

DAFTAR PUSTAKA

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LAMPIRAN

Lampiran 1. Jadwal Penelitian

JADWAL PENELITIAN

No	Kegiatan	Waktu Penelitian										
		Nov	Des	Jan	Feb	Mar	Apr	Mei	Jun	Jul	Ags	
1.	Seminar Proposal											
2.	Pengajuan Etik dan Ijin Penelitian											
3.	Pengambilan Sampel Isolat											
4.	Identifikasi Isolat (PCR)											
5.	Pengumpulan dan Pengolahan Data											
6.	Pembacaan Hasil											

Lampiran 2. Biodata Peneliti Utama

BIODATA PENELITI UTAMA

A. Data Pribadi

1. Nama : Arthur Hugo Makapuan
2. Tempat, tgl. lahir : Palu, 1 April 1977
3. Alamat : Perum RSUD Jailolo, Halmahera Barat, Maluku Utara
4. Kewarganegaraan : Warga Negara Indonesia

B. Riwayat Pendidikan

- Tamat SLTA tahun 1995 di SMA PSKD 4 Jakarta
- Sarjana Kedokteran (S1) tahun 2000 di Universitas Kristen Indonesia
- Profesi Dokter (dr.) tahun 2006 di Universitas Kristen Indonesia

C. Pekerjaan dan Riwayat Pekerjaan

- Jenis pekerjaan : ASN Pemda Halbar / PPDS Mikrobiologi Klinik
- NIP atau identitas lain (NIK) : 197704012009031001 / 8201010104770001
- Pangkat / Jabatan : Pembina - IVa / Dokter

Biaya Penelitian

SUMBER DAN RINCIAN BIAYA PENELITIAN

No.	Rincian Biaya Kegiatan	Jumlah (Rp)
1.	Pembuatan Proposal	250.000,-
2.	Seminar Proposal	250.000,-
3.	Etik Penelitian dan Administrasi	200.000,-
4.	Kegiatan Penelitian:	
	Pengelolaan Spesimen Sampel	10.800.000,-
	Kit PCR Multiplex (untuk 3 gen berbeda)	36.000.000,-
	Kit PCR Resistensi Karbapenem (5 gen berbeda)	19.400.000,-
	Analisis Data	1.000.000,-
	Analisis Hasil	250.000,-
	Penulisan Hasil Penelitian	250.000,-
	Seminar Hasil	250.000,-
5.	Dokumentasi dan Publikasi	15.000.000,-
	TOTAL	83.650.000,-

Sumber dana penelitian ini menggunakan dana pribadi peneliti dan bantuan Pemerintah Daerah Kabupaten Halmahera Barat.

Lampiran 3. Persetujuan Komite Etik Universitas Hasanuddin



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 : 394/UN4.6.4.5.31/ PP36/ 2023

Tanggal: 21 Juni 2023


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

No Protokol	UH23060409	No Sponsor	
Peneliti Utama	dr. Arthur Hugo	Sponsor	
Judul Peneliti	Deteksi Gen Pengkode Porin OprD pada Isolat Pseudomonas aeruginosa di Rumah Sakit Universitas Hasanuddin Makassar dan Rumah Sakit Jejaringnya		
No Versi Protokol	1	Tanggal Versi	19 Juni 2023
No Versi PSP		Tanggal Versi	
Tempat Penelitian	Rumah Sakit Universitas Hasanuddin Makassar dan Rumah Sakit Jejaringnya		
Jenis Review	<input type="checkbox"/> Exempted <input checked="" type="checkbox"/> Expedited <input type="checkbox"/> Fullboard Tanggal	Masa Berlaku 21 Juni 2023 sampai 21 Juni 2024	Frekuensi review lanjutan
Ketua KEP Universitas Hasanuddin	Nama Prof.Dr.dr. Suryani As'ad, M.Sc.,Sp.GK (K)	Tanda tangan	
Sekretaris KEP Universitas Hasanuddin	Nama dr. Agussalim Bukhari, M.Med.,Ph.D.,Sp.GK (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 Laporan 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 prokol yang disetujui (protocol deviation / violation)
- Mematuhi semua peraturan yang ditentukan

Lampiran 4. Izin Dirut RSPTN UNHAS untuk Melakukan Penelitian

	ADMINISTRASI	FORMULIR 1
	Nomor : 339/07/FR1/2023	Tanggal : 5 Juli 2023
SURAT PENGANTAR PENELITIAN		

