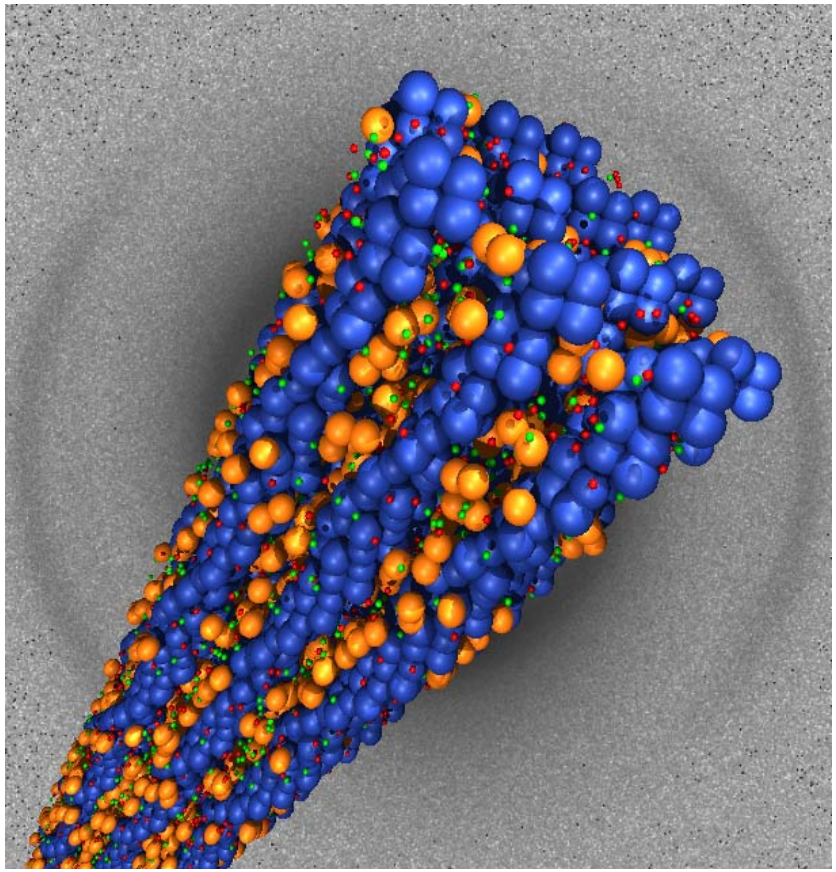
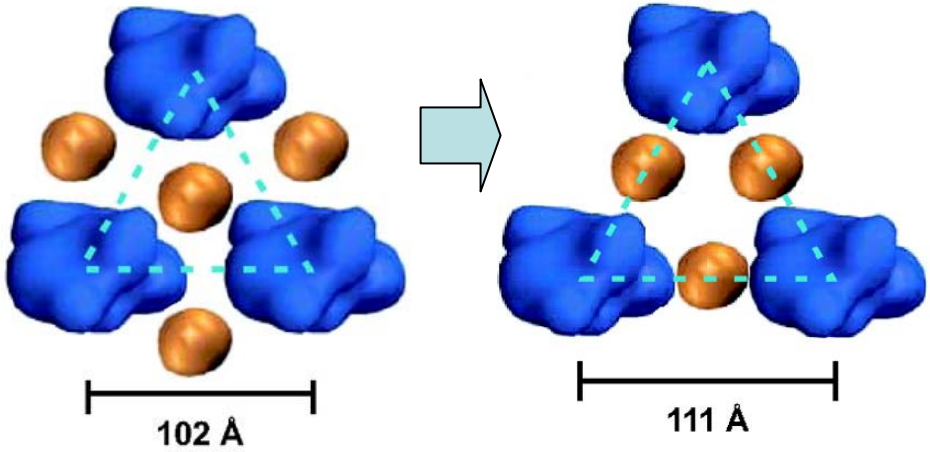
Actin-lysozyme complex in cystic fibrosis sputum





