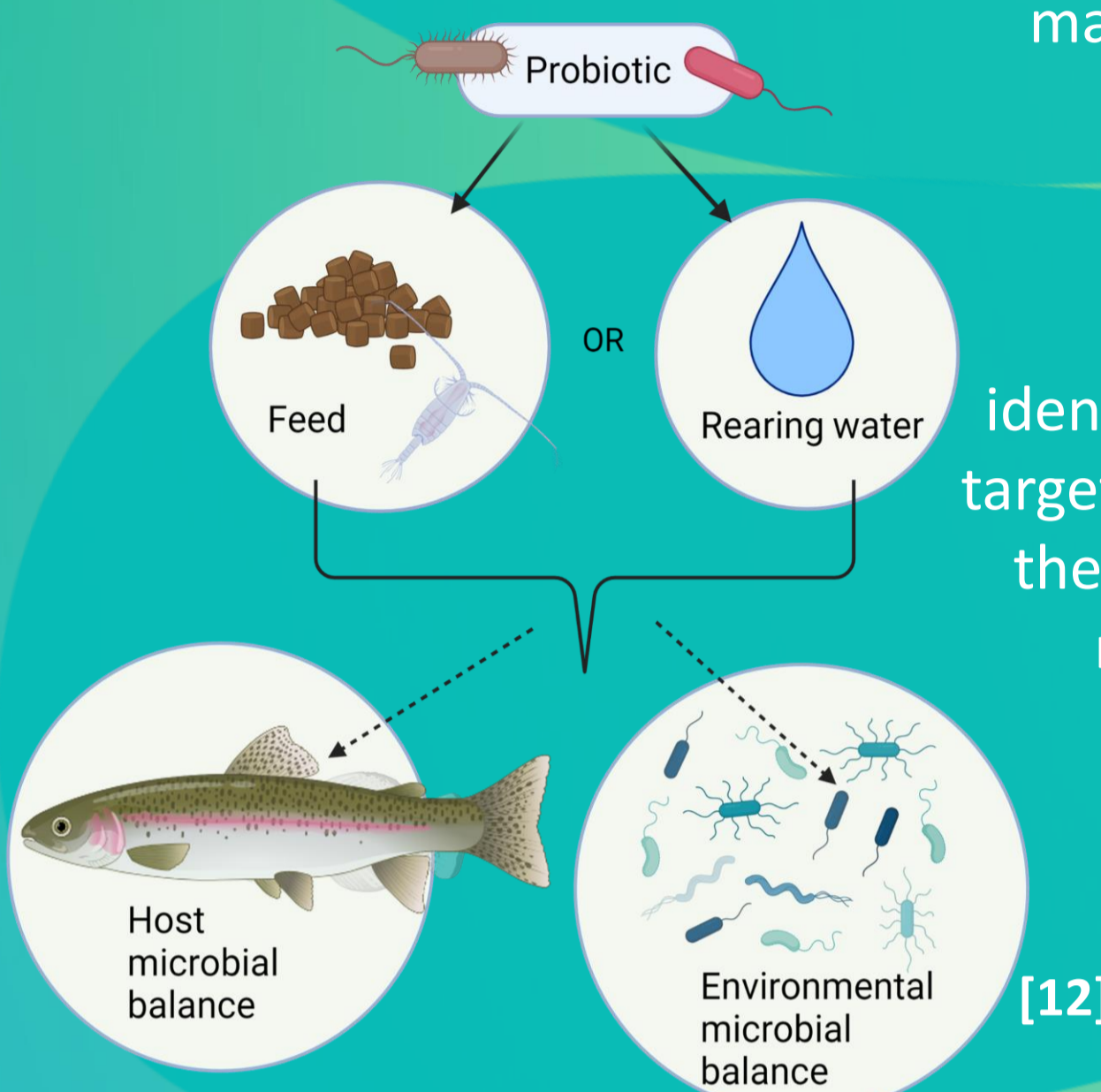


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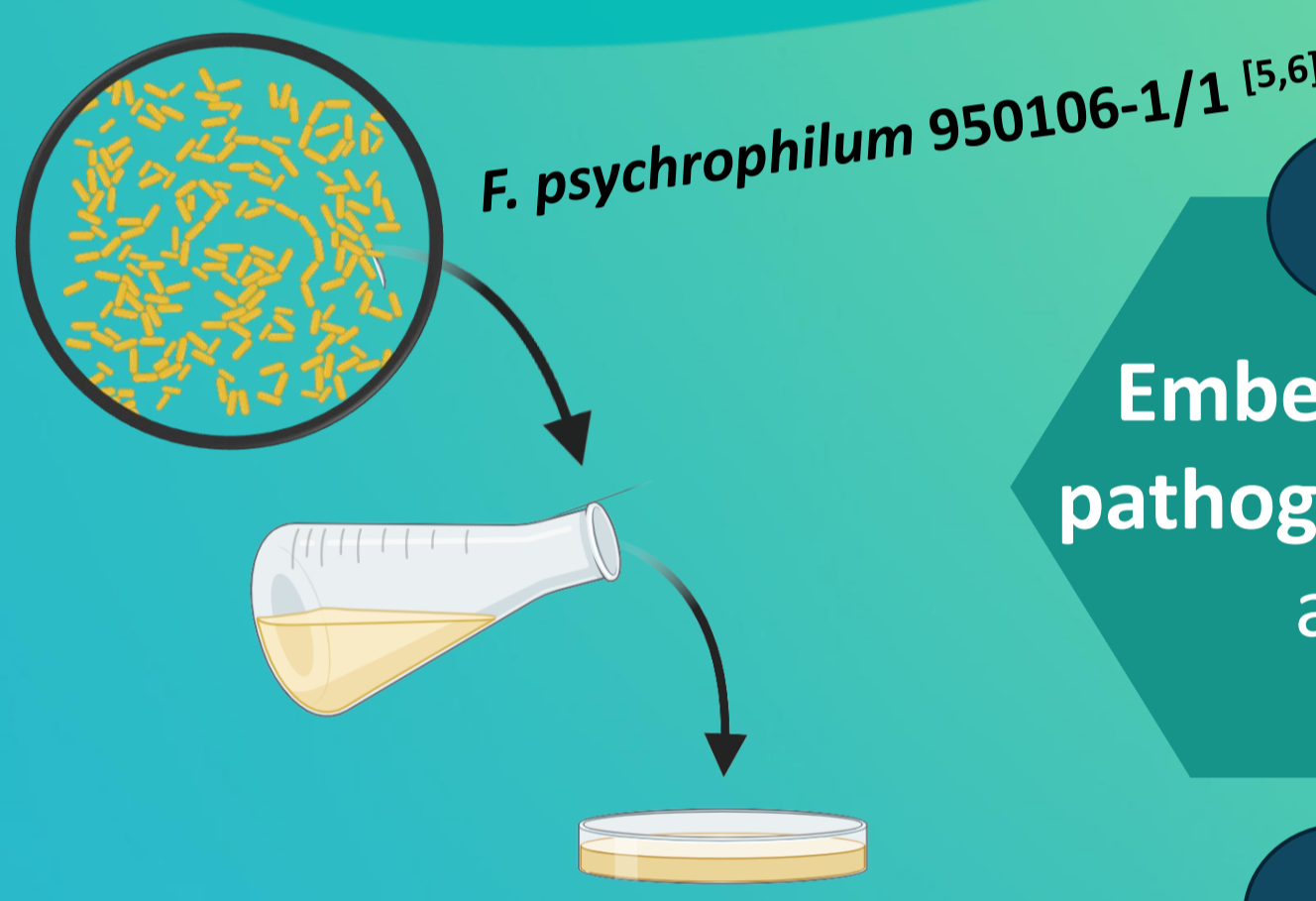
GLOBAL CHALLENGE

The extensive prophylactic and therapeutic use of antibiotics for disease management in aquaculture, has amplified the development of **antimicrobial resistance (AMR)**, representing a global threat for the welfare of farmed individuals, biodiversity, public health and food safety, especially considering climate change^[10,12]. In the context of **One Health**, more sustainable disease prevention and management approaches are required.

