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# Species, speciation, and diversity in the microbial world

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The number of recognized bacterial species is low, orders of magnitudes lower than the number of OTUs retrieved with culture-independent approaches from environmental samples. However, the species concept as known e.g. to zoologists can barely be applied to bacteria making the meaning of a species in microbiology arbitrary if not vague: clonal reproduction and lateral gene transfer both may complicate bacterial taxonomy. However, recent work has shown that microbial diversity matters, at least for particular ecosystem services. Nevertheless, correlating population structure with functional analysis is still a major challenge in contemporary microbial ecology. Here, the role of genetic, species, and functional diversity will be reviewed in the light of a recent EuroDIVERSITY workshop on “Microbial Diversity and Ecosystem Functioning”.