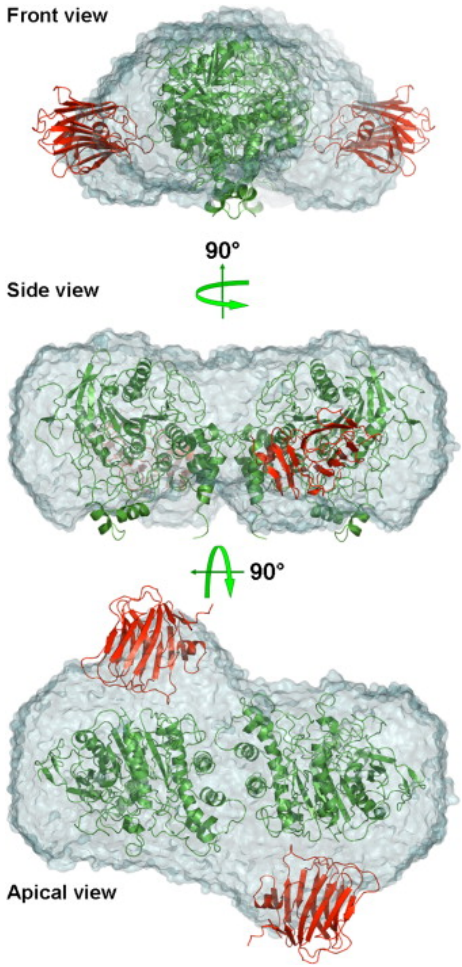
WT lysozyme (orange) and F-actin (blue) in end view. Stable structure, unaltered by mucin.

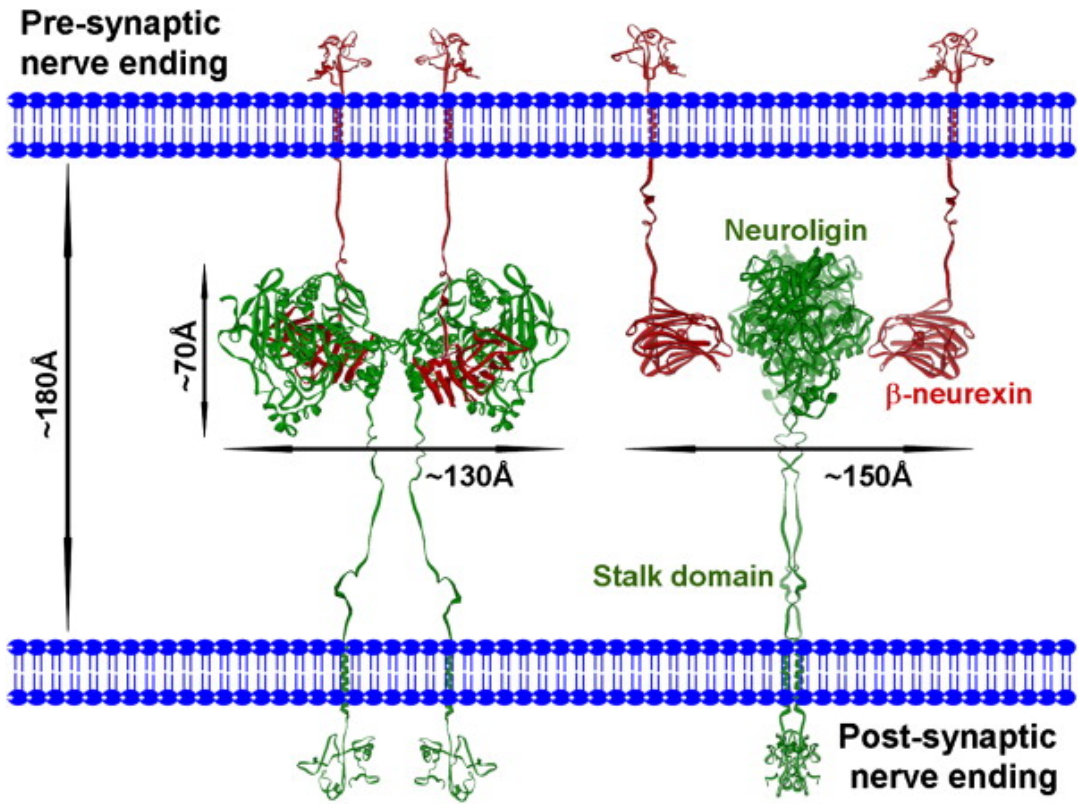
Charge-reduced lysozyme mutant (orange) and F-actin (blue) in end view. This structure is unstable.

