S8 THOUSE CONTENTS

PART | Background: Like Begets Like

CHAPTER ONE Clonality within the Individual 3

Clonality at the Gene Level: DNA Replication 3
Clonality at the Genomic Level: Mitosis 6
Clonality in the Cellular Cytoplasm: Mitochondrial DNA 8
Clonality in the Sex Chromosomes 11
Clonality among the Soma 13

CHAPTER TWO Sexuality: The Antithesis of Clonality 15

Sex at the Interchromosomal Level: Meiosis, Syngamy,
and Mendel's Laws 15
Sex at the Intrachromosomal Level: DNA Recombination
via Crossing Over 17
Recombination versus Mutation as Sources of Genetic Variation 18
The Paradox of Sex 20
Sex and Death 25
Cellular Autonomy and Immortality 27
Summary of Part I 30

PART II Unisexual Clonality in Nature

CHAPTER THREE Reproduction by the Chaste: Parthenogenesis 35

The Cast of Players 35

Cellular and Genetic Mechanisms 51

Evolution and Phylogeny 52

Comparative Ecology and Natural History 70

CHAPTER FOUR Reproduction by the Semichaste: Gynogenesis, Hybridogenesis, and Kleptogenesis 81

Cellular and Genetic Mechanisms 97
Evolution and Phylogeny 99
Comparative Ecology and Natural History 112
Summary of Part II 115

PART III Sexual Clonality in Nature

CHAPTER FIVE Clonality in Utero: Polyembryony 119

The Cast of Players 120

Genetic and Embryological Mechanisms 127

Ecology and Evolution 127

CHAPTER SIX Clonality by Incest: Hermaphroditic Self-Fertilization 133

The Cast of Players 137

Genetic and Reproductive Mechanisms 138

Evolution and Ecology 144

Summary of Part III 151

PART IV Clonality in the Laboratory

CHAPTER SEVEN Human-Sponsored Clonality 157

Gene Cloning 157

Whole-Individual Cloning by Quasi-natural Mechanisms 161

Whole-Individual Cloning by Mechanisms Unknown in Nature 168

Summary of Part IV 174

EPILOGUE 177
GLOSSARY 179
REFERENCES 191
INDEX 233