

DAFTAR PUSTAKA

- 1 Mathers, C., Smith, A. & Concha, M. Global burden of hearing loss in the year 2000. *Global burden of Disease* **18**, 1-30 (2000).
- 2 WHO. in www.who.int/news-room/fact-sheets/detail/deafness-and-hearing-loss (2019).
- 3 Arlinger, S. Negative consequences of uncorrected hearing loss-a review. *International journal of audiology* **42**, 2S17-12S20 (2003).
- 4 Cunningham, L. L. & Tucci, D. L. Hearing loss in adults. *New England Journal of Medicine* **377**, 2465-2473 (2017).
- 5 WHO. WHO global estimates on prevalence of hearing loss. Prevention of Deafness. (Geneva, 2018).
- 6 Heidi, L. R., Robin, E. W., Margaret, A. K., David, P. C. & Bruce, R. K. Understanding the genetics of deafness. A guide for patients and families. (2003).
- 7 Hilgert, N., Smith, R. J. H. & Van Camp, G. Forty-six genes causing nonsyndromic hearing impairment: which ones should be analyzed in DNA diagnostics? *Mutation Research/Reviews in Mutation Research* **681**, 189- 196 (2009).
- 8 Shearer, A. E., Hildebrand, M. S. & Smith, R. J. H. Hereditary hearing loss and deafness overview. *GeneReviews®[Internet]* (2017).
- 9 Pandey, S. & Pandey, M. Advances in Genetic Diagnosis and Treatment of Hearing Loss—A Thirst for Revolution. *Update On Hearing Loss* (2015).

- 10 Korver, A. M. H. *et al.* Congenital hearing loss. *Nature reviews Disease primers* **3**, 1-17 (2017).
- 11 Morton, C. C. & Nance, W. E. Newborn hearing screening—a silent revolution. *New England Journal of Medicine* **354**, 2151-2164 (2006).
- 12 Fortnum, H. M. *et al.* Prevalence of permanent childhood hearing impairment in the United Kingdom and implications for universal neonatal hearing screening: questionnaire based ascertainment studyCommentary: Universal newborn hearing screening: implications for coordinating and developing services for deaf and hearing impaired children. *Bmj* **323**, 536- 536 (2001).
- 13 Watkin, P. & Baldwin, M. The longitudinal follow up of a universal neonatal hearing screen: the implications for confirming deafness in childhood. *International journal of audiology* **51**, 519-528 (2012).
- 14 Nikolopoulos, T. P. Auditory dyssynchrony or auditory neuropathy: understanding the pathophysiology and exploring methods of treatment. *International journal of pediatric otorhinolaryngology* **78**, 171-173 (2014).
- 15 Zhao, H. B., Kikuchi, T., Ngezahayo, A. & White, T. W. Gap junctions and cochlear homeostasis. *The Journal of membrane biology* **209**, 177-186 (2006).
- 16 Tekin, M., Arnos, K. S. & Pandya, A. Advances in hereditary deafness. *The Lancet* **358**, 1082-1090 (2001).

- 17 Balitbangkes Kemkes RI. Riset Kesehatan Dasar (Riskesdas) Tahun 2013. (Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan Republik Indonesia, 2013).
- 18 Duthey, B. Priority medicines for Europe and the World: A public health approach to innovation. Upgrade on 2004 Background paper 6.21 Hearing Loss. 50-50 (2013).
- 19 Eryani, Y. M., Wibowo, C. A. & Saftarina, F. Faktor Risiko Terjadinya Gangguan Pendengaran Akibat Bising. *Jurnal Medula* 7, 112-117 (2017).
- 20 Marlina, S., Suwondo, A. & Jayanti, S. Analisis Faktor Risiko Gangguan Pendengaran Sensorineural pada Pekerja PT. X Semarang. *Jurnal Kesehatan Masyarakat (Undip)* 4, 359-366 (2016).
- 21 Rahayu, P. & Pawenang, E. T. Faktor yang berhubungan dengan gangguan pendengaran pada pekerja yang terpapar bising di Unit Spinning I PT. Sinar Pantja Djaja Semarang. *Unnes Journal of Public Health* 5, 140-148 (2016).
- 22 Widuri, A. & Kurniawati, D. K. Bising Lingkungan Tempat Tinggal Kota Sebagai Faktor Risiko Presbiakusis. *Mutiara Medika: Jurnal Kedokteran dan Kesehatan* 11, 62-66 (2011).
- 23 Baradaranfar, M. H. *et al.* Hearing abnormality in neonate intensive care unit (NICU), Yazd-Iran. (2014).
- 24 Cristobal, R. & Oghalai, J. S. Hearing loss in children with very low birth weight: current review of epidemiology and pathophysiology. *Archives of Disease in Childhood-Fetal and Neonatal Edition* 93, F462-F468 (2008).

