

Genetic relatedness of *Pseudomonas aeruginosa* isolated from cystic fibrosis patients attending a clinic at a tertiary academic hospital in Pretoria



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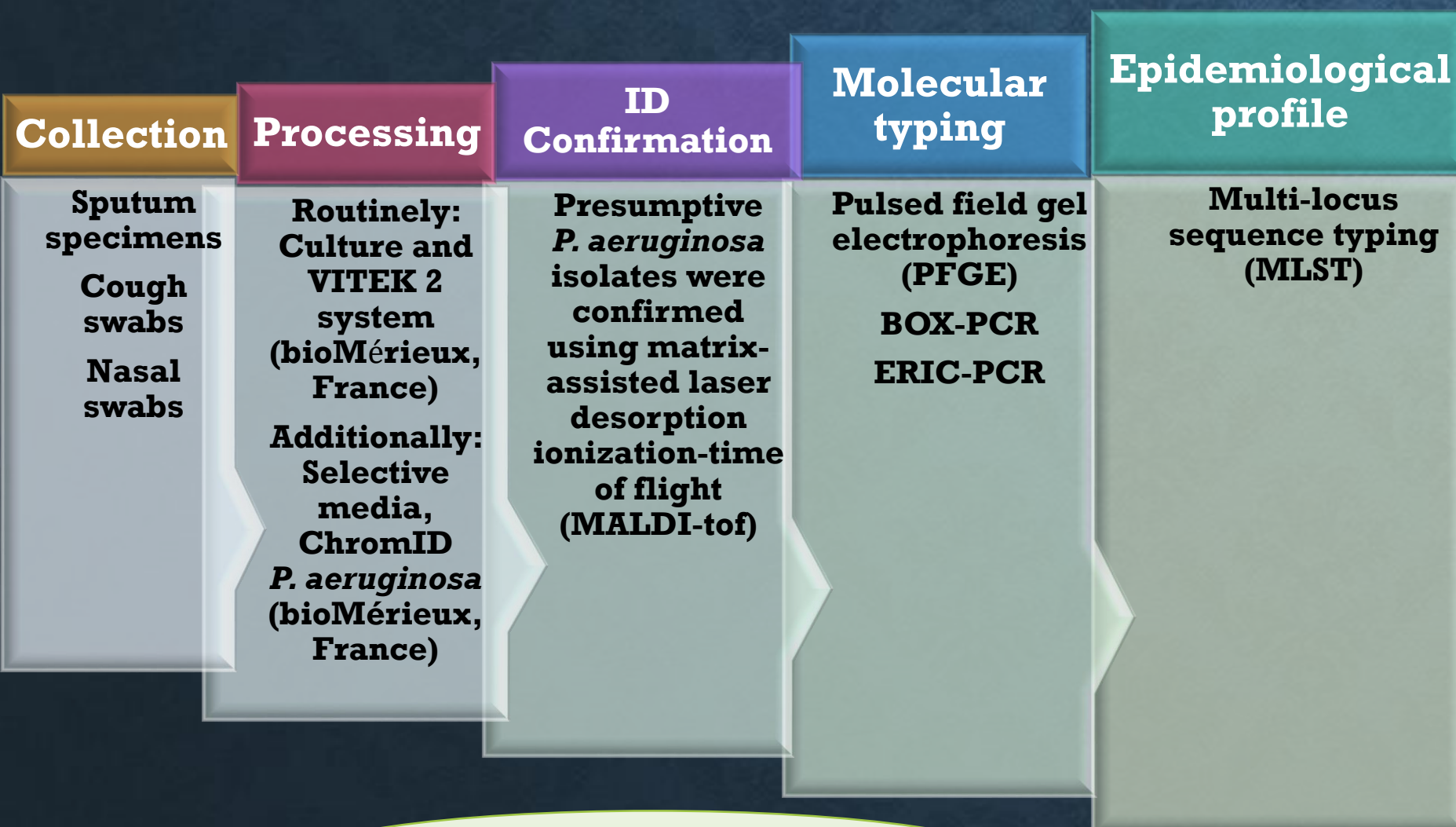


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Background

- ❖ Cystic fibrosis (CF) is an inherited recessive genetic disease that impairs the functioning of the lungs resulting in impaired mucociliary clearance of the lungs
- ❖ The removal of pathogens, such as *Pseudomonas aeruginosa*, from the lungs is thus impaired and these pathogens are able to colonise the lungs
- ❖ In South Africa, there is limited data available regarding the molecular characteristics and genetic relatedness of *Pseudomonas aeruginosa* in CF

Materials and Methods



Acknowledgements

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Results and Discussion

Table 1: Results of all three typing methods as well as the epidemiological profile of the isolates

Patient ID	Isolate ID	PFGE analysis	ERIC-PCR analysis	BOX-PCR analysis	Sequence type (ST)
P10	PA1	Untypeable	Group I	Group I	ST554
	PA4	Pulsotype A			
	PA6				
	PA7	Untypeable			
	PA9				
	PA12	Untypeable	Outlier	Outlier	
	PA16	Pulsotype B	Group IV	Group I	
PA17	Untypeable	Outlier			
P12	PA2	Pulsotype A	Group I	Group I	ST1062
	PA3	Untypeable	Outlier	Group I	N/A
	PA8				
	PA11				
	PA13	Untypeable	Group IV	Outlier	ST1062
	PA14				
	PA15	Outlier	Untypeable	N/A	
PA18	Pulsotype B	Outlier	Group I	ST1062	
P13	PA5	Untypeable	Group I	Group I	ST554
P15	PA19	Untypeable	Group II	Group I	ST2225
	PA20	Pulsotype A			
P18	PA21	Untypeable	Group III	Group I	ST395
	PA22				
	PA23				
	PA24				

- ❖ A total of 23 *P. aeruginosa* isolates were collected from five patients
- ❖ In order to determine the genetic relatedness of the isolates, PFGE was used. However, 48% (11/23) of the isolates were untypeable and as a result ERIC-PCR and BOX-PCR assays were employed
- ❖ While, these methods each had untypeable isolates, only one isolate (PA9) was untypeable by all three methods
- ❖ MLST analysis showed that this isolate (PA9) belonged to the same ST as the rest of the isolates from that patient
- ❖ Four sequence types were identified, of which only ST554 and ST395 were previously reported in CF
- ❖ ST395 is a well-known *P. aeruginosa* international clone which had been reported in CF patients in Spain
- ❖ ST554 has been isolated sporadically in Australia, Korea and the Netherlands, with the Netherlands being the only country from which it has been reported in CF
- ❖ This was the first reported instance of ST1062 in CF and this is the first report of ST2225, a new sequence type

Conclusions

- ❖ This study showed a genetically diverse *P. aeruginosa* population with limited patient to patient spread

References