

Contents

Contributors xi

Introduction: An Evolutionary Perspective 3

I THE REALITIES OF HUMAN GERMLINE ENGINEERING

A Vision for Practical Human Germline Engineering 9

John Campbell and Gregory Stock

The Human Genome Project—Launch Pad for
Human Genetic Engineering 17

Leroy Hood

Ethics and Safety 25

Daniel Koshland, Jr.

Human Germline Gene Therapy: How and Why 31

Mario R. Capecchi

A New Front in the Battle against Disease 43

W. French Anderson

Aging as a Target for Genetic Engineering 49

Michael R. Rose

Reprogenetics: How Reproductive and Genetic
Technologies Will Be Combined to Provide
New Opportunities for People to Reach Their
Reproductive Goals 57

Lee M. Silver

II THE ROAD AHEAD

A Panel Discussion 73

*John Campbell, Leroy Hood, Daniel Koshland, Jr.,
Mario Capecchi, W. French Anderson, Michael R. Rose,
Lee M. Silver, Andrea Bonnicksen, John Fletcher,
and James D. Watson. Moderated by Gregory Stock.*

III OTHER VOICES

Beyond the Issue of Safety 99

*Glenn McGee, Sandy Thomas, Sheldon Krimsky,
Kevin T. FitzGerald, Ruth Hubbard, Gregory E. Pence,
and Stefan F. Winter*

Long-Term Possibilities and Dangers 117

*Alex Mauron, Rabbi Barry Freundel, Erik Parens,
Burke K. Zimmerman, Paul R. Billings, James Hughes,
George Ennenga, and Jan C. Heller*

Regulation and Jurisdiction 139

Darryl Macer and Lloyd Cohen

Appendix: Select Questions from the Public
to Participants in the “Engineering
the Human Germline” Symposium 145

Notes 151

Glossary 159

Index 161