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Peter Hinow* (hinow@uwm.edu), Department of Mathematical Sciences, University of Wisconsin - Milwaukee, PO Box 413, Milwaukee, WI 53201. *Algebraic and Topological Indices of Molecular Pathway Networks in Human Cancers.*

Biological networks have been an active area of research for some years, in particular protein-protein interaction (PPI) networks. We retrieve the protein-protein interaction networks of 11 human cancers from the Kyoto Encyclopedia of Genes and Genomes (KEGG) and determine their relative automorphism group sizes and the dimensions of their cycle spaces. These quantities are commonly taken to be measures of network complexity in physics and computer science. We find evidence that greater network complexity is associated with lower five year survival probabilities. Moreover, we identify several protein families (PIK, ITG, AKT) that are repeated motives in many of the cancer pathways. Our results can aide in identification of promising targets for anti-cancer drugs.

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