# ABSTRACT BOOK

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**PW145 Fate of Pseudomonas aeruginosa and blaVIM in soil under selective pressure by copper and zinc**

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**Background:** Besides the natural resistance to antimicrobials present in soil, antibiotic-resistant bacteria (ARB) and antibiotic resistance genes (ARGs) can be discharged in soil through irrigation or other agricultural practices, which can also be a source of other contaminants such as metals. It is hypothesized that metals may generate selective pressure enhancing the survival of bacteria and/or of their ARGs.

**Objectives:** This study aims to assess the survival of a multidrug-resistant *Pseudomonas aeruginosa* strain in soil contaminated with metals as well as the fate of the $bla_{VIM}$ gene.

**Methods:** Assays were performed in sandy soil microcosms inoculated with *P. aeruginosa* strain H1FC49, in the presence and absence of potential selective pressures, generated by 20 mM $CuSO_4$ and $ZnSO_4$ or by $Cu(NO_3)_2$ and $Zn(NO_3)_2$. Microcosms were incubated at 25°C for 14 days and monitored weekly through the enumeration of *P. aeruginosa* on Cetrimide Agar + Nalidixic Acid and quantitative PCR of the housekeeping gene *ecf* and the acquired genes $bla_{VIM}$ and *intI*1.

**Results:** The survival of *P. aeruginosa* in soil amended with copper and zinc nitrate was significantly lower than in a non-amended soil, while no significant difference was observed in presence of sulfate salts. After 14 days of incubation, in presence of the metal selective pressure, the *P. aeruginosa* housekeeping gene *ecf* decreased more than the acquired ARG $bla_{VIM}$. These results suggest that antibiotic resistance selection may occur mainly at the molecular rather than at the cellular level. The molecular mechanisms behind these variations will be further discussed.