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Approaches to the Purification, Analysis and Characterization of Antibody-Based Therapeutics provides the interested and informed reader with an overview of current approaches, strategies and considerations relating to the purification, analytics and characterization of therapeutic antibodies and related molecules. While there are obviously other books published in and around this subject area, they seem to be either older (c.a. year 2000 publication date) or are more limited in scope. The book will include an extensive bibliography of the published literature in the respective areas covered. It is not, however, intended to be a how-to methods book. Covers the vital new area of R&D on therapeutic antibodies Written by leading scientists and researchers Up-to-date coverage and includes a detailed bibliography

Leading experts from all over the world present an overview of the use of enzymes in industry for: - the production of bulk products, such as glucose, or fructose - food processing and food analysis - laundry and automatic dishwashing detergents - the textile, pulp and paper and animal feed industries - clinical diagnosis and therapy - genetic engineering. The book also covers identification methods of new enzymes and the optimization of known ones, as well as the regulatory aspects for their use in industrial applications. Up to date and wide in scope, this is a chance for non-specialists to acquaint themselves with this rapidly growing field. '...The quality...is so great that there is no hesitation in recommending it as ideal reading for any student requiring an introduction to enzymes. ...Enzymes in Industry - should command a place in any library, industrial or academic, where it will be frequently used.' The Genetic Engineer and Biotechnologist 'Enzymes in Industry' is an excellent introduction into the field of applied enzymology for the reader who is not familiar with the subject. ... offers a broad overview of the use of enzymes in industrial applications. It is up-to-date and remarkable easy to read, despite the fact that almost 50 different authors contributed. The scientist involved in enzyme work should have this book in his or her library. But it will also be of great value to the marketing expert interested in the present use of enzymes and their future in food and non-food applications.' Angewandte Chemie 'This book should be available to all of those working with, or aspiring to work with, enzymes. In particular academics should use this volume as a source book to ensure that their 'new' projects will not 'reinvent the wheel'.' Journal of Chemical Technology and Biotechnology

This book deepens the study and knowledge on pectins, especially in the processes of extraction, purification, and characterization, in short its many and wide applications. Among the most prominent applications are the food, pharmaceutical, and other industries. The development of pectins has a very promising future with a marked annual increase and with a wide range of sources. As written above, this book will help its readers to expand their knowledge on this biopolymer with vast application in the industry worldwide.

Starting a new recombinant protein production project in Escherichia coli -- From the notebook to recombinant protein production in Escherichia coli: Design of expression vectors and gene cloning -- Use of tandem affinity-buffer exchange chromatography online with native mass spectrometry for optimizing overexpression and purification of recombinant proteins -- Purification, reconstitution, and mass analysis of archaeal RNase P, a multisubunit ribonucleoprotein enzyme -- Production of antibodies in SHuffle Escherichia coli strains -- Improved folding of recombinant protein via co-expression of exogenous chaperones -- Fusing an insoluble protein to GroEL apical domain enhances soluble expression in Escherichia coli -- Method for high-efficiency fed-batch cultures of recombinant Escherichia coli -- Fed-batch production of deuterated protein in Escherichia coli for neutron scattering experimentation -- Thermococcus kodakarensis provides a versatile hyperthermophilic archaeal platform for protein expression -- Recombinant protein expression in Sulfolobus islandicus -- High-level synthesis and secretion of laccase, a metalloenzyme biocatalyst, by the halophilic archaeon Haloferax volcanii -- Expression and tandem affinity purification of 20S proteasomes and other multisubunit complexes in Haloferax volcanii -- Purification and characterization of ribonucleoprotein effector complexes of Sulfolobus islandicus CRISPR-Cas systems -- Guidelines for nucleic acid template design for optimal cell-free protein synthesis using an Escherichia coli reconstituted system or a lysate-based system -- Cell-free protein synthesis of CRISPR ribonucleoproteins (RNP) -- Leishmania tarentolae cell-free based approach for rapid anitbody-antigen interaction analysis -- Cell-free protein synthesis using Chinese hamster ovary cells.

