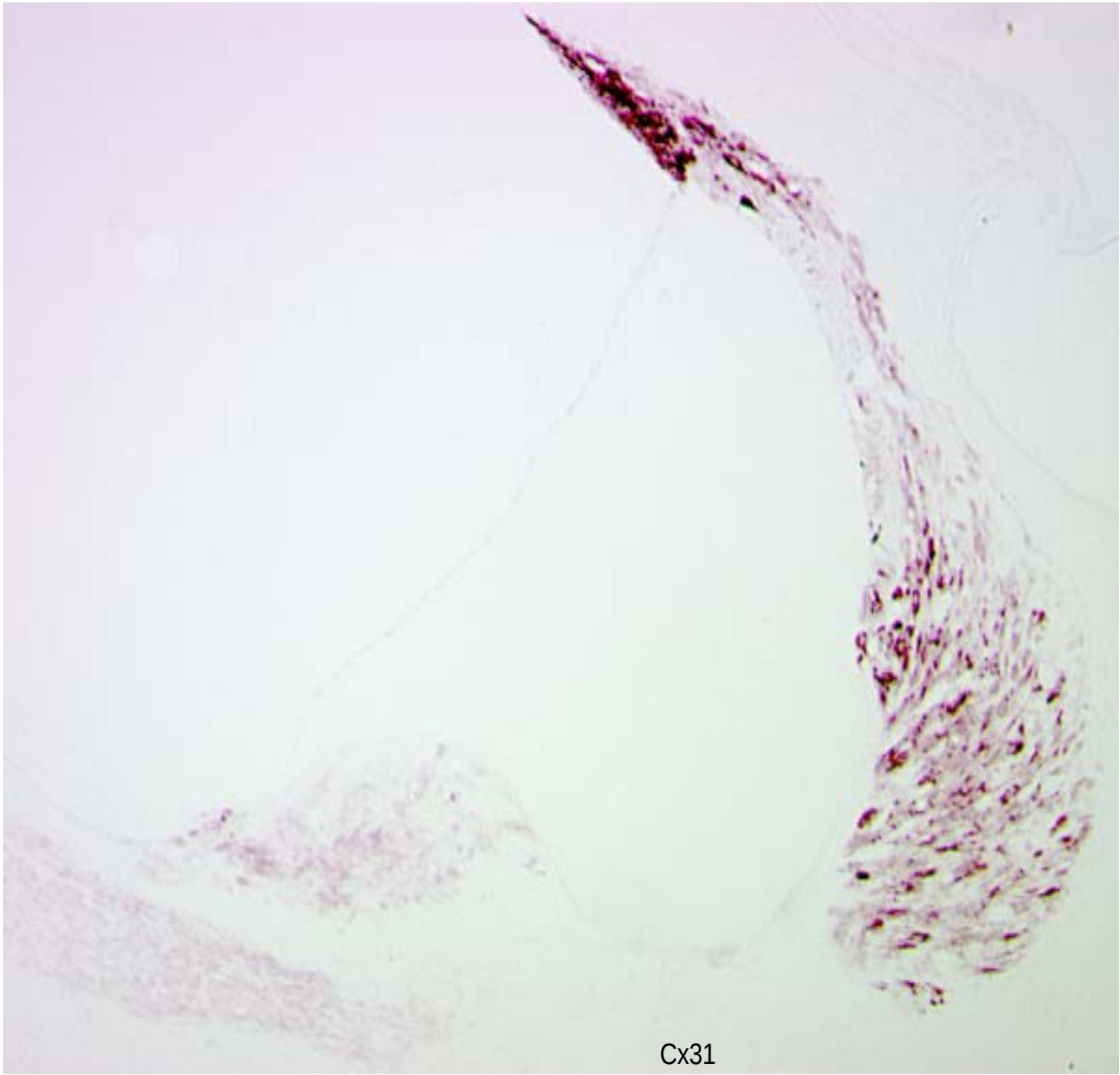


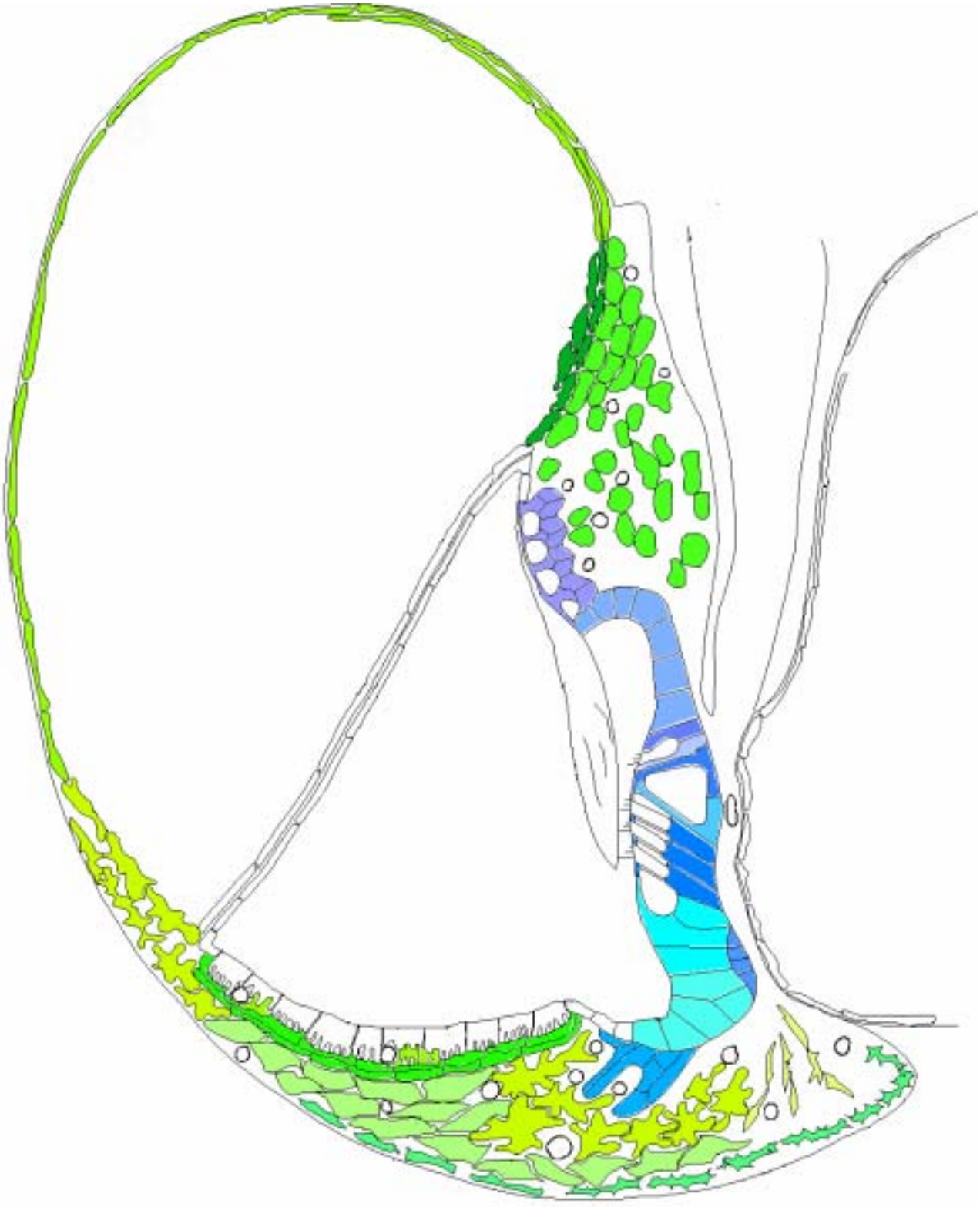
Figure 27. Time waveforms from long duration tone bursts. (**A**) Responses from a Claudius cell in response to 50, 1000, and 3000 msec tone bursts. The corresponding extracellular fluid response for 1000 msec is shown directly below. (**B**) Responses from an inner hair cell (same as in Figure 27) in response to 500 msec and 1000 msec tone bursts. All tone bursts were at 8 kHz at 70 dB SPL.

