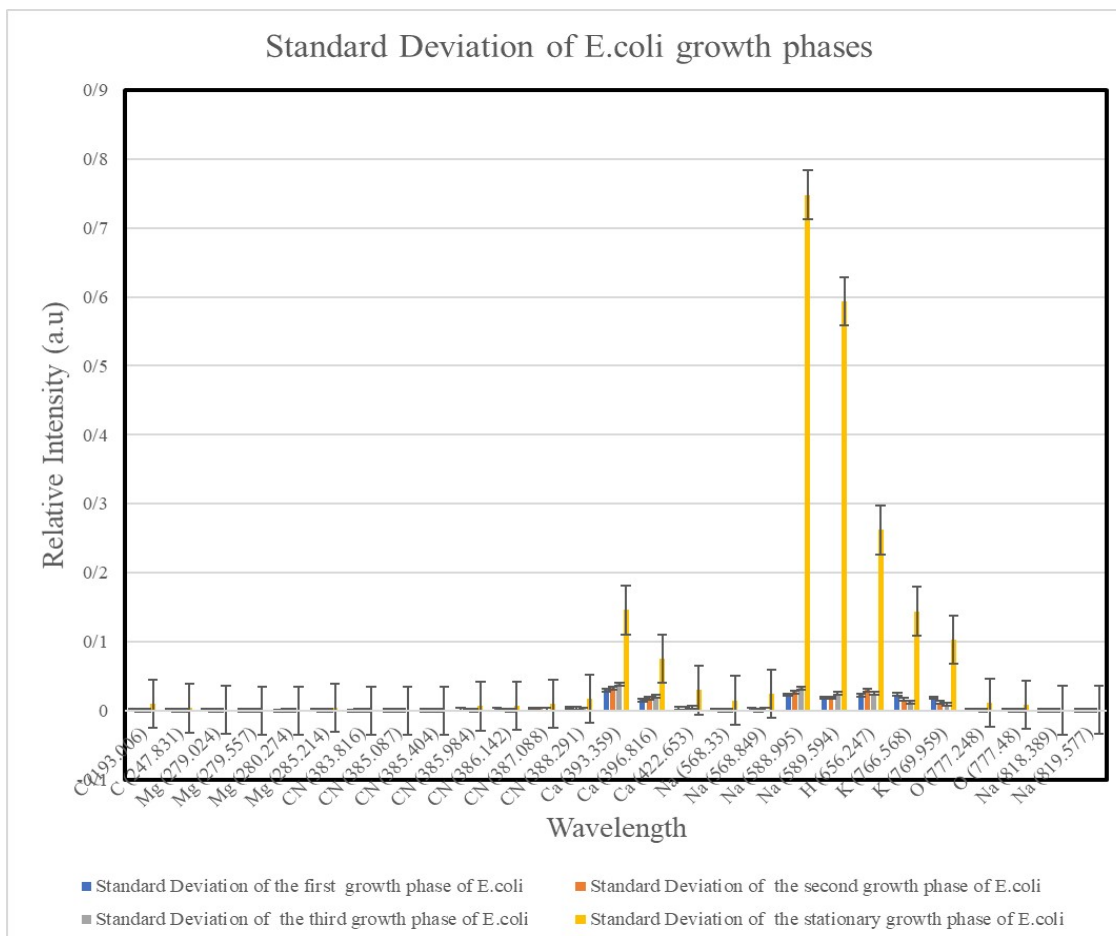
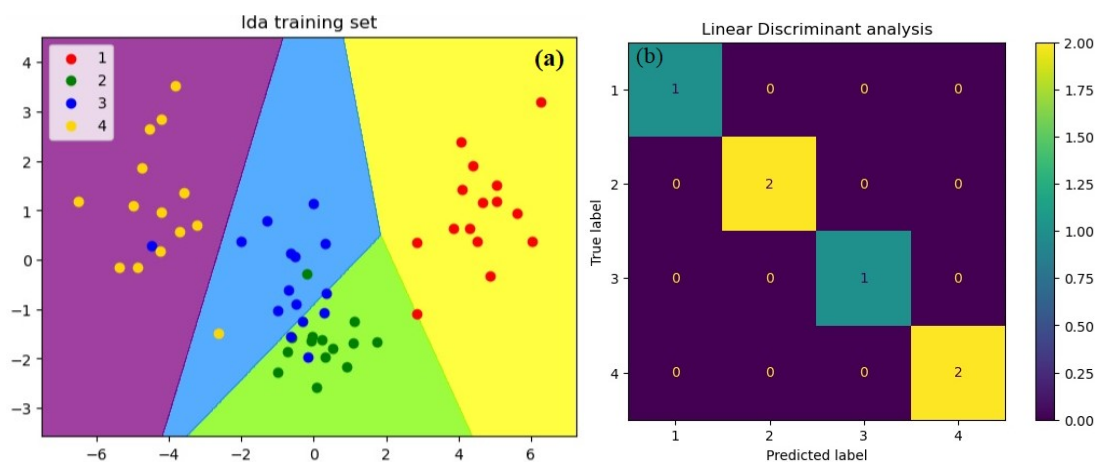


