Biochemical Tests For Identification Of Medical Bacteria

Yousef and Carlstrom's Food Microbiology: A Laboratory Manual serves as a general laboratory manual for undergraduate and graduate students in food microbiology, as well as a training manual in analytical food microbiology. Focusing on basic skill-building throughout, the Manual provides a review of basic microbiological techniques–media preparation, aseptic techniques, dilution, plating, etc.–followed by analytical methods and advanced tests for food-bourne pathogens. The Manual includes a total of fourteen complete experiments. The first of the Manual's four sections reviews basic microbiology techniques; the second contains exercises to evaluate the microbiota of various foods and enumerate indicator microorganisms. Both of the first two sections emphasize conventional cultural techniques. The third section focuses on procedures for detecting pathogens in food, offering students the opportunity to practice cultural, biochemical, immunoassay, and genetic methods. The final section discusses beneficial microorganisms and their role in food fermentations, concentrating on lactic acid bacteria and their bacteriocins. This comprehensive text also: - Focuses on detection and analysis of food-bourne pathogenic microorganisms like Escherichia coli 0157:H7, Listeria monocytogenes, and Salmonella - Includes color photographs on a companion Web site in order to show students what their own petri plates or microscope slides should look like: http://class.fst.ohio-state.edu/fst636/fst636.htm - Explains techniques in an accessible manner, using flow charts and drawings - Employs a "building block" approach throughout, with each new chapter building upon skills from the previous chapter

This book provides an up-to-date review of the subject, with coverage including the physiology of bacteria, yeasts and molds associated with meat and poultry products; the microbiology of industrial slaughtering, processing, packaging and storage technologies; food safety and quality control. It will be an invaluable reference source for microbiologists and technologists in the meat industry, research workers in private and government laboratories, and for food scientists in academic research institutions.

This dissertation, "Defining Novel Clinical Syndromes and Emerging Pathogens" by Chiu-yat, Patrick, Woo, ???, was obtained from The University of Hong Kong (Pokfulam, Hong Kong) and is being sold pursuant to Creative Commons: Attribution 3.0 Hong Kong License. The content of this dissertation has not been altered in any way. We have altered the formatting in order to facilitate the ease of printing and reading of the dissertation. All rights not granted by the above license are retained by the author. Abstract: ABSTRACT of thesis entitled Defining Novel Clinical Syndromes and Emerging Pathogens submitted by Patrick Chiu-yat Woo for the degree of Doctor of Medicine at The University of Hong Kong in April, 2002. ii Accurate identification of microorganisms is crucial to both immediate management of patients as well as defining the epidemiology, clinical syndromes, treatment, and outcome of infectious diseases caused by the corresponding microbes in the long run. Traditionally, bacterial identification in clinical microbiological laboratories is achieved by isolation of the organism and studying their phenotypic characteristics by Gram staining, cultural requirements, and biochemical tests. However, this is associated with major drawbacks. First, bacteria with ambiguous biochemical profiles are occasionally

observed. Second, when rare bacteria are encountered, their profiles are often not included in most commercially available identification systems. Additionally, their rarity would imply low positive predictive values even when they are "successfully identified." Hence the epidemiology, clinical syndromes, treatment, and outcome of infections caused by the corresponding bacteria are poorly defined. In the first part of this thesis, the application of 16S rRNA gene sequencing, the current gold standard of bacterial identification, to identify clinical bacterial isolates with ambiguous biochemical profiles was described. It was demonstrated that this would have direct impact on patient management in terms of whether antibiotics should be given, which antibiotics to prescribe, and the duration of antibiotics treatment. Furthermore, identification of bacteira with ambiguous biochemical profiles using 16S rRNA gene sequencing has also led us to the discovery of a novel clinical syndrome, acupuncture mycobacteriosis. In this study, four patients with mycobacterial infections complicating acupuncture were encountered in a 2-year period. All had clinical and/or radiological lesions at acupuncture point- and meridian-specific locations. There was no other history of trauma, nor other clinical foci of infections, and the chest radiographs were normal. Histological studies of iii biopsy specimens of all four patients showed changes compatible with chronic inflammation, with granulomatous inflammation present in three and acid fast bacillli in two. Conventional biochemical tests and whole cell fatty acid analysis for identification were inconclusive for all four non-pigmented rapidly growing mycobacteria recovered from tissue biopsies. 16S rRNA gene sequencing showed that the strains from two patients were Mycobacterium chelonae, and those from the other two were Mycobacterium nonchromogenicum. All four strains showed prolonged survival in 75% alcohol as compared to other skin flora. Strict implementation of proper infection control guidelines for acupuncture is mandatory. In addition to direct impact on patient management, it was shown that accurate identification of bacteria by 16S rRNA gene sequencing has changed our understanding in infectious diseases caused by both previously known and novel bacterial species. Infections caused by rarely encountered bacterial species such as Mycobacterium neoaurum, Microbacterium species, Haemophilus segnis, Arcobacter cryaerophilus, and Arcobacter butzleri are poorly understood. With the help

