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“Evolution of genomic rearrangements in animals and plants”

The Assis Lab develops and applies computational and statistical methods to make evolutionary inferences from comparisons of genomic and transcriptomic data among populations and species. We are broadly interested in the origin of phenotypic innovation and its connection to underlying genomic changes. In particular, recent studies suggest that genomic rearrangements may serve as a major reservoir of evolutionary novelty, as they often occur at faster rates and have more profound phenotypic effects than small-scale mutations. Therefore, a key focus of our current research is to investigate evolution after different classes of genomic rearrangements, specifically gene duplications, deletions, inversions, and translocations. However, another intriguing question is whether and how modifications in the regulation of existing genes contribute to evolutionary change. Hence, we are simultaneously exploring the role of lineage-specific gene expression evolution in phenotypic divergence across populations and species.

http://www.personal.psu.edu/rua15/