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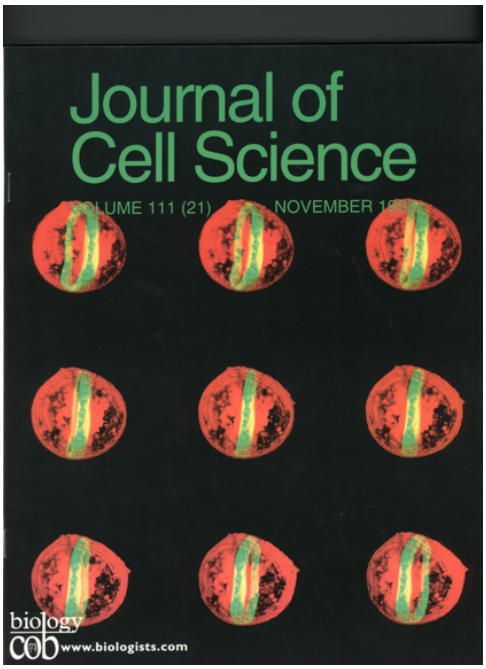
"Tau interacts with src-family non-receptor tyrosine kinases"

G. Lee, S.T. Newman, **D.L. Gard**, H. Band, G. Panchamoorthy



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Commentary: Expression of the microtubule-associated protein Tau and Fyn kinase induces a dramatic reorganization of the microtubule cytoskeleton of mouse 3T3 cells into a cortical ring, here visualized by laser scanning confocal immunofluorescence microscopy an 3D reconstruction of a single cell, rotated in 5 degree increments. Microtubules are stained in green, Fyn kinase is stained in red. Pairs of images in this montage can be viewed in stereo.

Abstract: Tau and other microtubule-associated proteins promote the assembly and stabilization of neuronal microtubules. While each microtubule-associated protein has distinct properties, their in vivo roles remain largely unknown. Tau is important in neurite outgrowth and axonal development. Recently, we showed that the amino-terminal region of tau, which is not involved in microtubule interactions, is important in NGF induced neurite outgrowth in PC12 cells. Here we report that a proline rich sequence in the amino terminus of tau interacts with the SH3 domains of fyn and src non-receptor tyrosine kinases. Tau and fyn were co-immunoprecipitated from human neuroblastoma cells and co-localization of tau and fyn was visualized in co-transfected NIH3T3 cells. Co-transfection of tau and fyn also resulted in an alteration in NIH3T3 cell morphology, consistent with an in vivo interaction. Fyn-dependent tyrosine phosphorylation of tau occurred in transfected cells and (cont.)

tyrosine phosphorylated tau was identified in human neuroblastoma cells as well. Our data suggest that tau is involved in signal transduction pathways. An interaction between tau and fyn may serve as a mechanism by which extracellular signals influence the spatial distribution of microtubules. The tyrosine phosphorylation of tau by fyn may also have a role in neuropathogenesis, as fyn is upregulated in Alzheimer's disease.

Access Article:
https://jcs.biologists.org/content/111/21/3167

https://www.ncbi.nlm.nih.gov/pubmed/9763511