

Search for a DNA aptamer to identify *Acinetobacter baumannii* using the cell-SELEX technique.

Emili Kenya Solís López¹, Luis Esaú López Jácome², Laura Isabel Vázquez Carrillo, José de Jesús Olivares Trejo^{1*}

*Autor correspondiente olivarestrejo@yahoo.com,

¹Posgrado en Ciencias Genómicas, Universidad Autónoma de la Ciudad de México (UACM). San Lorenzo 290, Col. Del Valle, CP 03100 Ciudad de México, México.

²Instituto Nacional de Rehabilitación, Laboratorio de infectología. Calz, México– Xochimilco 289, Coapa, col. Arenal de Guadalupe, Tlalpan C.P. 14389 Ciudad de México, México. Proyecto UACMCCYT-CON-08

Aptamers are single-stranded oligonucleotides, with sizes between 70 to 100 nucleotides, capable of specifically recognizing different target molecules, such as hormones, etc. These specific molecules present a highly viable alternative due to their high sensitivity, biological nature, low toxicity, easy control and handling. In this research work, we are developing aptamers capable of specifically recognizing *Acinetobacter baumannii*, which causes respiratory infections such as bronchitis, tracheobronchitis, especially pneumonia. This bacteria is also the cause of infections in wounds, abscesses in the lungs, skin, soft tissues, etc. *A. baumannii* shares niches with other bacteria such as *Staphylococcus aureus* and *Streptococcus pneumoniae*. For this reason, a timely diagnosis is of vital importance to avoid the massive spread of *A. baumannii*, making treatment more complicated.

The method to select specific aptamers for the bacteria of our interest, in this case *A. baumannii*, is known as CELL – SELEX, from its acronym in English “Systematic Evolution of Ligands by Exponential Enrichment”. The exponential enrichment method in the presence of the ligand is based on a single-stranded DNA library. This technique uses 4 steps that are repeated several times, until the desired specificity is reached.

According to the results obtained, there are eight positive selections, two negative which we reveal by microscopía of fluorescence and sequence the possible specific aptamer sequences to identify *A. baumannii*. It is proposed to use these aptamers to develop an efficient, rapid and low-cost detection method.