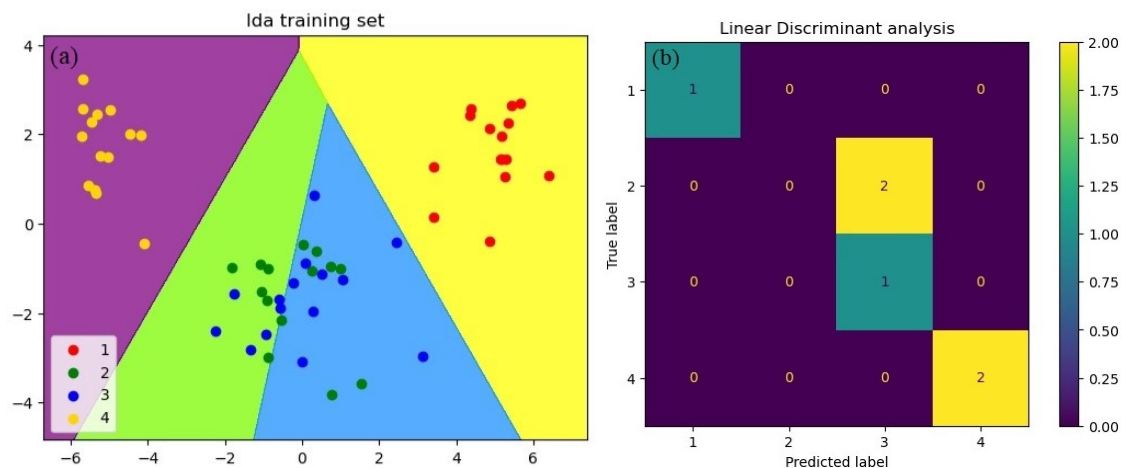
S1. Standard deviation diagram of *S. aureus* growth phases for the wavelengths of table 1.



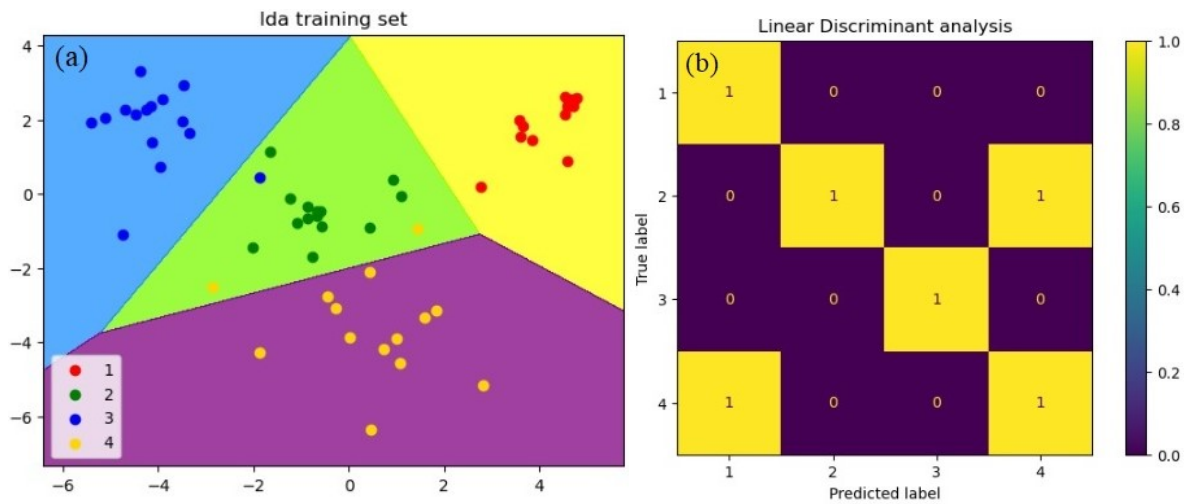
S2. Standard deviation diagram of *E. coli* growth phases for the wavelengths of table 1.



