

MULTIDRUG-RESISTANT *PSEUDOMONAS AERUGINOSA*, *KLEBSIELLA PNEUMONIAE*, AND *ESCHERICHIA COLI* IN CANCER PATIENTS: A GROWING THERAPEUTIC CHALLENGE

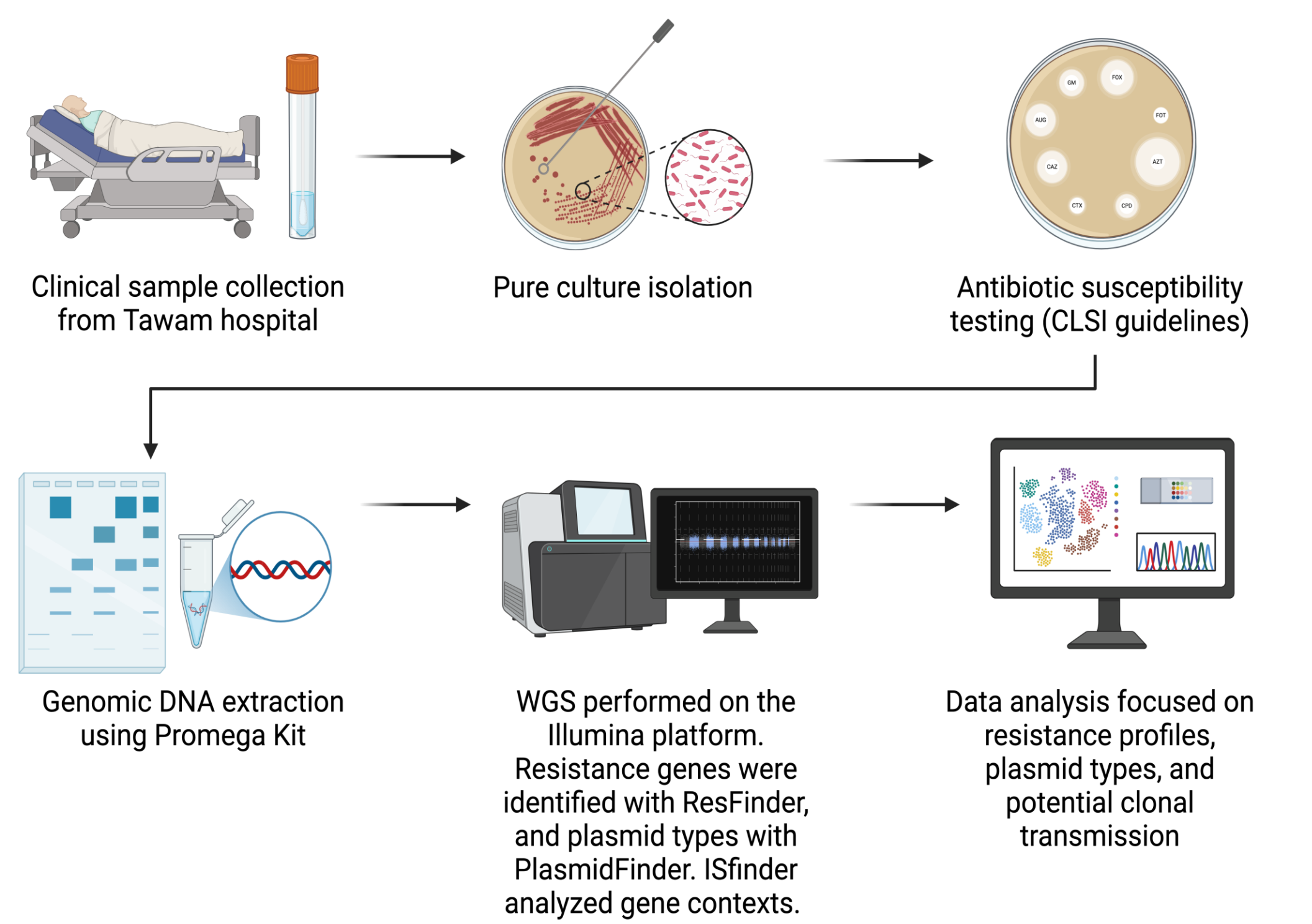
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INTRODUCTION & AIM

Antimicrobial resistance poses a major threat to immunocompromised cancer patients, limiting treatment options and increasing morbidity. This study investigated multidrug-resistant (MDR) and extensively drug-resistant (XDR) *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, and *Escherichia coli* isolates from cancer patients at a tertiary hospital in Abu Dhabi. Clinical samples underwent antibiotic susceptibility testing and whole genome sequencing. Resistance genes and plasmid types were identified using ResFinder and PlasmidFinder, while ISfinder was used to examine the genetic context. Key resistance determinants included blaNDM-1, blaOXA-181, and blaCTX-M-15, often located on mobile genetic elements. These findings underscore the critical role of plasmid-mediated gene transfer in resistance dissemination and highlight the urgent need for enhanced infection control and novel treatment strategies in oncology settings.

