1. Record Nr. UNINA9910830933303321

Titolo	Kinomics : approaches and applications / / edited by Heinz-Bernhard Kraatz and Sanela Martic
Pubbl/distr/stampa	Weinheim, Germany : , : Wiley-VCH, , [2015] ©2015
ISBN	3-527-68305-4 3-527-68303-8 3-527-68304-6
Descrizione fisica	1 online resource (365 p.)
Disciplina	616.109283746
Soggetti	Protein kinases
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Cover; Title Page; Copyright; Contents; List of Contributors; Preface; Part I Protein Kinases Cell Signaling; Chapter 1 Global Approaches to Understanding Protein Kinase Functions; 1.1 A Brief History of the Structure of the Human Kinome; 1.1.1 AGC Kinases; 1.1.2 The CaMK Family; 1.1.3 CMGC Family Kinases; References; 1.1.4 STE Family Kinases; 1.1.5 Tyrosine Kinases; 1.1.6 Casein Kinases; 1.1.7 Tyrosine Kinase-Like Family; 1.1.8 RGC Kinases; 1.1.9 Atypical/Other Protein Kinases; 1.2 Why Study Protein Kinases - Their Roles in Disease; 1.2.1 Neurodegenerative Disease; 1.2.2 Hallmarks of Cancer 1.3 Methodology for Assessment of Protein Kinase Functions1.3.1 Mass Spectrometry; 1.3.2 Fluorescence Resonance Energy Transfer; 1.3.3 Assessment of Kinase Functions in vitro: Genetic and Chemical; 1.3.4 Functional Assessment of Kinase Function in vivo: Animal Models; 1.3.5 CRISPR/Cas9 Genomic Recombineering; 1.4 Final Thoughts; Acknowledgments; Chapter 2 ""Genuine"" Casein Kinase (Fam20C): The Mother of the Phosphosecretome; 2.1 Introduction; 2.2 Early Detection of the pS-x-E Motif in Secreted Phosphoproteins; 2.3 CK1 and CK2 are Not Genuine Casein Kinases 2.4 Polo-Like Kinases: Newcomers in the Club of False ""Casein Kinases""2.5 Characterization of an Orphan Enzyme: The Spectacular Performance of a Peptide Substrate; 2.6 Catalytic Activity of Fam20C:

Mechanistic Aspects; 2.7 A Kinase in Need of Control; 2.7.1 Constitutively Active or Inactive?; 2.7.2 A Potential Mediator of Sphingosine Signaling; 2.7.3 Fam20c as a Novel Regulator of Blood Phosphate Homeostasis; 2.7.4 Does it Make Sense to Develop Fam20C Inhibitors?; 2.8 Outlook; Funding; References; Chapter 3 Chemical Biology of Protein Kinases; 3.1 The Basis of Chemical Genetics
4.2.2 Caspase-Dependent Intrinsic Apoptosis3.2 Protein Kinase Chemical Genetics; 3.3 Applications for AS Kinases; 3.3.1 Substrate Identification: General Phosphoproteomics; 3.3.2 Substrate Identification: Refinements through the Use of AS Kinases; 3.3.3 Substrate Identification in Action: What Have We Learned?; 3.3.4 Use of Specific Inhibitors for AS Kinases; 3.4 Current Challenges; 3.5 Conclusions; Acknowledgments; References; Chapter 4 Protein Kinases and Caspases: Bidirectional Interactions in Apoptosis; 4.1 Introduction; 4.2 Apoptosis: Caspase-Dependent Pathways; 4.2.1 Extrinsic Apoptosis
4.3 Functional Crosstalk between Protein Kinases and Caspases4.3.1 Direct Phosphorylation of Caspases by Protein Kinases; 4.3.1.1 Initiator Caspases; 4.3.1.2 Executioner Caspases; 4.3.2 Cleavage of Caspase Substrates is Positively and Negatively Regulated by Protein Kinase Phosphorylation; 4.3.3 Caspase-Mediated Degradation of Kinases and Apoptotic Progression; 4.3.3.1 Rho-Associated Coiled-Coil-Containing Protein 1 (ROCK1); 4.3.3.2 p21-Activated Protein Kinase 2 (PAK2); 4.3.3.3 Focal Adhesion Kinase (FAK); 4.3.3.4 Protein Kinase Akt; 4.3.3.5 Protein Kinase C (PKC)
4.4 Strategies to Investigate Global Crosstalk between Protein Kinases and Caspases

Sommario/riassunto

Authored by the world's leading kinase experts, this is a comprehensive introduction to current knowledge and practice within this emerging field. Following an overview of the major players and pathways that define the kinome, the major part of this work is devoted to current strategies of kinome investigation and manipulation. As such, kinase engineering, peptide substrate engineering, co-substrate design and kinase inhibitor design are discussed in detail, and their potential applications in kinome analysis and kinome-based pharmacotherapy are shown. The result is a toolbox for every kinase