

Supporting Information

Selective Detection of *Legionella pneumophila* Serogroup 1 and 5 with a Digital Photocorrosion Biosensor Using Antimicrobial Peptide-Antibody Sandwich Strategy

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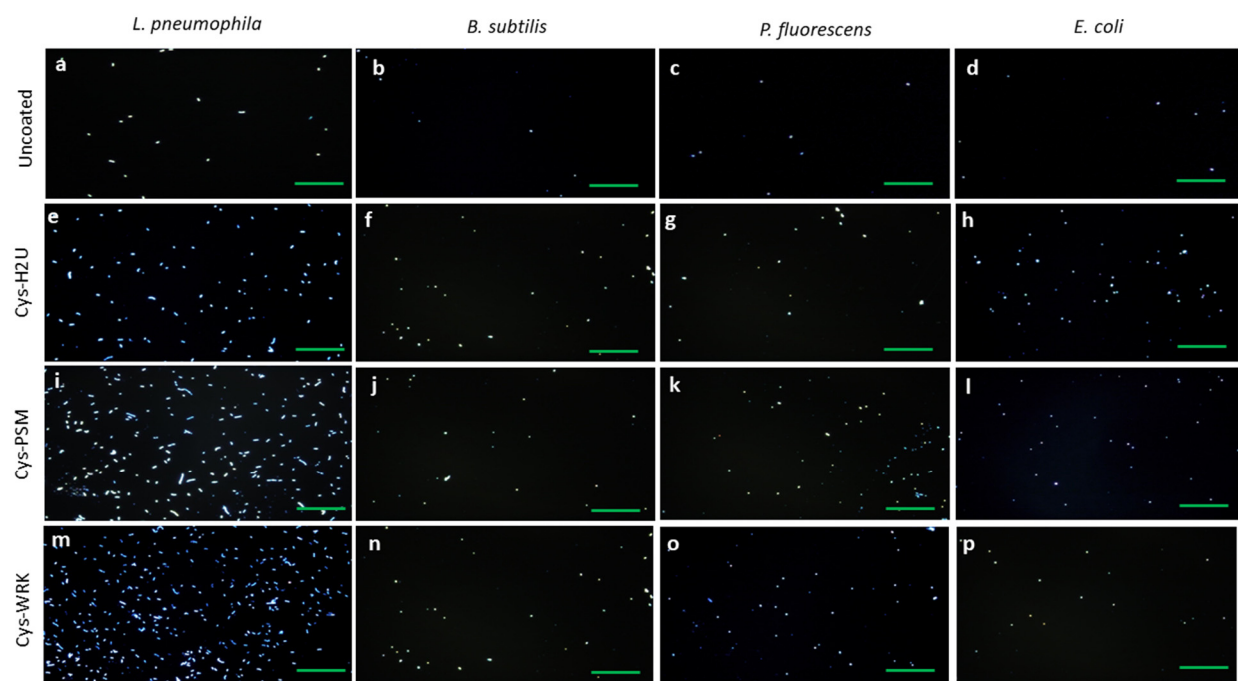


Figure S1. Representative optical micrographs of different bacteria on uncoated and different AMP (50 μg/mL) functionalized surfaces of GaAs. The scale bar represents 100 μm.

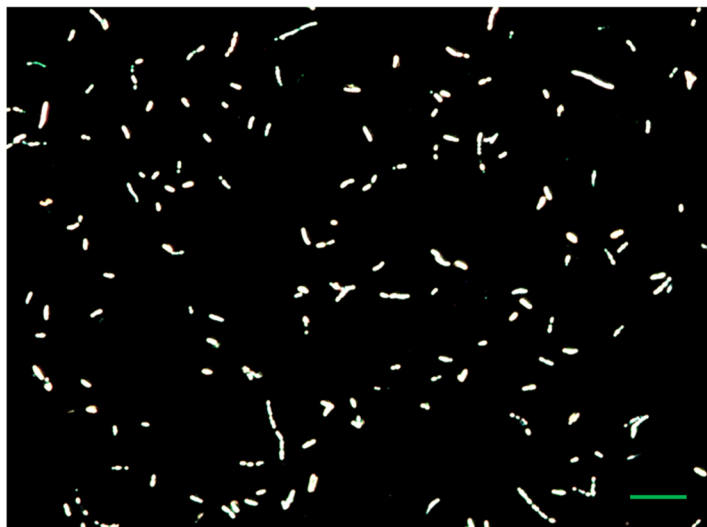


Figure S2. An example of optical micrograph for determining *L. pneumophila*. The scale bar represents 15 μm .

