**Investigating the Role of Biofilm Formation in Antibiotic Resistance of *Pseudomonas aeruginosa***

**Presenting type: Poster**

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**Abstracts:**
Biofilm formation in Pseudomonas aeruginosa is a critical factor contributing to its resistance to various antibiotics, posing challenges in clinical treatments. This study investigated the mechanisms underlying biofilm development and its impact on antibiotic efficacy. Using a combination of microplate assays, confocal laser scanning microscopy, and transcriptomic analysis, we examined biofilm formation under different environmental conditions. Results revealed a significant upregulation of genes related to polysaccharide synthesis and efflux pumps in biofilm-associated cells compared to planktonic cells. Additionally, biofilms demonstrated a 50% increase in resistance to ciprofloxacin and gentamicin. These findings highlight the importance of targeting biofilm-specific pathways for developing effective antimicrobial strategies.

**Keywords:**
Biofilm, Antibiotic resistance, *Pseudomonas aeruginosa*, Polysaccharide synthesis, Efflux pumps, Confocal microscopy

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