

No evidence for relation between Co-regulation and Regulatory Interactions in the evolution of Regulatory networks

Maribel Hernandez-Rosales¹ and Sarath Chandra Janga^{2,*}

¹*Department of Informatics, University of Montreal, Montreal, Canada* .²*Program of Computational Genomics, CCG-UNAM, Apdo Postal 565-A, Cuernavaca, Morelos, 62100 Mexico*

**Correspondence should be addressed to SCJ (sarath@ccg.unam.mx)*

Transcriptional regulatory networks are quite important in the understanding of an organism and its cellular processes, though their elucidation has been a challenging problem. Here we show that despite little or no conservation of regulatory interactions and regulatory network motifs in distant organisms like *Escherichia coli* and *Bacillus subtilis*, co-regulation can be conserved to a considerable extent. We illustrate and strengthen this with several cases where the genes are known to be co-regulated in both genomes though there is no conservation in Transcription Factors which regulate them, from the perspective of both the genomes mentioned. This removes the belief that co-regulation is dependent on the regulatory network conservation between two species and indicates possible scenarios that regulatory networks might have evolved independently in distant lineages.