Espin is a protein that is primarily found in hair cells of the inner ear, where it is important for maintaining the structure and function of the stereocilia, which are the tiny hair-like structures on the surface of these cells that are involved in detecting sound and movement. Mutations in the gene that codes for espin can lead to hearing loss and other auditory disorders.

Auditory hair cells are the mechanical sensors of sound waves in the inner ear, and the stereocilia, which are actin-rich protrusions of different heights on the apical surfaces of hair cells, are responsible for the transduction of sound waves into electrical signals. As a crucial actin-binding and bundling protein, espin is able to cross-link actin filaments and is therefore necessary for stereocilia morphogenesis. Using advanced super-resolution stimulated emission depletion microscopy, we imaged espin expression at the sub-diffraction limit along the whole length of the stereocilia in outer hair cells and inner hair cells in order to better understand espin's function in the development of stereocilia [1].

1)
Qi J, Zhang L, Tan F, Liu Y, Chu C, Zhu W, Wang Y, Qi Z, Chai R. Espin distribution as revealed by super-resolution microscopy of stereocilia. Am J Transl Res. 2020 Jan 15;12(1):130-141. PMID: 32051742; PMCID: PMC7013225.