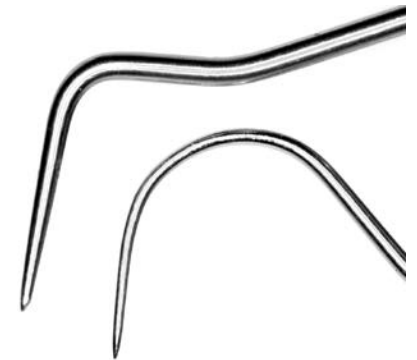


Fluorescence aided caries excavation (FACE)

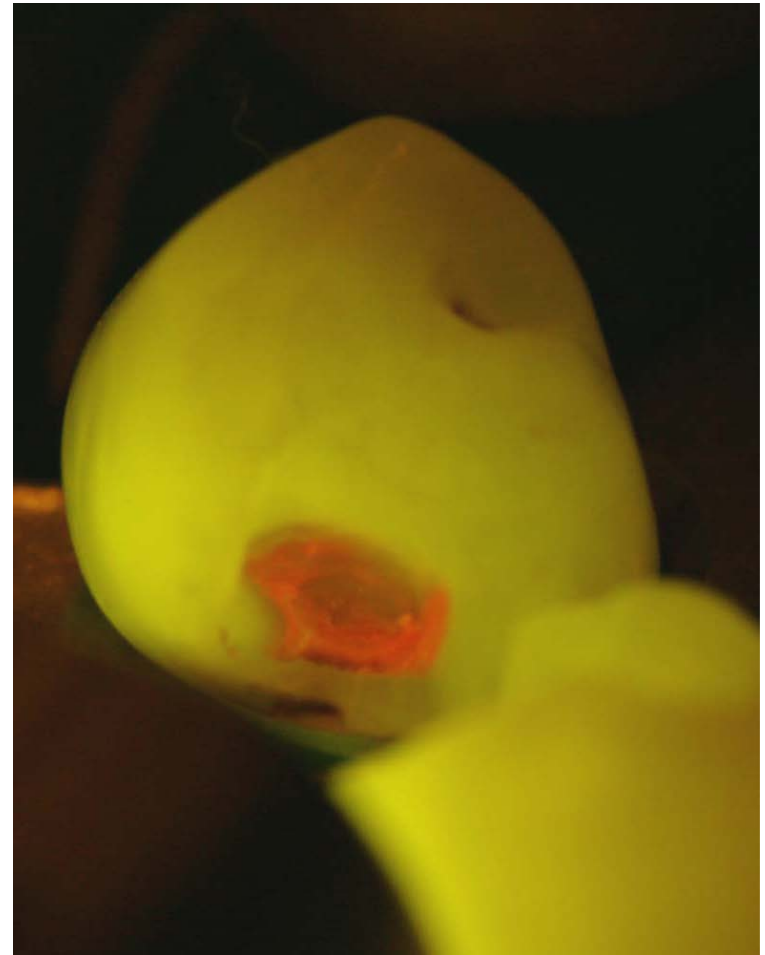
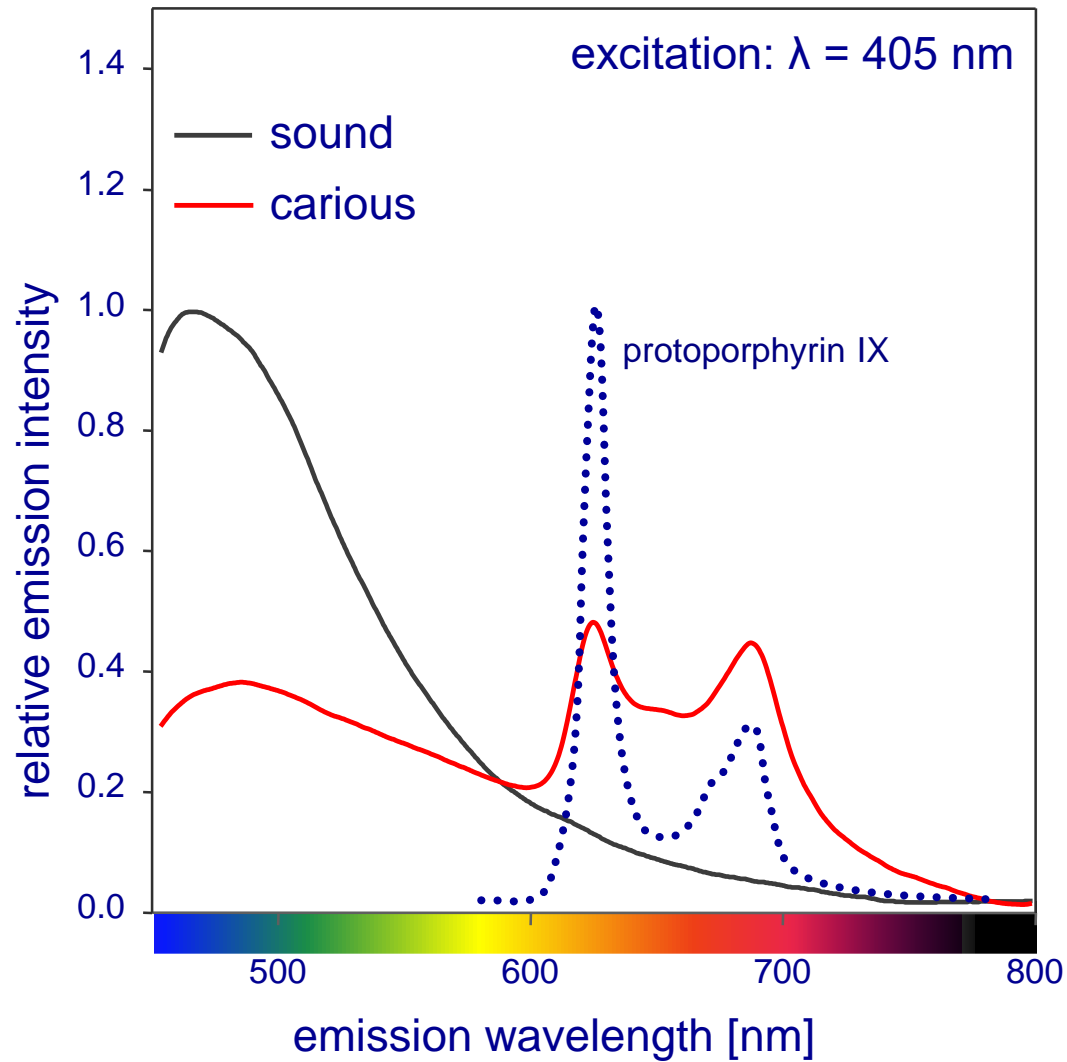
Development and validation of a method
for detection and treatment
of carious dentin

