

COMPARATIVE GENOMICS

Basic and Applied Research

Edited by James R. Brown

When genomic research first came on the scene, much of the biomedical research community viewed it as a limited venture with limited potential. We now know that such an assessment was both premature and inaccurate. In the last ten years, we've witnessed such remarkable acceleration in the merger of basic and applied genomic research that, among other things, genomic research is now thought of as being intrinsic to current drug research. Through rigorous comparative analysis, the genomes of cold-blooded vertebrate, avian, and other mammalian species are providing a deeper understanding of the human genome. This is leading to the development of drugs that may well treat a number of otherwise intractable conditions.

Rather than offering a comprehensive volume covering every aspect of comparative genomics, *Comparative Genomics: Basic and Applied Research* embodies the diverse interests of prominent researchers. Compiling first hand descriptions of their pioneering work, the text focuses on commonalities and synergies across the broad field of comparative genomics. Among many topics, it covers —

- Revolutionary advances in DNA-sequencing technology
- Bold new approaches to the organization and analysis of large phylogenetic data sets
- The impact of comparative genomics on our understanding of evolution
- Efforts toward developing novel antimicrobial drugs through the use of bacterial pathogen genomes
- Advanced considerations of genomic research in HIV, AIDS, and cancer, including new drug targets, and epigenomic-based drug therapies.
- Genomic applications in agricultural research and livestock breeding

Ultimately, future breakthroughs in comparative genomics will depend upon the continued interaction and interdependency of applied and basic research. This seminal volume demonstrates both the means and the fruits of that cooperation, and in doing so defines and lays the groundwork for continued progress.



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