The revised Third Edition of The Prokaryotes, acclaimed as a classic reference in the field, offers new and updated articles by experts from around the world on taxa of relevance to medicine, ecology and industry. Entries combine phylogenetic and systematic data with insights into genetics, physiology and application. Existing entries have been revised to incorporate rapid progress and technological innovation. The new edition improves on the lucid presentation, logical layout and abundance of illustrations that readers rely on, adding color illustration throughout. Expanded to seven volumes in its print form, the new edition adds a new, searchable online version.

A comprehensive textbook on tuberculosis that covers all aspects of the disease: epidemiology, microbiology, diagnosis, treatment, control and prevention. The main part of the book comprises very detailed and richly illustrated clinical chapters. The copious images are the advantage of this book. Chapters on new methods and treatments and on animal tuberculosis are included. The material is based on a wealth of experience in tuberculosis as seen in endemic countries such as Saudi Arabia that enjoy free access to advanced investigative and therapeutic facilities. This coexistence of endemicity of

the disease and state-of-the-art facilities is rare in poor and developing countries or in rich and developed nations. This multidisciplinary volume is ideal for all clinicians, laboratory and research workers, epidemiologists, university teachers and students, health care planners and international organizations involved in world health and infectious disease.

Basic methods; Techniques for the microbiological examination of foods; Microbiological examination of especific foods; Schemes for the identification of microorganisms.

Acetate utilization. Arginine dihydrolase. Bile Solubility. Catalase. Citrate utilization. Coagulase. Deaminase tests. Decarboxylase tests. Deoxyribunuclease (DNAse) test. Esculin hydrolysis. Gelatin liquefaction. luconate oxidation. Hippurate hydrolysis. Hidrogen sulfide. (H2S) production. Indole test. Lecithinase. Malonate utilization. Methyl red (MR) test. Nitrate reduction. ONPG test. Optochin inhibition. Oxidase test. Phosophatase. Starch hydrolysis. Urease test. Voges-proskauer (VP) test. Test procedures.

his accessible reference of biochemical tests has been reborn to encompass the bacteriology revolution of the past two decades. This easy to use manual is divided into three sections: Individual Biochemical Tests, Multi-Test Systems and Identification Schemas . Individual Biochemical Tests offers 41 chapters, each devoted to a single biochemical test; nine new tests have been added since the last edition. The Multi-Test Systems section provides commercially prepared multi testing kits, media, and alternate procedures for bacterial identification, while section three is broken into three chapters providing identification schemata of medically important bacteria. New colour plates, new nomenclature, and identification tables and flow charts are included

