

# Citation Classics

**Stanier R Y, Palleroni N J & Doudoroff M.** The aerobic pseudomonads : a taxonomic study. *Journal of General Microbiology* **43**:159-71, 1966.

**The authors describe a methodology for the taxonomic analysis of aerobic bacteria belonging to the genus *Pseudomonas*, based on the determination of biochemical, physiological and, in particular, nutritional characters. They show that it permits a satisfactory specification of this bacterial group. [The *SCI*® indicates that this paper was cited 540 times in the period 1961-1975].**

Professor Roger Y. Stanier  
Institut Pasteur  
25, Rue Du Docteur-Roux  
75724 Paris, France

March 2, 1977

"Taxonomy is a subject which rarely arouses wide interest. Moreover, this paper is a particularly forbidding and arid example of taxonomic research: it is extremely long and detailed, with many lists of strains, and no less than 60 unreadable tables of data. I was therefore astonished to learn that it had been so widely cited. If the computer hasn't made a mistake, I can attribute this popularity only to its methodological content. The methods of characterization that we developed, described and applied here for the first time to define certain *Pseudomonas* species have subsequently been adopted by other workers in the field of bacterial taxonomy. The most useful of these techniques is undoubtedly the simple screening method that we described for determining the range of organic compounds utilizable as carbon and energy sources by heterotro-

phic bacteria. It revealed many taxonomically significant nutritional properties which had been completely overlooked by the traditional methods of characterization, which examined only the capacity of bacteria to utilize carbohydrates.

"Ironically enough, the authors of this paper did not then consider themselves to be professional bacterial taxonomists! Over the preceding 20 years, Michael Doudoroff, Norberto Palleroni and I had used many unidentified *Pseudomonas* strains for our biochemical and physiological investigations. These studies included the discovery of the Entner-Doudoroff pathway of carbohydrate dissimilation; the analysis of the pathways of oxidation of aromatic compounds; and investigations on enzyme induction. We had become exasperated by the impossibility of appending specific names to these strains through use of the manifestly inadequate existing taxonomic treatments. Since nobody else seemed able or willing to straighten out *Pseudomonas* taxonomy, we finally decided to take a fling at it ourselves; and this paper was the first outcome. Unfortunately, taxonomic research, if it is successful, becomes addictive. This proved to be the first of many papers, emanating from our laboratory at the University of California in Berkeley, which dealt with the phenotypic and genotypic characterization of *Pseudomonads* and other bacterial groups. In fact, these investigations came to an end only with the death of Professor Doudoroff in 1975. I have recently published a retrospective survey of their significance.<sup>1</sup> By 1975, the two other original authors had both left Berkeley; Dr. Palleroni joined the research staff of Hoffman-La Roche in Nutley, New Jersey, and I moved to the Pasteur Institute."

**1. Stanier R Y.** Reflexions sur la taxonomie des *Pseudomonas*. (Reflections on the taxonomy of *Pseudomonas*). *Bulletin de la Institut Pasteur* **74**:255-70, 1976.