

Supplemental Data

Genomic Duplication and Overexpression of *TJP2*/*ZO-2*

Leads to Altered Expression of Apoptosis Genes

in Progressive Nonsyndromic Hearing Loss *DFNA51*

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Figure S1. Expression of *FAM189A2* in family T relatives.

Expression of *TJP2* transcript relative to the control gene *UBC* in lymphoblasts of family T relatives. Blue bars represent results from individuals without the duplication; red bars represent results for individuals with the duplication. Individuals are labeled as in Figure 1. Values represent mean \pm SEM of data from three independent experiments.

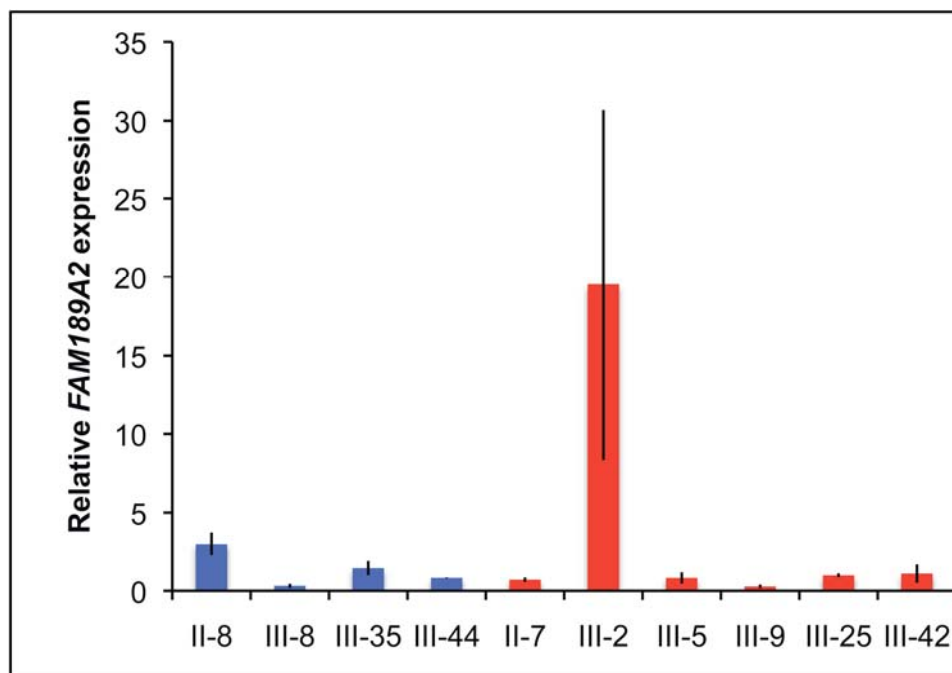


Figure S2. Expression of Tjp1 in the mouse inner ear.

Immunofluorescence confocal images of the cochlea were taken at E16.5 and P0 and of the saccule at E16.5. Tjp1 expression (red) is seen at the apical junctions between hair cells and supporting cells (arrowheads). In contrast, Tjp2 is expressed both at the apical edge, associated with tight junctions, and along the basolateral side (see Figure 3). Hair cell cytoplasm and nuclei are marked by myosin VI (MyoVI, green) and DAPI (blue), respectively. Scale bar: 10 μ m.

