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Understanding protein deubiquitination with activity-based probes

ABSTRACT:

Posttranslational modification of proteins by ubiquitin (Ub) represents a crucial way of regulating cellular functions. New pathways and processes regulated by Ub are being discovered at a fast pace, virtually in every aspect of cell biology. Activity-based deubiquitinase (DUB) probes provide a powerful approach for identifying DUBs of new functions and understanding DUB catalysis and specificity. We developed protein- and polyubiquitin-based DUB probes that helped to identify DUBs targeting a nuclear protein, proliferating cell nuclear antigen (PCNA), and understand the mode of ubiquitin chain recognition and cleavage by human ubiquitin-specific protease. I will also discuss our work on cell-permeable DUB probes that allow DUB profiling in live cells. These chemical biology approaches will enable investigations into a range of cellular processes that involves protein ubiquitination and deubiquitination.

BIO:

EDUCATION AND TRAINING

2003 - 2007

Postdoctoral Fellow, Chemical Biology, Pennsylvania State University,

1998 - 2003

Ph.D., Biochemistry, University of New Mexico

1993 - 1997

B.S., Chemistry, Sichuan University, China

PROFESSIONAL EXPERIENCE

2019- present

Professor, University of Delaware, Department of Chemistry and Biochemistry.

2013- 2019

Associate Professor, University of Delaware, Department of Chemistry and Biochemistry.

2007- 2013

Assistant Professor, University of Delaware, Department of Chemistry and Biochemistry.

INSTITUTIONAL AFFILIATION

2007 -

University of Delaware, Department of Chemistry and Biochemistry

2007 -

Delaware Biotechnology Institute (DBI)

2009 -

Nemours Center for Childhood Cancer Research, Nemours/Alfred I. duPont Hospital for Children

HONORS, SERVICES AND AWARDS

NIH study section ZRG1 CB-Q55R ad hoc member, 2021

NSF Review Panel Division of Chemistry, 2021

NIH study section ZRG1 BCMB-H ad hoc member, 2018

Molecules, journal editorial board, 2018

National Science Foundation Review Panel Member, 2016

American Cancer Society Research Scholar Award, 2014

Session Chair, Gordon Research Conference (GRC), Enzymes, Coenzymes and Metabolic Pathways, 2014

NIH study section SBCA ad hoc member, 2014

Faculty of 1000 member in Chemical Biology, 2011-

National Science Foundation CAREER Award, 2010

American Chemical Society Young Investigator Symposium, 2009