

“Structural basis and regulation mechanism of inflammatory cell death”

Prof Jixi Li

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Date : 20 May 2019

Time : 15:00 - 16:30

Venue : YEUNG-B4701, 4/F, Yeung Kin Man Academic Building

Abstract

Necroptosis and pyroptosis are two kinds of inflammatory cell death. The RIP1/RIP3 necrosome is an amyloid signaling complex that initiates TNF-induced necroptosis, serving in human immune defense, cancer and neurodegenerative diseases. RIP1 and RIP3 associate through their RIP homotypic interaction motifs. We identified RIP1/RIP3 forms a functional amyloid complex in cell necroptosis (2012, Cell). Recently, we solved the high-resolution structure of the RIP1-RIP3 core, the first detailed structure of a hetero-amyloid (2018, Cell), and provided a potential explanation for the specificity of hetero- over homo-amyloid formation and a structural basis for understanding the mechanisms of signal transduction. Moreover, we identified a novel TRIM family protein that interacted and ubiquitinated RIP3 and, therefore negatively regulated cell necroptosis.

About the Speaker

Prof Jixi Li obtained his BSc and MSc degrees from Zhejiang University and PhD in Genetics from Fudan University. From 2006 to 2014, he worked as a postdoctoral fellow at the California Institute of Technology (tutor: Prof Alexander Varshavsky) and Cornell Medical School and Harvard Medical School / Boston Children's Hospital (tutor: Prof Hao Wu). In 2014, he joined School of Life Sciences Fudan University as a Talent Youth Program recipient and an "Oriental Scholar" Distinguished Professor.

Prof Li applies structural biology, biochemistry and biophysics to study the three-dimensional structural basis of natural immune response-related protein complexes and molecular mechanisms. His main research directions include: 1. programmed cell death and inflammatory proteins related structural and biological research; 2. the natural immune response in neurodegenerative diseases.

References:

1. Mompeán M#, Li W#, Li J#, Laage S, Siemer AB, Bozkurt G, Wu H, Mcdermott A. The Structure of the Necrosome RIPK1-RIPK3 Core, a Human Hetero-amyloid Signaling Complex. Cell 2018 May 17;173(5):1244-1253.
2. Li J, McQuade T, Siemer A, Napetschnig J, Damko E, Hsiao Y, Moquin D, Walz T, Mcdermott A, Chan FK, Wu H. The RIP1/RIP3 Necrosome Forms a Functional Amyloid Signaling Complex Required for Programmed Necrosis. Cell. 2012 Jul 20;150(2):339-50.

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All are welcome!