The actin binding protein destrin is associated with growth and perineural invasion of pancreatic cancer.

Abstract:
The small actin-binding protein destrin is one of the key regulators involved in remodeling of the actin cytoskeleton, a process crucial for cytokinesis, cell migration and polarized cell growth as well as for cancer cell migration and invasion. A novel ex vivo nerve invasion model mirroring perineural cancer cell invasion as a key feature of pancreatic ductal adenocarcinoma has been previously established. Using this model, highly nerve-invasive clones of human pancreatic cancer cell lines have been obtained. Genome-wide transcriptional analyses of these cells revealed up-regulation of destrin in highly versus lowly nerve-invasive pancreatic cancer cells. Increased expression of destrin in these nerve-invasive cells was validated using quantitative RT-PCR and immunoblotting; concomitant changes in cell morphology were demonstrated using immunofluorescence analysis. Silencing of destrin by two specific siRNA oligonucleotides in Panc-1 pancreatic cancer cells decreased invasiveness and migration, and reduced proliferation of these cells. Destrin is upregulated in nerve-invasive pancreatic cancer cells and its expression might be related to perineural invasiveness.