Cover Letter

December 24th, 2019

Dear Nucleic Acid Research Editor,

We wish to submit an original research article entitled “*Network based multifactorial modelling microRNA-target interaction*”, by Selcen Ari Yuka and Dr. Alper Yilmaz, for consideration by Nucleic Acid Research. We confirm that this work is original and has not been published elsewhere, nor is it currently under consideration for publication elsewhere. In this paper, we report network model of miRNA and target mRNA interactions in order to calculate cascading effects of mRNA expression level changes in context of competing endogenous behaviours.

This study has been one of the first attempts to thoroughly assess miRNA:mRNA interactions in ***whole network***. Previous work approached the problem in a limited fashion; one miRNA interacted with more than one mRNA, one mRNA which is targeted by various miRNAs or several miRNAs targeting multiple mRNAs. Our approach not only reveal broader effect of mRNA changes but also allow screening the network for critical genes that perturb the network drastically. Our approach lays the groundwork for future research where researchers can analyze large miRNA:mRNA networks comprised of ceRNA expression levels and miRNA:mRNA interaction data.

We believe that this manuscript is appropriate for publication by Nucleic Acid Research because it provides computational methods that facilitate understanding of biological regulatory elements and coincide with “*Computational Biology*” scope of Nucleic Acid Research.

Thank you for your consideration!

Sincerely,

Assist.Prof.Dr. Alper YILMAZ

Department of Bioengineering

Faculty of Chemical and Metallurgical Engineering

Yildiz Technical University

Esenler, Istanbul/TURKEY 34210

Phone: +90.212.383-4627 (office)

alyilmaz@yildiz.edu.tr