Áine M. Lennon



Kidd EA, Joyston-Bechal S, Beighton D: The use of caries detector dye during cavity preparation: A microbiological assesment. B Dent J; 174:245-248 (1993)

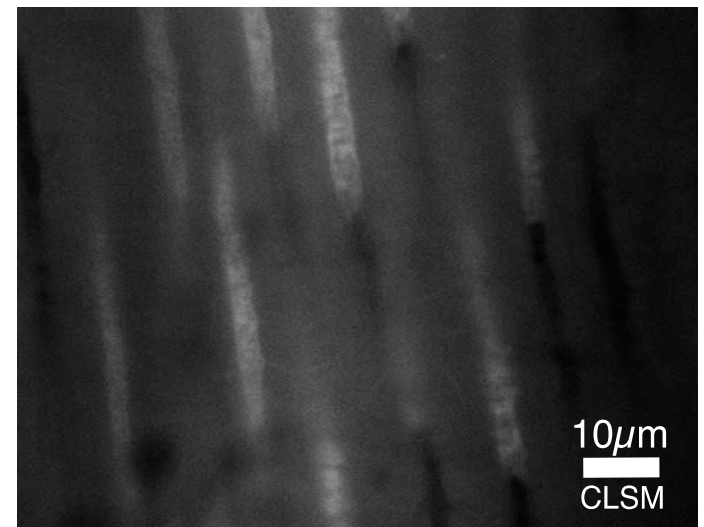
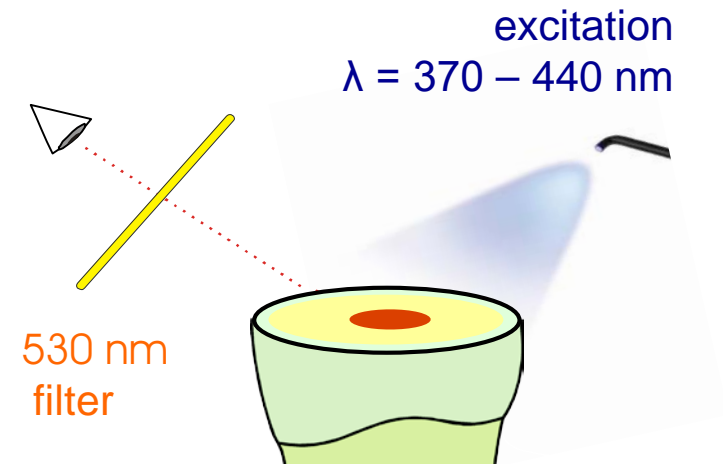
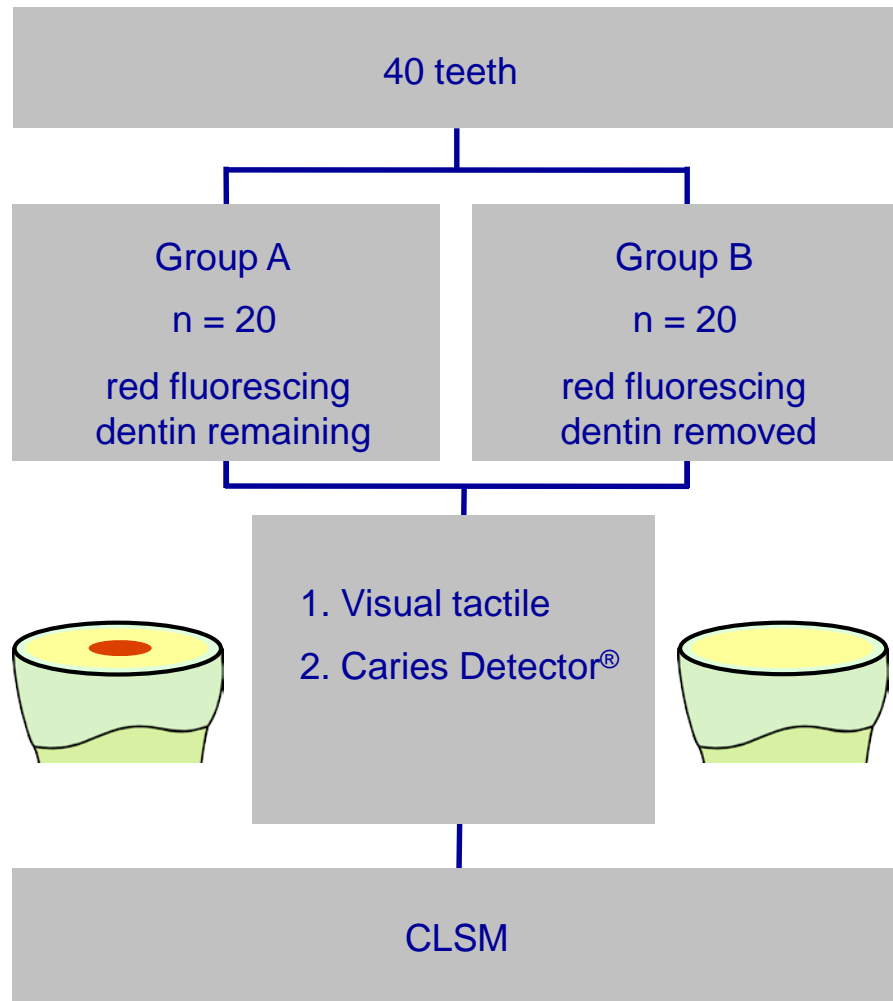
Kidd EA, Ricketts DN, Beighton D: Criteria for caries removal at the enamel-dentine junction: A clinical and microbiological study B Dent J; 180:287-291 (1996)