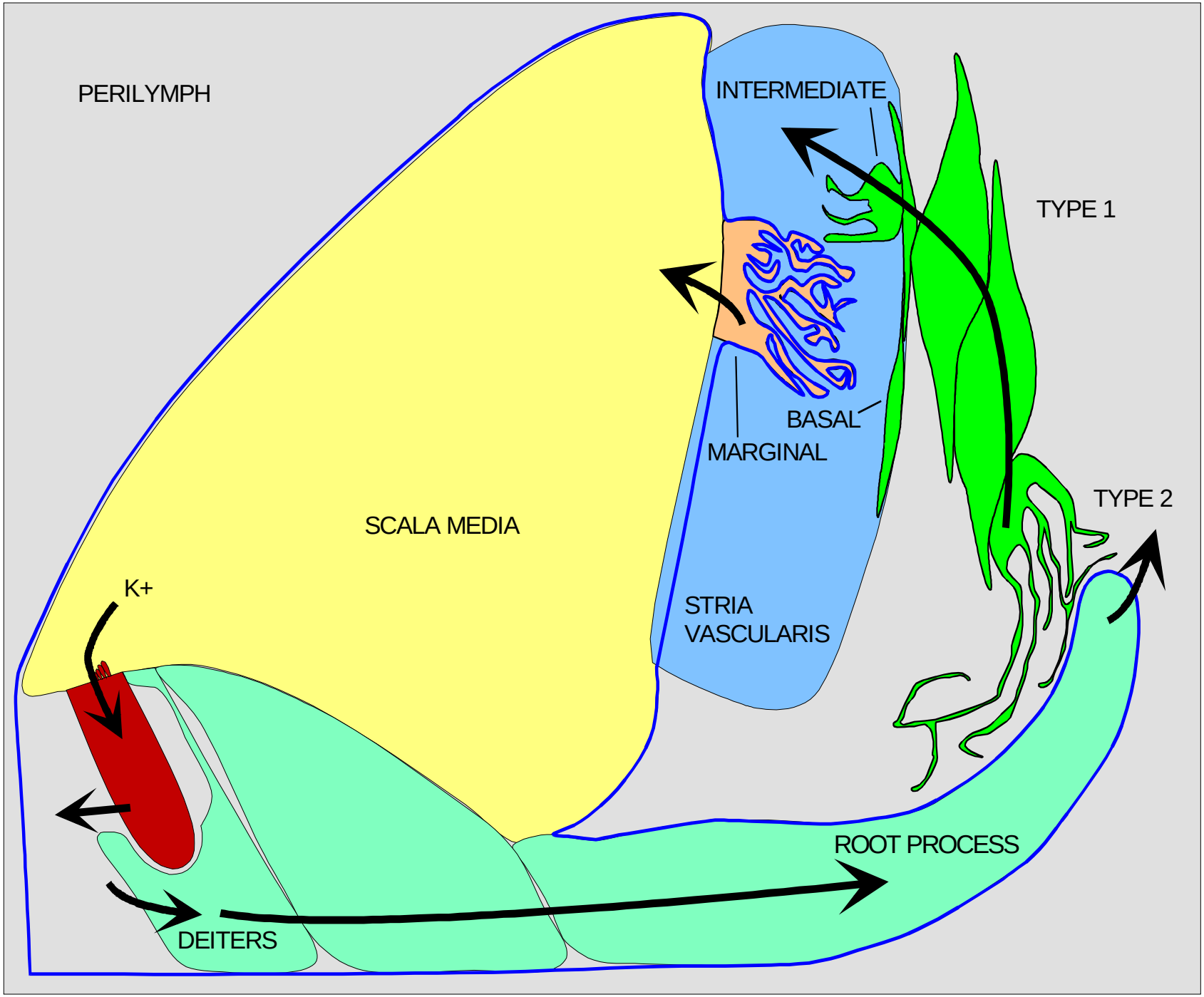

A
Distance in
Radial
Direction
IHC
0 µm
50 µm
100 µm
B
80dB (SPL)
70 dB
60dB
50 dB
40 dB
Potential (mV)
C
Corresponding extracellular responses just outside of the cell
Potential (mV)
Time (ms)