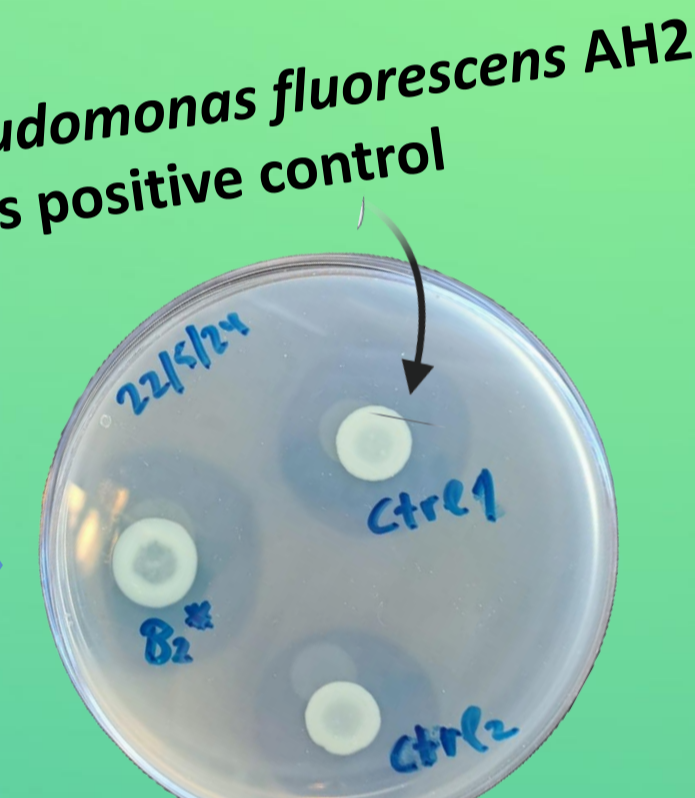
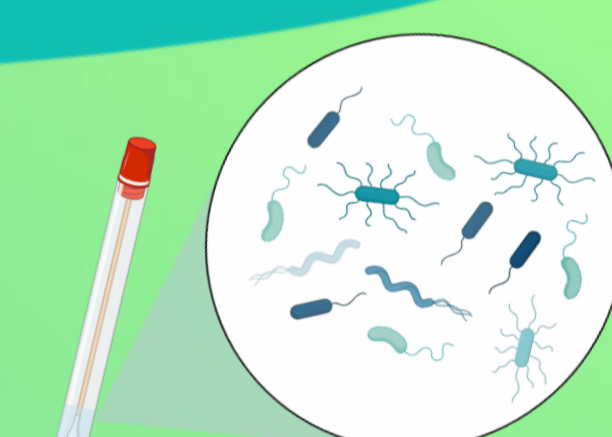
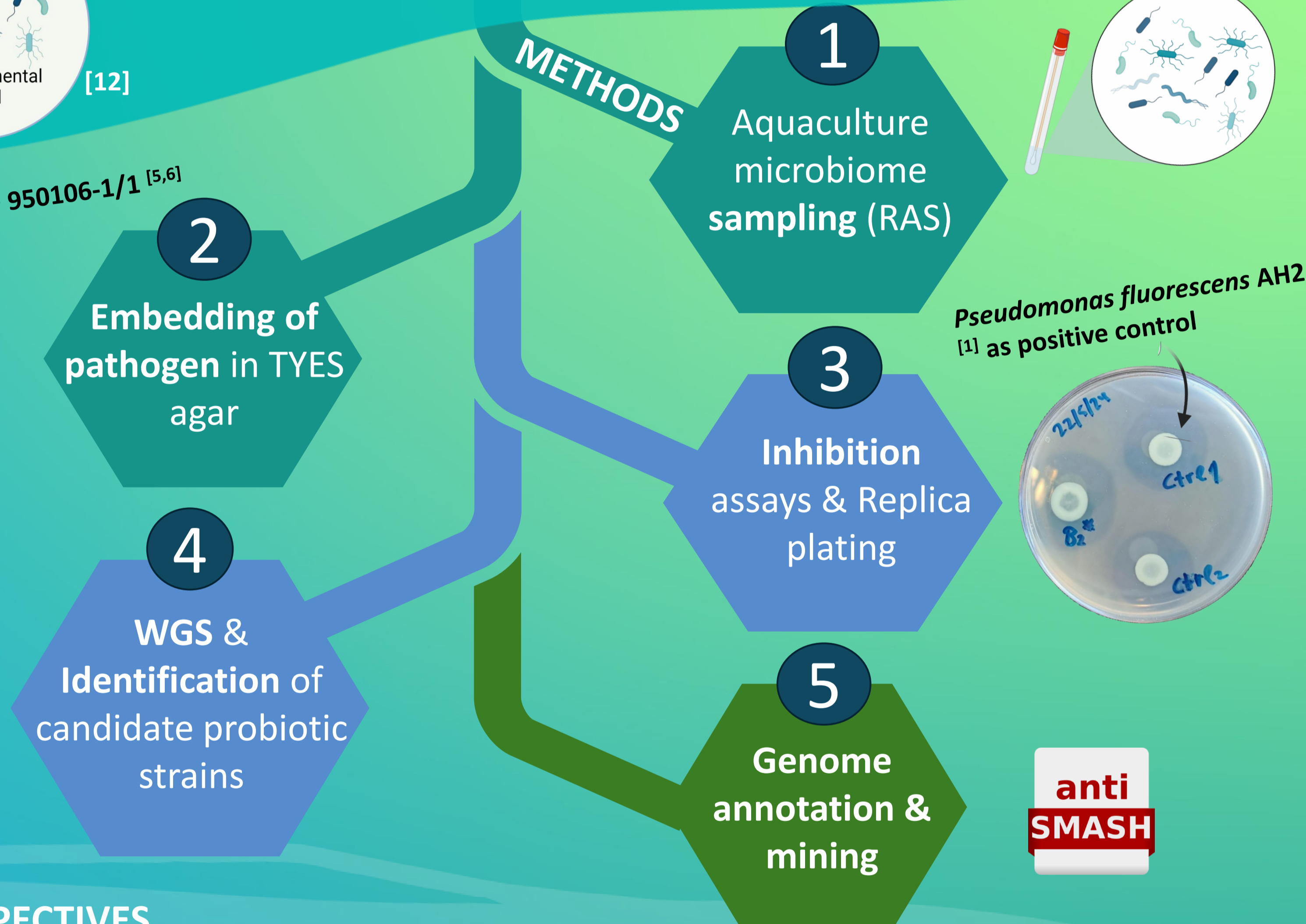


