Effects of destrin pathway mutations on the gene expression profile


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ABSTRACT. This study aimed to explore the interaction and crosstalk between pathways in response to destrin mutations. All the pathways from the MINT database were downloaded, a protein-protein interaction network was then constructed, and the crosstalk between pathways was investigated, in particular, the overlap of 2 significant pathway analysis results. As expected, the results showed that regulation of the actin cytoskeleton was the significant pathway of destrin mutations in mice. Further analysis indicated that 28 significant pathways cross-talked with the pathway regulating the actin cytoskeleton. Importantly, 3 pathways, including regulation of actin cytoskeleton pathway, pathways in cancer, and the B cell receptor signaling pathway were linked by inositol phosphate metabolism based on crosstalk analysis of Gene Ontology relationships among pathways. All of these pathways have been demonstrated to participate in cytoskeleton dynamics. These findings might provide valuable insights into cytoskeleton dynamic abnormalities in destrin mutations of corneal diseases.

Key words: ADF/Cofilin; Cytoskeleton dynamics; Pathway crosstalk