Contents

Preface IX Prolog XI

Chapter 15 How abitatesentedituntibit swith 256 add a 650 gentlemi

	Part One Reading Section 1	
Chapter 1	Extremely small but incredibly active 3	ES-191qerlD
Chapter 2	Bacteria are organisms like you and me 7	
Chapter 3	My name is LUCA 15	
Chapter 4	From the Big Bang to LUCA 23	Chapter 26
Chapter 5	O ₂ 33 old myzobes no za elil od bamon a za elil mori	
Chapter 6	Life in boiling water 39	
Chapter 7	Life in the Dead Sea 45	- Chapter 29
Chapter 8	Bacteria and archaea are everywhere 53	
Chapter 9	The power of photosynthesis, even in almost	
	complete darkness 65	
Chapter 10	Man and his microbes 73	
Chapter 11	Without bacteria there is no protein 81	
Chapter 12	Napoleon's victory gardens 87	
Chapter 13	Alessandro Volta's and George Washington's	

combustible air 91

Chapter 14	Microbes as climate makers 99
Chapter 15	How a state was founded with the aid of Clostridium acetobutylicum 105
Chapter 16	Pulque, wine, and biofuel 111
Chapter 17	Energy conservation from renewable resources 117
Chapter 18	Cheese and vinegar 121
Chapter 19	The periodic table of bioelements 127
Chapter 20	Bacterial sex life 133
Chapter 21	Bacteria can also catch viruses 145
Chapter 22	Antibiotics: from microorganisms against microorganisms 149
Chapter 23	Plasmids and resistances 159
Chapter 24	Agrobacterium tumefaciens, a genetic engineer par excellence 165
Chapter 25	Eco R1 and PCR-molecular biology at its finest 169
Chapter 26	Interbacterial relationships 177
Chapter 27	From life as a nomad to life as an endosymbiont 185
Chapter 28	Bacteria as production factories 191
Chapter 29	Plants, animals, and humans as food resources for bacteria 203
Chapter 30	Viruses, chemicals causing epidemics? 221
Chapter 31	The "omics" era 235
Chapter 32	Incredible microbes 245
Epilog 256	

Part Two Study Guide 257

Without backeria there is no protein 5.7

Overview to the Study Guide 259

Section 1 Microbial growth 261

Section 2	Molecules that make up microbes	267	
Section 3	Evolution, from the RNA world to the tree of life 277		
Section 4	Archaea 281		
Section 5	Bacterial diversity 289		
Section 6	Membranes and energy 297		
Section 7	Carbon metabolism 311		
Section 8	Regulation of microbial metabolism	325	
Section 9	Genomes, genes, and gene transfer	333	
Section 10	In-depth study of four special topics	337	

Appendix A Selected literature 345 Appendix B Glossary 351 Appendix C Subject index of figures and tables 373 Credits 379 Index 381

The Chapter, II: Oliver Einsle, Freeburg (DE), Alfred