Editorial

Long live RNA!

One of the greatest advances in both molecular biology and evolutionary biology in the last decade is the discovery of large amounts of non-coding RNA transcripts from eukaryotic genomes. Many of these transcripts have novel regulatory activities, with the miRNAs the most prominent class of small regulatory RNAs. Obviously these discoveries have a major impact on our understanding and study of the evolution of gene regulation.

Journal of Experimental Zoology Part B: Molecular and Developmental Evolution was among the first journals to publish evolutionary studies on miRNAs (Tanzer et al., 2005) and also published one of the first large scale comparisons of miRNA inventories of metazoan animals (Sempre et al., 2006). The results of this study support the notion that miRNAs and the evolution of phenotype complexity are strongly linked.

Included in this collection are two papers that pioneered the use of RNA secondary structure as a paradigm for the evolution of a complex phenotype. "Viral RNA and evolved mutational robustness" (Wagner and Stadler, 1999) was the first to demonstrate evolved mutational robustness of RNA secondary structure elements in RNA virus genomes. "Plasticity, evolvability, and modularity in RNA" (Ancel and Fontana, 2000) is a classic in the study of robustness research, where simulated evolution of RNA secondary structures shows a congruence between environmental and genetic robustness and the coincidental evolution of modularity.

This collection illustrates *JEZ-B*'s vital contribution to shaping the emerging field of RNA molecular evolution. I look forward to future advances in RNA molecular evolution and other areas of molecular and developmental evolution in future issues of *JEZ-B*.

Gunter P. Wagner, Editor in Chief
Yale University

JEZ B virtual issue: RNAs in Devo Evo

RNAs everywhere: genome-wide annotation of structured RNAs
Journal of Experimental Zoology Part B: Molecular and Developmental Evolution
Volume 308B, Issue 1, Date: 15 January 2007, Pages: 1-25
The Athanasius F. Bompfünewerer Consortium, Rolf Backofen, Stephan H. Bernhart, Christoph Flamm, Claudia Fried, Guido Fritzsch, Jörg Hackermüller, Jana Hertel, Ivo L. Hofacker, Kristin Missal, Axel Mosig, Sonja J. Prohaska, Dominic Rose, Peter F. Stadler, Andrea Tanzer, Stefan Washietl, Sebastian Will

The phylogenetic distribution of metazoan microRNAs: insights into evolutionary complexity and constraint
Journal of Experimental Zoology Part B: Molecular and Developmental Evolution
Volume 306B, Issue 6, Date: 15 November 2006, Pages: 575-588
Lorenzo F. Sempere, Charles N. Cole, Mark A. Mcpeek, Kevin J. Peterson
Abstract | References | Full Text: PDF (748K)

Prediction of structured non-coding RNAs in the genomes of the nematodes Caenorhabditis elegans and Caenorhabditis briggsae
Journal of Experimental Zoology Part B: Molecular and Developmental Evolution
Volume 306B, Issue 4, Date: 15 July 2006, Pages: 379-392
Kristin Missal, Xiaopeng Zhu, Dominic Rose, Wei Deng, Geir Skogerbø, Runsheng Chen, Peter F. Stadler

Evolution of microRNAs located within Hox gene clusters
Journal of Experimental Zoology Part B: Molecular and Developmental Evolution
Volume 304B, Issue 1, Date: 15 January 2005, Pages: 75-85
Andrea Tanzer, Chris T. Amemiya, Chang-Bae Kim, Peter F. Stadler

Status of RNAs, localized in Xenopus laevis oocytes, in the frogs Rana pipiens and Eleutherodactylus coqui
Journal of Experimental Zoology Part B: Molecular and Developmental Evolution
Volume 304B, Issue 1, Date: 15 January 2005, Pages: 28-39

Viral RNA and evolved mutational robustness
Journal of Experimental Zoology
Volume 285, Issue 2, Date: 15 August 1999, Pages: 119-127
Andreas Wagner, Peter F. Stadler

Plasticity, evolvability, and modularity in RNA
Journal of Experimental Zoology
Volume 288, Issue 3, Date: 15 October 2000, Pages: 242-283
Lauren W. Ancel, Walter Fontana

p68, a DEAD-box RNA helicase, is expressed in chordate embryo neural and mesodermal tissues
Journal of Experimental Zoology
Volume 288, Issue 3, Date: 15 October 2000, Pages: 193-204
Daniel W. Seufert, Robert Kos, Carol A. Erickson, Billie J. Swalla