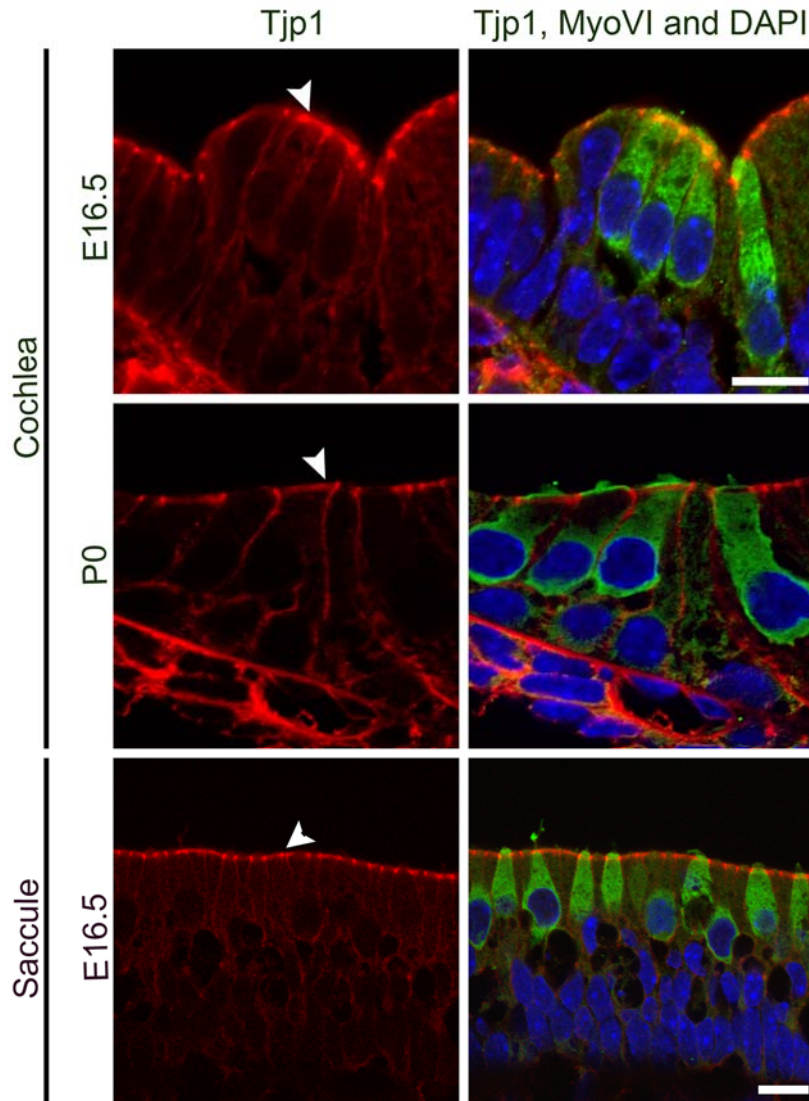


Table S1. Taqman Assays (Applied Biosystems)

Gene	Assay ID
BAD	Hs00188930_m1
BAK1	Hs00940249_m1
BAX	Hs00180269_m1
BBC3	Hs00248075_m1
BCL2	Hs99999018_m1
BCL2A1	Hs00187845_m1
BCL2L1	Hs00236329_m1
BCL2L11	Hs00197982_m1
BCL2L2	Hs00187848_m1
BID	Hs00609632_m1
BIK	Hs00609635_m1
BMF	Hs00372937_m1
HPRT	Hs99999909_m1
HRK	Hs02621354_s1
IL6	Hs00985639_m1
MCL1	Hs03043899_m1
PMAIP1	Hs00560402_m1
REL	Hs00968436_m1
TBP	Hs99999910_m1
TJP2	Hs00178081_m1
TSPO	Hs00559362_m1
UBC	Hs00824723_m1
18s RNA	Hs99999901_s1
Tjp2	Mm00495620_m1
Hprt	Mm00446968_m1

Table S2. Expression of apoptosis-related genes in Family T

Expression of genes on the Human Cellular Apoptosis Gene Signature Plate in lymphoblasts of four family T relatives. One plate was used for each sample. Gene expression is normalized to the *HPRT* endogenous control on each plate ($2^{\Delta Ct}$). Data for three additional endogenous control genes is excluded.