-amylase was purified and characterized from Bacillus subtilis isolated from fermented Parkia biglobosa seeds. Purification was achieved using ion exchange DEAE column and gel filtration (Sephadex G-200) chromatography. Effects of temperature; pH and production time on -amylase production were investigated, while physicochemical characteristics of the purified enzyme were investigated. The optimum production of -amylase was obtained at temperature, pH and time of 37oC, 7.0 and 24 h respectively. The results showed that purified -amylase had more enzymatic activity than crude samples from Bacillus subtilis whereby the activity of crude enzyme was 3.21 mM/min/ml while the purified enzyme had an improved activity of 21.46 mM/min/ml. Optimum temperature and pH values of the purified amylase were found to be 50 C and pH 5.0, respectively. pH stability of the enzyme ranged from pH 4.0- 9.0. At pH 5.0 and 7.0 it retained 70% and 60% of its activity respectively after 5 h of incubation. Temperature stability ranged between 40oC and 70oC but most stable at 50oC retaining 64% of its activity after 1 h of incubation. The enzyme exhibited maximum activity on soluble starch and sucrose."

Current Developments in Biotechnology and Bioengineering: Production, Isolation and Purification of Industrial Products provides extensive coverage of new developments, state-of-the-art technologies, and potential future trends, focusing on industrial biotechnology and bioengineering practices for the production of industrial products, such as enzymes, organic acids, biopolymers, and biosurfactants, and the processes for isolating and purifying them from a production medium. During the last few years, the tools of molecular biology and genetic and metabolic engineering have rendered tremendous improvements in the production of industrial products by fermentation. Structured by industrial product classifications, this book provides an overview of the current practice, status, and future potential for the production of these agents, along with reviews of the industrial scenario relating to their production. Provides information on industrial bioprocesses for the production of microbial products by fermentation Includes separation and purification processes of fermentation products Presents economic and feasibility assessments of the various processes and their scaling up Links biotechnology and bioengineering for industrial process development

Bacteriocins are regarded as the next generation of antibiotics due to their narrow-spectrum bactericidal activities. Lactic Acid Bacteria (LAB) are considered as Generally Recognized as Safe (GRAS) microorganisms that have been used in the processing of fermented food for centuries. Many lactic acid bacteria produce broad-spectrum bacteriocins, some of which could provide valuable alternatives to traditional therapeutic antibiotics for the treatment of infectious diseases. Lactobacillus sp. Y18 isolated from the Egyptian commercial yoghurt showed the highest antimicrobial activity (12800 AU/ml) against Streptococcus salivarius 5. It was identified as Lactobacillus plantarum SR18 and the extracted bacteriocin called Plantarcin SR18 can be used as an antimicrobial agent, it could be used to prevent the formation of plaque and teeth decaying caused by Streptococcus salivarius sp. present in the mouth. Also, it could be used as food additives under high temperature during processing.

The book provides an overview of bio-manufacturing techniques for the production, purification, characterization and modification of chito/chitin oligosaccharides and their monomers. In addition, it explores potential applications in the food, biomedical and agricultural industry on the basis of their bioactivities and biomaterial properties. Lastly, it shares a range of cutting-edge insights to help solve problems in industrial processes and promote further academic investigation. Given its scope, it offers a valuable resource for researchers and graduate students in the fields of bioengineering, food science, biochemistry, etc.