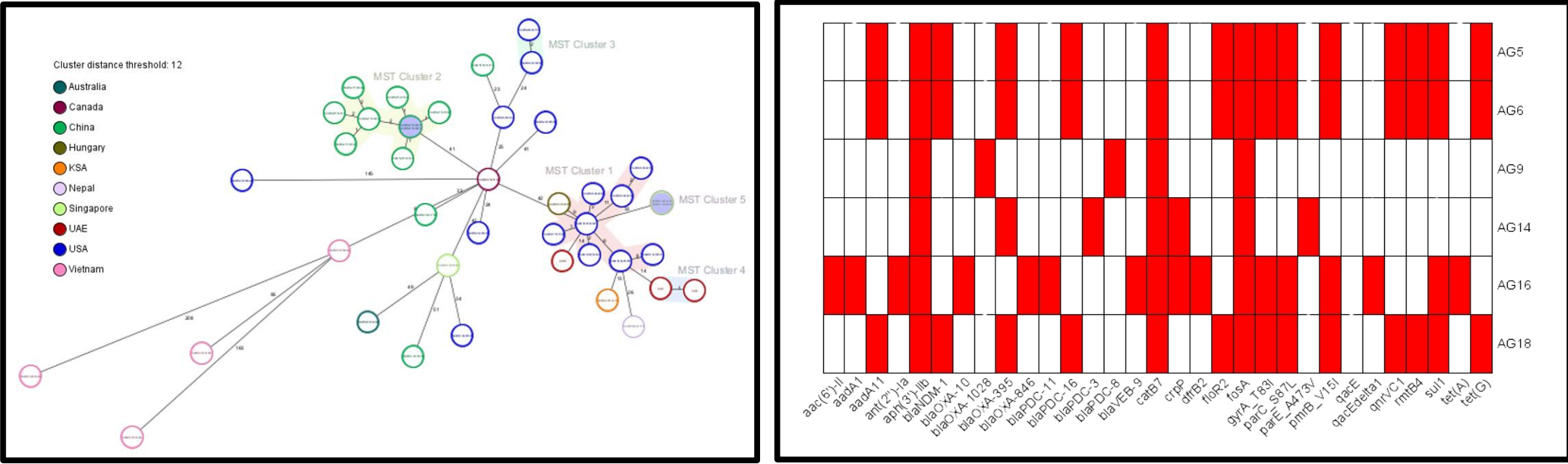
METHOD



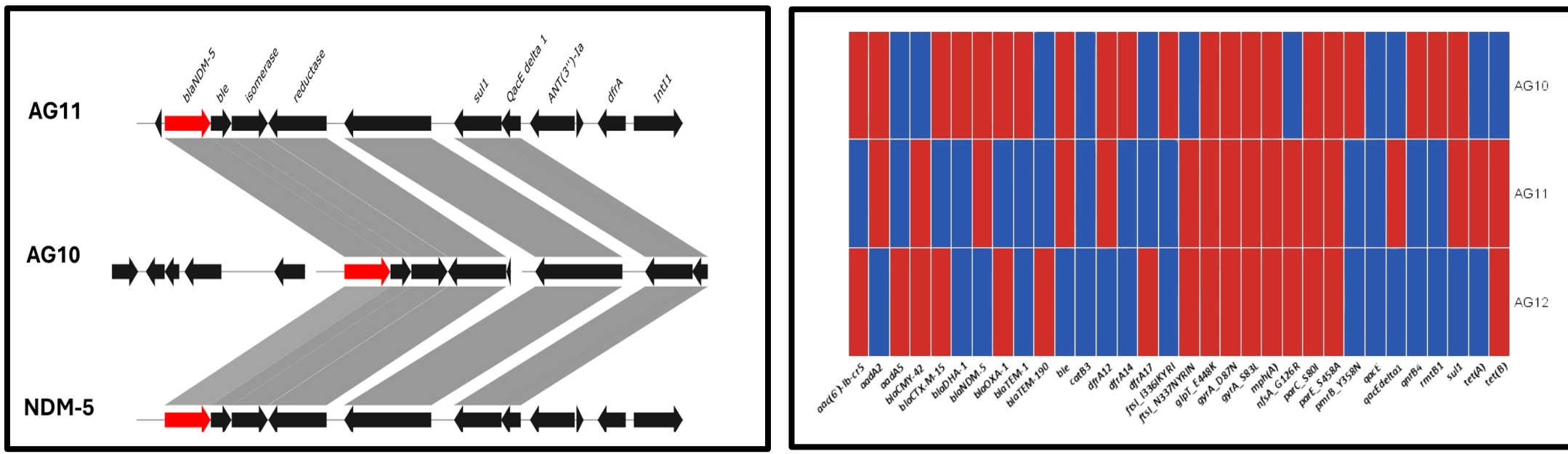
RESULTS & DISCUSSION

UAEU NO.	HOSPITAL	SAMPLE	ID by the hospital	Cancer type	Notes	ID by WGS	ST
AG5	A	Urine	<i>Pseudomonas aeruginosa</i>	Bladder cancer	XDR	<i>Pseudomonas aeruginosa</i>	773
AG6	A	Urine	<i>Pseudomonas aeruginosa</i>	Bladder cancer	XDR	<i>Pseudomonas aeruginosa</i>	773
AG7	A	Blood	<i>Aeromona hydrophila</i>	Acute lymphocytic leukemia	x	<i>Aeromonas dhakensis</i>	*f06c
AG8	A	Blood	<i>Salmonella Grp B</i>	Breast cancer	x	<i>Salmonella enterica</i>	376
AG9	A	Blood	<i>Pseudomonas aeruginosa</i>	Metastatic breast cancer to liver	x	<i>Pseudomonas aeruginosa</i>	270
AG10	A	Blood	<i>Escherichia coli</i>	Acute myelogenous leukemia	CRE	<i>Escherichia coli</i>	410
AG11	A	Body Fluid	<i>Escherichia coli</i>	Colorectal cancer	CRE	<i>Escherichia coli</i>	617
AG12	A	Body Fluid	<i>Escherichia coli</i>	Ovarian cancer	MDR	<i>Escherichia coli</i>	617
AG13	A	Urine	<i>Klebsiella pneumoniae</i>	Cervical cancer	CRE	<i>Klebsiella pneumoniae</i>	307
AG14	A	Sputum	<i>Pseudomonas aeruginosa</i>	Laryngeal squamous cell carcinoma	MDR	<i>Pseudomonas aeruginosa</i>	598