Gene	Assay ID	Unaffected		Affected		Fold difference Unaffected/Affected	P (t-test)
		II-8	III-35	III-42	III-1		
AIFM1	Hs00377585_m1	0.579652	0.809283	1.085023	0.691218	0.782	0.485
AKT1	Hs00178289_m1	1.541792	1.382115	2.150466	2.042125	0.697	0.022
APAF1	Hs00559441_m1	0.242876	0.196090	0.282235	0.280416	0.780	0.118
ATM	Hs01112307_m1	0.841657	0.988427	1.181084	0.832290	0.909	0.676
BAD	Hs00188930_m1	0.002668	0.001752	0.003608	0.001135	0.932	0.914
BAK1	Hs00940249_m1	0.000369	0.000602	0.000554	0.000649	0.807	0.455
BAX	Hs00180269_m1	5.219632	3.478779	6.297835	5.621597	0.730	0.227
BBC3	Hs00248075_m1	0.035715	0.022305	0.043014	0.037262	0.723	0.267
BCL2	Hs99999018_m1	1.189283	0.837419	1.061078	1.568386	0.771	0.432
BCL2L1	Hs00236329_m1	4.907826	6.284117	3.183286	2.484100	1.975	0.070
BCL2L11	Hs00197982_m1	0.220980	0.118235	0.736959	0.678235	0.240	0.012
BID	Hs00609632_m1	0.177385	0.139109	0.090164	0.112417	1.562	0.124
BIRC2	Hs01112284_m1	0.549251	0.310514	0.270212	0.328818	1.435	0.400
CASP3	Hs00234387_m1	1.110276	1.042245	1.039691	0.863442	1.131	0.318
CASP7	Hs00169152_m1	0.293288	0.289923	0.211158	0.260045	1.238	0.150
CASP8	Hs01018151_m1	0.081128	0.145250	0.095975	0.138057	0.967	0.930
CASP9	Hs00154260_m1	0.076552	0.077033	0.077644	0.064211	1.083	0.475
CDKN2A	Hs00923894_m1	0.346951	0.257095	0.313760	0.387122	0.862	0.492
CFLAR	Hs01116280_m1	2.419294	2.283057	1.899208	2.171639	1.155	0.174
CHEK2	Hs00200485_m1	0.024067	0.017943	0.024613	0.034423	0.712	0.279
CHUK	Hs00175141_m1	0.054447	0.044317	0.049712	0.048359	1.007	0.952
CYCS	Hs01588973_m1	0.060419	0.023298	0.025583	0.049668	1.113	0.866
DAPK3	Hs00154676_m1	0.115307	0.112635	0.114294	0.121741	0.966	0.414
DAXX	Hs00154692_m1	0.668304	0.561894	0.588148	0.610244	1.027	0.797
DFFA	Hs00189336_m1	0.550222	0.367078	0.461731	0.557273	0.900	0.671
DFFB	Hs00237077_m1	0.002337	0.001912	0.002988	0.002269	0.808	0.351
DIABLO	Hs00219876_m1	0.590332	0.492689	0.401400	0.594440	1.088	0.726
EGFR	Hs01076078_m1	0.000088	undetected	undetected	0.006331		
ENDOG	Hs00172770_m1	0.122974	0.064901	0.144314	0.142000	0.656	0.232
F2RL3	Hs00559732_m1	undetected	undetected	undetected	undetected		
FADD	Hs00538709_m1	0.013906	0.008240	0.017590	0.009993	0.803	0.624
FAS	Hs00531110_m1	1.328105	0.648589	1.746626	1.386111	0.631	0.272
FASLG	Hs00181225_m1	0.000423	0.000537	0.000142	0.000436	1.663	0.349
HTRA2	Hs00234883_m1	0.636932	0.616228	0.602746	0.409323	1.238	0.341
IGF1	Hs01547656_m1	0.238379	0.047194	0.028028	0.063800	3.110	0.424
IGF1R	Hs00609566_m1	0.007874	0.001634	0.045504	0.008976	0.175	0.349
IKBKB	Hs00233287_m1	0.613325	0.375322	0.432597	0.448630	1.122	0.697
IKBKE	Hs01063858_m1	0.278201	0.122132	0.273222	0.208390	0.831	0.678
IKBKG	Hs00415849_m1	0.254714	0.134865	0.287952	0.274287	0.693	0.289
IL2	Hs00174114_m1	undetected	undetected	undetected	undetected		
IL6	Hs00985639_m1	0.027684	0.036471	0.000389	0.003418	16.854	0.023
KDR	Hs00911700_m1	0.000325	undetected	undetected	undetected		
KIT	Hs00174029_m1	0.000203	0.000712	0.000210	0.004219	0.207	
MDM2	Hs99999008_m1	2.576849	1.285326	2.746608	3.339028	0.635	0.258

