

sciFLEXARRAYER Application Note No. 08008

Immobilization and activity of bacteria for prokaryotic chips

Immobilization of bacteria is an important step in the development of prokaryotic cell chips. The sciFLEXARRAYER S3 has been used to spot bacteria in nanoliter volumes. The activity of the bacteria have been tested.

Example 1

Luminescent bacteria were grown in minimal medium with 0.5 M NaCl and 1 mM ecotine. The bacteria were centrifuged and suspended with various osmoprotectants. 500 nl (1000 drops) of bacteria were spotted into the wells of a 384-well microtiter plate using the S3 sciFLEXARRAYER. Luminescence measurements using a Victor 2 apparatus were performed before, after spotting and after incubation for 24 hours at 4°C in the dry state, Figure 1.

In most cases the bacteria maintained their activities after 24 hours. This indicates that they also survived the spotting process when comparing the luminescence activities before and after spotting.

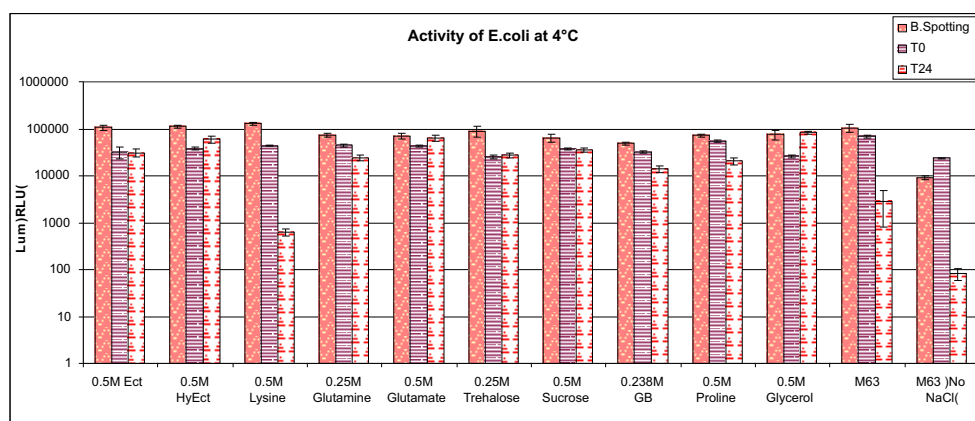


Fig. 1 Luminescence values as measure for the activities of the bacteria and comparison of their activities prior, after spotting (T0) and after incubation (T24). (Ect=Ecotine, HyEct = Hydroxyecotine, GB = Glycine Betaine, M63 = Minimal Medium, No NaCl = bacteria were grown without osmotic stress).

Example 2

Luminescent bacteria were spotted into 96-well microtiter plates with bottom glass. Arrays of 5 x 5 spots were printed with 2 nl for each spot. The bacteria were suspended in 0.25 M trehalose to protect them from dry conditions. The plate was incubated for 24 hours at 4°C. Luminescence measurements were made prior and after incubation. Spot pattern and comparison of the activity are shown in Figure 2.

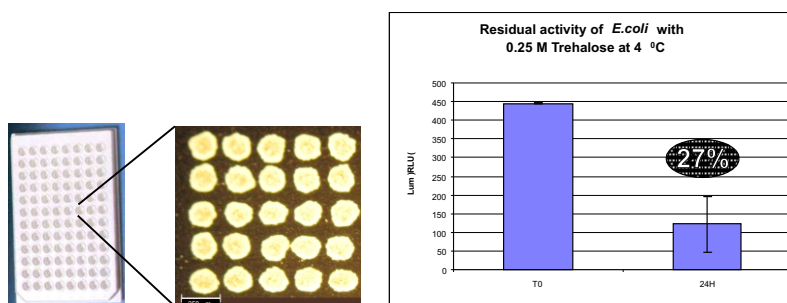


Fig. 2 Arrays of bacteria in 96-well plates and comparison of their activity prior and after incubation.

Courtesy of Prof. Dr. Shimshon Belkin and Sahar Melamed.

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