- 25 Silva, D. P. C. d. & Martins, R. H. G. Analysis of transient otoacoustic emissions and brainstem evoked auditory potentials in neonates with hyperbilirubinemia. *Brazilian Journal of Otorhinolaryngology* **75**, 381-386 (2009).
- 26 Susyanto, B. E. & Widuri, A. Faktor Risiko Gangguan Pendengaran pada Skrining Pendengaran Bayi Baru Lahir di Rumah Sakit PKU Muhammadiyah Yogyakarta. *Mutiara Medika: Jurnal Kedokteran dan Kesehatan* **15**, 30-36 (2015).
- 27 Melinda, M., Muyassaroh, M. & Zulfikar, Z. Faktor yang berpengaruh terhadap kejadian presbikusis di rumah sakit Dr Kariadi Semarang. *Oto Rhino Laryngologica Indonesiana* **42** (2012).
- 28 Brant, L. J. & Fozard, J. L. Age changes in pure-tone hearing thresholds in a longitudinal study of normal human aging. *The Journal of the Acoustical Society of America* **88**, 813-820 (1990).
- 29 Ciorba, A., Bianchini, C., Pelucchi, S. & Pastore, A. The impact of hearing loss on the quality of life of elderly adults. *Clinical interventions in aging*, 159-163 (2012).
- 30 Tye-Murray, N., Sommers, M. S. & Spehar, B. Audiovisual integration and lipreading abilities of older adults with normal and impaired hearing. *Ear and hearing* **28**, 656-668 (2007).
- 31 Ahmed, R., Hannigan, I., MacDougall, H., Chan, R. & Halmagyi, G. Gentamicin ototoxicity: A 23-year selected case series of 103 patients. *The*

- Medical journal of Australia* **196**, 701-704, doi:10.5694/mja11.10850 (2012).
- 32 Cureoglu, S., Schachern, P. A. & Paparella, M. M. Effect of parenteral aminoglycoside administration on dark cells in the crista ampullaris. *Archives of Otolaryngology–Head & Neck Surgery* **129**, 626-628 (2003).
 - 33 East, J. E., Foweraker, J. E. & Murgatroyd, F. D. Gentamicin induced ototoxicity during treatment of enterococcal endocarditis: resolution with substitution by netilmicin. *Heart* **91**, e32-e32 (2005).
 - 34 Peloquin, C. A. *et al.* Aminoglycoside toxicity: daily versus thrice-weekly dosing for treatment of mycobacterial diseases. *Clinical Infectious Diseases* **38**, 1538-1544 (2004).
 - 35 Rybak, L. P., Talaska, A. E. & Schacht, J. Drug-induced hearing loss. *Auditory trauma, protection, and repair*, 219-256 (2008).
 - 36 Agus, R. *Epidemiologi genetik penderita tuli bisu pada masyarakat Kolok di Desa Bengkala Bali Utara, tahun 2012.* (FKM UI, 2013).
 - 37 Michel, V., Hardelin, J.-P. & Petit, C. Molecular mechanism of a frequent genetic form of deafness. *New England Journal of Medicine* **349**, 716-717 (2003).
 - 38 Abe, S., Usami, S.-i., Shinkawa, H., Kelley, P. M. & Kimberling, W. J. Prevalent connexin 26 gene mutations in Japanese. *Journal of Medical Genetics* **37**, 41-41, doi:10.1136/jmg.37.1.41 (2000).
 - 39 Banjara, H., Mungutwar, V., Swarnkar, N. & Patra, P. Detection of connexion 26 GENE (GJB2) mutations in cases of congenital non

