

CONTENTS

Acknowledgments ix

Abbreviations xi

Introduction	1
1 Ethics and Economics of Longevity: Is It Right to Study Aging?	6
2 Why Do We Age?	15
3 Studying the Genetics of Human Longevity: Centenarians and What We Can Learn from Them	37
4 Long-Lived Species and Longevity Mutants of Model Organisms	51
5 What Is Aging (and How Can We Measure It)? Biomarkers of Aging and “Quality of Life” Metrics	71
6 Insulin Signaling, FOXO Targets, and the Regulation of Longevity and Reproduction	87
7 Dietary Restriction: Nutrient and Genetic Regulation of Longevity and Reproduction	107
8 Taking out the Trash: Molecular Homeostasis in the Regulation of Longevity	137
9 Powering Longevity: Mitochondria’s Role in Aging and Longevity	152
10 Dracula and Wolverine: How DNA Repair and Cell Replacement Can Help Us Live Long	173

11	Use It or Lose It: Reproductive Aging, the Germline, and Longevity	193
12	Sex, Flies (and Worms), and Videotape: The Battle of the Sexes	214
13	I See Dead Flies: Neurons and Sensory Regulation of Longevity	237
14	Don't You Forget about Me: What We Are Learning about Cognitive Aging and How to Slow It	250
15	Lamarck's Revenge? Transgenerational Inheritance, the "Molecular Clock," and the Epigenetic Regulation of Longevity	279
16	Gut Feelings: The Microbiome and Aging	303
17	Long Life in a Pill? The Future of Longevity: From Bench to Biotech	319

Notes 349

Index 417