Kepada Yth.
Pembimbing/pendamping,
Bapak Syafri S.,

Dengan ini menerangkan bahwa peneliti/mahasiswa berikut ini :

Nama : Arthur Hugo
NIM : C195192003
Institusi : Dept. Mikrobiologi Klinik Fakultas Kedokteran UNHAS

Akan melakukan pengambilan data/ analisa bahan hayati :

Pada tanggal : 10 Juli 2023 s/d Selesai
Jumlah subjek : ± 97 sampel
Jenis data : Data Primer

Untuk penelitian dengan judul :

“Deteksi Gen Pengkode Porin OprD pada Isolat Pseudomonas aeruginosa di Rumah Sakit Pendidikan Universitas Hasanuddin Makassar”

Harap dilakukan pembimbingan dan pendampingan seperlunya. Terima Kasih.

Staf Administrasi,



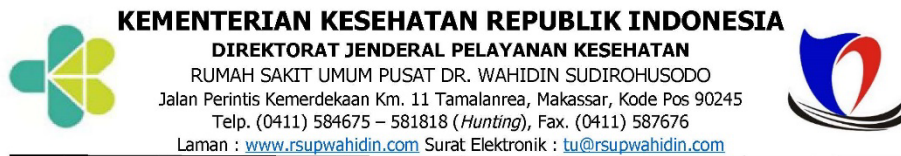

Andi Fidyah Septiani

Catatan : Proses pengerjaan dilakukan oleh peneliti, Pendamping hanya mendampingi.

Jika pengambilan data telah selesai, **diwajibkan bagi pendamping/pembimbing;**

1. Membubuhi **paraf dan tanggal selesai** pengambilan data di formulir ini,
2. Mengisi **jumlah alat dan bahan habis pakai** yang digunakan peneliti pada form tarif penggunaan alat dan bahan,
3. **Mengembalikan formulir** yang sudah lengkap ke staf administrasi.

Lampiran 5. Izin Dirut RSUP Wahidin Sudirohusodo untuk Melakukan Penelitian



Nomor : DP.04.03/D.XIX.2/13999/2023 20 Juli 2023
Hal : Izin Penelitian

**Yth. Ketua Program Studi Mikrobiologi Klinik
Fakultas Kedokteran Universitas Hasanuddin**

Sehubungan dengan surat saudara nomor **12565/UN4.6.8/PT.01.04/2023**, tertanggal **29 Mei 2023**, hal **Permohonan Izin Penelitian**, dapat kami fasilitasi dan memberikan izin pelaksanaan penelitian kepada:

Nama : **dr. Arthur Hugo**
NIM : **C195192003**
Prog. Pend. : **MPPDS Mikrobiologi Klinik**
No. HP : **082189753958**
Judul : **Deteksi Gen Pengkode Porin OprD pada Isolat Pseudomonas Aeruginosa di RSUP Dr. Wahidin Sudirohusodo Makassar**
Jangka Waktu : **Tiga Bulan Setelah Surat ini di Keluarkan**
Lokasi : **Inst. Rekam Medik; Laboratorium Patologi Klinik**

dengan ketentuan sebagai berikut :

1. Sesuai dengan peraturan dan ketentuan penelitian yang berlaku di lingkup RSUP Dr Wahidin Sudirohusodo
2. Sebelum meneliti, peneliti wajib melapor kepada Pengawas Penelitian di masing-masing unit yang menjadi lokasi penelitian
3. Pelaksanaan penelitian tidak mengganggu proses pelayanan serta mendukung upaya peningkatan mutu pelayanan dan keselamatan pasien
4. Pemeriksaan penunjang, BHP dan lain-lain yang digunakan dalam penelitian, menjadi tanggung jawab peneliti, tidak dibebankan kepada pasien ataupun RS
5. Peneliti melaporkan proses penelitian secara periodik serta hasil penelitian di akhir waktu penelitian
6. Mencantumkan nama RSUP Dr Wahidin Sudirohusodo sebagai afiliasi institusi dalam naskah dan publikasi penelitian
7. Surat Keterangan Selesai Penelitian menjadi salah satu syarat untuk mengikuti Seminar Hasil Penelitian
8. Bukti Penyerahan Skripsi/Thesis/Disertasi ke RSUP Dr Wahidin Sudirohusodo menjadi syarat penyelesaian studi

