Appendix 2

Stages of Revision

1. Both authors circulate among their colleagues drafts that are not submitted for publication.
2. Dr. Bloch submits a manuscript to *Nature*. It is returned by the editor without review.
   Dr. Crews submits a manuscript to *Science*. It is reviewed by two referees, who are split in their decisions, and rejected.
3. Dr. Bloch resubmits a slightly revised version to *Nature*, with a cover letter asking for a review. It is reviewed by three referees and rejected.
   Dr. Crews resubmits a revised version to *Science*. It is reviewed by two more referees, who also split widely, and rejected.
4. Dr. Bloch submits a revised version to *Science*. It is reviewed by two referees who are ambivalent but generally favorable, and rejected.
   Dr. Crews submits a heavily revised manuscript to *Nature*. It is returned by the editor without review.
5. Dr. Bloch submits a revised version to the *Journal of Molecular Evolution*. It is accepted, conditional on changes suggested by two referees and the editor.
   Dr. Crews submits the unrevised *Nature* manuscript to *Proceedings of the National Academy of Sciences*. It is rejected.
6. Dr. Bloch's revised manuscript is accepted at the *Journal of Molecular Evolution* and appears in the December 1983 issue.
   Dr. Crews's unrevised manuscript is accepted at *Hormones and Behavior* on the basis of its previous reviews, and appears in the March 1984 issue.

Scope of Claims

Dr. Bloch

I. "Transfer of control . . . , given the name 'surrogation,' marks the appearance of new kinds of behavior at every level of organization and process, including evolution itself."

II. "A primordial tRNA produces through successive rounds of elongation a molecule with multiple functions of gene, message, and scaffolding, and which serves as the source of the original tRNAs and rRNAs."
III. "The patterns and distributions of homologies make phylogenetic relatedness a more plausible explanation than evolutionary convergence."
IV. "The existence of homologous sequences of tRNAa and 16S rRNA is demonstrated."
V. The sequence of one tRNA is . . .

Dr. Crews

I. Environmental factors influence the evolution and development of three aspects of reproduction: "(i) the functional association between gamete production, sex hormone secretion, and mating behavior, (ii) the functional association between gonadal sex . . . and behavioral sex, (iii) the functional association among the components of sexuality."
II. Environmental factors may cause gamete production, sex hormone secretion, and mating behavior to be dissociated.
III. Gamete production, sex hormone secretion, and mating behavior are dissociated in some species of each class of vertebrates.
IV. Gamete production, sex hormone secretion, and mating behavior are dissociated in the red-sided garter snake.
V. The red-sided garter snake mates at the beginning of warm weather, when sex hormone levels are low.

Comparisons of Review Articles by Dr. Crews

1. *Science*, 1975
2. Manuscript, 1983
3. *Hormones and Behavior*, 1984

Titles

1. "Psychobiology of Reptilian Reproduction"
2. "New Concepts in Behavioral Endocrinology"
3. "Gamete Production, Sex Hormone Secretion, and Mating Behavior Uncoupled"

Opening Sentences

1. "The interaction of behavioral, endocrinological, and environmental factors regulating reproduction has been the subject of intensive investigation in recent years."
2. "Much of the information on the causal mechanisms of vertebrate reproductive behavior has been gathered on highly inbred stocks of rodents and birds living under artificial conditions. . . . Some of the organismal concepts that have emerged are overly narrow and sometimes unrealistic."
3. "A common observation for seasonally breeding vertebrates is that the reproductive processes of gamete production, sex hormone secretion, and mating behavior coincide, and further, that sex steroid hormones activate mating behavior. The postulate of hormone dependence of mating behavior is based primarily on detailed studies of laboratory and domesticated species."

Concluding Sentences

1. "Thus, while the utilization of inbred species contributes greatly to our understanding of the factors regulating reproduction, the integration of these factors can only be appreciated fully in an ecological context where the adaptive significance of such interactions becomes apparent."
2. With this work on the *Cnemidophorus*, "it becomes possible to apply evolutionary theory to gain insight into the evolution of psychoneuroendocrine controlling mechanisms."
3. "The possibility that similarities in mating behavior in different vertebrate species is the result of convergent, rather than divergent, evolution adds another perspective to our understanding of the many species, life history, and sex differences observed in vertebrates."

Length

1. 3200 words
2. 2992 words
3. 940 words

Examples of Revisions

Dr. Bloch

A1. "The Evolution of Control Systems: The Evolution of Evolution"
A2. "An Argument for a Common Evolutionary Origin of tRNAs and rRNAs"
A3. "tRNA–rRNA sequence Homologies: Evidence for a Common Evolutionary Origin?"

B1. ". . . peppered with stretches . . ."
B2. ". . . were found to contain stretches . . ."

C1. Heading "Why the Homologies?"
C2. "Discussion"

D1. The role of coincidence in some matches "will be revealed . . ."
D2. It "should be revealed . . ."

E1. "This is a tantalizing bit of numerology that evokes no ready explanation from current views of RNA functions or relationships."
E2. "This interesting stoichiometry . . ."
E3. "This suggestion of a stoichiometry . . ."

Dr. Crews

A1. "New Concepts in Behavioral Endocrinology"
A2. "Functional Association in Behavioral Endocrinology: Gamete Production, Sex Hormone Secretion, and Mating Behavior"
A3. "Gamete Production, Sex Hormone Secretion, and Mating Behavior Uncoupled"

B1. "This survey makes several points . . ."
B2. "This survey raises several questions . . ."

C1. "My laboratory has been investigating . . ."
C2. "The most thoroughly investigated species is. . . "

D1. 57 references
D2. 195 references
D3. 52 references