

Imaging of Dynamic Changes of the Actin Cytoskeleton in Microextensions of Live NIH3T3 Cells with a GFP Fusion of the F-Actin Binding Domain of Moesin

ABSTRACT

Despite the fact that shape alone could not differentiate between retraction fibers and advancing, retracting or stable filopodia, the use of fluorescent imaging of C-moesin-GFP paralleled the rapid and dynamic changes of the actin cytoskeleton in microextensions. Regional regulatory control is implicated because opposite changes occur in close proximity to each other. This new and sensitive tool should be useful in investigating mechanisms of localized actin dynamics in the cell cortex.

INTRODUCTION

A number of different diseases are associated with abnormalities of the actin cytoskeleton (ACTN) and its protein binding domain (Moesin), and a number of approaches have been used to detect these abnormalities. The aim of this study was to investigate how Moesin-positive cells express Moesin-binding protein (MBP), a protein that is associated with a variety of diseases, including Parkinson's disease (PD), multiple sclerosis (MS) and Alzheimer's disease (AD). The aim of the study was to investigate how the expression of MBP differs between Moesin-positive and Moesin-negative cells.

Materials and methods:

The experimental design Lamellipodia, filopodia (limbs), retraction fibers, and microspikes are all dynamic and transient membranous structures that occur on the surface of most cells. They can be easily observed in spreading, moving, or migrating cells, as well as in invading cancer cells in vivo. Small GTPases of the rho family have been shown to regulate this protrusive cell surface activity through their interaction with moesin and ezrin or radixin inactivating proteins in response. It has been proposed that moesin requires an "activated" form to interact with actin filaments and connect to locations in the plasma membrane.

CONCLUSION

Remarkable conclusions A pattern of actin microfilaments is observed in different regions of live NIH3T3 cells, which are characterized by imaging and retrospective analysis using moesin-fused GFP. This technique allows for analysis of dynamic and diverse changes that occur spontaneously in small areas of the cell surface as determined by their F-actin binding domain, motility, and life history. C-moesin-GFP may provide sensitive insight into critical regulatory steps required to understand highly dynamic interactions between various cytoskeleton and membrane components.