- syndromic deafness. *Indian Journal of Otolaryngology and Head & Neck Surgery* **68**, 248-253 (2016).
- 40 Batisso, A. C. *et al.* Prevalence of GJB2 (connexin-26) and GJB6 (connexin-30) mutations in a cohort of 300 Brazilian hearing-impaired individuals: implications for diagnosis and genetic counseling. *Ear and hearing* **30**, 1-7 (2009).
- 41 Wageih Felfela, G. M. Ear Anatomy. *Global Journal of Otolaryngology* **4**, doi:10.19080/GJO.2017.04.555630 (2017).
- 42 Silverthorn, D. Human Physiology: An Integrated Approach. Paeson Education. Inc., USA (2016).
- 43 Wu, X., Zhang, W., Li, Y. & Lin, X. Structure and function of cochlear gap junctions and implications for the translation of cochlear gene therapies. *Frontiers in Cellular Neuroscience* **13**, 529-529 (2019).
- 44 Susanto, S. Risiko Gangguan Pendengaran Pada Neonatus Hiperbilirubinemia. *Program Pascasarjana Magister Ilmu Biomedik dan Program Pendidikan Dokter Spesialis I Ilmu Kesehatan Anak Universitas Diponegoro, Semarang* (2010).
- 45 Turner, J. S. & Per-Lee, J. H. Auditory Dysfunction: Hearing Loss. *Clinical Methods: The History, Physical, and Laboratory Examinations. 3rd edition* (1990).
- 46 Joe Walter, K., Ginger, M. & Kathleen, C. M. C. in <https://emedicine.medscape.com/article/1822962-overview> (2018).
- 47 Lomas, G., Andrews, J. & Shaw, P. 233-246 (2011).

- 48 Lustig, L. R. *et al.* GJB2 gene mutations in cochlear implant recipients: prevalence and impact on outcome. *Archives of Otolaryngology–Head & Neck Surgery* **130**, 541-546 (2004).
- 49 Chan, D. K. & Chang, K. W. GJB2-associated hearing loss: Systematic review of worldwide prevalence, genotype, and auditory phenotype. *The Laryngoscope* **124**, E34-E53 (2014).
- 50 Wu, B.-L. *et al.* Effectiveness of sequencing connexin 26 (GJB2) in cases of familial or sporadic childhood deafness referred for molecular diagnostic testing. *Genetics in Medicine* **4**, 279-288 (2002).
- 51 Eisen, M. D. & Ryugo, D. K. Hearing molecules: contributions from genetic deafness. *Cellular and molecular life sciences* **64**, 566-580 (2007).
- 52 Hamid, M., Karimipoor, M., Chaleshtori, M. H. & Akbari, M. T. A novel 355-357delGAG mutation and frequency of connexin-26 (GJB2) mutations in Iranian patients. *Journal of Genetics* **88**, 359-359 (2009).
- 53 Yuan, Y. *et al.* Prevalence of the GJB2 IVS1+ 1G> A mutation in Chinese hearing loss patients with monoallelic pathogenic mutation in the coding region of GJB2. *Journal of translational medicine* **8**, 1-7 (2010).
- 54 Bruzzone, R. & Cohen-Salmon, M. Hearing the messenger: Ins(1,4,5)P3 and deafness. *Nature Cell Biology* **7**, 14-16, doi:10.1038/ncb0105-14 (2005).
- 55 Lerer, I. *et al.* A deletion mutation in GJB6 cooperating with a GJB2 mutation in trans in non-syndromic deafness: a novel founder mutation in Ashkenazi Jews. *Human mutation* **18**, 460-460 (2001).

