

Original article

**Genomic insights into multidrug-resistant *Acinetobacter baumannii* strains isolated from Dhaka, Bangladesh**

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## SUPPLEMENTARY MATERIALS

**Supplementary Table 1.** Biofilm formation data.

No. of Exp.	No. of Readings	Control	SDL03	SDL07	SDL32	SDL35	SDL40
1	Reading 1	0.331	1.573	0.732	1.486	2.246	0.442
	Reading 2	0.337	1.503	0.726	2.283	2.267	0.340
	Reading 3	0.334	1.658	0.744	2.147	2.169	0.346
	Reading 4	0.346	1.739	0.720	2.321	2.281	0.376
2	Reading 1	0.342	1.883	0.828	1.805	2.366	0.300
	Reading 2	0.338	1.822	0.948	2.189	1.840	0.327
	Reading 3	0.332	2.042	0.821	1.808	2.209	0.332
	Reading 4	0.332	1.364	0.794	1.976	2.417	0.390
3	Reading 1	0.347	1.310	0.739	1.997	2.548	0.410
	Reading 2	0.347	1.690	0.740	1.929	1.976	0.344
	Reading 3	0.340	1.597	0.731	1.869	2.420	0.534
	Reading 4	0.349	1.895	0.746	1.497	1.784	0.400
Overall Average		0.340	1.673	0.772	1.942	2.210	0.378
OD value compared to control			4.927	2.275	5.720	6.509	1.114
Biofilm Status			Strong	Weak	Very Strong	Very Strong	Very Weak

**Supplementary Table 2.** Pearson correlations between biofilm formation capacity and antibiotic resistance pattern.

Antibiotics→	AMK	GEN	IPM	MEM	CRO	FEP	CIP	LVX	SXT	AMP	TZP	CST	PMB	TGC
Pearson Correlation	0.431	0.431	**	**	**	**	**	0.584	**	**	**	**	-0.201	**
Sig. (2-tailed)	0.469	0.469	*	*	*	*	*	0.301	*	*	*	*	0.746	*
Total Strains	5	5	5	5	5	5	5	5	5	5	5	5	5	5

\*Correlation is significant at the 0.01 level (2-tailed).

a=Cannot be computed because at least one of the variables is constant.

