

Deep-coverage Analysis of Protein-Protein Interaction by Cross-linking Mass Spectrometry

Lihua ZHANG*

Dalian Institute of Chemical Physics

Gold statement

- New chemical crosslinkers designed to improve the crosslinking efficiency
- in vivo crosslinking achieved to reflect the real status of protein-protein interaction

Introduction

Chemical cross-linking combined with mass spectrometry (XL-MS) has become a powerful technique for the analysis of protein-protein interactions (PPIs). However, the deep coverage in-vivo analysis is still of great challenges.

Body

In our recent work, we synthesized multifunctional cross-linkers, not only of good solubility and trans-membrane capacity, but also could enrichable by click chemistry. With such cross-linkers, more inter-linked lysine pairs representing PPIs, and more intra-linked peptide pairs representing protein internal conformation sites in cancer cells were identified, obviously improved compared to those obtained by commercial cross-linkers. Most importantly, by in-vivo crosslinking, we could identify more protein-protein interaction, especially for low-abundance proteins.

Conclusion

In-vivo cross-linking is a very promising technique to obtain the real status of PPIs in cells. Much effort should be still made to study the dynamic change of PPIs no matter with time or space.