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Autore	Shima, Hirohiko
Titolo	The geometry of Hessian structures / Hirohiko Shima
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Livello bibliografico	Monografia
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Autore	Summers David K
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ISBN	1-4443-1373-8 1-282-37172-X 9786612371721 1-4443-1374-6 1-4051-4943-4
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Soggetti	Plasmids - Genetics Plasmids
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Nota di contenuto	The Biology of Plasmids; Contents; Preface; 1: The Anatomy of Bacterial Plasmids; Prologue; The first word; 1.1 Early plasmid research; 1.1.1 Fertile beginnings; 1.1.2 Plasmids and antibiotic resistance; 1.2 Plasmid-encoded phenotypes; 1.2.1 The diversity of plasmid-borne genes; 1.2.2 Bacteriocin production and resistance; 1.2.3 Colicin production; 1.3 Plasmid classification; 1.3.1 Early attempts; 1.3.2 Incompatibility classification; 1.3.3 The molecular basis of plasmid incompatibility; 1.3.4 Shortcomings of incompatibility testing; 1.4 The structure and organization of plasmids 1.4.1 Topological considerations1.5 The preparation of plasmid DNA; 1.5.1 Caesium chloride density gradient centrifugation; 1.5.2 Rapid plasmid purification; 1.5.3 Gel electrophoresis of plasmid DNA; 1.6 Plasmid anatomy revisited; 1.6.1 Linear plasmids of Streptomyces; 1.6.2 Linear plasmids of Borrelia; 1.6.3 Linear plasmid telomeres; 2: The Unity of Plasmid Biology; 2.1 Essential plasmid functions; 2.1.1 Persistence; 2.1.2 Proliferation; 2.1.3 Cryptic plasmids; 2.2 Plasmids and prokaryote evolution; 2.2.1 Changing and yet staying the same; 2.2.2 Plasmids as libraries of genetic information

2.2.3 The division of labour between plasmid and chromosome2.2.4 Do plasmids ever carry essential genes?; 2.3 Structural fluidity of plasmid genomes; 2.3.1 Transposons and plasmid structure; 2.3.2 Recombination and plasmid structure; 2.4 Where do plasmids come from?; 2.4.1 Plasmids and bacteriophages; 2.4.2 Parasites or symbionts?; 2.4.3 Plasmids, bacteriophages and transposons; 3: Plasmid Replication and its Control; 3.1 Essential components of replication control systems; 3.1.1 The need for replication control; 3.1.2 Basic principles of copy number control; 3.1.3 The basic replicon 3.1.4 Replication origins3.1.5 Multireplicon plasmids; 3.2 Strategies of replication control; 3.2.1 Passive control; 3.2.2 Active control; 3.3 Model systems of replication control; 3.3.1 The formulation of negative control models; 3.3.2 The Inhibitor Dilution model; 3.3.3 The Autorepressor model; 3.3.4 The kinetics of control: oscillation and over-shoot; 3.4 Genetic analysis of replication control; 3.4.1 cop and rep mutations; 3.4.2 Incompatibility studies; 3.5 The initiation of plasmid replication; 3.5.1 The role of Rep proteins; 3.5.2 Direct priming of replication
3.6 The control of plasmid replication3.6.1 Antisense RNA inhibitors; 3.6.2 ColEl-like plasmids; 3.6.3 Rom: a matchmaker protein; 3.6.4 pT181: transcriptional attenuation; 3.6.5 Plasmid R1: antisense control of a low copy number plasmid; 3.6.6 l-dv: regulation by a trans-acting protein; 3.6.7 The P1 prophage: titration and handcuffing; 3.7 The two-tier organization of control circuits; 3.7.1 CopB: a secondary inhibitor of R1 replication; 3.7.2 The role of ColE1 Rom; 3.8 Quantitative modelling of plasmid replication control; 4: Plasmid Inheritance; 4.1 The nature of plasmid instability
4.1.1 Segregational instability

Sommario/riassunto

Plasmids are closed, circular pieces of DNA that are able to self-replicate and are carried by many bacteria. They provide unique functions for bacteria by allowing them to sexually replicate and to pass on genetic material between each other. Plasmids are also responsible for the genetic factors that give resistance to antibiotics, and provide the enzymes needed to break down poorly metabolised food resources. The author has provided an updated treatment of the structure, function and application of plasmids suitable for undergraduates and medical students. Employing an original teaching pers