

# Preface

Although the phenomenon of lateral (horizontal) gene transfer has been known since the 1940's, it was the genomics era that has really revealed the extent and many facets of this evolutionary/genetic phenomenon. Even in the early 2000s, with a handful of genomes available it became clear that the nature of microorganisms is full of genetic exchange between lineages that are sometimes far apart. The following years have seen an explosion of genomic data, with genomes of eukaryotes including multicellular ones providing ever more evidence for the pervasiveness of lateral gene transfer both in terms of the functions being transferred and of the organisms involved. These findings have shaken the “tree of life” and have raised doubts about the most appropriate species concepts for prokaryotes. They have also made us realize how rapidly genetic innovation can spread in the microbial world. In this book I attempted to represent the many-fold contributions of LGT to the evolution of micro- and to an extent macro-organisms by focusing on the areas where I felt it had the largest impact: metabolic innovations and adaptations and speciation, and also addressed the issue of how new genes integrate into complex biological systems. I also wanted to emphasize the most dramatic instances of LGT—those occurring between life's domains. I present to the readers of this book an up-to-date look at what are possibly the most intriguing evolutionary surprises that science has revealed in recent years, with the hope of stimulating future research in the fields of evolutionary genomics, especially within the realms of the microbial world.

It was a pleasure to work with Kevin Wright and Melanie Tucker of Springer USA, who assisted me with my editorial duties and addressed technical difficulties. Finally, to the authors, thank you all for taking part in this endeavor.



<http://www.springer.com/978-1-4614-7779-2>

Lateral Gene Transfer in Evolution

Gophna, U. (Ed.)

2013, XI, 294 p., Hardcover

ISBN: 978-1-4614-7779-2