- 56 Denoyelle, F. *et al.* Prelingual deafness: high prevalence of a 30delG mutation in the connexin 26 gene. *Human molecular genetics* **6**, 2173-2177 (1997).
- 57 Feldmann, D. *et al.* Large deletion of the GJB6 gene in deaf patients heterozygous for the GJB2 gene mutation: genotypic and phenotypic analysis. *American Journal of Medical Genetics Part A* **127**, 263-267 (2004).
- 58 Wonkam, A. *et al.* No evidence for clinical utility in investigating the connexin genes GJB2, GJB6 and GJA1 in non-syndromic hearing loss in black Africans: forum-genetics in medicine. *South African medical journal* **105**, 23-26 (2015).
- 59 Anjum, S. *et al.* GJB2 Gene Mutations Causing Hearing Loss in Consanguineous Pakistani Families. *Pakistan Journal of Life & Social Sciences* **12** (2014).
- 60 Antoniadis, T. *et al.* Mutation analysis of the GJB2 (connexin 26) gene by DGGE in Greek patients with sensorineural deafness. *Human mutation* **16**, 7-12 (2000).
- 61 Amritkumar, P. *et al.* Role of DFNB1 mutations in hereditary hearing loss among assortative mating hearing impaired families from South India. *BMC Medical Genetics* **19**, 1-24 (2018).
- 62 Adadey, S. M. *et al.* GJB2 and GJB6 mutations in non-syndromic childhood hearing impairment in Ghana. *Frontiers in Genetics* **10**, 841 (2019).

63. Del Castillo, Moreno-palayo MA, Del Castillo FJ, et al., Prevalence and Evolutionary Origin of the del(GJB6-D13S1830) Mutation in the DFNB1 Locus in Hearing Impaired Subjects : a Multicenter Study, Am J Hum Genet 73 : 1452 - 1458 (2003)

64. Mahasneh AA, Al-Asseer MH, Screening of GJB6 Gene for the 342-kb Deletion in Patients from Jordan with Non Syndromic Hearing Loss, Int J Hum Genet, 5(4) : 253-257 (2005)

65. Gaffar M, Budu, Kuhuwael FG, Yusuf I, A Polymerase Chain Restriction Fragment Length Polymorfism (PCR-RFLP) Analysisi of Connexin 26 (GJB2) Gene common Mutation (235delC) In Indonesian Patient with Prelingual Non Syndromic Sensorineural Hearing Loss : A PreliminaryStudy, The Open Otorhinolaryngology Journal, Vol.3 : 16-20 (2009)

66. Asma A, Ashwaq A, Norzana AG, et al., The Association Between GJB2 Mutation dan GJB6 Gene in Non Syndromic Hearing Loss School Children, Med J Malaysia, Vol. 66 No.2 : 124 - 128 (2011)

67. Tarkan O, Sari P, Demirhan O, Kiroglu M et al., Connexin 26 and 30 mutations in paediatric patients with congenital, non syndromic hearing loss treated with cochlear implatation in Mediterranean Turkey, The Journal of laryngology & Oncology, Vol. 127 : 33 - 37 (2012)

68. Roux AF, Pallares-Ruiz N, Faugere V et al., Molecular epidemiology of DFNB1 deafness in France, BMC Medical Genetics Vol. 5 : 5-15 (2004)

69. Kenneson A, Van Naarden BK & Boyle C, GJB2 (Connexin 26) variant and non syndromic sensorineural hearing loss : A Huge review, Genetic in Medicine official Journal of the American College of medical genetics Vol. 4 : 258-274 (2002)
70. Dai P, Han B, Liu XZ, Wang GJ, Li Q, Yuan YY et al., GJB Mutation in the Chinese deaf population, Genetics in Medicine : Official Journal of the American College of medical genetics, Vol. 9: 283 - 289 (2009)
71. Huang Y, Yang XL, Chen WX, et al., Prevalence of p.V37I variant of GJB2 among Chinese infants with mild or moderate hearing loss. International Journal of clinical and experimental Medicine, Vol. 8 : 21674 - 21678(2015)
72. Wu CC, Tsai CH, Hung CC, Lin YH et al., Newborn genetic screening for hearing impairment : A population-based longitudinal study. Genetics in Medicine : Official Journal of the American College of medical Genetics, Vol 19 : 6-12, 2020
73. Kim SY, Park G, Han KH, Kim A, Koo JW et al., Prevalence of p.V37I in mild or moderate hearing loss in a pediatric population and the interpretation of its pathogenicity. PloS One Vol. 8 : e61592.10.1371/journal.pone.0061592 (2013)
74. Kelley PM, Harris DJ. Novel mutation in connexin 26 gene (GJB2) that cause autosomal recessive (DFNB1). Am Med Genet. Vol. 62 : 792 - 799 (1998)

