

Guest Editorial

Highlight: The universe of proteolytic networks and mechanisms

The 7th General Meeting of the International Proteolysis Society (IPS2011) was held in San Diego, California between 16th and 20th October, 2011. Approximately 300 delegates enjoyed a lively program of talks on the world surrounding proteolytic enzymes. The meeting featured 12 major sessions, a keynote session and three associated workshops. Sessions were themed to fit around mechanism and biology (hunting for substrates, proteolysis and signaling, proteasome and ubiquitin-like modifiers, beyond the active site); disease pathology (cancer and cell survival, immunity and host-pathogen interactions, neurobiology and degeneration, cardiovascular disease and homeostasis, cancer and metabolism); and pharmacology and pharmaceutical development (drug/probe discovery, therapeutic strategies).

In the early days of research, proteases were viewed by many as simple degradation machines, but paradigms have shifted and now proteases are viewed as signaling molecules critical for many biological processes. Proteolysis is the most widespread post-translational modification, and the field has exploded with diversity. The findings presented at the meeting reflect the breadth of the protease universe, their role in pathology, and the current state of chemical methods to study functions and mechanism.

The many sophisticated studies presented at the meeting reflected the exciting paradigm shifts helping to redefine the scope of the field. Among these are the development of synthetic compounds and inhibitors designed to reveal the key control points in protease networks, and

the emerging topic of specificity-driven protease exosites, leading to allosteric mechanisms. The main focus of the research articles and reviews in this Highlight is on newly-developed chemical and diversity methods that explore protease specificity, a topic that was well represented at the conference. Several papers also highlight the roles of proteases and their inhibitors in disease states such as cancer, neurodegeneration and infection.

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