

## Introns

### **1. The Mediterranean Fruit Fly, By Jan Kwiatowski**

The origin and evolution of introns have been the subjects of much **debate**. Page 77

### **2. Evolutionary Dynamics of Introns, By Malay Kumar Basu**

Origin and evolution of introns are often considered within the context of the **debate** between the introns-early and introns-late concepts, a conundrum that emerged shortly after the discovery of the exon–intron organization of eukaryotic genes. Page 111

### **3. Two Distinct Globin Families, By Anja Roesner**

Intron positions are considered as valuable clues for gene evolution, but the antiquity of introns within globin genes and their positional stability have been a matter of **debate**. Page 18

### **4. Unique Intron Positions, By Scott William Roy**

The timing, causes, and mechanisms of intron origin have long been matters of **debate** (e.g., Hickey and Benkel 1986; Stoltzfus 1994; Elder 1991, 2000; Giroux et al. 1994; Poole et al. 1998; Venkatesh et al. 1999; Lynch 2002; Fedorov et al. 2003; Mourier and Jeffares 2003; de Roos 2004; Fedorov and Fedorova 2004; Roy 2004; Sverdlov, Babenko, et al. 2004; Collins and Penny 2005; Niu et al. 2005; Lin and Zhong 2005; Perumal et al. 2005; Fedorov and Fedorova 2006; Knowles and McLysaght 2006; Logsdon 1991). Page 1447

These results have important implications for the ongoing **debate** on the relative importance of intron gain and loss (Rogozin et al. 2003, 2005; Babenko et al. 2004; Qiu et al. 2004; Csuro's et al. 2005; Nguyen et al. 2005; Roy and Gilbert 2005a, 2005b), and support the notion that early eukaryotic ancestors were very intron rich, with intron losses outnumbering intron gains through subsequent evolution over a wide variety of eukaryotic lineages (Roy and Gilbert 2005a, 2005b). Page 1448

These data inform the more general **debate** about the incidence of parallel intron insertion (Tarrío et al. 2003; Qiu et al. 2004; Sadusky et al. 2004; Stoltzfus 2004; Csuro's 2005; Nguyen et al. 2005; Sverdlov et al. 2005). Page 1451

### **5. Intracellular Life Stages, By Erin E. Gill**

Within most eukaryotes, these core characteristics are generally shared by most genes, and although spliceosomal introns are variable in density between genomes, overall they are very common (although there is a long-standing **debate** about their origin, potential functions, and evolutionary significance) (Collins and Penny 2005; Rogozin et al. 2005; Koonin 2006). Page 1579

### **6. Intron Loss and Gain in Plants, By Scott William Roy**

Despite ongoing **debate** (Fedorov et al. 2001; Roy et al. 2001; Kaessmann et al. 2002; Roy et al. 2002; de Souza 2003; Fedorov et al. 2003; Roy 2003; Vibranovski et al. 2005), momentum has shifted in recent years toward the perspective that introns were absent in the common ancestor of prokaryotes (which lack spliceosomal introns) and eukaryotes and have arisen during the course of intron evolution (e.g., Cavalier-Smith 1985, 1991; Stoltzfus et al. 1994; Logsdon 1998; Ruvinsky et al. 2005; Ruvinsky and Ward 2006; Whamond and Thornton 2006). Page 171

### **7. Absence Polymorphisms in Daphnia, By Angela R. Omilian**

Since the discovery of spliceosomal introns (Berget et al. 1977; Chow et al. 1977; Evans et al. 1977; Goldberg et al. 1977), their origins and evolutionary roles have been **debated** (reviewed in Roy and Gilbert 2006; Lynch 2007). Page 2129

Our findings are relevant to another idea at the heart of the introns-early versus introns-late **debate**—the preferential insertion of new introns at proto-splice sites. Page 2136

### **8. Relationship of Intron Positions, By Danny W. De Kee**

Claims of intron-structure correlations have played a major role in **debates** surrounding split gene origins. Page 2158

## 9. Smoke Without Fire, By Scott William Roy

Identification of recently gained spliceosomal introns would provide crucial evidence in the continuing **debate** concerning the age and evolutionary significance of introns. Page 2259

## 10. Initial Stage of Domain Shuffling, By Kazuhiko Ohshima

However, vigorous **debate** continues about the timing, mechanisms, and causes of spliceosomal intron evolution (Roy and Gilbert 2006; De Kee et al. 2007). Page 2522

## 11. Loss and Gain of Introns, By Yong-Hwee Loh

Ever since the discovery of spliceosomal introns about 30 years ago, the evolutionary origin and significance of spliceosomal introns have been the subject of a lively **debate** (Jeffares et al. 2006; Roy and Gilbert 2006). Page 526

## 12. Deletion Bias in Avian Introns, By Kevin P. Johnson

The role of selection on intron size is a matter of **debate** (Clark, Leicht, and Muse 1996; Carvalho and Clark 1999; Comeron and Kreitman 2000; Duret 2001; Lynch 2002; Waltari and Edwards 2002). Page 599

Resolving this **debate** will require an understanding of the underlying mutation rates and substitution properties of insertion and deletion events (indels) in introns. Page 599

## 13. Extremely Intron-Rich Genes, By Miklos Csuros

For the last 30 years, the study of intron evolution had been coached, primarily, as a **debate** between the so-called introns-early and introns-late concepts. Page 903

## 14. A Sequence-Based Model, By Danny W. De Kee

Claims of intron-structure correlations have played a major role in **debates** surrounding split gene origins. Page 2158

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