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Killer Whale Microbiomes for Health Assessment

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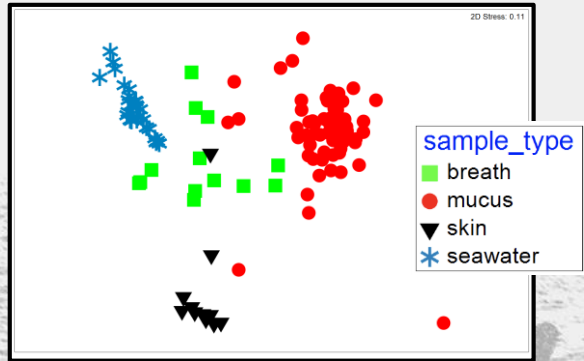
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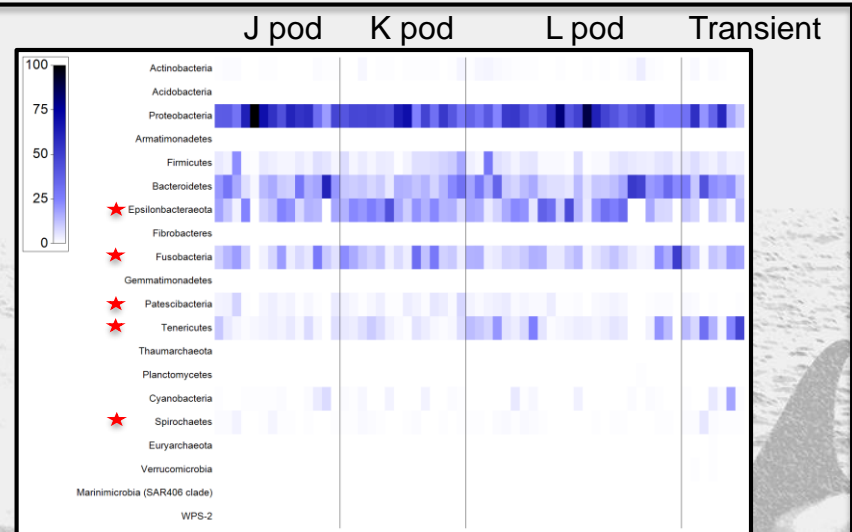
KILLER WHALE MICROBIOMES FOR HEALTH ASSESSMENTS

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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
<i>Mycoplasma</i>	<i>Mycoplasma</i>
<i>Campylobacter</i>	<i>Campylobacter</i>
<i>Staphylococcus</i>	<i>Staphylococcus</i>
<i>Porphyromonas</i>	<i>Porphyromonas</i>
<i>Helcococcus</i>	<i>Helcococcus</i>
<i>Streptococcus</i>	<i>Serratia</i>
<i>Hemophilus</i>	<i>Clostridium</i>
<i>Aeromonas</i>	<i>Fusobacter</i>
	<i>Treponema 2</i>
	<i>Ureaplasma</i>
	<i>Escherichia-Shigella</i>

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.