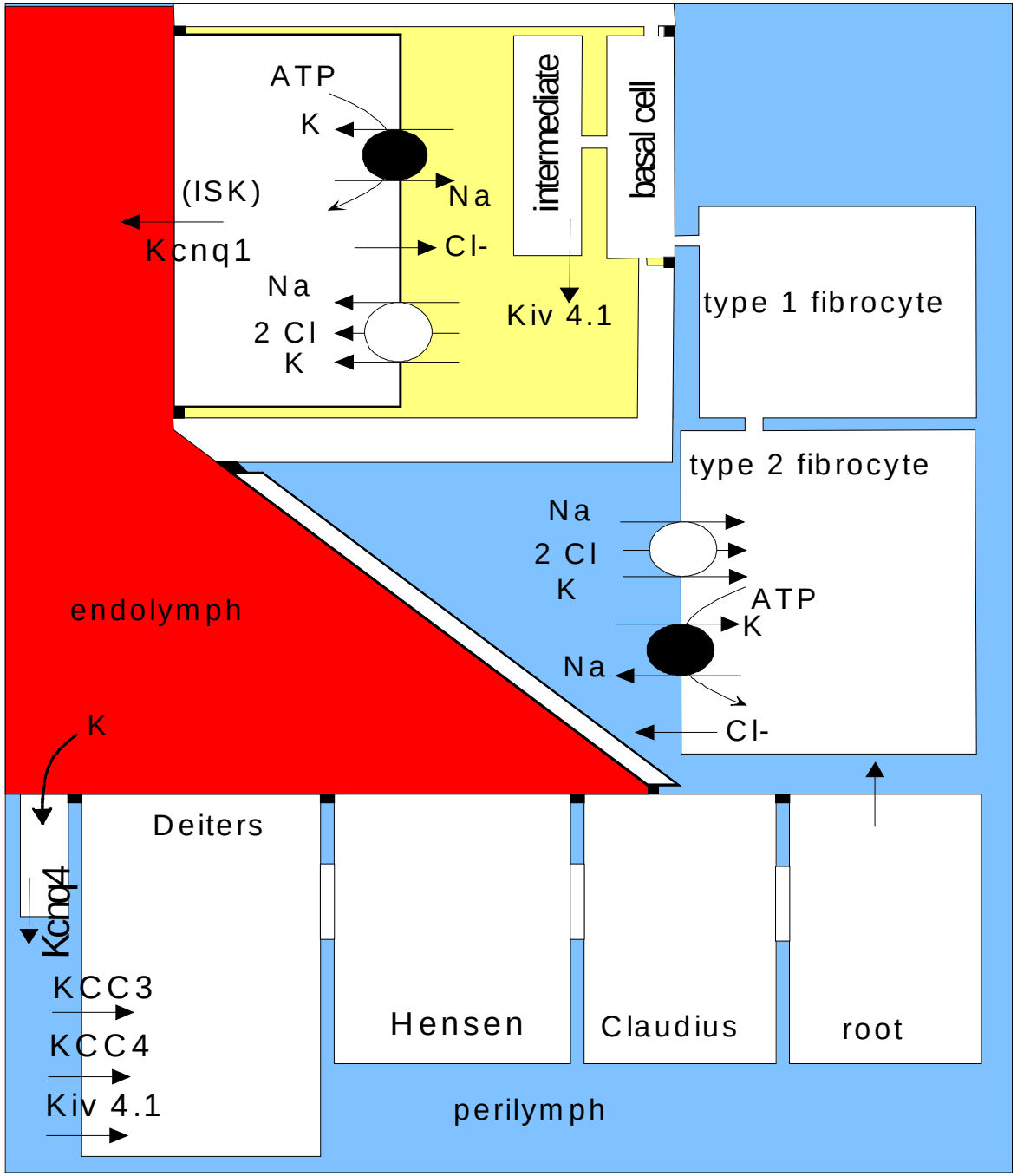

Cx26



Cx31




PERILYMPH
INTERMEDIATE
TYPE 1
BASAL
MARGINAL
TYPE 2
SCALA MEDIA
K+
STRIA
VASCULARIS
ROOT PROCESS
DEITERS


ATP
K
Na
(ISK)
Kcnq1
Cl-
Na
2 Cl
K
Kiv 4.1
intermediate
basal cell
type 1 fibrocyte
type 2 fibrocyte
Na
2 Cl
K
ATP
K
Na
Cl-
endolymph
K
Deiters
Kcnq4
KCC3
KCC4
Kiv 4.1
Hensen
Claudius
root
perilymph