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# Enriching and observing: Microbial species as practices

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## Abstract

Session: Abstracting from the Living: Characters and classifications in the Life Sciences (Mathias Grote, Lara Keuck, Robert Meunier)

Microbial taxonomy is considered an utter mess throughout most of the 20th century, with a broadly accepted phylogenetic classification emerging only on the basis of rRNA sequences in the 1980s.

Here, I argue that in contrast to numerous re-classifications, conceptual changes, and the molecular genetic "revolution", the laboratory practices used for the identification and classification of an exemplary microbe (*Halobacterium*) have remained surprisingly stable for almost a century. Since the late 1890s, enrichment culture has been crucial to obtain microbial material to be analyzed morphologically, physiologically or biochemically. Thus, not only concepts of microbial species, but the entire laboratory existence of the organisms hinged on the technological ideal of a pure culture. In the case under examination here, the simple visual index of colony colour has been central to identify the microbes, as compared to more sophisticated characters. Also, analysis remained entirely on the level of the phenotype until c. 1980.

Clearly, the reliance on laboratory culturing and the scarcity of stable, distinct characters of microbes have impacted on their identification and classification. Yet, it is interesting to note that whereas the resulting determinative, non-phylogenetic classifications might have been unsatisfactory from a general biological point of view, they have at least in this case remained relatively stable on the level of practices involved. Under these premises, I will also analyze the interrelations of isolation, culturing, identification and classification. Against the background of today's molecular genetic practices of classification, this case study allows to discern a way of conceiving of the microbial world that has been prevailing until very recently.

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