

Contents

Prologue	xi
At the Harbour	xi
At the Market	xiii
Part One	1
The Mystery (and Sperm) of Life's Origins	3
Deus ex Machina	3
The World Egg	7
Spontaneous Generation and Meat Broth— <i>Lazzaro Spallanzani</i>	14
Preformation or Epigenesis?	22
Types and Rhythms of Embryos— <i>Karl Ernst von Baer</i>	37
Cell from a Cell	44
The Feats of the Sea Urchin	51
Part Two	61
Chromosomes, Mendelian Factors and Evolution	63
Roasted Capon	63
The Immortal Germplasm	65
Reduction Division	78

A London Pigeon Sale— <i>Thomas Henry Huxley</i>	88
The Orchard of Evolution	102
Peas and Minotaur— <i>William Bateson</i>	108
Galton and Mendel	120
Two Sperm, One Ovum— <i>Theodor Boveri</i>	132
Part Three	147
The Triumph of Genes	149
Trickster Mendelians— <i>Thomas Hunt Morgan</i>	149
Sex Chromosomes	156
The Telltale White Eye	166
Genetic Mapping	174
Part Four	189
Forces and Reactions	191
The Mathematics of Life— <i>D'Arcy Wentworth Thompson</i>	191
The Two-Headed Newt	201
Zeus's Beard	210
Evolutionary Synthesis	211
The Casting Moulds of Genes— <i>Hermann Joseph Muller</i>	219
Fronts on the Wings of a Moth— <i>Alfred Kühn</i>	228
The Birth of Patterns	239
Part Five	247
The Atoms of Life	249
Hormones in Larva Blood	249
One Gene, One Enzyme— <i>George Wells Beadle</i>	261
The Protein—Genes	271
The Principle of Transformation— <i>Oswald Theodore Avery</i>	281

The Triple Helix— <i>Linus Pauling</i>	291
DNA with Ambrosia	303
Part Six	315
Codes and Links	317
The Central Dogma— <i>Francis Crick</i>	317
The Diamond Code of Proteins	327
The Genetic Code	339
A Molecular Lung— <i>Max Ferdinand Perutz</i>	352
Sugar-Consuming Bacteria— <i>Jacques Monod</i>	364
Part Seven	377
Genes in the Mortar	379
Epigenesis and Genetics— <i>Conrad Hal Waddington</i>	379
A Recipe for Making Mice— <i>Sydney Brenner</i>	389
The Wiring of a Worm's Brain	396
Recombinant DNA	404
Striped Embryos— <i>Christiane Nüsslein-Volhard</i>	414
Our Worm Ancestors— <i>Detlev Arendt</i>	427
The Age of Genomics— <i>Eugene Koonin</i>	441
Part Eight	451
Beyond Genes	453
Postcard to Thrace	453
The Cedar Forest of Abdera	454
The Philosophy of Biology— <i>Ernst Mayr</i>	457
The Genetics of the Biosphere	465
Biscuits Baked in Ash	474
On the Island of Bensalem— <i>Pál Juhász-Nagy</i>	475

Epilogue	483
On Mount Olympus	483
The Bay of Abdera	486
<i>Appendix</i>	491
A Chronology of Events Discussed in the Book	491
<i>Further Reading</i>	499
<i>List of Figures</i>	505
<i>Index</i>	515