This research confirms the existence of the lysozyme-actin complex in cystic fibrosis sputum and demonstrates that engineered lysozyme might prevent infected mucus molecules from forming ordered bundles that trap antimicrobials.

Sanders, L.K., *et al.,* PNAS 104, 15994-9 (2007)
"Control of electrostatic interactions between F-actin and genetically modified lysozyme in aquaous media"

Molecular organization of neuroligin/neurexin complex in synaps. Implication in neurodevelopment disorders, including autism spectrum disorder.

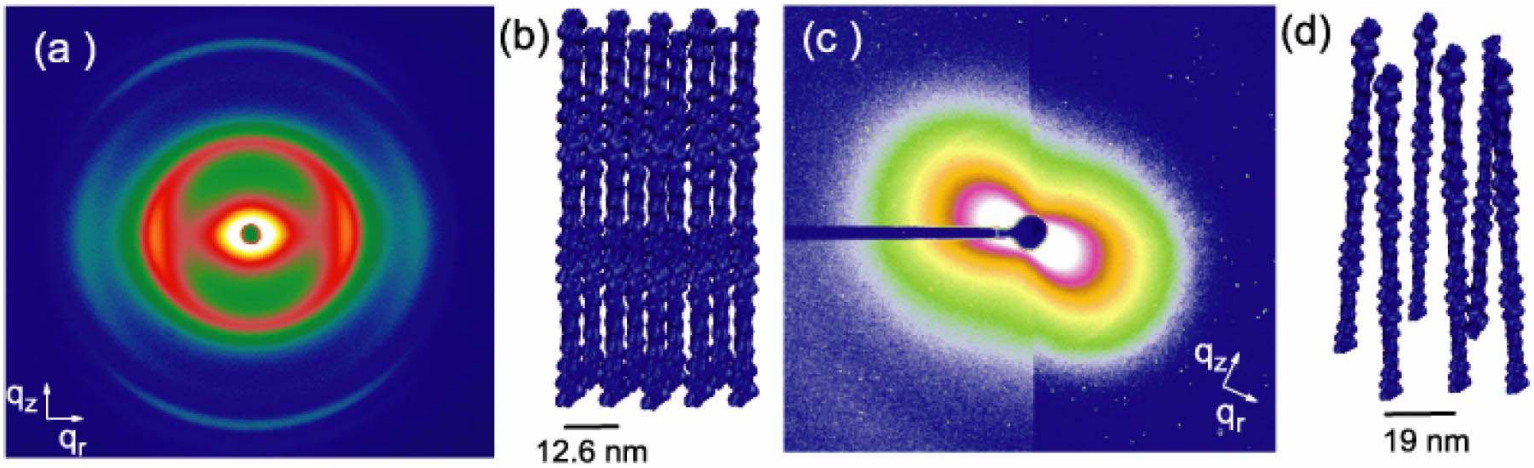




Model of the neuroligin/b-neurexin assembly, deduced from solution scattering studies (left), and their possible configuration in the synaptic space (right).

Comoletti, D., *et al.,* Structure 15, 693-705 (2007).

Structural Polymorphism of the Actin-Espin System: A Prototypical System of Filaments and Linkers in Stereocilia