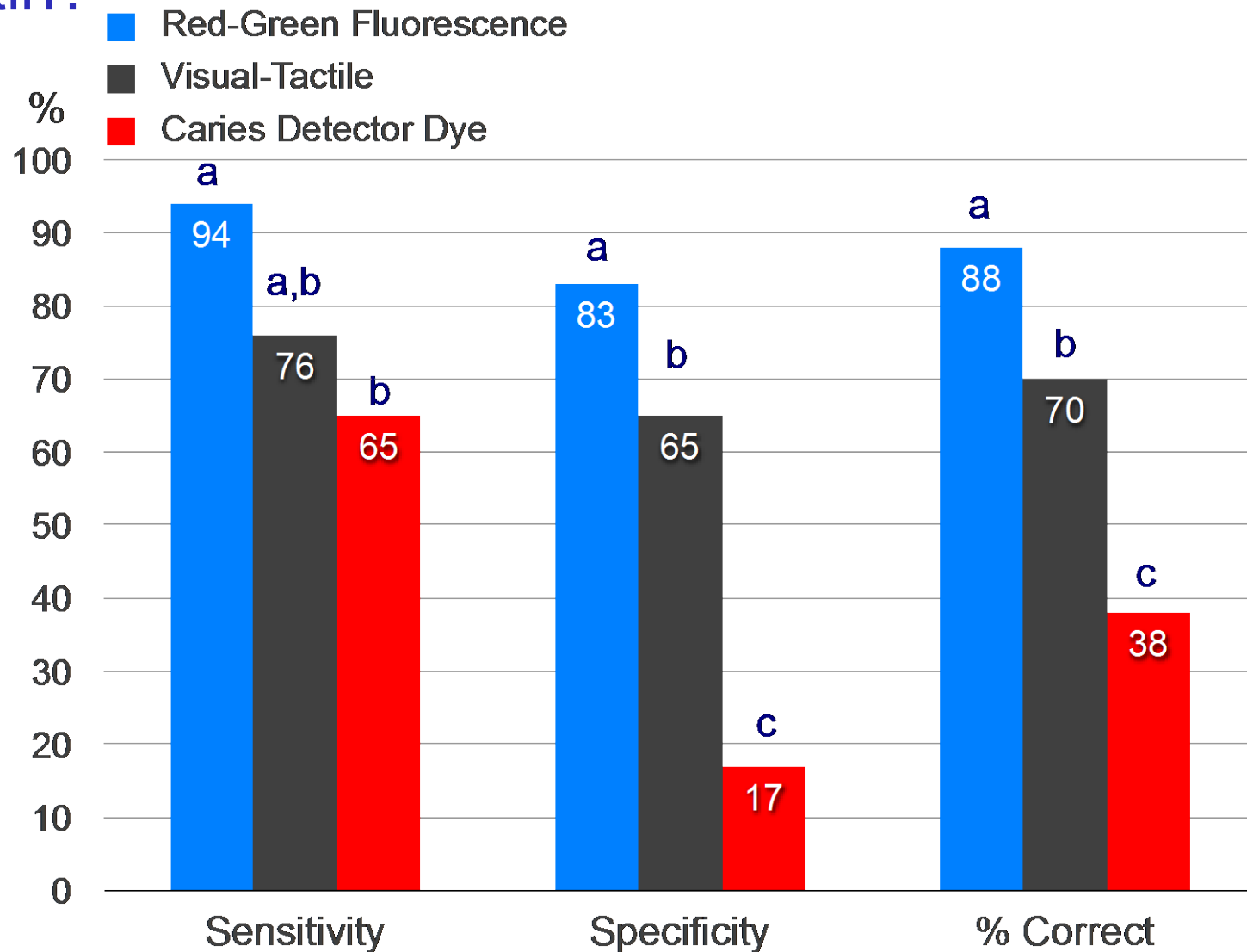
Buchalla W, Lennon ÁM, Attin T: Comparative fluorescence spectroscopy of root caries lesions. Eur J Oral Sci; 112, 490-496 (2004)

