

## Anti-listerial activity of coatings entrapping living bacteria

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### Supplementary Information

Figure S1-S3 show the <sup>1</sup>H-NMR spectra of polyvinyl alcohol (PVOH), 3-(triethoxysilyl)propylisocyanate (ICPTES) and triethoxysilane functionalized polymer (PVOH-Si).

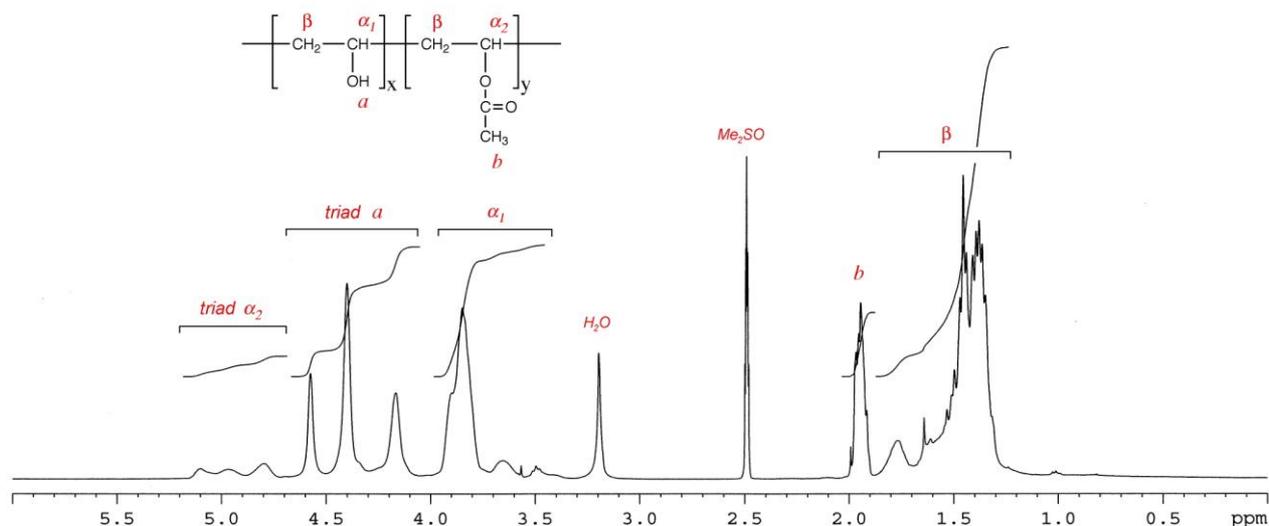


Figure SI 1. <sup>1</sup>H-NMR spectrum of partially hydrolyzed PVOH and relative assignments.

The partially hydrolyzed PVOH purchased from Aldrich has a content of about 88 % of vinyl alcohol units as derived from the NMR spectrum of Figure 1S, in good agreement with that indicated by the supplier.

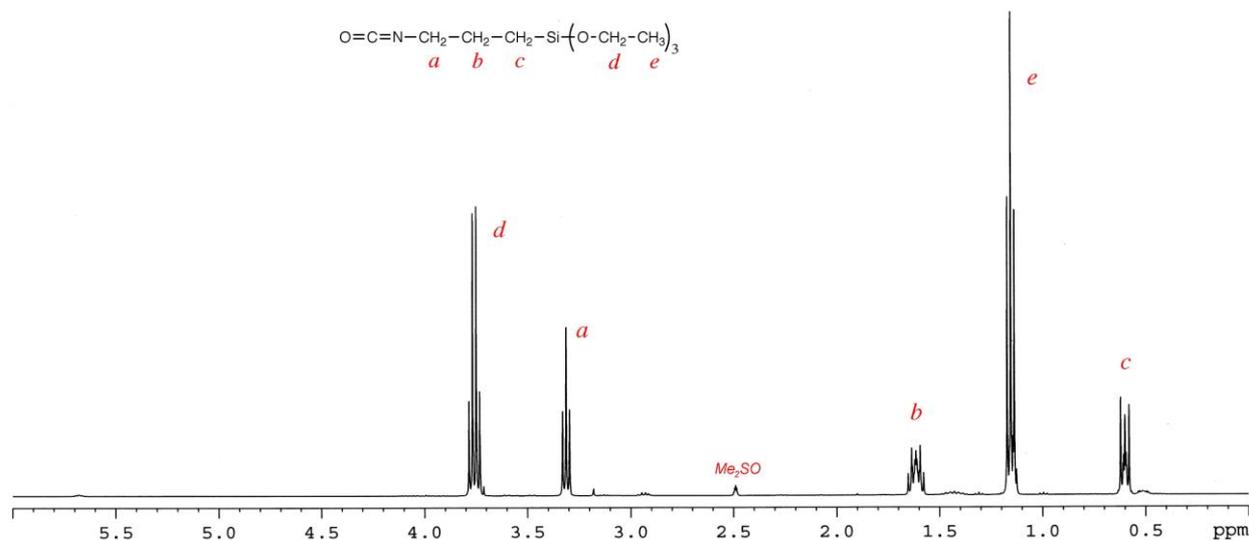


Figure SI 2. <sup>1</sup>H-NMR spectrum of ICPTES and relative assignments.

