Single-cell manipulation and dynamic metabolite detection in Escherichia coli

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1.   Long-term observation of intracellular NAD(P)H via its autofluorescence is possible in live bacteria. (Chapter 2)

2.   Intracellular NAD(P)H levels oscillate with bacterial division cycle. (Chapter 2)

3.   The NAD(P)H level can be a marker to dissect how E. coli deploys its antioxidant defense systems. (Chapter 3)

4.   Manipulating rod-shaped bacteria using line-scanning optical trapping is less invasive than using conventional optical trapping. (Chapter 4)

5.   Persistent data analysis efforts are key to reveal the trend buried in the noisy single-cell data. (Chapter 2 and 3)

6.   Being observant to even the tiniest hardware malfunctions and fixing them can save days of experimental efforts.