Buchalla W, Attin T, Niedmann Y, Niedmann PD, Lennon ÁM: Porphyrins are the cause of red fluorescence of carious dentine: Verified by gradient reversed-phase HPLC. Caries Res; 42, 223 (2008)

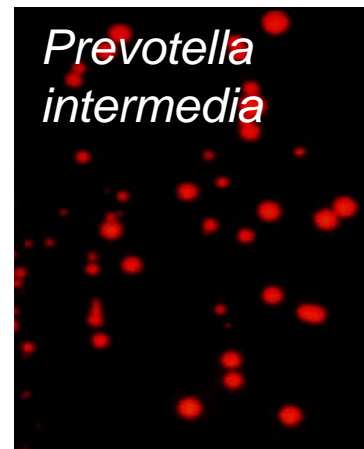
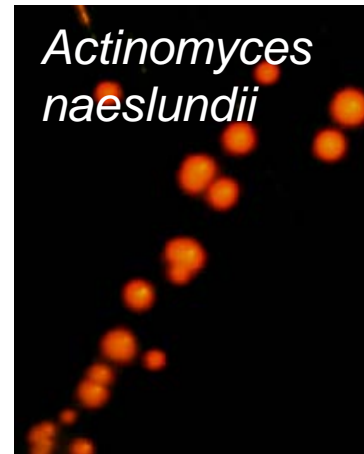
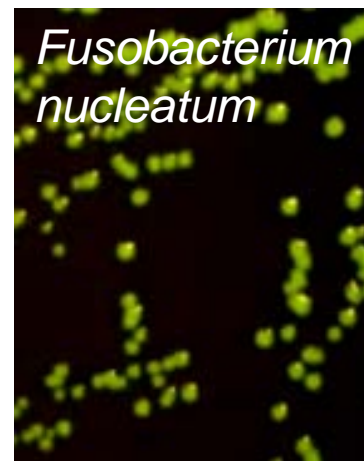
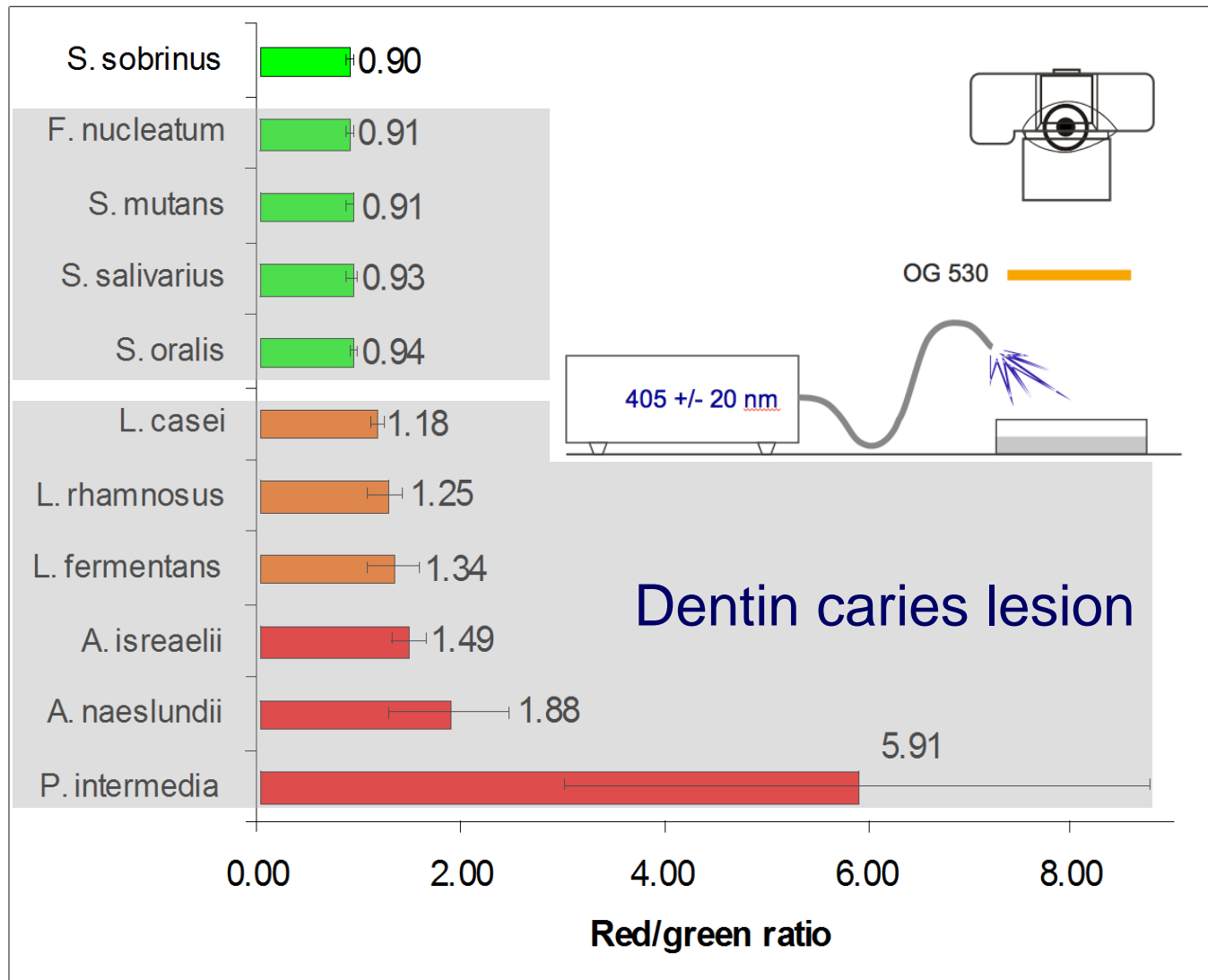
1. Is red fluorescence a good marker for infected dentin?



