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Phylogenetics, Genomics and a Bacterial Species Concept.

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The goal of this work is to evaluate the core genome hypothesis, which posits that there is a core set of shared genes that define a bacterial species. Although it is clear that mechanisms exist for abundant and widespread genetic transfer between microbial lineages, the observation of phenotypic clustering argues for genomic stability and cohesion. To evaluate the importance of genomic and evolutionary stability versus genomic flux, we employ population and comparative genomic methods. Such analyses suggest that, for at least *E. coli* and *S. enterica*, there is a core genome that is shared within, but not between, these two related species. If the core genome hypothesis holds for many bacterial lineages, then it may be possible to revise the existing Biological Species Concept originally proposed by Ernst Mayr such that is can be usefully applied to bacteria.