75. Zaidieh T, Habbal W, Monem F, Screening of GJB6 gene large Deletions among syrian with congenital hearing impairment. Genetic testing and molecular Biomarkers, VO.19 No.7 (2015)
76. Paris R, Tamayo ML, Gelvez N & Schrijver, Allele-specific impairment of GJB2 expression by GJB6 deletion del(GJB6-D13S1854).PLos One (2011)
77. Del Castillo FJ, et.al., A Novel deletion involving the connexin 30 gene , del(GJB6-D13S1854), found in trans with mutations in GJB2 gene(connexin-26) in subjects with DFNB1 non syndromic hearing imparment. J Med Genetica, (2005)
78. Gravina LP, Foncuberta ME, Prieto ME et al., prevalence of DFNB1 mutations in Argentinian children with non syndromic deafness. Report of a novel mutation in GJB2, Int J Pediatr. Otorhinolaryngology 74, (2010)
79. Al kowari MK, Gasparini P, Abdulhadi K et al., Mutations in GJB2, GJB6 and mDNA 1555A>G variant explain only a minority of cases of non sindromic hearing loss in the Qatari population. Qatar Foundation Annual Research Forum Proceedings (2010)
80. Tabatabaieffer MA, Montaver ZM, Shariati L et al., Mutations analysis of GJB2 and GJB6 genes and the genetic linkage analysis of five common DFNB loci in the Iranian families with autosomal recessive non syndromic hearing loss. J Sci Islam Repub Iran 21 (2010)

81. Elbagoury NM, Soliman HN, Mohammed OS et al., Mutation analysis of the GJB2 and GJB6 genes in Egyptian patients with autosomal recessive sensorineural non syndromic hearing loss. Middle East Med Genet 3 (2014)
82. Neocleous V, Costi C, Shammas C et al., Spectrum of GJB2 mutations in Cypriot nonsyndromic hearing loss subjects. J Genet 93 (2014)

LAMPIRAN 1 REKOMENDASI PERSETUJUAN ETIK



KEMENTERIAN PENDIDIKAN, KEBUDAYAAN, RISET DAN TEKNOLOGI
UNIVERSITAS HASANUDDIN FAKULTAS KEDOKTERAN
KOMITE ETIK PENELITIAN UNIVERSITAS HASANUDDIN
RSPTN UNIVERSITAS HASANUDDIN
RSUP Dr. WAHIDIN SUDIROHUSODO MAKASSAR
Sekretariat : Lantai 2 Gedung Laboratorium Terpadu
JL.PERINTIS KEMERDEKAAN KAMPUS TAMALANREA KM.10 MAKASSAR 90245.



Contact Person: dr. Agussalim Bukhari., MMed, PhD, SpGK TELP. 081241850858, 0411 5780103, Fax : 0411-581431

REKOMENDASI PERSETUJUAN ETIK

Nomor : 713/UN4.6.4.5.31/ PP36/ 2023

Tanggal: 20 September 2023

Dengan ini Menyatakan bahwa Protokol dan Dokumen yang Berhubungan Dengan Protokol berikut ini telah mendapatkan Persetujuan Etik :