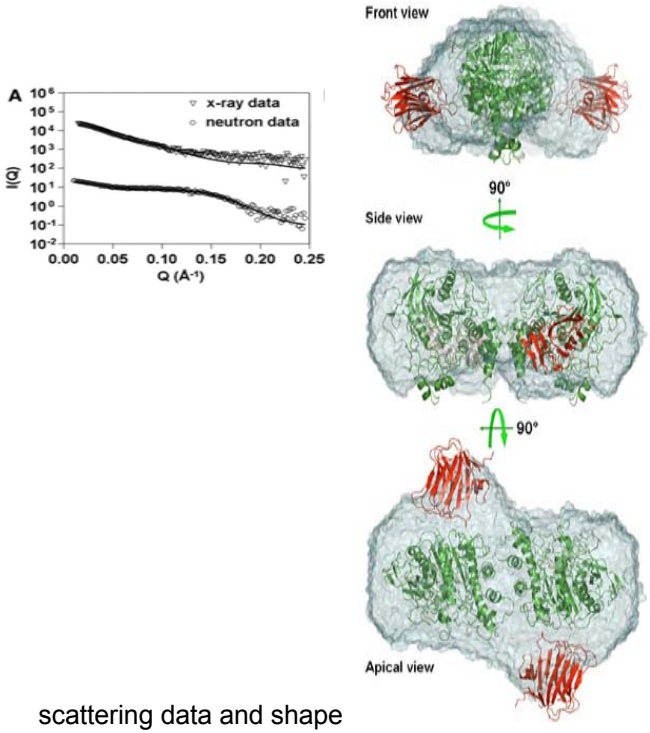


Espins are a type of cross-linking protein that are responsible for the formation of large parallel f-actin bundles. Scattering experiments have shown that normal espins cause the actin to arrange in highly ordered hexagonally packed rigid bundles, whereas a deafness causing mutation of the espin is able to induce only a weak nematic order, resulting in bundles of much lower stiffness.

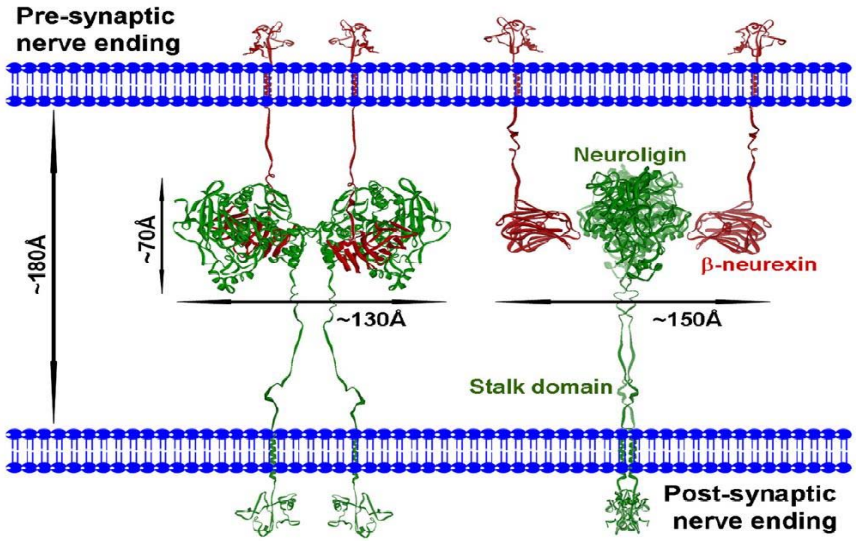
(a) hexagonally coordinated peaks are shown by packed F-actin-espin bundles (b);
(c) the scatttering from the bundles with mutant espins only show nematic order (d)

Kirstin R. Purdy, James R. Bartles, and Gerard C. L. Wong, *Phys.Rev.Lett.* **98**, 058105, 2007

Synaptic Arrangement of the Neuroligin/b-Neurexin Complex Revealed by X-Ray and Neutron Scattering



scattering data and shape reconstruction of the neuroligin/neurexin complex



model of the neuroligin/neurexin complex in the synaptic cleft

The tree dimensional solution structure of the neuroligin/neurexin complex, determined by SAXS and SANS methods, allowed for the development of a structural model of their spatial arrangement in the synaptic cleft.
As mutations in the neroligin and neurexin gene are linked to autism, this provides a structural framework for understanding altered recognition by these proteins in neurodevelopmental disorders.

Davide Comoletti, Alexander Grishaev, Andrew E. Whitten, Igor Tsigelny, Palmer Taylor and Jill Trewhella, *Structure* **16**, 693, (June 2007)