AIM

The present work entails the successful development of a **screening assay** for the identification of probiotic strains from within the aquaculture environment^[3,4], specifically targeted against the rainbow trout pathogen *Flavobacterium psychrophilum*, responsible for the lethal **Rainbow Trout Fry Syndrome** and **Bacterial Cold Water Disease**. Antimicrobial resistance in this pathogen has already developed in Denmark and elsewhere^[8,11].



METHODS



KEY FINDINGS & PERSPECTIVES

- Identification of 3 strains as potential probionts: *Pseudomonas sp.* (unknown species), *Pseudomonas yamanorum* & *Janthinobacterium tructae*
- All strains harbour several **biosynthetic gene clusters** suggesting a potential to produce **secondary metabolites**, which could contribute an antimicrobial activity against *F. psychrophilum*
- The potential for the production of **antagonistic compounds**^[2, 7, 13] will be explored with metabolomics
- Candidate probionts will be further tested at **aquaria-scale challenge trials**

Region	Type	Most similar known cluster	Similarity	Region	Type	Most similar known cluster	Similarity
Region 1.1	NRPS	Pf-5 pyoverdine	9	Region 1	NRPS	Pf-5 pyoverdine	17%
Region 1.2	NAGGN			Region 2	NRP-metallophore, NRPS	pyoverdine SMX-1	80%
Region 1.3	NRPS	viscosinamide A/pseudodesmin A	62	Region 3	betalactone	fengycin	13%
Region 1.4	betalactone	fengycin	13	Region 4	NRPS	viscosinamide A/pseudodesmin A	100%
Region 1.5	RiPP-like	lipopolysaccharide	5	Region 5	NI-siderophore		
Region 1.6	NRPS, NRP-metallophore	Pf-5 pyoverdine	11	Region 6	RiPP-like		
Region 1.7	hserlactone	cepacin A	12	Region 7	hydrogen-cyanide		
Region 1.8	RiPP-like			Region 8	RiPP-like		
Region 1.9	arylpylyene	APE Vf	40	Region 9	NAGGN		
Region 1.10	NRPS-like	ambactin	25	Region 10	RiPP-like		
Region 1.11	RiPP-like			Region 11	arylpylyene	APE Vf	
Region 1.12	RiPP-like			Region 12	NRPS-like	fragin	
Region 1.13	redox-cofactor	lankacidin C	13%	Region 13	RiPP-like		
				Region 14	redox-cofactor	lankacidin C	

Janthinobacterium tructae

Pseudomonas sp.

Pseudomonas yamanorum

REFERENCES

