

Figure S1. Multiple hedgehogs' structures adjacent to each other. Reprinted with the publisher's permission.

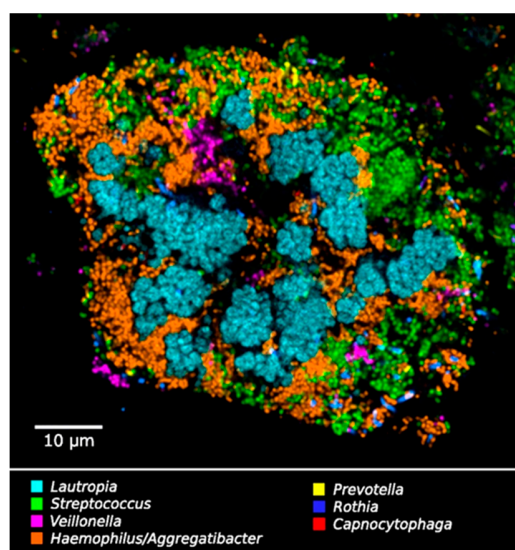


Figure S2. A cauliflower structure in plaque. Reprinted with the publisher's permission.

Table S1. Database search strategy.

Database	Search strategy
MEDLINE (via PubMed)	(Periodont* OR "Periodontal pockets" OR Microbes OR "Oral biofilm" OR Micro* OR "Oral micro*" OR "Bacteria") AND (Imaging OR FISH OR "FISH technique" OR "fluorescence <i>in situ</i> hybridization" OR "hybridization")
Scopus (Elsevier: Amsterdam, The Netherlands)	(Periodont* OR "Periodontal pockets" OR Microbes OR "Oral biofilm" OR Micro* OR "Oral micro*" OR "Bacteria") AND (Imaging OR FISH OR "FISH technique" OR "fluorescence <i>in situ</i> hybridization" OR "hybridization")
Web of Science (Clarivate Analytics: Philadelphia, United States)	TS = ((Periodont* OR "Periodontal pockets" OR Microbes OR "Oral biofilm" OR Micro* OR "Oral micro*" OR "Bacteria") AND (Imaging OR FISH OR "FISH technique" OR "fluorescence <i>in situ</i> hybridization" OR "hybridization"))

Table S2. Oligonucleotide probes' names and sequences, the microorganisms targeted, and the FISH conditions used in the studies included in this scoping review. The abbreviations can be found at the bottom of the table.

Authors (year)	Probe name	Sequence (5'→3')	Taxon	Target	FISH conditions		
				Microorganisms	% Form. (vol/vol)	Hybridization Temp. (°C)	Hybridization Time (hours)
Moter, A., et al. (1998)	EUB338	GCTGCCTCC CGTAGGAGT	D	<i>Bacteria</i>	0-20	46	1-3
	TRE I	ACGCAAGCTC ATCCTCAAG	G	Group I of oral treponemes			
Wecke, J., et al. (2000)	EUB338	GCTGCCTC CCGTAGGAGT	D	<i>Bacteria</i>	20	46	3.5
	TRE I	ACGCAAGC TCATCCTCAAG	G	Group I of oral treponemes			
Lepp, P. W., et al. (2004)	SBGA-1	NAI	S	<i>Methanobrevibacter oralis</i>	0-80	65	8
Gmür, R., et al. (2004)	Lbuc668	TACTCGTGC AGTTCCGTCC	S	<i>Leptotrichia buccalis</i> <i>Fusobacterium nucleatum</i>	30-40	46	2.5
Gmür, R. and H. Lüthi-Schaller (2007)	EUB338	GCTGCCTC CCGTAGGAGT	D	<i>Bacteria</i>	40	46	2
	Tfor582	GCGGACTTA ACAGCCACCT	S	<i>Tannerella forsythia</i>			
Drescher, J., et al. (2010)	EUB338	GCTGCCTC CCGTAGGAGT	D	<i>Bacteria</i>	0-30	46	3-5
	SELE	TCGGAATGTT GTCCCCATCC	G	<i>Selenomonas sp.</i> <i>Centipeda sp.</i>			
	FUSO	CTAATGGGA CGCAAAGCT CTC		<i>Fusobacterium sp.</i>			
Schlafer, S., et al. (2010)	EUB338	GCTGCCTC CCGTAGGAGT	D	<i>Bacteria</i>	0-30	46	3-5
	FIAL	TCTTTGTCCAC TATCGTTTGA	S	<i>Filifactor alocis</i>			
	EUB338	GCT GCC TCC CGT AGG AGT	D	<i>Bacteria</i>	0-50	50	3

