

Social interactions in mixed species biofilms

004 : *S. aureus* Modulates *P. aeruginosa* Small-Colony Variants Formation

Session D

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Some studies reported that, in polymicrobial consortia, some *P. aeruginosa* exoproducts suppresses the growth of *S. aureus* and provokes the emergence of SCV, associated with antimicrobial resistance, altered metabolism and reduced immunogenicity. However, the role of *S.aureus* in *P.aeruginosa* behavior has still not been deciphered.

This work aimed to deeply investigate the phenotypic changes undergone by *P. aeruginosa* and *S. aureus* in a co-infection scenario. The cells recovered from 24-h-old single and dual-species biofilms were inspected regarding their colony morphology differentiation, antibiotic susceptibility profiles and expression of virulence factors.

The population analysis profiles showed the existence of two *P.aeruginosa* SCV resulting only from the dual-species biofilms. These SCV exhibited impressive ability to form biofilm, impaired swimming, twitching and swarming abilities, in comparison with the wild-type morphotype. Their morphologies remained unchangeable over 10 passages onto solid media, which may mean these phenotypic alterations were not adaptive. Yet, the two SCV were susceptible to the action of several classes of antibiotics.

In conclusion, the presence of *S.aureus* in biofilms seemed to modulate some phenotypic alterations in *P.aeruginosa* that may be clinically relevant as two SCV were detected. As the role of *S. aureus* over *P. aeruginosa* stills not full clear, some tests are being run to more comprehensively know how these *P. aeruginosa* SCV modulate the dual-species community response to in-use antimicrobials.

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