

Different cell types generate different types of protrusive structures to provide locomotion. The protrusive structures include filopodia (microspikes), lamellipodia, and pseudopodia. All are filled with a dense core of filamentous actin. The three structures differ primarily in the way in which the actin is organized – in one, two, or three dimensions, respectively. Filopodia, formed by migrating growth cones and some types of fibroblasts, are essentially one-dimensional. They contain a core of long, bundled actin filaments, which are reminiscent of those in microvilli but longer and thinner, as well as more dynamic. Lamellipodia, formed by epithelial cells and fibroblasts, as well as by some neurons, are two-dimensional, sheet-like structures. They contain an orthogonally cross-linked mesh of actin filaments, most of which lie in a plane parallel the solid substratum. Pseudopodia, formed by amoebae and neutrophils, are stubby three-dimensional projections filled with an actin-filament gel.