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Killer Whale Microbiomes for Health Assessment

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KILLER WHALE MICROBIOMES FOR HEALTH ASSESSMENTS

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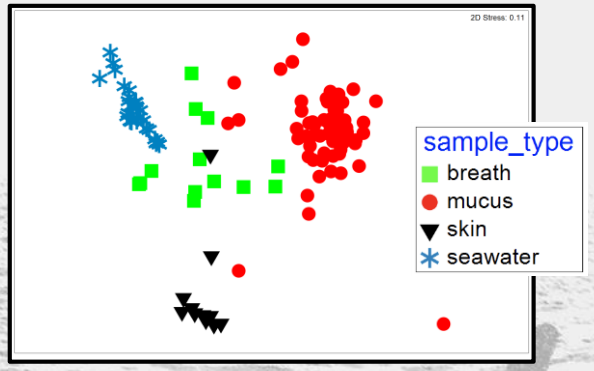
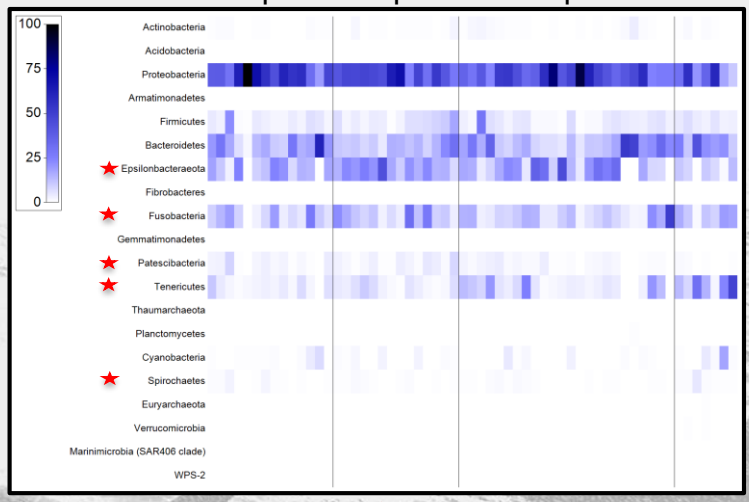
Bacterial microbiomes are an emerging area of health assessments that can be applied to killer whales. Microbiomes from noninvasive samples (e.g., mucus, breath) are a chance to learn from living animals. These results are the most extensive assessment of killer whale mucus & breath bacterial microbiomes.



Sample sources have distinct bacterial microbiomes & all are different from seawater

(16S metabarcoding; nonmetric multidimensional scaling)



Five bacterial phyla (★) are nearly exclusive to mucus samples across pods & populations

(16S metabarcoding; shade plot; abundance key in upper left)

Breath samples	Mucus samples
Mycoplasma	*Mycoplasma*
Campylobacter	*Campylobacter*
Staphylococcus	*Staphylococcus*
Porphyromonas	*Porphyromonas*
Helcococcus	*Helcococcus*
Streptococcus	*Serratia*
Hemophilus	*Clostridium*
Aeromonas	*Fusobacter*
	Treponema 2
	Ureaplasma
	Escherichia-Shigella

Detected bacterial genera that contain potential pathogens

	2009	2010	2011	2012	2013	2014	2015	2016
J16	▮▮					▮		
K22	▮	▮						
L86	▮	▮						▮

Repeated samples over time (▮) allow comparison for changes related to aging or maturity.

Reference: Rhodes et al (2022) *Conserv Physiol* 10(1): coac014; doi:10.1093/conphys/coac014.