No Protokol	UH23070486	No Sponsor	
Peneliti Utama	dr. Rodrigo Limmon, Sp.THT-BKL, MARS	Sponsor	
Judul Peneliti	ANALISIS MUTASI GEN GAP JUNCTION BETA – 2 (GJB 2) DAN GEN GAP JUNCTION BETA – 6 (GJB 6) PADA PENDERITA KETULIAN SENSORINEURAL KONGINETAL NON SINDROMIK ETNIS MALUKU		
No Versi Protokol	2	Tanggal Versi	19 September 2023
No Versi PSP	2	Tanggal Versi	19 September 2023
Tempat Penelitian	RS Universitas Hasanuddin Makassar Dan SLB-B Karya Kasih Ambon		
Jenis Review	☐ Exempted ☒ Expedited ☐ Fullboard Tanggal	Masa Berlaku 20 September 2023 sampai 20 September 2024	Frekuensi review lanjutan
Ketua KEP Universitas Hasanuddin	Nama Prof. dr. Muh Nasrum Massi, PhD, SpMK, Subsp. Bakt(K)	Tanda tangan	
Sekretaris KEP Universitas Hasanuddin	Nama dr. Firdaus Hamid, PhD, SpMK(K)	Tanda tangan	

Kewajiban Peneliti Utama:

- Menyerahkan Amandemen Protokol untuk persetujuan sebelum di implementasikan
- Menyerahkan Laporan SAE ke Komisi Etik dalam 24 Jam dan dilengkapi dalam 7 hari dan Lapor SUSAR dalam 72 Jam setelah Peneliti Utama menerima laporan
- Menyerahkan Laporan Kemajuan (progress report) setiap 6 bulan untuk penelitian resiko tinggi dan setiap setahun untuk penelitian resiko rendah
- Menyerahkan laporan akhir setelah Penelitian berakhir
- Melaporkan penyimpangan dari protokol yang disetujui (protocol deviation / violation)
- Mematuhi semua peraturan yang ditentukan

Lampiran 2. Hasil Pengujian Statistik

Hasil Frekuensi Pada Variabel GJB2

Kelas Kasus

GJB2					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Tidak Mutasi	28	70.0	70.0	70.0
	Mutasi	12	30.0	30.0	100.0
	Total	40	100.0	100.0	

Kelas Kontrol

GJB2					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Tidak Mutasi	39	97.5	97.5	97.5
	Mutasi	1	2.5	2.5	100.0
	Total	40	100.0	100.0	

Hasil Frekuensi Pada Variabel GJB6

Kelas Kasus

GJB6					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Tidak Mutasi	34	85.0	85.0	85.0
	Mutasi	6	15.0	15.0	100.0
	Total	40	100.0	100.0	

Kelas Kontrol

GJB6					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Tidak Mutasi	38	95	92.5	92.5
	Mutasi	2	5	7.5	100.0
	Total	40	100.0	100.0	

Hasil Uji Chi Square

GJB2 * PTA Crosstabulation				
Count				
		PTA		Total
		Kelas Kasus	Kelas Kontrol	
GJB2	Tidak Mutasi	28	39	67
	Mutasi	12	1	13
Total		40	40	80

Chi-Square Tests					
	Value	df	Asymptotic Significance (2- sided)	Exact Sig. (2- sided)	Exact Sig. (1- sided)
Pearson Chi-Square	11.114 ^a	1	0.001		
Continuity Correction ^b	9.185	1	0.002		
Likelihood Ratio	12.785	1	0.000		
Fisher's Exact Test				0.001	0.001
Linear-by-Linear Association	10.975	1	0.001		
N of Valid Cases	80				
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.50.					
b. Computed only for a 2x2 table					

Risk Estimate			
	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for GJB2 (Tidak Mutasi / Mutasi)	0.060	0.007	0.487
For cohort PTA = Kelas Kasus	0.453	0.328	0.625
For cohort PTA = Kelas Kontrol	7.567	1.139	50.289
N of Valid Cases	80		

GJB6 * PTA Crosstabulation				
Count				
		PTA		Total
		Kelas Kasus	Kelas Kontrol	
GJB6	Tidak Mutasi	34	38	72
	Mutasi	6	2	8
Total		40	40	80

Chi-Square Tests					
	Value	df	Asymptotic Significance (2- sided)	Exact Sig. (2- sided)	Exact Sig. (1- sided)
Pearson Chi-Square	2.222 ^a	1	0.136		
Continuity Correction ^b	1.250	1	0.264		
Likelihood Ratio	2.315	1	0.128		
Fisher's Exact Test				0.263	0.132
Linear-by-Linear Association	2.194	1	0.139		
N of Valid Cases	80				
a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 4.00.					
b. Computed only for a 2x2 table					

