

## CONTENTS

Introduction <i>Robert John Russell</i> .....	i
Message to the Vatican Observatory Conference on Evolutionary and Molecular Biology <i>Pope John Paul II</i> .....	1
Message to the Pontifical Academy of Sciences <i>Pope John Paul II</i> .....	2
Evolution and the Human Person: The Pope in Dialogue <i>George V. Coyne, S.J.</i> .....	11

### I. SCIENTIFIC BACKGROUND

The Evolution of Life: An Overview <i>Francisco J. Ayala</i> .....	21
The Hominid Evolutionary Journey: A Summary <i>Camilo J. Cela-Conde</i> .....	59
The Phenomenon of the Eukaryotic Cell <i>Julian Chela-Flores</i> .....	79

### II. EVOLUTION AND DIVINE ACTION

Darwin's Devotion: Design Without Designer <i>Francisco J. Ayala</i> .....	101
Evaluating the Teleological Argument for Divine Action <i>Wesley J. Wildman</i> .....	117
Teleology Without Teleology: Purpose through Emergent Complexity <i>Paul Davies</i> .....	151
The Immanent Directionality of the Evolutionary Process, and its Relationship to Teleology <i>William R. Stoeger, S.J.</i> .....	163
Special Providence and Genetic Mutation: A New Defense of Theistic Evolution <i>Robert John Russell</i> .....	191
Neo-Darwinism, Self-organization, and Divine Action in Evolution <i>Charles Birch</i> .....	225

## CONTENTS

### III. RELIGIOUS INTERPRETATIONS OF BIOLOGICAL THEMES

The Thinking Underlying the New 'Scientific' World-views <i>George F. R. Ellis</i> . . . . .	251
Darwin's Revolution in <i>the Origin of Species</i> : A Hermeneutical Study of the Movement from Natural Theology to Natural Selection <i>Anne M. Clifford</i> . . . . .	281
Evolutionary Naturalism and Religion <i>Willem B. Drees</i> . . . . .	303
Biocultural Evolution: A Clue to the Meaning of Nature <i>Philip Hefner</i> . . . . .	329
Biological Evolution—A Positive Theological Appraisal <i>Arthur Peacocke</i> . . . . .	357
Original Sin and Saving Grace in Evolutionary Context <i>Denis Edwards</i> . . . . .	377
Darwin's Gift to Theology <i>John F. Haught</i> . . . . .	393
Five Models of God and Evolution <i>Ian G. Barbour</i> . . . . .	419

### IV. BIOLOGY, ETHICS, AND THE PROBLEM OF EVIL

Beyond Biological Evolution: Mind, Morals, and Culture <i>Camilo J. Cela-Conde and Gisele Marty</i> . . . . .	445
Supervenience and the Nonreducibility of Ethics to Biology <i>Nancy Murphy</i> . . . . .	463
Playing God with Our Evolutionary Future <i>Ted Peters</i> . . . . .	491
Evolution, Divine Action, and the Problem of Evil <i>Thomas F. Tracy</i> . . . . .	511
Contributors . . . . .	531
Name Index . . . . .	533
Subject Index . . . . .	539