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Abstract

This paper presents a fow-based ultrasensitive capacitive biosensor for the detection of bacterial DNA. The used sensor chip consists of a gold electrode, insulated with a polytyramine layer and covalently tagged with a DNA capture probe. The hybridization of target DNA to the capture probe resulted in sensor response. The sensor response was linear vs. log concentration in the range 1.0 × 10

Keywords:

Introduction

E. c li *Neisse ia meningi idis* *S a h l c cc s a e s* *M c bac e i m be c l sis*

Ta

Esche ichia c li, Shigella, Salm nella *Ye sinia es is*

E. c li

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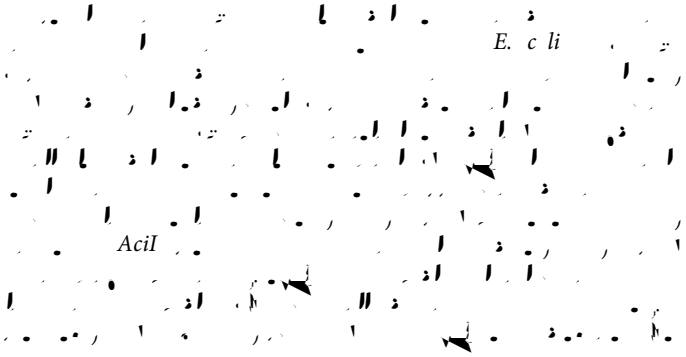
Experimental section

Reagents



$$Residual\ capacity\ (\%) = 100 - ((\Delta C_i - \Delta C_f) / \Delta C_i) \times 100$$

Stock solution of bacterial cells:

DNA sample preparation from bacterial cells:

DNA extraction:

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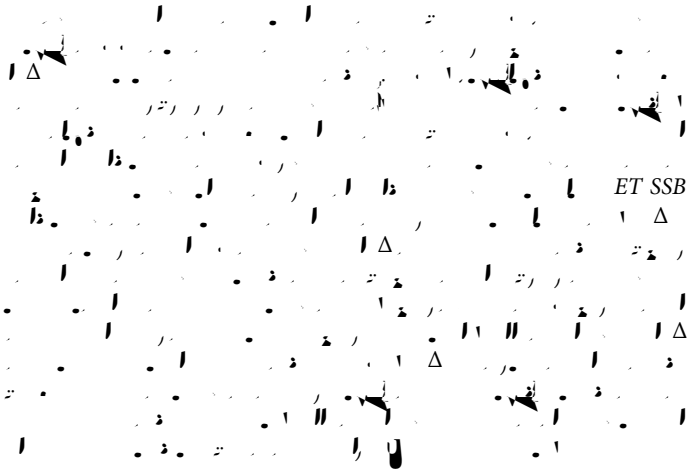
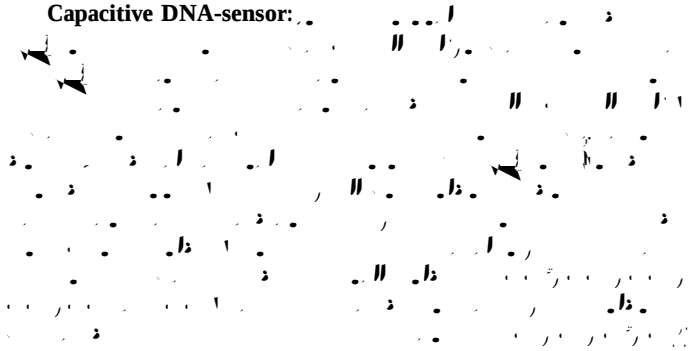


***E. coli* sample analysis**

Capacitive DNA-sensor:



E. c li *L. e e i*

Δ

E. c li.

Results and discussion

Modi cation of sensor electrode surface

Δ

b, red

c, black

d, green

Capacitive DNA-sensor for assay of hybridization of complementary probes

Linear dynamic range and detection limit:

Citation: Mahadhy A, Mamo G, Ståhl-Wernersson E, Mattiasson B, Hedström M

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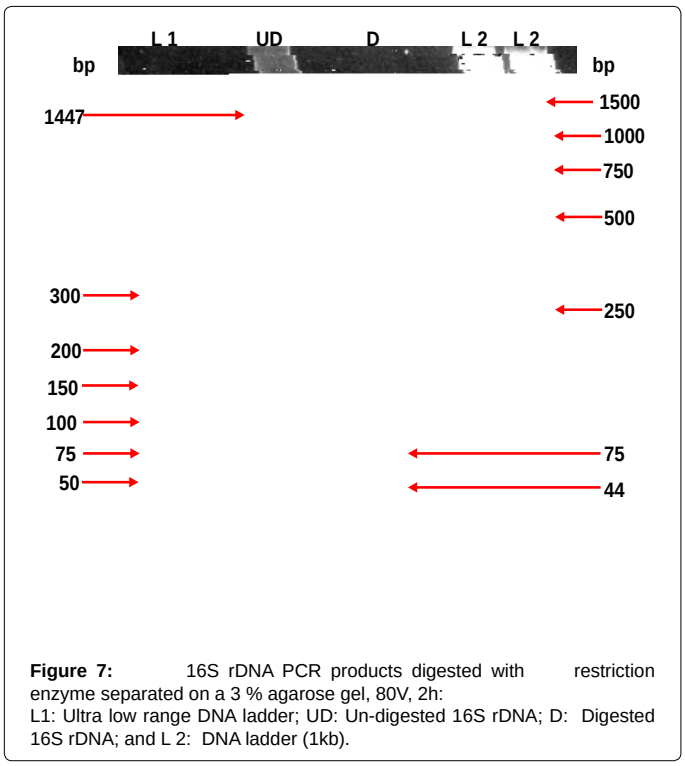


Figure 7: 16S rDNA PCR products digested with restriction enzyme separated on a 3 % agarose gel, 80V, 2h:
L1: Ultra low range DNA ladder; UD: Un-digested 16S rDNA; D: Digested 16S rDNA; and L 2: DNA ladder (1kb).