Once feared as a deadly intracellular bacterium with the extraordinary capacity to survive a wide array of arduous external stressors, Listeria monocytogenes is increasingly recognized as a preferred vector for delivering anti-infective and anti-cancer vaccine molecules. A reliable, single-source reference on the fundamental aspects of this bacterium is crucial to support future study and further the advancement of biomedical sciences and intervention strategies. Drawn from an international panel of scientists with notable expertise in their respective fields, the Handbook of Listeria monocytogenes is divided into four sections: Section I discusses the biology and pathogenicity of this bacterium, including epidemiology and stress responses. Section II demonstrates identification and detection techniques such as phenotypic and genotypic identification, strain typing, and virulence determination. Section III details the current knowledge of genetic manipulation of Listeria, including comparative genomics, genomic divisions, epidemic clones and population structure, and analysis of cell envelope proteins. Section IV covers innate and adaptive immunity against Listeria, and examines the use of this bacterium for anti-infective and anti-cancer vaccine development. The first comprehensive compilation of knowledge in this area, this handbook is an indispensable reference for anyone embarking on the path of manipulation of Listeria as either a model for the study of the host-bacterium relationship or as a tool for delivering protective molecules to cytoplasm.

While evolving molecular diagnostic methods are being heralded for the role they will play in improving our ability to cultivate and identify bacteria, fungi, and viruses, the reality is that those new methods are still beyond the technical and financial reach of most clinical laboratories. Most clinical microbiology laboratories still rely upon cu

In contrast to the second edition, the third edition of ‘‘Fungi and Food Spoilage’’ is evolutionary rather than revolutionary. The second edition was intended to cover almost all of the species likely to be encountered in mainstream food supplies, and only a few additional species have been included in this new edition. The third edition represents primarily an updating – of taxonomy, physiology, mycotoxin production and ecology. Changes in taxonomy reflect the impact that molecular methods have had on our understanding of classification but,

it must be said, have not radically altered the overall picture. The improvements in the understanding of the physiology of food spoilage fungi have been relatively small, reflecting perhaps the lack of emphasis on physiology in modern mic- biological science. Much remains to be understood about the specificity of particular fungi for particular substrates, of the influence of water activity on the growth of many of the species treated, and even on such basic parameters as cardinal temperatures for growth and the influence of pH and preservatives. Since 1997, a great deal has been learnt about the specificity of mycotoxin production and in which commodities and products-specific mycotoxins are likely to occur. Changes in our understanding of the ecology of the included species are also in most cases evolutionary. A great number of papers have been published on the ecology of foodborne fungi in the past few years, but with few exceptions the basic ecology of the included species remains.

Designed for associate-degree MLT/CLT programs and baccalaureate MT/CLS programs, this textbook presents the essentials of clinical microbiology. It provides balanced coverage of specific groups of microorganisms and the work-up of clinical specimens by organ system, and also discusses the role of the microbiology laboratory in regard to emerging infections, healthcare epidemiology, and bioterrorism. Clinical case studies and self-assessment questions show how to incorporate the information into everyday practice. More than 400 illustrations and visual information displays enhance the text. Essentials boxes, chapter outlines, key terms, summaries, and other study aids help students retain information. A bound-in CD-ROM includes additional review questions, case studies, and Web links.

Final year undergraduate Microbiology students are often required to identify the several bacterial isolates obtained in the course of their research project. For undergraduate Microbiology students of Universities in low income earning countries, the cost effective means available to achieve such identification include microscopic examination, and biochemical/physicochemical tests. This handbook provides a practical guide for carrying out the various biochemical/physicochemical tests that can lead to the identification of aerobic and facultative anaerobic bacteria isolates. Directions for compounding the media and reagents used for carrying out some of these biochemical/physicochemical tests have also been provided in this handbook. Result patterns generated for investigated isolates from the biochemical/physicochemical tests covered in this handbook can be compared with the reaction patterns of some known bacteria species presented in Chapter Five so as to decipher the identity of the investigated isolates. The Result patterns generated for investigated isolates can also be submitted to ABIS (Advanced Bacterial Identification Software) online for identification. This handbook will also be valuable to post graduate Microbiology students who need to narrow down their large number of bacterial isolates before proceeding for identification through molecular means.

