

Preface

Introduction

One of the biggest dreams of medicine from the 1940s, the complete defeat of infectious diseases caused by bacteria, was treated to a rough awakening with the rise and dissemination of antibiotic resistance, toxins, and pathogenicity functions. In the early 1960s it was found that this dissemination was usually associated with the acquisition of genes that were located in extrachromosomal elements analogous to those that Joshua Lederberg had called "plasmids" in 1952. The importance of the discovery led to intense research on plasmid biology, which in turn resulted in innumerable benefits to the development of science. The list of discoveries in the fields of cell and molecular biology is far too long to detail in this Preface. In addition, a monumental contribution of research on plasmids was instrumental in the development of molecular cloning and the biotechnology revolution that ensued. Their role in virulence and antibiotic resistance, together with the generalization of "omics" disciplines, has recently ignited a new wave of interest in plasmids. As models for understanding innumerable biological mechanisms of living cells, as tools for creating the most diverse therapies, and as invaluable helpers to understand the dissemination of microbial populations, plasmids continue to be at the center of research.

Marcelo E. Tolmasky
Juan C. Alonso