KEY BENEFIT: Many biochemistry lab instructors are now opting to either design their own experiments or select them from major educational journals. Biochemistry Laboratory: Modern Theory and Techniques addresses this issue by providing a flexible alternative without experimental protocols. Instead of requiring instructors to use specific experiments, the book focuses on detailed descriptions of modern techniques in experimental biochemistry and discusses the theory behind such techniques in detail. Part I: Theory and Experimental Techniques, Introduction to the Biochemistry Laboratory, The Computer as a Tool in Biochemistry and Molecular Biology, General Laboratory Procedures, Centrifugation Techniques in Biochemistry, Purification and Identification of Biomolecules by Chromatography, Characterization of Proteins and Nucleic Acids by Electrophoresis, Spectroscopic Analysis of Biomolecules, Biomolecular Interactions: Ligand Binding and Enzyme Reactions, Molecular Biology I: Structures and Analysis of Nucleic Acids, Molecular Biology II: Recombinant DNA. Molecular Cloning, and Enzymology, Protein Production, Purification, and Characterization, Part II: Teaching the Biochemistry/Molecular Biology Lab, A Brief History, A Variety of Teaching Methods, Essential BMB Concepts and Skills for Student Learning, Experiments in Biochemistry and Molecular Biology KEY MARKET: For all readers interested in laboratory experiments.

Protein Biotechnology and Biochemistry is a complete and definitive source of information for all those interested in the area, providing a broad overview of the various medical, diagnostic and industrial uses of proteins. It covers basic biochemical principles as well as providing a comprehensive survey of products currently available or under development. * The new edition has been thoroughly updated with new material. * The key difference is that this new edition will include more "pure" biochemistry. * There are two completely new chapters: Protein Structure - an overview and Novel Proteins from Novel Sources. Chapter 2, Protein Structure, an overview and chapter 3, Protein Purification & Characterisation, make up approximately 30% of the book. These chapters concentrate on the basic biochemical principles of proteins and will lay the foundations for the rest of the book. The remaining chapters focus on protein biotechnology and have been rearranged, updated and expanded.

The potential of cold-active proteases are greater than thermostable proteases in view of their high catalytic efficiency at low and moderate temperatures. However, these enzymes along with their producing organisms are remains unexplored. The aim of present work was to isolate, purify and characterize novel cold-active extracellular proteases and explore its biotechnological potential. As a result, two potential cold-adapted bacteria viz. C. luteum and S. maltophilia are isolated that producing cold-active metallo-proteases and alkaline protease, respectively. The enzyme from S. maltophilia showed excellent compatibility with commercial detergents and exhibited high efficiency for the removal of blood & grass stains at low temperature. The present dissertation is specially meant for undergraduate/postgraduate students and research scholars of biotechnology/biochemistry and applied sciences; and will be very helpful in developing interest to pursue studies and research in enzyme biotechnology. Key features of the book include theoretical & practical approach to understand production, purification and characterization of cold-active proteases and their biotechnological applications.

Xylan is the major hemicellulosic constituent of hard and soft wood, and is the next most abundant renewable polysaccharide after cellulose.Xylanases and associated debranching enzymes produced by a variety of microorganisms including bacteria, yeast and filamentous fungi, bring about the hydrolysis of hemicelluloses. Xylanolytic enzymes are receiving increasing attention because of their potential application in pulp bleaching and bioconversion of lignocelluloses into feedstocks and fuels.The xylan degrading system includes endo-1,4-xylanases (1,4- -xylan xylanohydrolase; EC 3.2.1.8), which release long and short xylo-oligosaccharides, and other xylanases that attack only longer chains, and -D-xylosidase (1,4- -xylan xylohydrolase; EC 3.2.1.37), which remove D-xylose residues from short xylo-oligosaccharides. Cellulase-free xylanases are important in the paper and pulp industry as alternatives to the use of toxic chlorinated compounds. For the last two decades the bleaching of pulp has become an issue of great concern, primarily because of the environmental hazards caused by the release of the adsorbable organic halogens and due to increasing public awareness thereof."

Proteases are unique class of enzymes, as they possess both degradative and synthetic properties. Microorganisms are attractive sources of protease owning to the limited spaces required for their cultivation and their ready susceptibility to genetic manipulation. Microbial protease accounts for approximately 40% of the total worldwide enzyme sales and used extensively in the food, dairy, and detergent industries. So it's a need of a day to increase the microbial protease production as plant and animal proteases are unable to meet the demands of the current world. Neutral proteases hydrolyzed food proteins & generate less bitterness due to their intermediate rate of reaction. This research study will help out industrial area as the isolated protease will help out in different manufacturing step of industrial products. This book explains the production of neutral protease and its characterization.