1. Is red fluorescence a good marker for infected dentin?



2. Which oral bacteria emit red fluorescence?

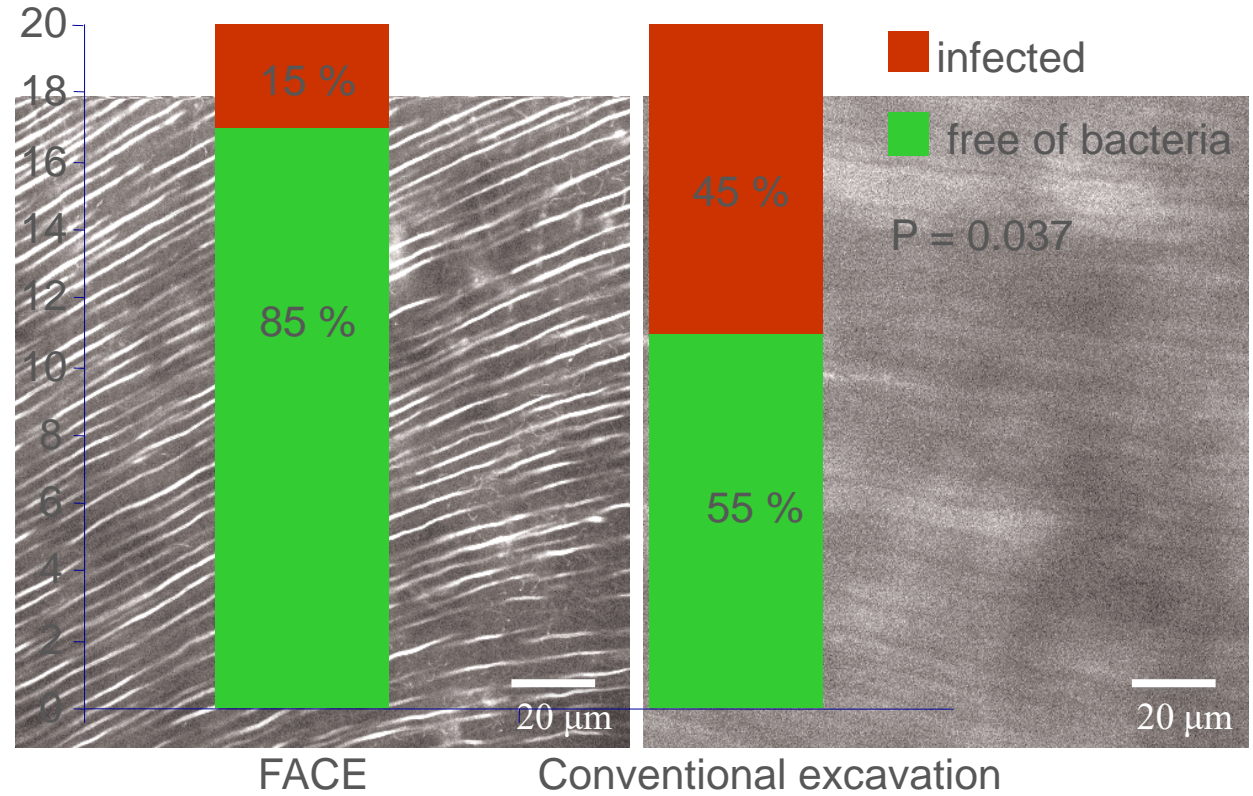


Lennon ÁM, Buchalla W, Brune L, Zimmermann O, Groß U, Attin T:
The ability of selected oral microorganisms to emit red fluorescence. Caries Res; 40: 2-5
(2006)