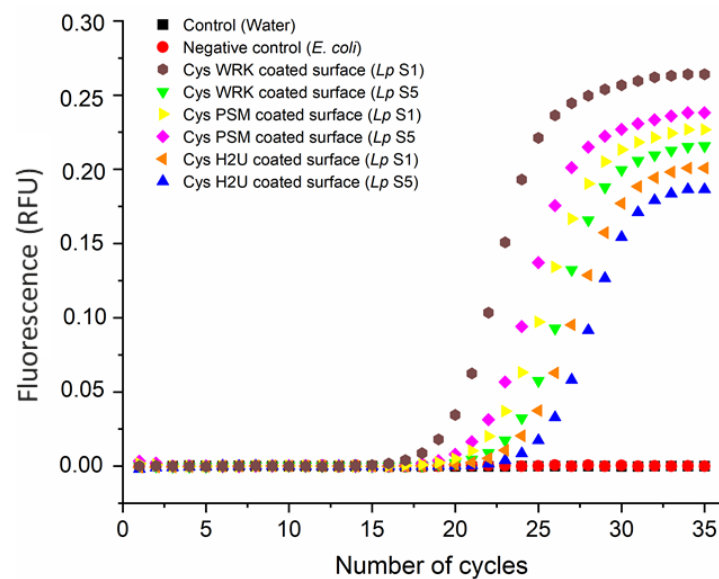


Figure S3. The real-time PCR amplification curves (relative fluorescence units, RFU) for *L. pneumophila* SG1 and *L. pneumophila* SG5 captured by different peptide-functionalized GaAs samples.

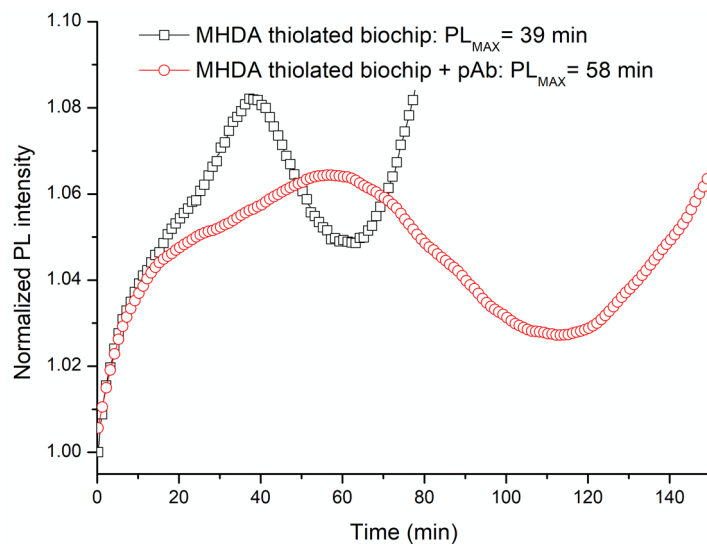


Figure S4. Examples of DIP runs for MHDA thiolated GaAs/AlGaAs biochip before (squares) and after (circles) pAb attachment. The figure presents example of PL data for the GaAs/AlGaAs biochips following a 20-hours functionalization with 1mM mercaptohexadecanoic acid (MHDA) thiol and after Ab attachment (incubation in 100 $\mu\text{g/mL}$ Ab solution for 1-hour). The MHDA-based architecture was designed to conduct control experiment, however, data presented in the main part of the manuscript were collected using AMP-based architectures.

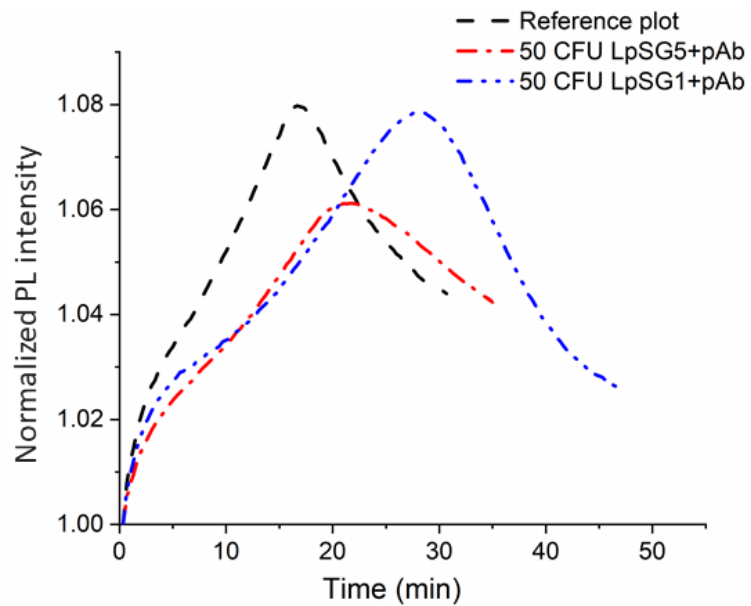


Figure S5. Normalized PL intensity of AMP functionalized GaAs/AlGaAs DIP biochips (wafer D3422) exposed to *L. pneumophila* (SG1 and SG5) at 50 CFU/mL and decorated with pAb.

Table S1. FTIR absorbance bands corresponding to the assigned functional groups

Absorbance Bands (cm ⁻¹)	Corresponding Bonds	Reference
1605	Amide II	[1,2]
1655	Amide I bond (C=O stretching)	[3,4]
1738	Amide II, C=O stretching lateral chain function	[5,6]
3218	Amide A	[7,8]

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