**Supplementary Table 3.** The accession number of 50 *A. baumannii* strains used to construct phylogenomic trees.

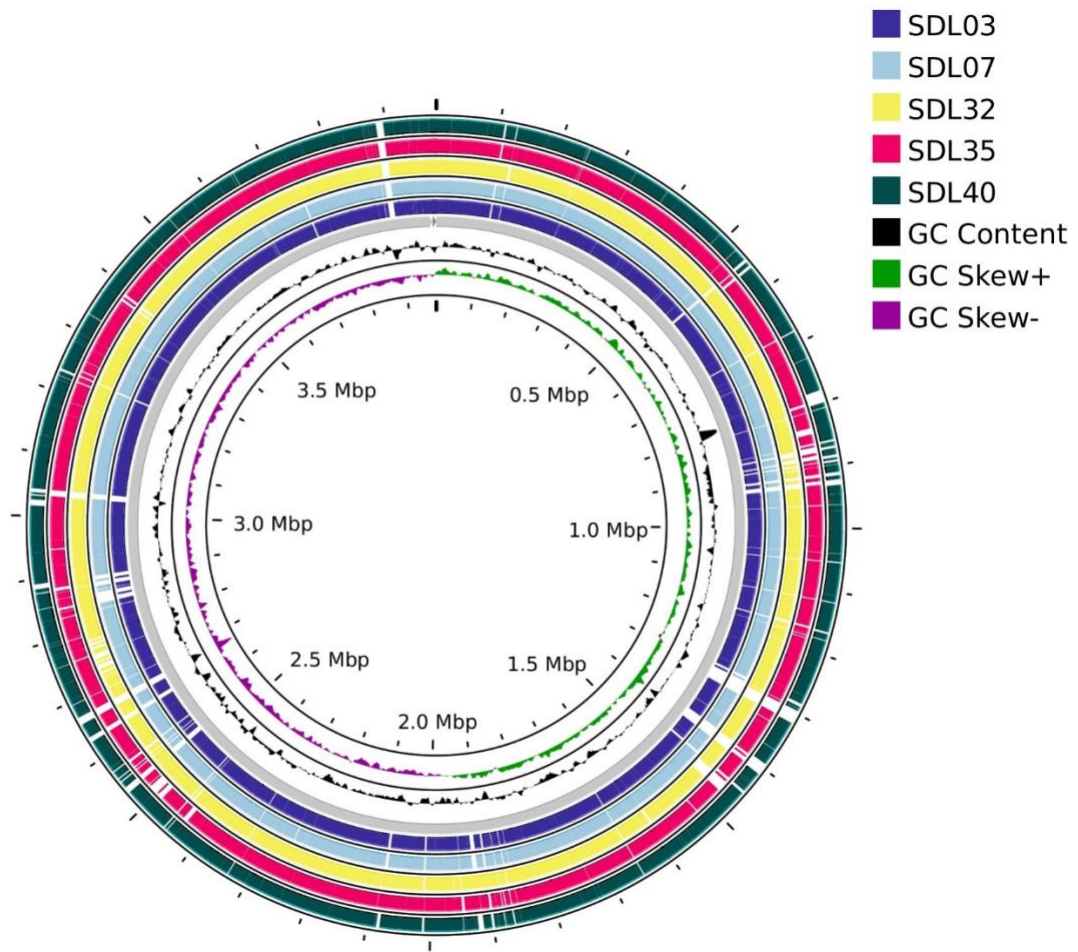
Strains	BioSample	Isolation country
<i>A. baumannii</i> ABA03 (SDL03)	SAMN27378538	Bangladesh
<i>A. baumannii</i> ABB07 (SDL07)	SAMN27378539	Bangladesh
<i>A. baumannii</i> ABC32 (SDL32)	SAMN27378540	Bangladesh
<i>A. baumannii</i> ABD35 (SDL35)	SAMN27378541	Bangladesh
<i>A. baumannii</i> ABE40 (SDL40)	SAMN27378542	Bangladesh
<i>A. baumannii</i> DMC32	SAMN11357878	Bangladesh
<i>A. baumannii</i> CRA-AC-04	SAMN25894921	Bangladesh
<i>A. baumannii</i> CRA-AC-05	SAMN25894922	Bangladesh
<i>A. baumannii</i> NGCE921	SAMN25894923	Bangladesh
<i>A. baumannii</i> NGCE922	SAMN25894924	Bangladesh
<i>A. baumannii</i> NGCE923	SAMN25894925	Bangladesh
<i>A. baumannii</i> NGCE924	SAMN25894926	Bangladesh
<i>A. baumannii</i> NGCE925	SAMN25894927	Bangladesh
<i>A. baumannii</i> NGCE926	SAMN25894928	Bangladesh
<i>A. baumannii</i> NGCE927	SAMN25894929	Bangladesh
<i>A. baumannii</i> NGCE928	SAMN25894930	Bangladesh
<i>A. baumannii</i> NGCE1004	SAMN25894931	Bangladesh
<i>A. baumannii</i> NGCE1005	SAMN25894932	Bangladesh
<i>A. baumannii</i> NGCE1008	SAMN25894934	Bangladesh
<i>A. baumannii</i> NGCE1011	SAMN25894935	Bangladesh
<i>A. baumannii</i> 11W359501	SAMN12015779	United Kingdom (UK)
<i>A. baumannii</i> 96	SAMN33498121	Poland
<i>A. baumannii</i> 2022CK-00185	SAMN27182072	United States of America (USA)
<i>A. baumannii</i> 2022CK-00843	SAMN32734002	USA
<i>A. baumannii</i> 5457	SAMN09244198	India
<i>A. baumannii</i> 37662RM1	SAMN11997570	China
<i>A. baumannii</i> 04117201	SAMN20255403	Australia
<i>A. baumannii</i> A1	SAMN03248539	UK
<i>A. baumannii</i> A85	SAMN07125723	Egypt
<i>A. baumannii</i> A388	SAMN07736509	Greece
<i>A. baumannii</i> A9844	SAMN30174926	Unknown
<i>A. baumannii</i> AB44	SAMN31265944	China
<i>A. baumannii</i> AB0057	SAMN02603051	Unknown
<i>A. baumannii</i> AB169-VUB	SAMN22062057	Belgium
<i>A. baumannii</i> AB307-0294	SAMN02603889	Unknown
<i>A. baumannii</i> AB322	SAMN33446574	Taiwan
<i>A. baumannii</i> AB5075	SAMN39855183	USA
<i>A. baumannii</i> AB5075-UW	SAMN36911450	USA
<i>A. baumannii</i> ARC6851	SAMN31037892	Greece
<i>A. baumannii</i> Canada BC-5	SAMN02436468	Canada
<i>A. baumannii</i> GIMC5508ABT-3Ts65	SAMN12618963	Russia
<i>A. baumannii</i> HAB11	SAMN27010192	Saudi Arabia
<i>A. baumannii</i> JAB34	SAMN27010211	Saudi Arabia
<i>A. baumannii</i> MAB9	SAMN27010256	Saudi Arabia
<i>A. baumannii</i> MRSN 56	SAMN20178847	USA
<i>A. baumannii</i> NCTC13421	SAMEA3146530	United Kingdom
<i>A. baumannii</i> OC081	SAMN23078461	Germany
<i>A. baumannii</i> RAB14	SAMN27010271	Saudi Arabia
<i>A. baumannii</i> USA15	SAMN06650240	South Korea
<i>A. baumannii</i> Z198	SAMN31277299	China

**Supplementary Table 4.** The number of accessories, unique, and exclusively absent genes resulted from pan-genome analysis of the twenty different strains of *A. baumannii*.