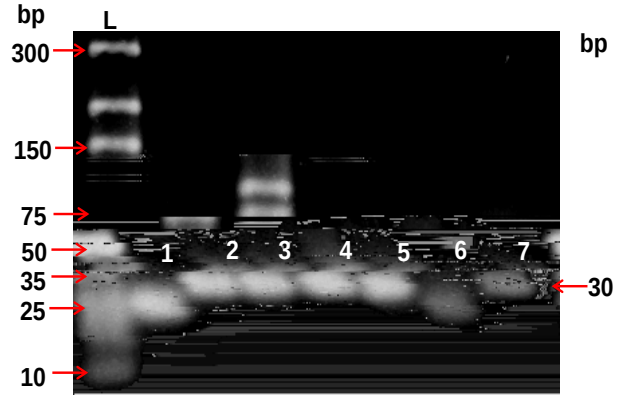
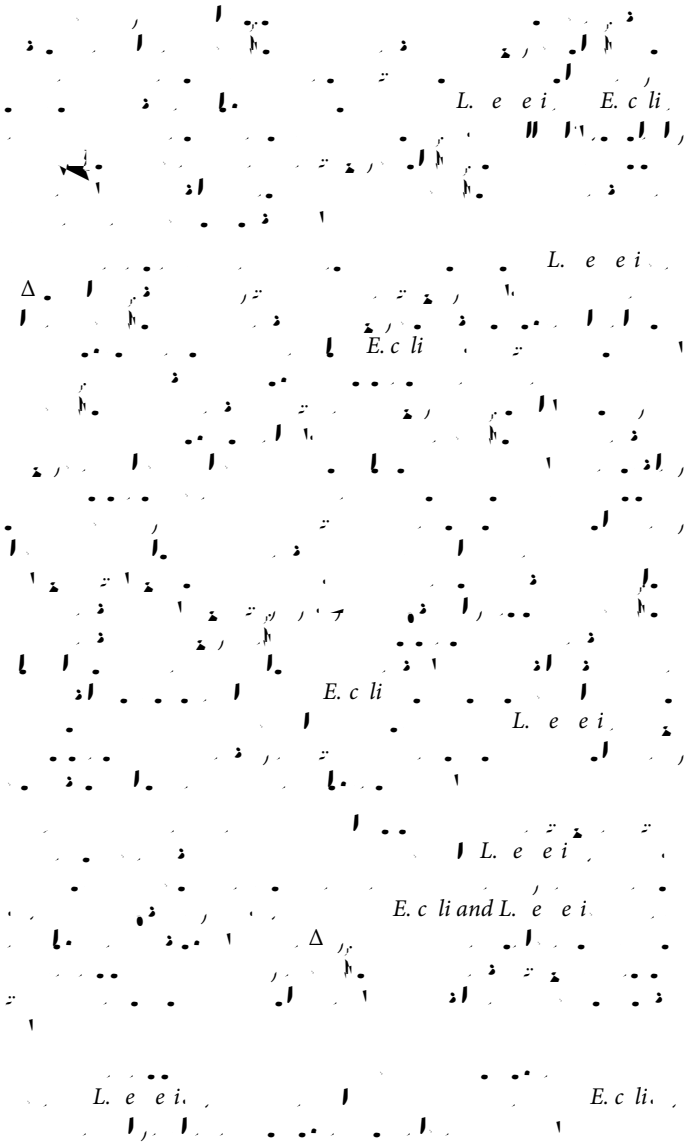
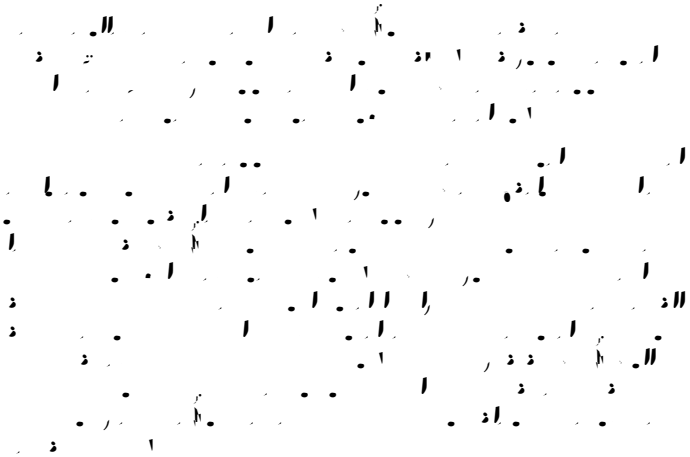


Figure 8:





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