Risk Estimate			
	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for GJB6 (Tidak Mutasi / Mutasi)	0.298	0.056	1.578
For cohort PTA = Kelas Kasus	0.630	0.394	1.006
For cohort PTA = Kelas Kontrol	2.111	0.623	7.150
N of Valid Cases	80		

Lampiran 3. MASTER DATA

" ANALISIS MUTASI GEN GJB2 DAN GEN GJB6 PADA PENDERITA KETULIAN SENSORINEURAL KONGENITAL NON SINDROMIK DI MALUKU "

SAMPel	OTOSKOPI	AUDIOMETRI								OAE	TYMPANOMETRI	MUTASI GJB2	MUTASI GJB6
		KANAN				KIRI							
		500	1000	2000	4000	500	1000	2000	4000				
A1	Normal	90	95	100	100	95	95	100	100	Refer	tipe A		
A2	Normal	90	80	85	85	85	90	85	85	Refer	tipe A		
A3	Normal	95	95	100	100↓	100	95	95	100↓	Refer	tipe A		
A4	Normal	100	100↓	100↓	100↓	100	100↓	100↓	100↓	Refer	tipe A	P187L	Homozigot D13S1830
A5	Normal	100	90	100	100↓	100	100	95	100↓	Refer	tipe A		
A6	Normal	95	95	100↓	100↓	100	95	95	100↓	Refer	tipe A	c45delA, 78_79insC, 83_84insT	
A7	Normal	100	90	95	100↓	95	95	100	100↓	Refer	tipe A	c45delA	Homozigot D13S1854
A8	Normal	100	95	95	95	100	100	95	95	Refer	tipe A		
A9	Normal	100↓	100	95	100↓	95	100	100↓	100↓	Refer	tipe A		
A10	Normal	100	90	95	100↓	100	100	95	95	Refer	tipe A		
A11	Normal	95	95	95	100	95	95	100	100↓	Refer	tipe A	V37I	
A12	Normal	95	85	85	90	90	85	85	90	Refer	tipe A		
A13	Normal	95	95	95	100	95	95	100	100↓	Refer	tipe A		
A14	Normal	100	100	95	100↓	95	100	100↓	100↓	Refer	tipe A		
A15	Normal	90	95	95	100	95	95	95	100	Refer	tipe A	c45delA, 166_167insC	
A16	Normal	95	90	85	100	95	90	90	95	Refer	tipe A	c45delA, 290_291insA	
A17	Normal	100	100	95	95	100	100	95	100↓	Refer	tipe A		

A18	Normal	90	85	90	85	85	85	90	95	Refer	tipe A		
A19	Normal	95	95	90	95	90	95	95	95	Refer	tipe A		Homozigot D13S1830, D13S1854
A20	Normal	100	100	95	95	95	100	100	100	Refer	tipe A		
A21	Normal	100↓	100↓	100↓	100↓	100↓	100	100↓	100↓	Refer	tipe A		Heterozigot D13S1854
A22	Normal	95	100	95	95	100	95	95	95	Refer	tipe A		
A23	Normal	90	100	100	95	90	90	95	100	Refer	tipe A		
A24	Normal	100↓	100	100	95	100	100	100↓	100↓	Refer	tipe A		
A25	Normal	95	95	95	90	95	90	95	95	Refer	tipe A		
A26	Normal	90	90	100	95	90	95	100	100	Refer	tipe A	V37I	Heterozigot D13S1830
A27	Normal	100	95	100	100↓	100	100	95	95	Refer	tipe A		
A28	Normal	90	90	95	95	95	95	95	95	Refer	tipe A		
A29	Normal	95	95	90	95	100	95	95	100	Refer	tipe A		Heterozigot D13S1854
A30	Normal	100↓	100	95	95	100↓	100	100	95	Refer	tipe A	P187L	
A31	Normal	90	90	95	95	95	90	95	95	Refer	tipe A		
A32	Normal	100	95	95	100↓	95	100	100	100↓	Refer	tipe A	V37I	
A33	Normal	95	95	90	90	90	95	95	100	Refer	tipe A		
A34	Normal	95	95	100↓	100↓	95	95	100	100↓	Refer	tipe A		
A35	Normal	90	100	100	95	100	95	100↓	100↓	Refer	tipe A	V37I	
A36	Normal	100	95	95	95	95	95	95	100↓	Refer	tipe A		
A37	Normal	95	95	90	95	100	95	90	95	Refer	tipe A		
A38	Normal	90	90	95	95	90	90	95	90	Refer	tipe A		
A39	Normal	95	90	90	100	100	95	95	90	Refer	tipe A	V37I, c45delA	
A40	Normal	100	95	100↓	100↓	100	100	95	100↓	Refer	tipe A	c45delA, 78_79insC	
B1	Normal	15	20	15	10	10	15	15	15	Pass	tipe A		
B2	Normal	20	20	10	15	15	20	20	15	Pass	tipe A	V37I	

