

Rho GTPases

Central regulators of cell migration

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In his review of the Ras family in 1988, Pierre Chardin speculated that an obscure subfamily of the Ras superfamily, which at that time was only known in yeast, would be conserved in mammals.¹ He was of course right, and today the number of labs and the amount of effort being expended to understand the vast network of Rho-family signaling is enormous.

Given their fundamental role in normal and developmentally regulated processes, it is not surprising that Rho-family GTPases are also involved in such diverse conditions as metastasis, tumor development, and the reaction to infections. The challenge continues to be to try and

ascertain the function and regulation of these complex and versatile/multifunctional cellular regulators in an attempt to find attractive targets to develop novel therapeutic strategies.

Still, exactly how Rho family members themselves are regulated, how they interact with one another and the pathways they themselves regulate, is not yet completely understood. What is known is that Rho family GTPases regulate the cytoskeletal rearrangements and adhesions necessary for cell shape change and cellular adhesion,^{4,6} and the coordinated regulation of the various Rho family members is important for directed cell

migration, as well as maintenance of cellular adhesions.^{2,3,5}

From this it is evident that spatio-temporal regulation of the various Rho GTPase family members is important. This is an extreme over simplification, but will have to do since this is an Editor's Corner and not a review of the field.

In the current issue there are some excellent commentaries explaining important recent advances in the field of Rho-family research, from cytoskeletal regulation to the regulation of Rac1 localization in the cell. I hope you will enjoy these commentaries and that they will entice you to read the original articles.

References

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