

Figure S1. Reproducibility of SERS spectra across different genomic DNA concentrations. The dot plots illustrate the coefficient of determination (R^2) values obtained from genomic DNA at concentrations of (A) 15 $\text{ng}/\mu\text{l}$ and (B) 50 $\text{ng}/\mu\text{l}$. The y-axis indicates the R^2 values, reflecting the degree of the correlation and consistency between replicates. The x-axis denotes the specific bacterial isolate tested: MAB, MMAS, and MTB-H37Ra. Numbers (1, 2 and 3) under each isolate represent independent technical replicates. The high R^2 values (mostly >0.8) observed across both concentrations and all strains demonstrate the high precision and reliability of the method. SERS, surface-enhanced Raman spectroscopy; MAB, *M. abscessus* subspecies *abscessus*; MMAS, *M. abscessus* subspecies *massiliense*; MTB-H37Ra/H37Ra, *M. tuberculosis* H37Ra.