B3	Normal	25	25	30	20	20	25	25	25	Pass	tipe A		
B4	Normal	15	10	10	15	15	15	20	10	Pass	tipe A		
B5	Normal	20	15	15	20	20	15	20	20	Pass	tipe A		
B6	Normal	20	15	25	20	25	20	15	15	Pass	tipe A		
B7	Normal	25	25	20	15	20	25	15	15	Pass	tipe A		
B8	Normal	15	20	20	20	25	20	20	15	Pass	tipe A		
B9	Normal	10	15	10	5	15	15	10	10	Pass	tipe A		
B10	Normal	15	20	25	25	15	25	20	20	Pass	tipe A		
B11	Normal	20	15	20	20	20	15	15	15	Pass	tipe A		
B12	Normal	25	20	25	25	25	25	15	20	Pass	tipe A		
B13	Normal	15	15	10	10	15	20	20	10	Pass	tipe A		
B14	Normal	25	20	25	25	20	20	25	20	Pass	tipe A		
B15	Normal	20	20	25	20	20	20	15	20	Pass	tipe A		
B16	Normal	30	20	20	25	25	30	20	15	Pass	tipe A		
B17	Normal	20	15	25	20	30	20	20	25	Pass	tipe A		
B18	Normal	15	10	10	20	15	15	20	20	Pass	tipe A		
B19	Normal	10	10	5	15	15	15	10	10	Pass	tipe A		
B20	Normal	20	20	10	15	15	15	20	15	Pass	tipe A		
B21	Normal	25	20	20	15	15	25	20	20	Pass	tipe A		
B22	Normal	20	25	25	20	25	20	15	15	Pass	tipe A		
B23	Normal	15	5	10	10	15	15	10	10	Pass	tipe A		
B24	Normal	20	10	15	15	15	20	20	15	Pass	tipe A		
B25	Normal	25	15	15	20	20	15	15	10	Pass	tipe A		
B26	Normal	20	25	25	25	15	15	25	20	Pass	tipe A		
B27	Normal	10	10	15	15	15	15	10	10	Pass	tipe A		
B28	Normal	20	25	25	25	25	30	20	20	Pass	tipe A		

B29	Normal	15	15	20	15	15	15	10	15	Pass	tipe A		
B30	Normal	10	10	5	15	10	5	5	10	Pass	tipe A		
B31	Normal	20	25	25	20	25	20	20	25	Pass	tipe A		Homozigot D13S1830
B32	Normal	10	10	15	15	15	10	10	15	Pass	tipe A		
B33	Normal	15	15	25	20	20	20	25	15	Pass	tipe A		
B34	Normal	25	25	20	15	20	25	25	20	Pass	tipe A		
B35	Normal	20	30	15	15	15	25	20	20	Pass	tipe A		
B36	Normal	15	25	25	20	20	30	15	20	Pass	tipe A		Homozigot D13S1830
B37	Normal	20	20	25	25	25	25	20	25	Pass	tipe A		
B38	Normal	20	15	15	10	15	20	15	15	Pass	tipe A		
B39	Normal	25	20	20	20	20	25	15	20	Pass	tipe A		
B40	Normal	15	15	10	20	15	10	15	15	Pass	tipe A		