

BIOMECHANICS, BIOENGINEERING & AUDIOLOGY

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Electrochemical protocol for polyketide synthase multienzyme (pks) genomic island identification

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Colibactin is a genotoxin produced by the polyketide synthase multienzyme (pks genomic island) encountered in the human gut microbiota. Many studies link colibactin production to different kinds of cancers, therefore making it a molecule of interest in the biomedical research field. More specifically, certain strains of *Escherichia coli* have been found to harbor pks genomic island that induced DNA damage. Here, we developed a PCR mediated-electrochemical protocol to successfully identify the presence of the pks genomic island in DNA samples. For this, pks and non-pks containing *E. coli* DNA were impedimetrically analyzed before and after amplification through polymerase chain reaction (PCR) protocol. Custom DNA primers were synthesized in order to selectively amplify a specific 400 base pair sequence from the *clbN* gene from the pks island. Impedance data showed a 97% increase in charge transfer resistance after the protocol was applied for the pks containing samples as opposed to the 15% increase for the non-pks containing DNA samples. Overall, effective identification of the pks genomic island was achieved.

Biography

Nadja E Solis-Marcano is pursuing her PhD at University of Puerto Rico, Rio Piedras campus. She is currently working with "The development of electrochemical biosensors for the detection of diseases with the characteristics of easy handling, fast detection and minimal use of reagents". She is also interested in "The fabrication of custom microelectrodes for various applications".

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