MET	Hs00179845_m1	0.000855	0.000752	0.001068	0.000781	0.870	0.511
NFKB1	Hs00765730_m1	1.207240	1.328625	0.850417	1.370591	1.142	0.615
NFKB2	Hs00174517_m1	2.698112	3.211787	2.009516	2.439073	1.328	0.161
NFKBIA	Hs00153283_m1	3.064137	4.179580	2.294863	2.137362	1.634	0.130
NFKBIB	Hs00182115_m1	0.212677	0.274955	0.202636	0.184918	1.258	0.262
NFKBIE	Hs00234431_m1	0.112102	0.130183	0.078188	0.128076	1.175	0.567
P53AIP1	Hs00223141_m1	undetected	undetected	undetected	undetected		
PARP1	Hs00242302_m1	0.485276	0.758037	0.502494	0.631308	1.097	0.751
PARP2	Hs00193931_m1	0.341517	0.534381	0.298945	0.404122	1.246	0.514
PARP3	Hs00193946_m1	0.220284	0.281485	0.235266	0.294190	0.948	0.775
PARP4	Hs00173105_m1	0.361985	0.457845	0.374614	0.477009	0.963	0.842
PIK3CA	Hs00180679_m1	0.190615	0.260466	0.128320	0.178805	1.469	0.237
PIK3CB	Hs00927728_m1	0.109121	0.193225	0.168385	0.110211	1.085	0.838
PIK3CD	Hs00192399_m1	3.041199	5.900900	3.576814	2.722683	1.419	0.469
PIK3R1	Hs00381459_m1	0.611614	0.647674	0.658183	0.704655	0.924	0.220
PIK3R2	Hs00178181_m1	0.690204	1.148056	0.797417	0.518020	1.397	0.432
PMAIP1	Hs00560402_m1	1.860088	2.703486	2.798500	2.188522	0.915	0.724
PPID	Hs00234593_m1	0.956213	1.061520	1.336708	0.976860	0.872	0.513
PRKCA	Hs00176973_m1	0.000734	0.025906	0.000765	0.006440	3.697	0.530
PRKCB	Hs00176998_m1	2.769941	4.073969	3.182761	2.207195	1.270	0.466
PRKCD	Hs01090047_m1	1.813187	1.967788	2.221491	2.044374	0.886	0.175
PRKCE	Hs00178455_m1	0.135493	0.232660	0.063336	0.110785	2.114	0.215
PRKCZ	Hs00177051_m1	0.001808	0.080305	0.009205	0.003956	6.239	0.473
REL	Hs00968436_m1	0.914970	0.880683	0.414743	0.383203	2.250	0.002
RELA	Hs00153294_m1	0.874923	1.130390	1.056736	0.758509	1.105	0.676
RELB	Hs00232399_m1	0.032807	0.032162	0.045244	0.008291	1.214	0.786
RIPK1	Hs00169407_m1	0.077125	0.106887	0.073297	0.055343	1.430	0.252
RPS6KA1	Hs00177257_m1	0.017218	0.014178	0.020140	0.014753	0.900	0.629
RPS6KA2	Hs00179731_m1	0.045668	0.126718	0.105155	0.092339	0.873	0.789
RPS6KA3	Hs00177936_m1	0.811471	1.129020	0.781389	0.683040	1.325	0.288
RPS6KA4	Hs00177670_m1	0.156062	0.137609	0.188800	0.130626	0.919	0.714
RPS6KA5	Hs00178054_m1	0.084457	0.140175	0.159208	0.069913	0.980	0.970
SLC25A4	Hs00154037_m1	0.196143	0.350072	0.485339	0.366115	0.642	0.257
SLC25A5	Hs00854499_g1	1.090449	1.370249	2.112939	1.660216	0.652	0.133
SLC25A6	Hs00745067_s1	4.456966	5.290826	10.715795	5.644618	0.596	0.327
TGFB1	Hs00998133_m1	4.117961	3.471901	3.926650	6.796703	0.708	0.398
TNF	Hs00174128_m1	3.207226	5.988626	2.990897	2.255385	1.753	0.303
TNFRSF10A	Hs00269492_m1	0.009020	0.056369	0.021699	0.015020	1.781	0.610
TNFRSF1A	Hs00533560_m1	0.535879	0.647253	0.470664	0.214902	1.726	0.216
TNFSF10	Hs00234356_m1	0.631751	0.425309	0.394300	0.409370	1.315	0.346
TNFSF12	Hs00611242_m1	0.048411	0.027532	0.005143	0.035771	1.856	0.444
TP53	Hs01034249_m1	4.191902	5.870490	6.643640	3.426368	0.999	0.999
TRADD	Hs00182558_m1	0.005742	0.003480	0.008316	0.002098	0.885	0.874
TRAF2	Hs00184192_m1	0.382484	0.685908	0.810972	0.369651	0.905	0.853
TSPO	Hs00559362_m1	0.063623	0.162907	0.554376	0.316904	0.260	0.129
VDAC1	Hs01019083_m1	0.009239	0.020123	0.030426	0.014133	0.659	0.519
VDAC2	Hs00762994_s1	0.125905	0.272117	0.260996	0.140603	0.991	0.987
VDAC3	Hs00366592_m1	0.501340	0.918354	1.104094	0.706442	0.784	0.568