Project Report from the year 2018 in the subject Biology - Micro- and Molecular Biology, grade: 0, , language: English, abstract: Cellulose is one the most abundant carbon sources present on the earth. In the book, the author reported on production optimization and characterization of cellulolytic enzymes by thermophilic bacteria. Various adaptation strategies adapted by thermophilic bacteria are also discussed along with. The thermophilic bacterial strain produced cellulase in the CMC broth, pH 7 containing 0.5% peptone, 0.5% malt extract, 0.2% ammonium sulphate, 0.2% ammonium nitrate and 0.2% NaCl at 50˚C. Interestingly, the bacteria

could not grow at 37˚C, confirming its thermophilic nature. Further, the cellulase was characterized after getting partially purified by ammonium sulphate precipitation method. The partially purified cellulase may be employed to hydrolyze agricultural wastes to produce bioethanol, i.e. biofuels. Thus, the present research may help solve issues of crisis of renewable energy as well as environmental pollution.

This book presents advanced expression technologies for the production of protein complexes. Since complexes lie at the heart of modern biology, the expression, purification, and characterization of large amounts of high-quality protein complexes is crucial for the fields of biomedicine, biotechnology, and structural biology. From co-expression in E. coli, yeast, mammalian and insect cells to complex reconstitution from individual subunits, this book offers useful insights and guidance for successful protein expressionists. Across several sections readers will discover existing opportunities for the production of protein complexes in bacterial systems (including membrane proteins and cell-free co-expression), methylotrophic and non-methylotrophic yeasts, protozoa (Leishmania terantolae and Dictyostelium discoideum), baculovirus-infected insect cells, mammalian cells, plants and algae. Complex reconstitution from individually purified subunits or subcomplexes is discussed as a complementary strategy. A last section introduces briefly some of the biophysical and structural characterization techniques for macromolecular complexes using state-of-the-art solution scattering and nuclear magnetic resonance. This work is a guided tour over some of the most powerful and successful protein expression technologies, with a focus on co-expression and high-throughput applications. It is addressed to everyone interested in the production and characterization of macromolecular complexes, from university students who want an accessible description of the major co-expression systems to researchers in biomedicine and the life sciences seeking for an up-to-date survey of available technologies.

Production of recombinant proteins for biotechnological and therapeutic applications at a large scale is an essential need of mankind. Huge application potential of therapeutic and industrial proteins has led to increasing demand for effective and efficient bioprocessing strategies. Recent progress around recombinant DNA technologies and bioprocessing strategies has paved the way for efficient production of recombinant proteins. Important factors such as insolubility and cost of production need to be considered for large scale production of these recombinant proteins. Fundamentals of Recombinant Protein Production, Purification and Characterization is organized into 9 chapters in a logical fashion beginning with an introduction to recombinant proteins and moving onto expression in different host expression systems followed by extraction, purification, and analysis of proteins. This important reference features protocols, along with the advantages and disadvantage of each expression hosts and characterization technique (presented in tabular format) and offers detailed coverage of all aspects of protein production and processing (upstream and downstream processing) in one place; and finally ends with different characterization techniques

Emphasizing the newest developments in the field, this volume presents detailed methodswith added emphasison therapeutic protein discovery. It features key tips and valuable implementation advice to ensure successful results."