The H-NMR signals of the 3-(triethoxysilyl)propyl isocyanate (ICPTES) used correspond to those expected from his formula.

Signals “e” and “g” derived from ICPTES and signals “β” and “b” from PVOH (Figure SI 3) have been used to calculate the mol% of the alkoxy silane-modified vinyl alcohol units in the PVOH-Si copolymer (4.5 mol%). The ratio between “e” and “g” signals allows also to exclude the hydrolysis reaction of the alkoxy silane groups. Small signals from N,N-dimethylformamide (DMF) are also present due to residual amounts of the solvent used to dissolve PVOH.

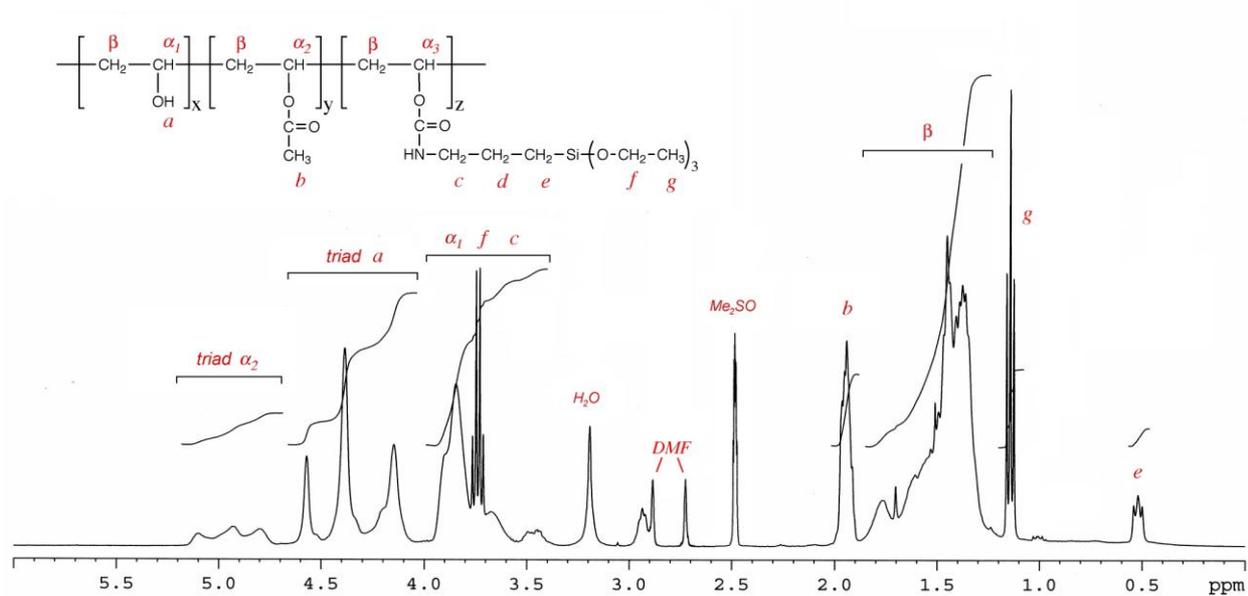


Figure SI 3. <sup>1</sup>H-NMR spectrum of PVOH-Si and relative assignments.

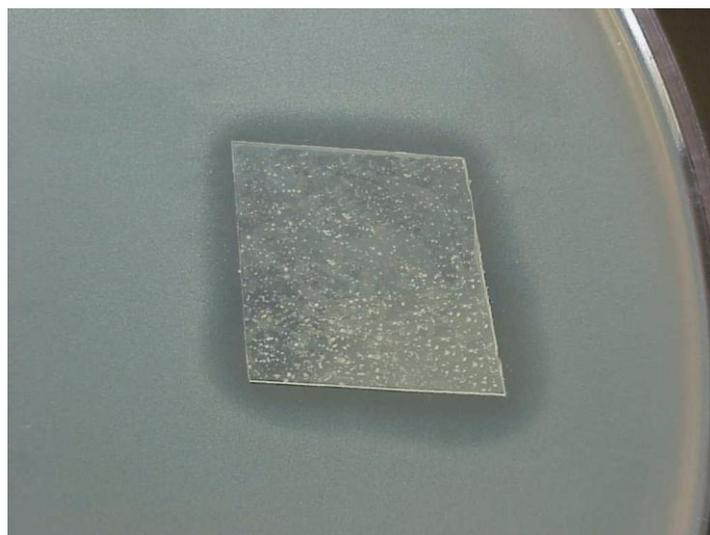


Figure SI 4. Qualitative agar well diffusion tests of live-enterococcus-doped film against *L. monocytogenes* NCTC 10888.

Figure SI4 shows the formation of small colonies of *E. casseliflavus* IM 416K1 on the top surface of the coating in contact with the agar medium.