We study the active membrane waves on fibroblasts by using an optical technique called “non-interferometric wide-field optical profilometry.” The amplitudes of these waves are smaller than 300 nm, the wave speeds increase from 10 nm/s to 25 nm/s after ~20 µm of centripetal propagation. The wavelengths approach a steady-state value. The dispersion relation and amplitude frequency response of these waves are consistent to a simple mathematical model. These membrane waves are driven by the interactions between myosin II and actin polymerization in the cytoplasm.