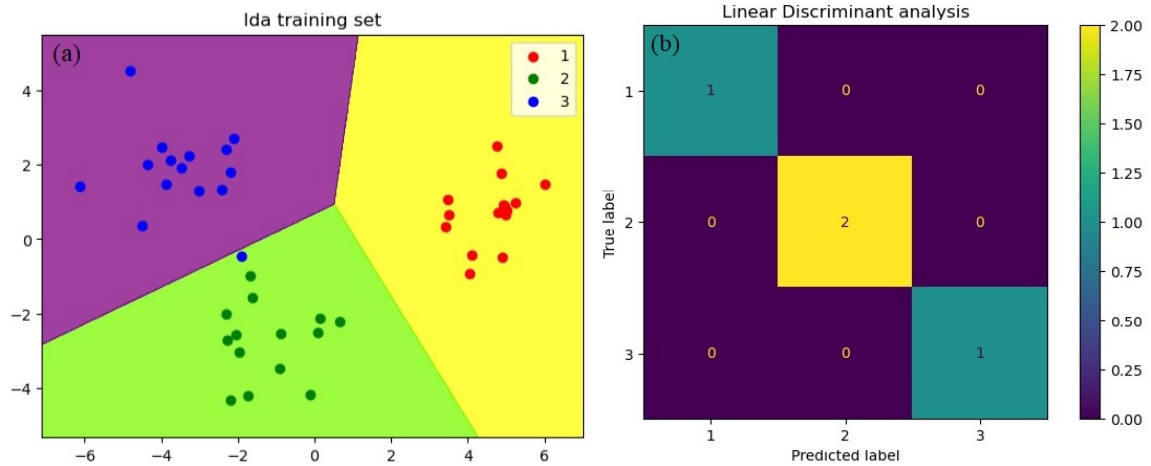
S3. (a) LDA plot showing the first two LD scores for dataset M1 related to LIBS spectrum of growth phases of *E. coli* C (1= first phase of growth, 2= second phase of growth, 3= third phase of growth, and 4= stationary phase of growth) and (b) confusion matrix for LDA performance.