Mohon dapat dipastikan agar ketentuan tersebut dipenuhi peneliti sebelum menyelesaikan studi di institusi saudara. Atas perhatian dan Kerjasama yang baik, diucapkan terima kasih.

a.n. Direktur Utama
Plt. Direktur Sumber Daya Manusia,
Pendidikan dan Penelitian,



Ridhayani B, SKM, M.Kes
NIP197110271997032001

Tembusan:

1. Kepala Instalasi Rekam Medik
2. Kepala Instalasi Laboratorium
3. Kepala Sub Instalasi Laboratorium Patologi Klinik

Lampiran 6. Hasil BLAST Primer Gen 16S rRNA *Pseudomonas aeruginosa***Hasil Blast Primer 16S rRNA *P. aeruginosa***

dr. Arthur Hugo

Referensi Jurnal :

PCR-Based Assay for Differentiation of *Pseudomonas aeruginosa* from Other *Pseudomonas* Species Recovered from Cystic Fibrosis Patients

Theodore Spilker, Tom Coenye, Peter Vandamme, and John J. LiPuma
(Department of Pediatrics and Communicable Diseases, University of Michigan Medical School, Ann Arbor, Michigan, 48109, and Laboratorium voor Microbiologie, Universiteit Gent, Ghent)

PA-SS-F : 5' – GGGGGATCTTCGGACCTCA - 3'**PA-SS-R : 5' – TCCTTAGAGTGCCACCCG - 3'**

- Showing 956 bp region from base 5037419 to 5038374.
- Due to the large size of this record, sequence and annotated features are not shown. Use the "Customize view" panel to change the display.

***Pseudomonas aeruginosa* strain HS_121 chromosome, complete genome**

GenBank: CP104565.1

LOCUS CP104565 956 bp DNA linear BCT 18-OCT-2022

DEFINITION *Pseudomonas aeruginosa* strain HS_121 chromosome, complete genome.ACCESSION [CP104565](#) REGION: 5037419..5038374

VERSION CP104565.1

DBLINK BioProject: [PRJNA793523](#)BioSample: [SAMN24562916](#)

KEYWORDS .

SOURCE *Pseudomonas aeruginosa*ORGANISM [Pseudomonas aeruginosa](#)

Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales;
Pseudomonadaceae; *Pseudomonas*.

REFERENCE 1 (bases 1 to 956)

AUTHORS Sun,Z.

TITLE Dissecting the genotypic features of a fluoroquinolone-resistant
Pseudomonas aeruginosa ST316 sublineage causing ear infections in
Shanghai, China

JOURNAL Unpublished

REFERENCE 2 (bases 1 to 956)

AUTHORS Sun,Z.

TITLE Direct Submission

JOURNAL Submitted (01-JAN-2022) Institute of Antibiotics, Huashan Hospital,
Fudan University, No 12 M Urumqi Road, Jingan district, Shanghai,
Shanghai 200040, China

COMMENT The annotation was added by the NCBI Prokaryotic Genome Annotation
Pipeline (PGAP). Information about PGAP can be found here:

https://www.ncbi.nlm.nih.gov/genome/annotation_prok/

##Genome-Assembly-Data-START##

Assembly Method :: Canu v. 2.1

Genome Representation :: Full

Expected Final Version :: Yes

Genome Coverage :: 100x

Sequencing Technology :: PacBio RSII; Illumina NovaSeq

##Genome-Assembly-Data-END##

##Genome-Annotation-Data-START##

Annotation Provider :: NCBI

Annotation Date :: 09/16/2022 16:46:52

Annotation Pipeline :: NCBI Prokaryotic Genome
Annotation Pipeline (PGAP)

Annotation Method :: Best-placed reference protein
set; GeneMarkS-2+

Annotation Software revision :: 6.2

Features Annotated :: Gene; CDS; rRNA; tRNA; ncRNA;
repeat_region

Genes (total) :: 6,640

CDSs (total) :: 6,560

Genes (coding) :: 6,480

CDSs (with protein) :: 6,480

Genes (RNA) :: 80

rRNAs :: 4, 4, 4 (5S, 16S, 23S)

complete rRNAs :: 4, 4, 4 (5S, 16S, 23S)

tRNAs :: 64

ncRNAs :: 4

Pseudo Genes (total) :: 80
 CDSs (without protein) :: 80
 Pseudo Genes (ambiguous residues) :: 0 of 80
 Pseudo Genes (frameshifted) :: 38 of 80
 Pseudo Genes (incomplete) :: 47 of 80
 Pseudo Genes (internal stop) :: 4 of 80
 Pseudo Genes (multiple problems) :: 8 of 80
 ##Genome-Annotation-Data-END##

