

MEGAPLAZMIDY - PRÓBA DEFINICJI, ROZPOWSZECHNIENIE I RÓŻNORODNOŚĆ KODOWANYCH FENOTYPÓW

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1. Definicja i ogólna charakterystyka plazmidów. 2. Próba zdefiniowania pojęcia megaplazmid. 3. Rozpowszechnienie megaplazmidów i przegląd kodowanych przez nie fenotypów. 3.1. Megaplazmidy w rizobiach (*Rhizobium*, *Sinorhizobium*, *Mesorhizobium*). 3.2. Megaplazmidy w fakultatywnie litoautotroficznych bakteriach. 3.3. Megaplazmidy kataboliczne u *Pseudomonas* i innych rodzajów bakterii. 3.4. Megaplazmidy warunkujące patogenność. 3.5. Inne rzadkie fenotypy i kryptyczne megaplazmidy. 3.6. Megaplazmidy u archeonów. 4. Metody identyfikacji i badania megaplazmidów. 5. Korzyści z utrzymywania w komórce megaplazmidów. 6. Podsumowanie

Megaplasmsids, attempt to give a definition, distribution and diversity of encoded phenotypes

Abstract: Megaplasmsids are extremely large extrachromosomal genetic elements (plasmids) mainly spread in several genera of α -Proteobacteria (e.g. *Rhizobium*, *Agrobacterium*, *Paracoccus* and *Rhodobacter*), but also discovered in β -Proteobacteria (e.g. *Ralstonia* and *Pseudomonas*) γ -Proteobacteria (e.g. *Salmonella* and *Escherichia*), δ -Proteobacteria (e.g. *Erwinia*) and ϵ -Proteobacteria (e.g. *Xanthomonas*) as well as in genera belonging to other taxonomic units, including the Archaea. Megaplasmsids can encode many phenotypic traits including those involved in different aspects of bacterial metabolism (e.g. lithoautotrophy, degradation of various organic substrates), resistance to different antibacterial agents as well as pathogenicity to humans, animals and plants, symbiosis of bacterial cells with plants or other features. In this review we present a brief overview of megaplasmsids - starting with the proposal of a definition, through a survey of different phenotypes associated with their presence and characterisation of experimental procedures employed in their isolation and analysis, ending with the discussion why maintaining of such large extrachromosomal molecules might be advantageous for bacteria.

1. Definition and general characteristics of plasmids. 2. An attempt to define the term "megaplasmsid". 3. Distribution of megaplasmsids and survey of encoded phenotypes. 3.1. Megaplasmsids in rhizobia (*Rhizobium*, *Sinorhizobium*, *Mesorhizobium*). 3.2. Megaplasmsids in facultatively lithoautotrophic bacteria. 3.3. Degradative megaplasmsids in *Pseudomonas* and some other bacteria. 3.4. Megaplasmsids and pathogenicity. 3.5. Different uncommon phenotypes and cryptic megaplasmsids. 3.6. Megaplasmsids in archaeons. 4. Methods adapted for studying of megaplasmsids. 5. Benefits of maintaining of megaplasmsids. 6. Summary

Słowa kluczowe: fenotyp, genom plazmidowy, megaplazmid, mini-chromosom, plazmid
Key words: phenotype, plasmid genom, megaplasmsid, minichromosome, plasmid