

Preface

Microbes vary. Some grow quickly, using resources inefficiently. Others grow slowly, achieving efficient reproductive yield.

Why do evolutionary processes lead to such diversity? To answer that question, we must ask: How do the fundamental evolutionary forces shape biological design?

For example, comparing scarce versus abundant food, how do we expect evolutionary forces to alter growth rate and metabolic design?

Comparison provides the key. If we can predict how traits change when comparing different conditions, then we can reasonably say that we understand the fundamental evolutionary forces of design.

We face two challenges. Conceptually, we must understand the fundamental forces to make good comparative predictions. Empirically, we must translate data into the weight of evidence for or against the causal role of specific forces.

This book develops comparative predictions for microbial traits. Recent advances in microbial studies provide an ideal opportunity to test those predictions about diversity and design, perhaps the greatest problems in biology.

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A book is nothing without a home and someone who believes in you. Thank you, Robin.