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 /mol_type="genomic DNA"
 /strain="HS_121"
 /isolation_source="ear swabs"
 /host="Homo sapiens"
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 /note="Derived by automated computational analysis using
 gene prediction method: cmsearch."
 /db_xref="RFAM:[RF00177](#)"

ORIGIN

//
 >CP104565.1:5037419-5038374 Pseudomonas aeruginosa strain HS_121 chromosome,
 complete genome

PA-SS-R

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TCCTTAGAGTGCCCACCCGAGGTGCTGGTAACTAAGGACAAGGGTTGCGCTCGTTA
 CGGGACTTAACCCA
 ACATCTCACGACACGAGCTGACGACAGCCATGCAGCACCTGTGTCTGAGTTCCCGA
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 CTCTGGAAAGTTCTCAGCATGTCAAGGCCAGGTAAGGTTCTTCGCGTTGCTTCGAAT
 TAAACCACATGCT
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 CCCAGGCGGTCTG

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GTATTAACCTACTG
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ATGGCTGGATCAG
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PA-SS-F

GGGGATCTTCGGACCTCA

CCCCCTAGAAGCCTGGAGT

TGAGGTCCGAAGATCCCC

AATCCGACCTAGGCTCATCTGATAGCGTGAGGTCCGAAGATCCCC

Lampiran 7. Hasil BLAST Primer Gen oprD *Pseudomonas aeruginosa*

Hasil Blast Primer Gen oprD *Pseudomonas aeruginosa*

dr. Arthur Hugo

Referensi Jurnal

Phenotypic and genotypic detection of antibiotic resistance of *Pseudomonas aeruginosa* isolated from urinary tract infections

Hisham A Abbas, Amira M El-Ganiny, Hend A Kamel (Microbiology and Immunology Department, Faculty of Pharmacy, Zagazig University, Zagazig, Egypt., Microbiology Department, Faculty of Pharmacy and Pharmaceutical Industries, Sinai University, Kantara, Egypt)

OprD-F : 5' – GCTCGACCTCGAGGCAGGCCA – 3'

OprD-R : 5' – CCAGCGATTGGTCGGATGCCA – 3'

- Showing 242 bp region from base 516 to 757.

***Pseudomonas aeruginosa* strain KB-PA-F19 outer membrane porin OprD (oprD) gene, complete cds**

GenBank: OL372283.1

LOCUS OL372283 242 bp DNA linear BCT 10-MAY-2022

DEFINITION *Pseudomonas aeruginosa* strain KB-PA-F19 outer membrane porin OprD (oprD) gene, complete cds.

ACCESSION [OL372283](#) REGION: 516..757

VERSION OL372283.1

KEYWORDS .

SOURCE *Pseudomonas aeruginosa*

ORGANISM [Pseudomonas aeruginosa](#)

Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales; Pseudomonadaceae; *Pseudomonas*.

REFERENCE 1 (bases 1 to 242)

AUTHORS Fang,Y., Baloch,Z., Zhang,W., Hu,Y., Zheng,R., Song,Y., Tai,W. and Xia,X.

TITLE Emergence of Carbapenem-Resistant ST244, ST292, and ST2446
Pseudomonas aeruginosa Clones in Burn Patients in Yunnan Province

JOURNAL Infect Drug Resist 15, 1103-1114 (2022)

PUBMED [35321081](#)

REMARK Publication Status: Online-Only

REFERENCE 2 (bases 1 to 242)

AUTHORS Fang,Y.

