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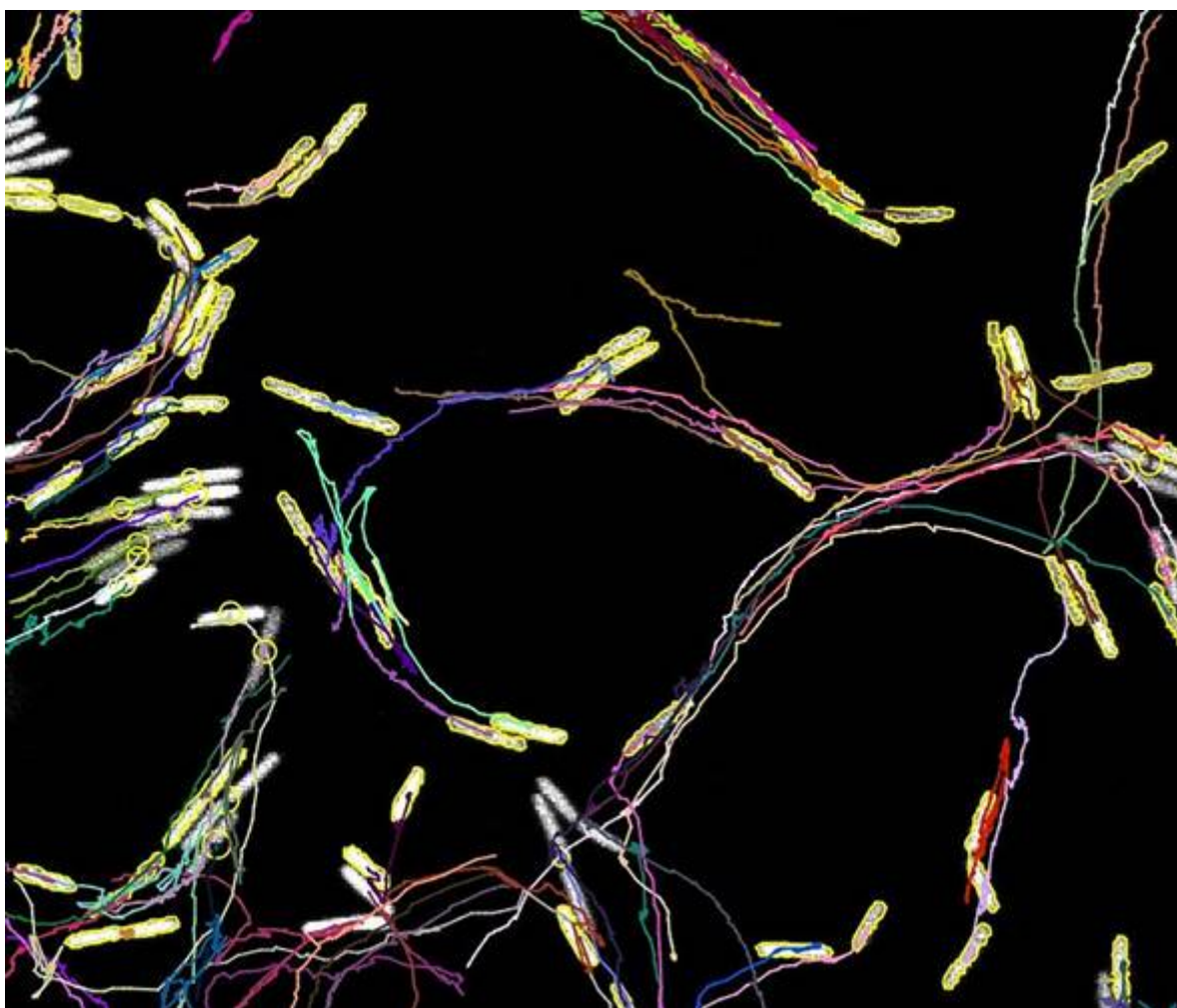


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GENETIC ENVIRONMENT OF THE DEFENSE SYSTEMS OF *Acinetobacter baumannii* ST25

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Acinetobacter baumannii is a multidrug resistant opportunistic pathogen of global concern that causes a variety of healthcare-associated infections. These bacteria continuously evolve by acquiring mobile genetic elements (MGE), such as transposons, plasmids, phages, etc. MGEs participate in a dynamic interaction with the host defense systems (DS) that drives its evolution. To date there have been described over 152 DS families, including CRISPR-Cas, BREX, and the “Doron” systems, adding to other well-known DS, such as, restriction-modification (RM) and toxin-antitoxin (TA) systems. The sequence-type (ST)25 is a globally distributed clonal lineage that confers resistance to carbapenems, produces extensive biofilms, and is associated with high mortality rates. The aim of this work was to study the occurrence and genetic surroundings of defense systems encoded in clinical isolates of *A. baumannii* ST25 from Argentina. We searched for DS in 40 genomes (33 ST25; 6 ST2; 1 ST46) employing PADLOC v2.0.0, DefenseFinder v2.0 and TADB v3.0 softwares. Comparative analysis was performed using Mauve v2. We found 15 DS families and 75 undefined candidate DS. RosmerTA (37/40 genomes), TA-II (34/40) and CRISPR-Cas (35/40) showed the highest occurrence. Some DS (BREX-I, DMS, RM-I and Mokosh-I) were found exclusively in the ST25 lineage. The co-occurrence between BREX-I and Mokosh-I was observed, and comparative genome analysis showed that they were in large plasmids (~200kb) encoding MobP relaxases and the mating pair formation complex Mpf-I (detected with MOB-typer v3.0.3). On the other hand, RosmerTA and RM-I were in highly conserved regions of the chromosome. Last, the type I-F1 CRISPR-Cas contained 2 CRISPRs providing limited protection against foreign DNA. Our analyses suggest that *A. baumannii* ST25 counteracts MGE invasion using a few DS, some of which may be laterally transferred to a new host. DS should be further studied in order to develop successful phage-based therapies against this problematic pathogen

Palabras clave: *Acinetobacter baumannii* - ST25 - Defensome - Argentina