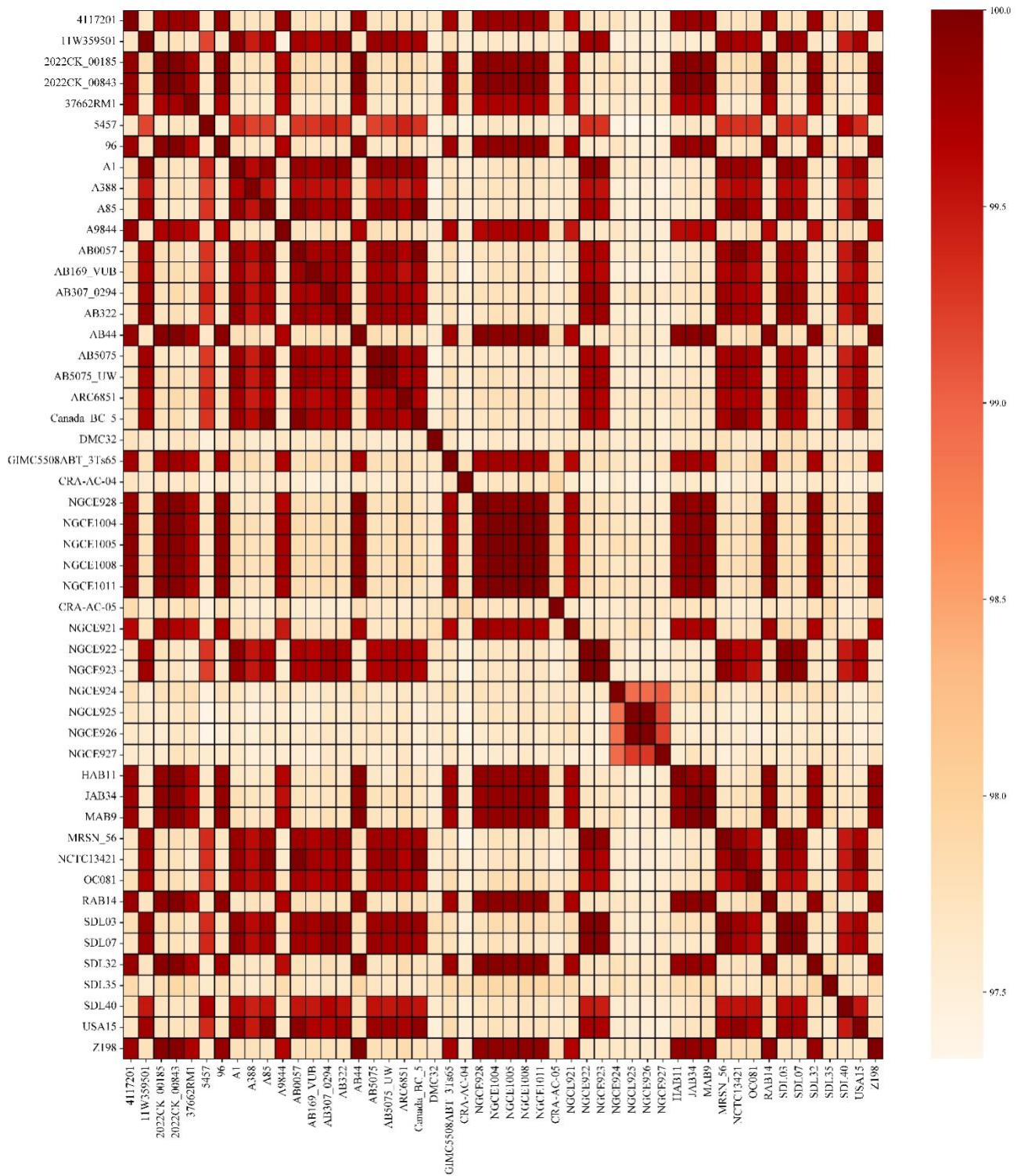
Strain	Genes in the accessory genome	Unique genes	Exclusively absent genes
CRA-AC-04	1182	181	36
CRA-AC-05	1086	159	58
DMC32	1520	307	56
NGCE921	1502	25	1
NGCE922	1582	0	0
NGCE923	1584	0	1
NGCE924	1314	74	60
NGCE925	1493	1	0
NGCE926	1490	0	1
NGCE927	1598	92	34
NGCE928	1627	6	5
NGCE1004	1578	0	0
NGCE1005	1577	0	0
NGCE1008	1579	0	0
NGCE1011	1579	1	0
SDL03	1376	1	20
SDL07	1193	0	112
SDL32	1470	31	36
SDL35	1065	296	56
SDL40	1293	128	34