This volume details techniques to study biotic elicitors involved in the field of agriculture for the benefit of the environment and growers. Chapters guide readers through protein, carbohydrate, lipid, glycoprotein and glycolipid components derived from microorganisms and their production, purification, and characterization. Authoritative and cutting-edge, Biotic Elicitors: Production, Purification, and Characterization serve as an essential resource for researchers in agricultural microbiology, plant biotechnology, and plant pathology. @font-face {font-family:"Cambria Math"; panose-1:2 4 5 3 5 4 6 3 2 4; mso-font-charset:0; mso-generic-font-family:roman; mso-font-pitch:variable; mso-font-signature:-536870145 1107305727 0 0 415 0;}@font-face {font-family:-Calibri; panose-1:2 15 5 2 2 2 4 3 2 4; mso-font-charset:0; mso--generic-font-family:swiss; mso-font-pitch:variable; mso-font-signature:-536858881 -1073732485 9 0 511 0;}p.MsoNormal, li.MsoNormal, div.MsoNormal {mso-style-unhide:no; mso-style-qformat:yes; mso-style-parent:""; margin-top:0cm; margin-right:0cm; margin-bottom:8.0pt; margin-left:0cm; line-height:107%; mso-pagination:widow-orphan; font-size:11.0pt; font-family:"Calibri",sans-serif; mso-ascii-font-family:Calibri; mso-ascii-theme-font:minor-latin; mso-fareast-font-family:Calibri; mso-fareast-theme-font:minor-latin; mso-hansi-font-family:Calibri; mso-hansi-theme-font:minor-latin; mso-bidi-font-family:"Times New Roman"; mso-bidi-theme-font:minor-bidi; mso-fareast-language:EN-US;}.MsoChpDefault {mso-style-type:export-only; mso-default-props:yes; font--size:11.0pt; mso-ansi-font-size:11.0pt; mso-bidi-font-size:11.0pt; font-family:"Calibri",sans-serif; mso-ascii-font-family:Calibri; mso-ascii-theme-font:minor-latin; mso-fareast-font-family:Calibri; mso--fareast-theme-font:minor-latin; mso-hansi-font-family:Calibri; mso-hansi-theme-font:minor-latin; mso-bidi-font-family:"Times New Roman"; mso-bidi-theme-font:minor-bidi; mso-fareast-language:EN-US;}.MsoPapDefault {mso-style-type:export-only; margin-bottom:8.0pt; line-height:107%;}div.WordSection1 {page:-WordSection1;}

Principles and Reactions of Protein Extraction, Purification, and Characterization provides the mechanisms and experimental procedures for classic to cutting-edge techniques used in protein extraction, purification, and characterization. The author presents the principles and reactions behind each procedure and uses tables to compare the different

Enzyme production from lignocellulosic biomass is sustainable owing to their ubiquitious nature and non-competitivness with food crops. Agrowastes accumulate in envonment in substantial amounts as pollutants, and primarily comprise of cellulose and hemicellulose that can be saccharified by cellulases to produce fermentable sugars yielding bioethanol. However, cellulase production cost is major impediment in bioenergy production scenario. Saccharum spontaneum is an abundantly found agrowaste with high cellulose content which can be employed for cellulase production through biological route. In present investigation, cellulase production was significantly elevated through substrate delignification and process optimization by employment of fungal strain Trichoderma viride. Therefore, cost effective cellulase production can be achieved by exploiting cheaper substrates, effective pretreatment and process enhancement strategies for economical fermentation.

With insolubility proving to be one of the most crippling bottlenecks in the protein production and purification process, this volume serves to aid researchers working in the recombinant protein production field by describing a wide number of protocols and examples. Insoluble Proteins: Methods and Protocols includes chapters that describe not only the recombinant protein production in different expression systems but also different purification and characterization methods to finally obtain these difficult-to-obtain proteins. Beginning with protein production methods using both prokaryotic and eukaryotic expression systems, the book continues with purification protocols using insoluble proteins, the characterization of insoluble proteins, as well as a general overview of interesting applications of insoluble proteins. Written in the highly successful Methods in Molecular Biology series format, chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible laboratory protocols, and tips on troubleshooting and avoiding known pitfalls. Comprehensive and practical, Insoluble Proteins: Methods and Protocols aims to provide the scientific community with detailed and reliable state-of-the-art protocols that are used in order to successfully produce and purify recombinant proteins prone to aggregate.

A practical manual of the key characteristics of the bacteria likely to be encountered in microbiology laboratories and in medical and veterinary practice.