3. How does FACE compare to conventional excavation in a 3-dimensional cavity?

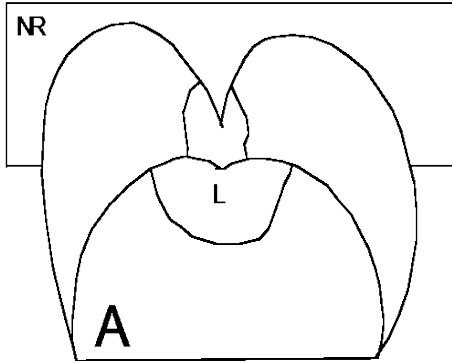


CLSM with EtBr

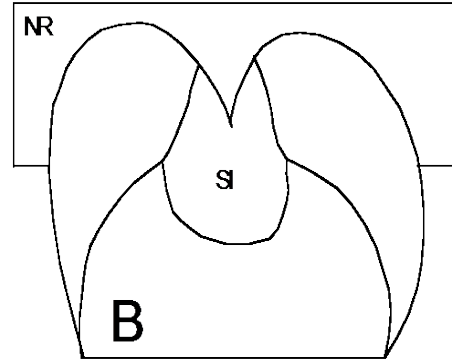


Lennon ÁM: Fluorescence aided caries excavation (FACE): compared to conventional method. Oper Dent; 28: 341-345 (2003)

4. Does more thorough removal of infected dentin result in larger cavities?

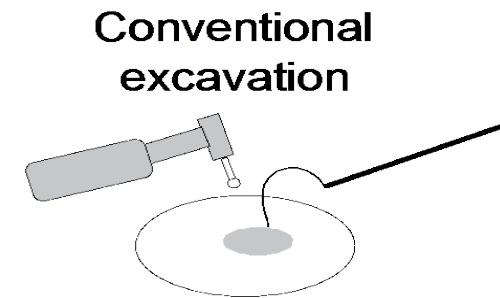
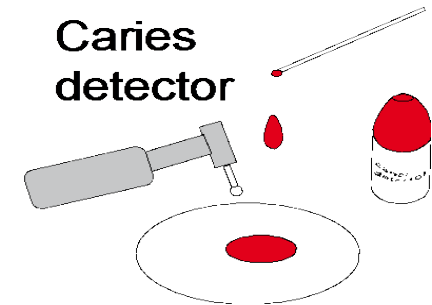
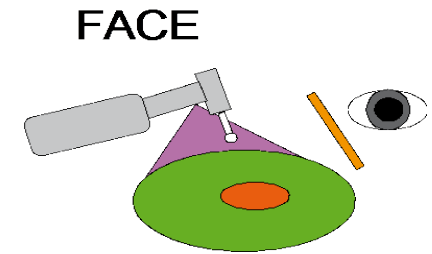


