

SPACE LIFE SCIENCES SYMPOSIUM (A1)
Interactive Presentations (IP)Author: Mr. Ozan Kara
Koc University, TürkiyePREVENTION OF HFQ - SRNA BINDING FOR PSEUDOMONAS AERUGINOSA VIRULENCE
EFFECTS DURING THE SPACEFLIGHT**Abstract**

Understanding the alterations of microbial communities in microgravity environment is crucial to prevent infectious diseases during spaceflight. Increasing virulence impacts of primary bacterial pathogens such as *Pseudomonas aeruginosa*, *Salmonella typhimurium*, *E.coli* and *Staphylococcus aureus* is criticized in regard to RNA binding protein HFQ. The research shows that HFQ is the bacterial branch of the LSm protein which increase virulence effects via binding small non-coding RNAs. The objective of this research is to discover a proper drug molecule to prevent sRNA binding of the HFQ protein. *P. aeruginosa* was analyzed as the main bacterial pathogen with the PDB 4J6Y. Commercially available compounds were chosen from the AfroDB Natural Products and the Apollo Scientific Limited by using the Zinc database and docked via the MOLEGRO Virtual Docker into the PDB 4J6Y. The AfroDB mol2 file had 84 ligands. Due to the comparison approach only 130 ligands were selected from the Apollo Scientific among 1361 ligands. The molecules obtained are studied in the Discovery Studio to identify the residues and bonds. Also, 2D bonding layout was presented from Molegro. Molecules that retain the HFQ-RNA binding were searched to find the possible commercial drug compounds. According to analyses, AfroDB presented plant-based anti-cancer drugs which commercially used. On the other hand Apollo Scientific results show cross-linking drugs which weren't suitable. Ultimately, preliminary price survey was performed for selected drug compounds. Results indicated that none of drug molecules used for Hfq- sRNA binding before which should be investigated in the future.