Authors (year)	Probe name	Sequence (5'→3')	Taxo n	Target	FISH conditions		
				Microorganisms	% Form. (vol/vol)	Hybridizatio n Temp. (°C)	Hybridizatio n Time (hours)
Zjinge, V., et al. (2010)	EUK502	ACC AGA CTT GCC CTC C		<i>Eukarya</i>	15-45		
	CAAL	GCC AAG GCT TAT ACT CGC T	S	<i>Candida albicans</i>	30		
	STR493	GTT AGC CGT CCC TTT CTG G	G	most <i>Streptococcus</i> sp. and some <i>Lactococcus</i> sp.	0		
	LAB759	CTA CCC ATR CTT TCG AGC C		<i>Lactobacillus</i> sp., <i>Ruminococcaceae</i> sp. and <i>Pediococcus</i> sp.	35	46	
	Mmicros1435	GCC GCC GAT CTA ACC GCA	S	<i>Parvimonas micra</i>	0	50	
	Sel1469	CCA GTC ACC TTC CCC ACC	G	<i>Selenomonas</i> sp. but not <i>S. sputigena</i>	30-50	46	
	SynA1409	ACA CCC GGC TCG GGT GGT		<i>Synergistetes</i> group A	40-50		
	ACT218	CGA GCC CAT CCC CCA CCA		<i>Actinomyces</i> sp.	0	50	
	Fus664	CTT GTA GTT CCG CYT ACC TC		most <i>Fusobacterium</i> sp.	40		
	Fnav1254	CTT CAC AGC TTT GCG ACT C	S	<i>F. naviforme</i> , <i>F.</i> <i>nucleatum</i> subsp. <i>fusiforme</i>	30	46	
	Fnuc133c	GTT GTC CCT ANC TGT GAG GC		<i>F. nucleatum</i> , <i>F.</i> <i>periodonticum</i>			
	SPIRO1400	CTC GGA TGG TGT GAC GGG CG	F	subgroup of the <i>Spirochaetaceae</i>	ND	50	
	TrepG1	GAT TCC ACC CCT ACA CTT	S	<i>T. medium</i> and <i>T.</i> <i>denticola</i>	20-50	46	
	Td469	CAT GAC TAC CGT CAT CAA AGA AGC		<i>T. denticola</i>	ND	50	
	Aa829	GGG CTA AAC CCC AAT CCC		<i>A.</i> <i>actinomycetemcomitan</i> <i>s</i>			
	Camp655	CAT CTG CCT CTC CCT YAC		<i>Campylobacter</i> sp.	30	46	
	CFB935	CCA CAT GTT CCT CCG CTT GT	G	<i>Cytophaga</i> - <i>Flavobacterium</i> - <i>Bacteroides</i> cluster	>40	50	
	BAC303	CCA ATG TGG GGG ACC TT	F	<i>Bacteroidaceae</i> and <i>Prevotellaceae</i>	0		
	Prev394	GCA CGC TAC TTG GCT GG	G	<i>Prevotella</i> sp.	25		
	Pi425	CTT TAC TCC CCA ACA AAA GCA GTT TAC AA	S	<i>P. intermedia</i>	20	46	
	Pnig657	TCC GCC TGC GCT GCG TGT A		<i>P. nigrescens</i>	≤ 40		

Authors (year)	Probe name	Sequence (5'→3')	Taxo n	Target	FISH conditions		
				Microorganisms	% Form. (vol/vol)	Hybridizatio n Temp. (°C)	Hybridizatio n Time (hours)
	Tfor582	GCG GAC TTA ACA GCC CAC CT		<i>T. forsythia</i>	40		
	Tfor440	CGT ATC TCA TTT TAT TCC CCT GTA		<i>T. forsythia</i>	20		
	Tfor127	CTC TGT TGC GGG CAG GTT AC		<i>T. forsythia</i>	40		
	Tfor997	TCA CTC TCC GTC GTC TAC		<i>T. forsythia</i>	40		
	Pg477	CAA TAC TCG TAT CGC CCG TTA TTC		<i>P. gingivalis</i>	20		
	Pendo740	CAG TGT CAG ACG GAG CCT		<i>P. endodontalis</i>	30-40		
	Capno371	TCA GTC TTC CGA CCA TTG	G	<i>Capnocytophaga</i>	0	50	
Machado , F. C., et al. (2012)	Pint649	GCCGCCRC TGAASTCAAGCC	S	<i>Prevotella intermedia</i>	40	42	left overnight
Mark Welch, J. L., et al. (2016)	EUB338	GCTGCCTC CCGTAGGAGT	D	<i>Bacteria</i>	20	46	2-4
	Act381	CGTCGCTG CATCAGGCTT	P	<i>Actinobacteria</i>			
	Act692	CTGATATCT GCGCATTCC		<i>Actinobacteria</i>			
	Act476	ATCCAGCTA CCGTCAACC		<i>Actinomyces</i>			
	Cor595	CCGGAATT CACAGACGACG	G	<i>Corynebacterium</i>			
	Cor633	AGTTATGCC CGTATCGCCTG		<i>Corynebacterium</i>			
	Rot491	TAGCCGGC GCTTCTCTG		<i>Rothia</i>			
	Cmat175	ACTAAACCA TGGTCCTATCCG	S	<i>Corynebacterium matruchotii</i>			
	Cap371	TCAGTCTC CGACCATG		<i>Capnocytophaga</i>			
	Prv392	GCACGCTAC TTGGCTGG		<i>Prevotella</i>			
	Pg1160	CCTCACGCC TTACGACGG	G	<i>Porphyromonas</i>			
	Str405	TAGCCGTC CCTTCTGGT		<i>Streptococcus</i>			
	Vei488	CCGTGGCT TTCTATTCCG		<i>Veillonella</i>			
	Lmir444	TGGCACAG TCCTTTTCGTTCC	S	<i>Lautropia mirabilis</i>			
	Nei1030	CCTGTGTTA CGGCTCCCG	F	<i>Neisseriaceae</i>			

Authors (year)	Probe name	Sequence (5'→3')	Taxon	Target	FISH conditions		
				Microorganisms	% Form. (vol/vol)	Hybridization Temp. (°C)	Hybridization Time (hours)
	Pas111	TCCCAAGC ATTACTCACC	G	<i>Pasteurellaceae</i>			
	Fus714	GGCTTCCC CATCGGCATT		<i>Fusobacterium</i>			
	Lep568	GCCTAGAT GCCCTTTATG		<i>Leptotrichia</i>			

D: Domain; F: Family; G: Genus; NAI: no available information; ND: not determined; P: Phylum; S: Specie.