



UNIVERSITÄT ZU KÖLN

Department für Biologie  
Schwerpunkt Ökologie

Zülpicher Str.47b  
50674 Köln  
Tel.: 0221-4703100  
Fax: 0221-4705932

---

## ÖKOLOGISCHES KOLLOQUIUM

des Instituts für Zoologie

im

HÖRSAAL DES BIOZENTRUMS

**Mittwoch, den 04.12.2019, 16:00 Uhr**

*PhD. Ken Kraaijeveld*

*Institute for Biodiversity and Ecosystem Dynamics (IBED), Sciencepark 904, 1098 XH Amsterdam, the Netherlands*

Host: Dr. Jens Bast

### **Genomes of asexuals are not analogous to Y chromosomes**

The lack of recombination exposes Y chromosomes of sexually reproducing organisms to Muller's Ratchet: the gradual accumulation of deleterious mutations. It is widely believed that the entire genomes of asexual organisms are subject to the same process. In fact, Muller originally formulated his theory with asexual organisms in mind.

Recent comparisons of the genomes of asexual organisms with those of their sexually reproducing relatives have failed to detect the predicted accumulation of deleterious mutations. However, widespread genomic reorganisations in the form of palindromes and translocations were observed in the genomes of bdelloid rotifers and an asexual lineage of the springtail *Folsomia candida*, suggesting that mutation accumulation may still occur on longer timescales.

Here, we sequenced the genomes of two additional strains of *F. candida*; one a genetically distinct asexual lineage and the other a sexual lineage. Surprisingly, we find similar numbers of palindromes in the sexual lineage. These genomic reorganisations are found in regions with many copies of transposable elements, nuclear-mitochondrial segments and horizontally transferred genes. We suggest that these patterns are not caused by Muller's Ratchet. Instead, we suggest that these features are part of a genome structure that partitions the genome into highly evolvable and more constrained regions. Such a genome structure allows adaptation regardless of sexual recombination.



**Gäste sind herzlich willkommen!**  
**Die Mitarbeiter/innen der Ökologie**

→ bei Rückfragen: 470-8268 (Romankiewicz)