



# Comprehensive Description of the Versatile Genus *Pseudomonas*, its Status in the Post Genomic Era

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## Abstract

Bacteria, which have existed for more than 3 billion years, represent the most ancient forms of life and inhabit every conceivable ecological niche on the planet. The enormous evolutionary potential of these organisms is illustrated by the fact that the innumerable species currently living, exhibit diverse metabolic capacities, cell surface compositions, life styles, ecological niches and host specificities. compilation and comparative analysis of metal transportomes from metabolically diverse Pseudomonads followed by characterization of novel metal resistance determinants from their metal transportomes. Computational approaches were used to measure and compare the cumulative number of predicted horizontally transferred metal ion transporters from the genomes of diverse Pseudomonads. Subsequently, various molecular approaches used for functional characterization of novel hypothetical metal resistance determinants from *P. putida* KT2440 and *P. syringae* DC3000, have been detailed to elucidate their role in the toxic divalent cation resistance.

**Keywords:** *Pseudomonas*, RNA, Pre genomic era, Metal resistance

The genus *Pseudomonas* encompasses arguably the most diverse and ecologically significant group of bacteria on the earth, containing over 60 validly described species, isolated from plants to contaminated soils and water to human clinical samples. They are obligate aerobic chemoorganotrophs capable of living on a wide range of aliphatic and aromatic carbon compounds. *Pseudomonad* means “false unit”, being derived from the Greek *pseudo* (“false”) and *monas* (a single unit”). The term “monad” was used in the early history of microbiology to denote single-celled organisms. Because of their widespread occurrence in nature, the Pseudomonads were observed early in the history of *microbiology*. The generic name *Pseudomonas* created for these organisms was defined in later part of 18<sup>th</sup> century (1894) as a genus of Gram-

negative, rod-shaped, motile bacteria with polar flagella (Palleroni 1984) (Figure-1).



**Fig. 1: Source: Dennis Kunkel Microscopy, Inc- scientific stock photography agency**

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