

JC Note2

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Expansion Microscopy

In this article, Prof. Boyden and his students invent a total different method to improve the optical imaging. They tried to magnify the specimen rather than enhancing the structure of microscope. Firstly, they injected the chemistry sodium acrylate and comonomer acrylamide and N-N'-methylenebisacrylamide into cell or brain tissue. Then water were added into specimen, which enlarged specimen. By this way, they can use a normal microscope to observe finer structure. With some experiments, they proved that ExM is receivable microscopy. They summarized following advantage:

- Fast speed to image than SIM
- Under diffraction-limited microscope, but similar voxel size of a superresolution microscope.
- Enable bigger volum of specimen to image
- Empower fast method, just like light-sheet microscopy

It is a pity that they can't observe alive specimen, whose dynamical process encodes lots of information.

Deacetylation of Nuclear LC3 Drives Autophagy Initiation under Starvation

Autophagy is a self-digestion of cell, which can maintain homeostasis. However, starved cells can upregulate autophagy to recycle nutrients. In this paper, authors used the method of FRET and other method to find out the temporal-spatial control of LC3 activity, which play a central role in autophagy.

Extracellular rigidity sensing by talin isoform-specific mechanical linkages

For organ development and function, adhering and sensing different stiffness are very important. However, the mechanisms of detecting extracellular matrix compliance is still mystery. Authors found talin linkages can exposed to 7-10 pN during cell adhesion. After a series experiments, they found talin is necessary for adhering and talin can focal adhesion reinforcement and extracellular rigidity sensing.