AG15	A	Urine	<i>Escherichia coli</i>	Cervical cancer	MDR	<i>Stenotrophomonas maltophilia</i>	*c9b5
AG16	A	Urine	<i>Pseudomonas aeruginosa</i>	Cervical cancer	MDR	<i>Pseudomonas aeruginosa</i>	357
AG17	A	Blood	<i>Klebsiella pneumoniae</i>	Colorectal cancer	ESBL	<i>Klebsiella pneumoniae</i>	469
AG18	A	Urine	<i>Pseudomonas aeruginosa</i>	Cervical cancer	MDR	<i>Pseudomonas aeruginosa</i>	773
AG19	A	Urine	<i>Klebsiella pneumoniae</i>	Breast cancer	ESBL	<i>Klebsiella pneumoniae</i>	45

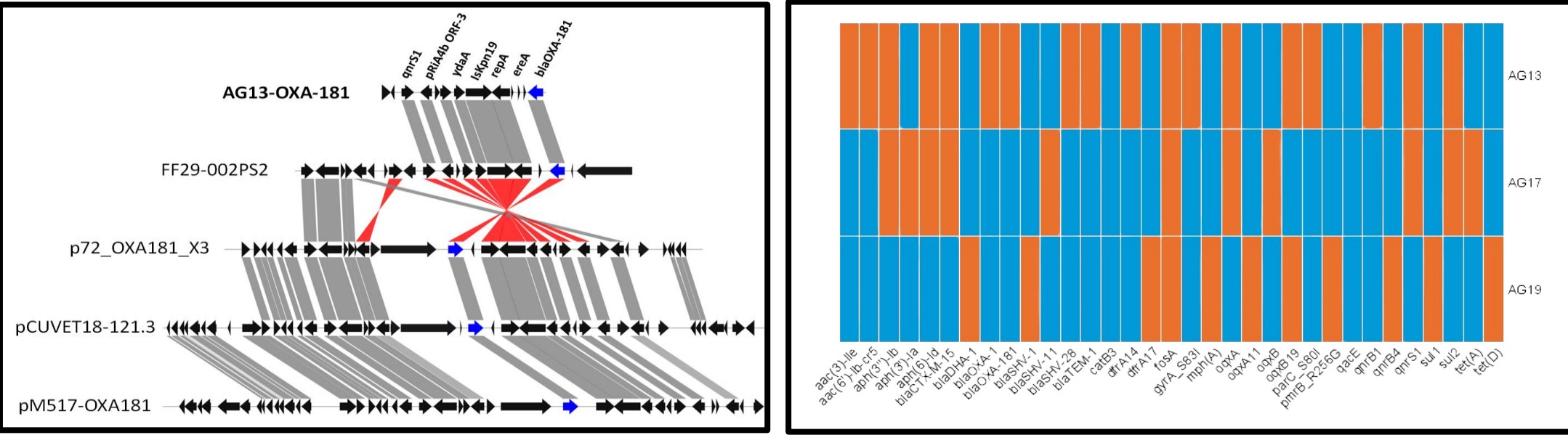
cgMLST and AMR Heatmap of *Pseudomonas aeruginosa* Isolates



Genetic context of blaNDM-5 and AMR Heatmap of *Escherichia coli* Isolates



Genetic context of blaOXA-181 and AMR Heatmap of *Klebsiella pneumoniae* Isolates



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CONCLUSION

This study highlights the prevalence of MDR and XDR pathogens in cancer patients and the significance of plasmid-mediated gene transfer in resistance. Improved infection control and novel therapeutic strategies are critical to addressing these complex resistance mechanisms.