**Supplementary Table 5.** Presence of polymorphisms in different antibiotic resistance gene encoding proteins

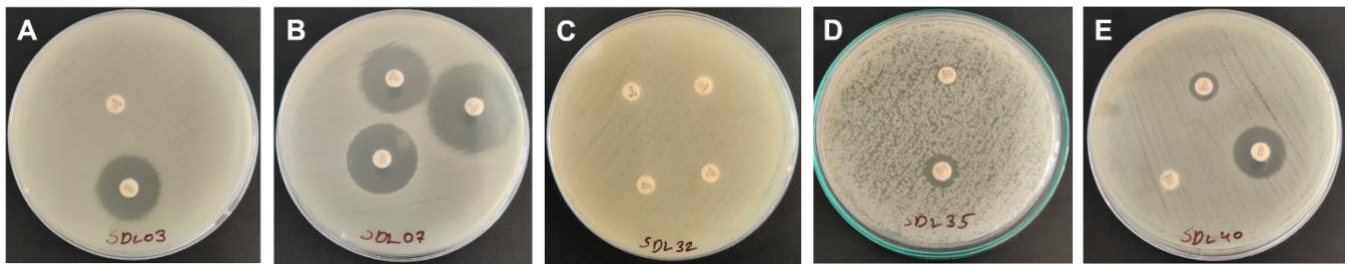
Gene Family	Gene	Protein	SDL03	SDL07	SDL32	SDL35	SDL40
Aminoglycoside modifying enzyme	<i>ant</i> (3'')	ANT (3'')	A90S	A90S	A90S	A90S	A90S
	<i>Ilc</i>	IIC	T135A D198G	T135A D198G	T135A M205K P206S	S247N	T135A D198G
DNA Gyrase and Topoisomerase IV	<i>gyrA</i>	GyrA	S81L A755T	S81L A755T	S81L	S81L	S81L
	<i>parC</i>	ParC	A250T	A250T	S84L A250T	S84L A250T	S84L A250T
MFS family efflux pump: dyes, disinfectants & erythromycin	<i>amvA</i>	AmvA	D436N	D436N	A183V D436N	Q391H	
MFS family efflux pump: Fosfomycin	<i>abaF</i>	AbaF	A355T	A355T	A355T S250T	A355T	A355T
SMR Family Efflux Pump	<i>abeS</i>	AbeS	V91A	V91A	V91A	V91A	V91A
Resistance Nodulation & Cell Division (RND) Family of Efflux Pump	<i>adeR</i>	AdeR			V120I A136V	V120I I175L	
	<i>adeS</i>	AdeS	A94V A153T S263A Q299R V331I	A94V A153T S263A Q299R V331I	A153T S263A N268H A280S D281Q V331I	A153T S263A A280S D281Q	A153T S263A Q299R V331I



**Supplementary Figure 1.** Sequence alignment of five *A. baumannii* strains. The GC content is shown in black.



**Supplementary Figure 2.** Matrix heatmap of the pairwise Average Nucleotide Identity (ANI). ANI values between 5 *A. baumannii* strains alongside the 45 selected strains with a cutoff score >97%, were obtained from FastANI. Each cell represents the ANI values between two strains, with the strains listed on both the x-axis and y-axis. The color gradient corresponds to ANI values, where light peach indicates the lowest ANI values (around 97%) and maroon indicates the highest ANI values (around 100%).



**Supplementary Figure 3.** Sample figures showing disk diffusion test results for five studied *A. baumannii* strains against various antibiotics. In Figure (A), strain SDL03 with no zone of inhibition for MEM and a zone diameter of 22 mm for TGC; in Figure (B), strain SDL07 shows zone diameters of 24 mm for AMK, 33 mm for LEV, and 25 mm for SXT; in Figure (C), strain SDL32 with no inhibition zones for AMP, FEP, CIP, and CN; in Figure (D), strain SDL35 with no zone of inhibition TZP and a zone diameter of 11 mm for IPM: and in Figure (E), for strain SDL40, the zone diameters are 18 mm for TGC, 11 mm for IPM, and 0 mm for CRO.