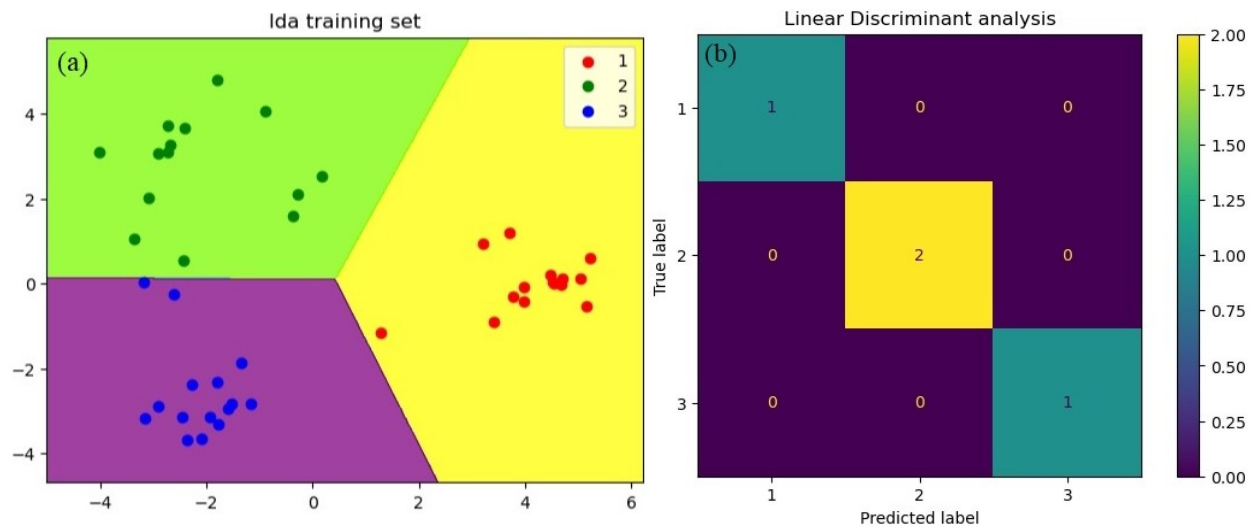
S4. (a) LDA plot showing the first two LD scores for dataset M2 related to LIBS spectrum of growth phases of *E. coli* C (1= first phase of growth, 2= second phase of growth, 3= third phase of growth, and 4= stationary phase of growth) and (b) confusion matrix for LDA performance.



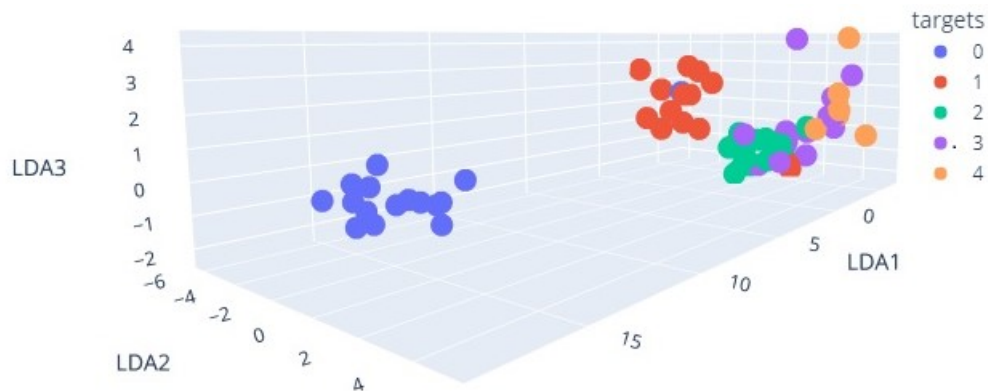
S5. (a) LDA plot showing the first two LD scores for dataset M1 and M2 related to LIBS spectrum of growth phases of *S. aureus* C (1= first phase of growth, 2= second phase of growth, 3= third phase of growth, and 4= stationary phase of growth) and (b) confusion matrix for LDA performance.



S6. (a) LDA plot showing the first two LD scores for dataset M1 related to the LIBS spectrum of the stationary growth phases of *S. aureus*, *E. coli*, and their mixture state (1= stationary growth phase of *E. coli*, 2= stationary growth phase of *S. aureus*, and 3= stationary growth phase of their mixture) and (b) confusion matrix for LDA performance.



S7. (a) LDA plot showing the first two LD scores for dataset M2 related to the LIBS spectrum of the stationary growth phases of *S.aureus*, *E. coli*, and their mixture state (1= stationary growth phase of *E. coli*, 2= stationary growth phase of *S. aureus*, and 3= stationary growth phase of their mixture) and (b) confusion matrix for LDA performance.



S8. 3D diagram LDA plot showing the three LD scores for dataset M1 related to LIBS spectrum of growth phases of *E. coli* (0=substrate, 1= first phase of growth, 2= second phase of growth, 3= third phase of growth, and 4= stationary phase of growth)