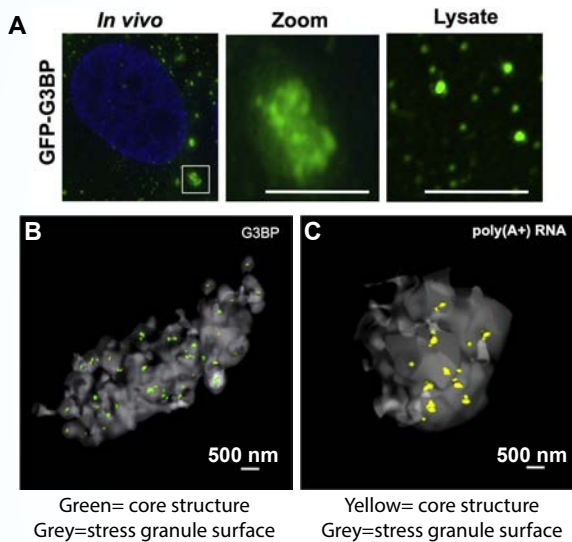


Discovering New Cellular Structures with Double Helix Light Engineering™

Summary: Stress granules are mRNA-protein granules that form when translation initiation is limited, and they are related to pathological granules in various neurodegenerative diseases. Jain and Wheeler et al. (Cell, 2016) found that *in vitro* cell lysates contained smaller stress granule structures. They hypothesized these structures may be a stable “core” of the *in vivo* stress granule. 3D super-resolution imaging with Double Helix revealed these dense substructures for the first time and enabled quantitative measurement of the size, shape, and distribution of these elusive stress granule cores.



Super-Resolution Microscopy of Mammalian Stress Granules. (A) Structured illumination microscopy (SIM) images show granule size *in vivo* and GFP-G3BP foci in lysates. Middle panel shows zoomed inset. Third panel shows foci in lysate. Scale bars, 2 μ m. (B) 3D STORM image of a stress granule *in vivo* using Double Helix SPINDLE™, showing IF for GFP-G3BP (Alexa647- α GFP) and (C) poly(A+) RNA (Alexa647-oligo[dT]). Grey represents surface of a stress granule. Cores are shown in green and yellow, respectively.

Conclusion: Jain and Wheeler et al. combined biochemical methods, traditional light microscopy, and 3D super-resolution imaging with the Double Helix SPINDLE™ to visualize and describe previously unseen stress granule cores.

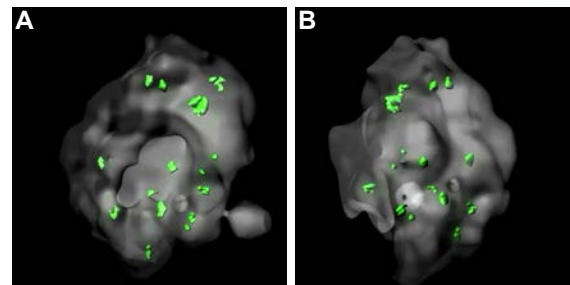
Cell

ATPase-Modulated Stress Granules Contain a Diverse Proteome and Substructure

For data quantification and more information see: Jain and Wheeler et al., Cell 164, 487-498

Structured Illumination
Microscopy (SIM)

High Precision 3D
Reconstruction with
Double Helix
Light Engineering™



Double Helix 3D Super-Resolution Reconstruction of Single Stress Granule: (A) 3D STORM image of GFP-G3BP (Alexa647- α GFP) in a stress granule *in vivo* using Double Helix SPINDLE™. Grey represents surface of a stress granule. Cores are shown in green. (B) 3D rotation of the same stress granule.

For more information on

Double Helix Light Engineering™

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