Abstract Submitted
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Early life was a generalist: protein modularity increase as evolution proceeds JIANKUI HE, JUN SUN, MICHAEL DEEM, Rice University — We study the evolution of modularity in protein-protein interaction network and protein domain-domain interaction networks. By introducing compositional age, we construct the interaction networks at different points in evolutionary time. We use the average-linkage hierarchical clustering method to reorganize the network matrix to identify the modules. With several different definitions of modularity, we compare the observed modularity at different evolutionary times in both E. coli and S.cerevisiae. We conclude that the modularity of protein-protein interaction network and domain-domain interaction network grows in evolution, validating recent theoretical predictions of spontaneous modularity in evolution [1].

[1] J. Sun and M. W. Deem, Phys. Rev. Lett, to appear, arXiv:0710.3436.

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