Lesion size [mm²]
before excavation



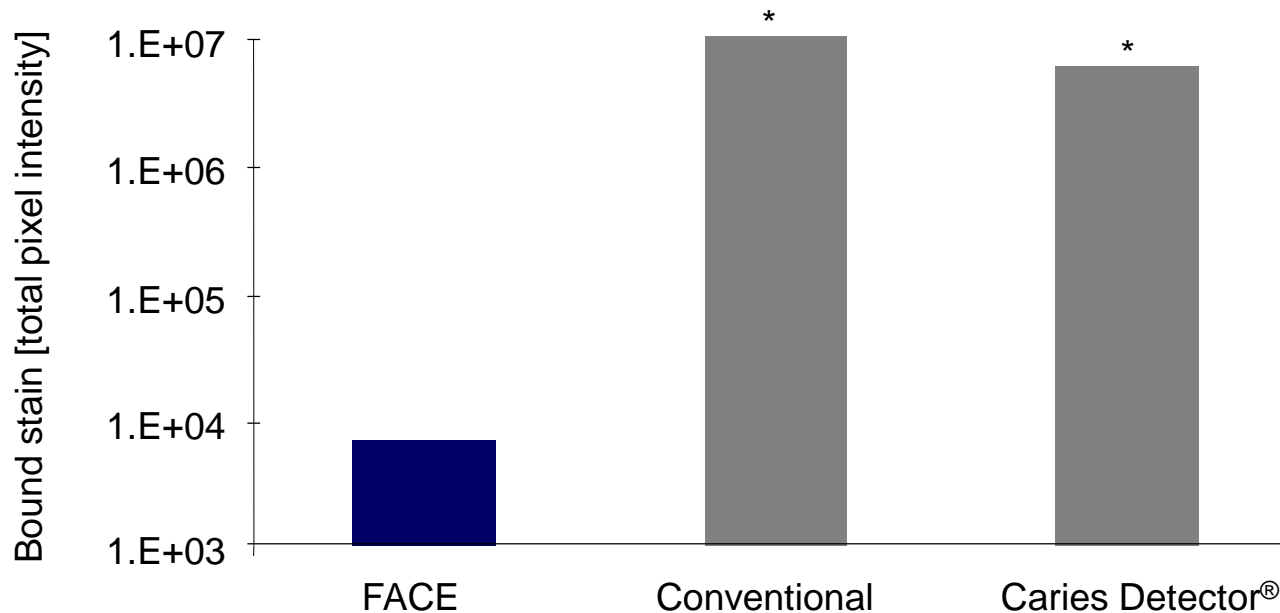
Cavity volume [mm³]
after excavation

$$\text{Relative cavity size [mm]} = \frac{\text{Cavity volume [mm}^3\text{]}}{\text{Lesion size [mm}^2\text{]}}$$



4. Does more thorough removal of infected dentin result in larger cavities?

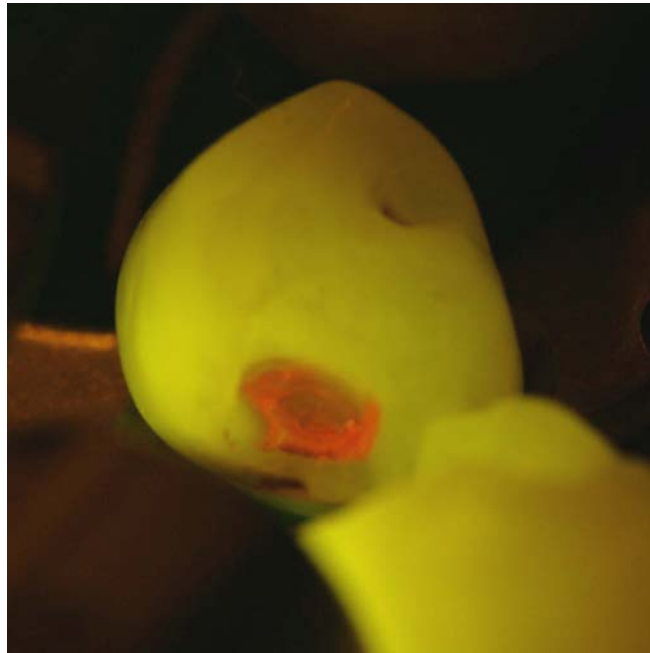
n = 20 each	mean lesion size mm ² ± sd	mean rel. cavity size mm ± sd	pulp exposures
FACE	9.2 ± 5.2	3.0 ± 1.3	0
Caries Detector®	9.2 ± 5.2	3.4 ± 1.4	10
Conventional excavation	9.2 ± 5.1	3.4 ± 2.8	0



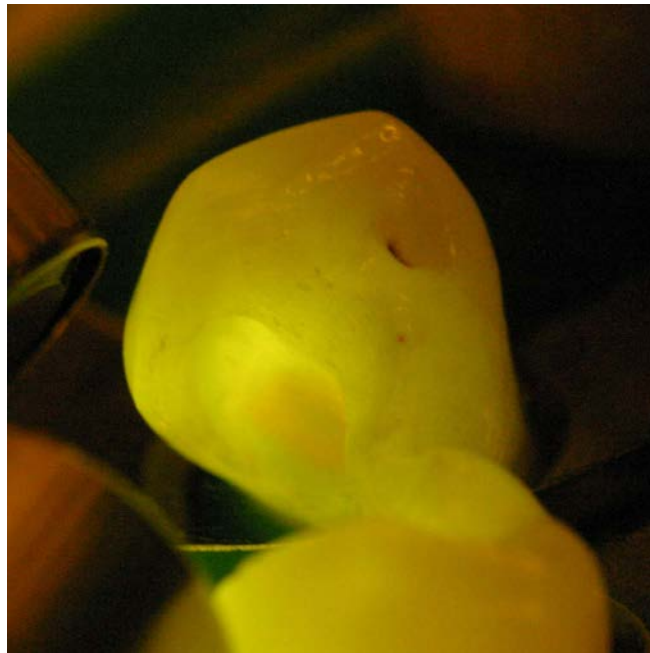
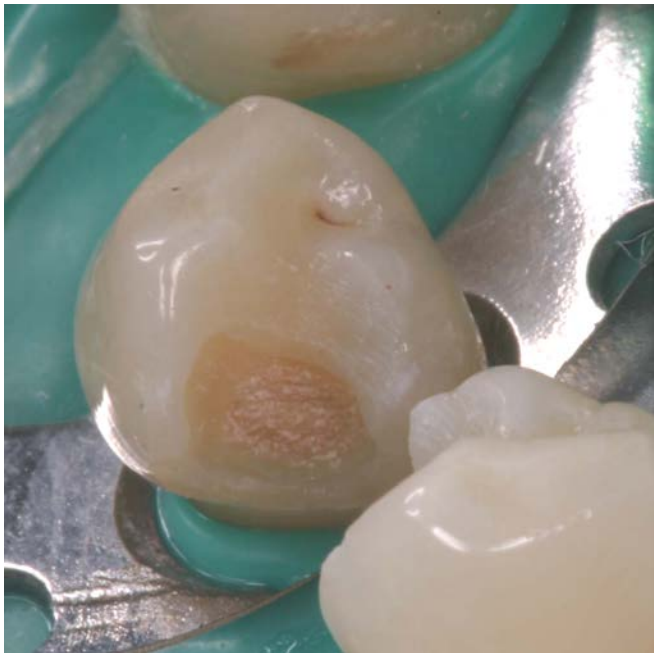
Lennon ÁM, Attin T, Buchalla W: Quantity of bacteria remaining and cavity size after excavation with FACE, caries detector dye and conventional excavation in vitro. Oper Dent; 32, 236-241 (2007)