TITLE Direct Submission

JOURNAL Submitted (25-OCT-2021) Faculty of Life Science and Technology,
Kunming University of Science and Technology, Jingming road,
Kunming City, Yunnan 650500, China

COMMENT ##Assembly-Data-START##

Sequencing Technology :: Sanger dideoxy sequencing

##Assembly-Data-END##

FEATURES Location/Qualifiers

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/mol_type="genomic DNA"

/strain="KB-PA-F19"

/isolation_source="hospital"

/db_xref="taxon:[287](#)"

/country="China"

/note="identical sequence found in strains KB-PA-F19,
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sequence type 244; ST244"

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CDS <1..>242

/gene="oprD"

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/transl_table=[11](#)

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/protein_id="[UPX85317.1](#)"

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WSLAAAYTLDAHTFTLAYQKVHGDQPFYIGFGRNGSGAGGDSIFLANSVQYSDFNGP

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ORIGIN

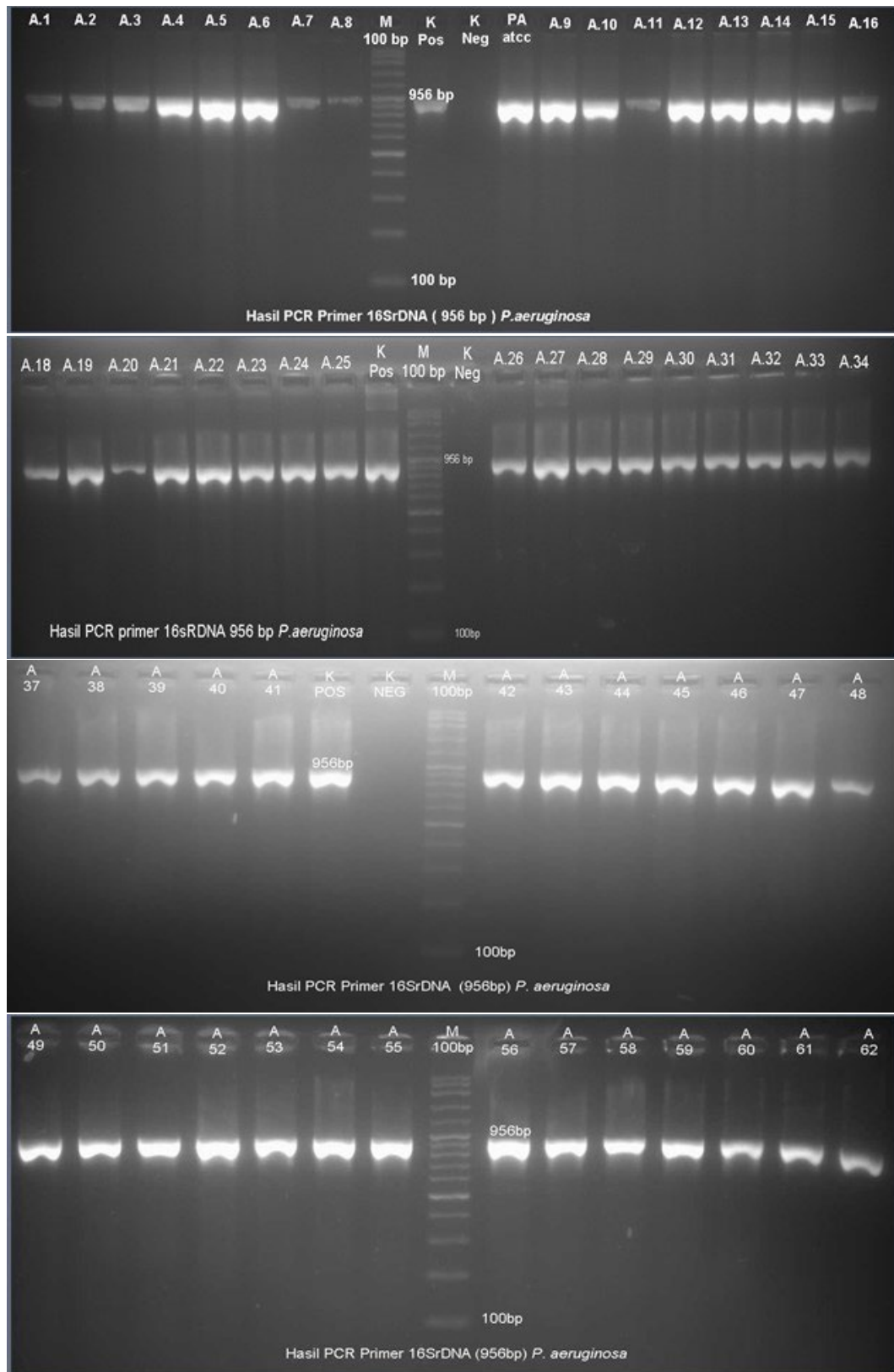
OprD-F

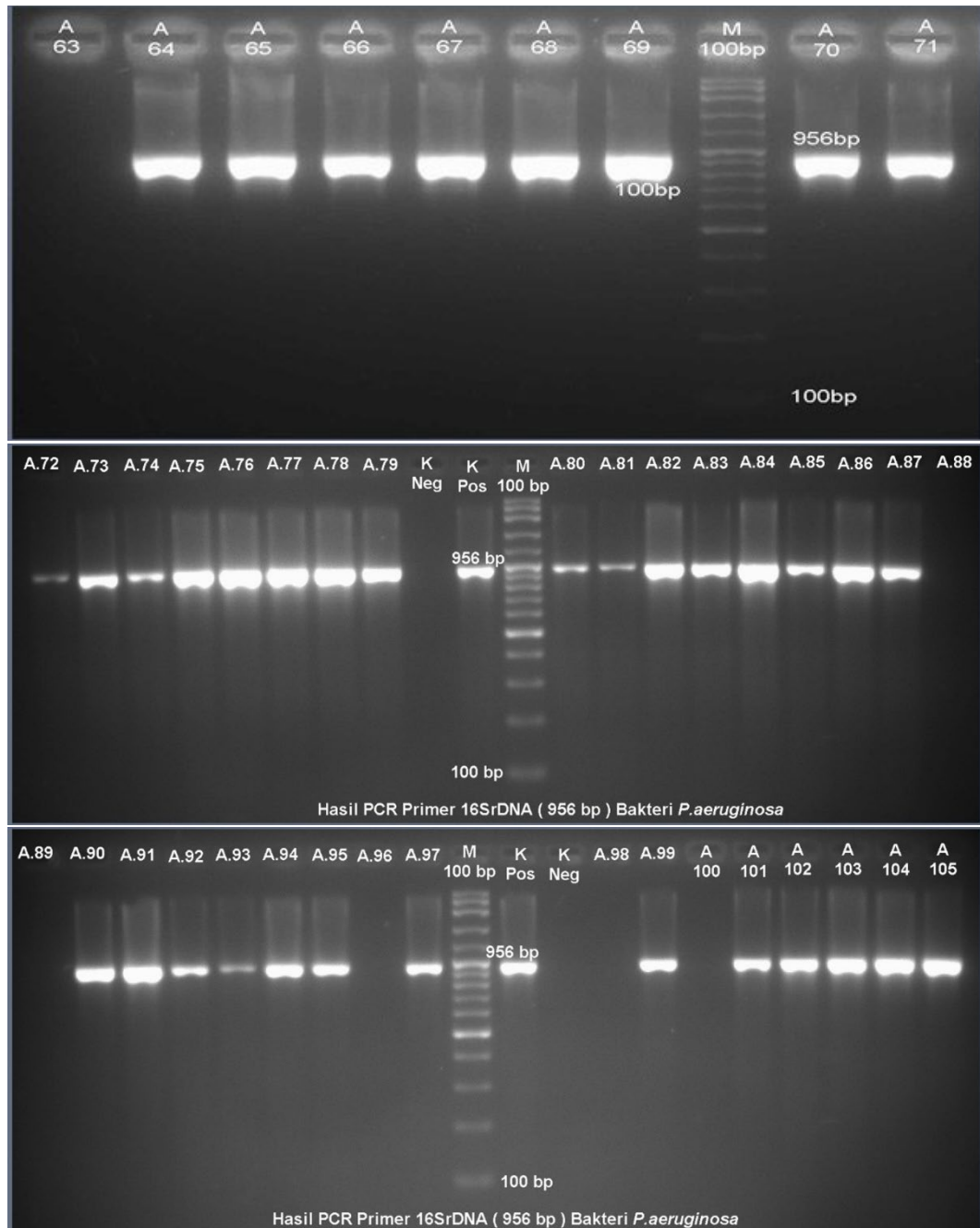
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OprD-R

ccagcgatt ggtcggatgc
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ca
gt
gg
241 gg

Lampiran 9. Data hasil PCR gen 16S rDNA *Pseudomonas aeruginosa*





Lampiran 10. Data hasil PCR gen 16S rRNA oprD *Pseudomonas aeruginosa*