Conclusions

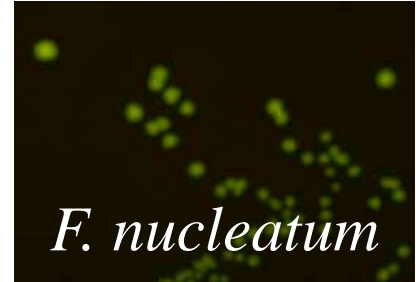
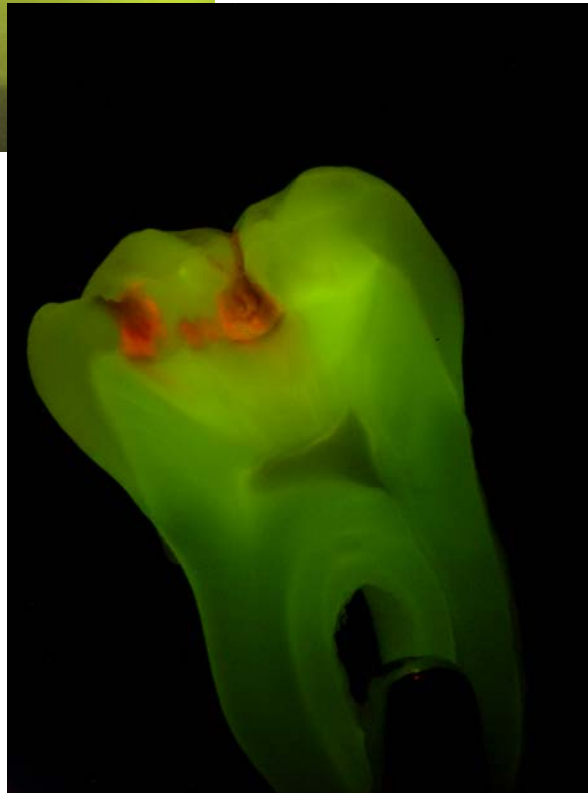
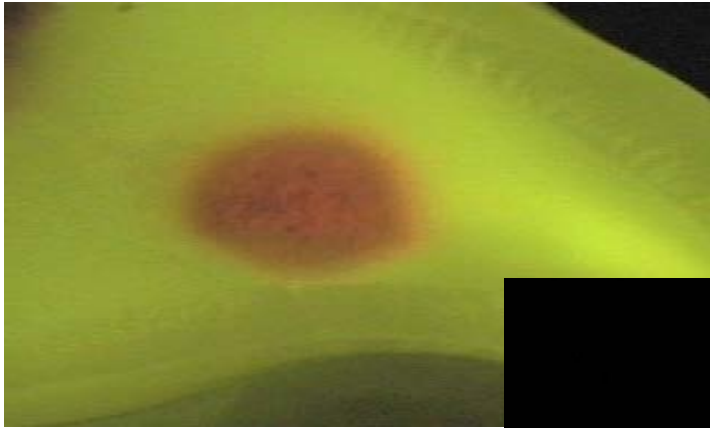
- caries autofluorescence is a reliable indicator of infected dentin
- of the bacterial species tested, those commonly found within the caries lesion in dentin produce red fluorescing compounds
- the incidence of bacterially infected dentin is significantly lower following FACE excavation compared to conventional excavation
- FACE is capable of more complete removal of infected dentin without significantly increasing the cavity size compared to conventional excavation methods



Before
excavation:
 $3.2 \cdot 10^6$
CBU



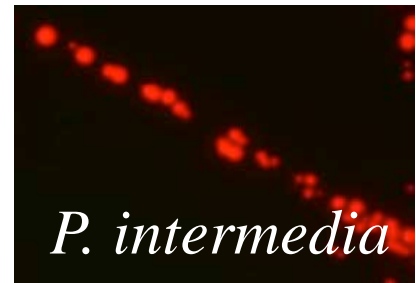
After
excavation:
< 20 CBU



F. nucleatum



A. naeslundii



P. intermedia