Principles of Laboratory Food Microbiology serves as a general laboratory guide for individuals in quality control, quality assurance, sanitation, and food production who need to increase their knowledge and skills in basic and applied food microbiology and food safety. This is a very useful book for food industry personnel with little or no background in microbiology or who need a refresher course in basic microbiological principles and laboratory techniques. Focusing on basic skill-building throughout, the book provides a review of basic microbiological techniques — media preparation, aseptic techniques, dilution, plating, etc. — followed by analytical methods and advanced tests for food-borne pathogens. It reviews basic microbiology techniques to evaluate the microbiota of various foods and enumerate indicator microorganisms. It emphasize on conventional cultural techniques. It also focuses on procedures for detecting pathogens in food, offering students the opportunity to practice cultural and biochemical methods. The final section discusses beneficial microorganisms and their role in food fermentations, concentrating on lactic acid bacteria, acetic acid bacteria and

yeast. It provides an ideal text companion for an undergraduate or graduate laboratory course, offering professors an authoritative frame of reference for their own supplementary materials and to the food processing industry personnel, Government and private organization linked with food processing and microbial quality of the processed product. The book is an essential text for microbiologists working in the food industry, quality assurance personnel and academic researchers.

Biochemical Tests for Identification of Medical BacteriaWilliams & Wilkins

Evaluation of bioMu00e9rieux VITEKu00ae MS MALDI-TOF MS System for identification of dermatophytesObjectives The two objectives of this study was to evaluate the performance of the Vitek MS (bioMu00e9rieux, Marcy lu2019Etoile, France) MALDI-TOF in identifying dermatophytes, and to evaluate in-house prepared extraction reagents against commercially prepared extraction reagents. Methods The Vitek MS was run with a modified extraction method using the V3.0 Knowledge Base database. Each tested isolated was extracted using commercially prepared and in-house prepared extraction reagents. Extraction was performed using the same method but with different reagents. The extraction steps are as follows:1.tAliquot 900uL of 70% ethanol into Eppendorf tubes 2.tWet a sterile swab with 70% ethanol and press swab against side of tube to remove excess liquid.3.tCollect a circle of approximately 1cm u2013 2 cm (diameter) of mould from the agar plate, suspend in the aliquoted ethanol4.tVortex for 15 minutes5.tCentrifuge for 2 minutes at 14,000G.6.tDiscard supernatant7.tAdd 40uL of 70% formic acid and vortex for 5 minutes8.tAdd 40uL of 100% acetonitrile and vortex for 5 minutes9.tCentrifuge for 2 minutes at 14, 000G10.tSpot in duplicate immediately with 1uL each of the supernatant on the target slide.11.tAllow the spots to dry completely (10-15mins).12.tAdd 1uL of Vitek MS-CHCA matrix to the target slide spots. Allow matrix to dry Each extraction method was spotted onto the target slide in duplicate. The Vitek MS was run as per manufactureru2019s instructions and an identification was accepted if the confidence value was u226598.0 Discrepant identifications were considered indeterminate results. Results A total of 44 Trichophyton spp., 8 Microsporum spp., and 3 Epidermophyton floccosum isolates were tested. All T. interdigitale (10), M. canis (3), M. gypseum (3), and E. floccosum (3) were correctly identified by both extraction methods. Of 31 T. rubrum isolates, 30 (97%) and 29 (94%) were identified correctly by the commercial and in-house extractions. No identification were available for the remaining T. rubrum isolates. One T. tonsurans isolate could not be identified using commercial extraction and was misidentified by the in-house extraction method. One T. soudanense isolate was misidentified as T. rubrum by both methods. One T. violaceum isolate could not be identified by the in-house method and had inconclusive results by the commercial method: one spot had the correct identification, but the second spot misidentified it as T. rubrum.ConclusionA total of 55 dermatophyte isolates were tested and the results show that VMS MALDI-TOF can replace the current phenotypic and biochemical tests for the identification of T. rubrum and T. interdigitale. Additional data is required for less commonly isolated

dermatophytes. Extraction performed by in-house prepared reagents can be used in place of commercially prepared reagents. There were a few misidentifications of uncommon Trichophyton spp. as T. rubrum and T. interdigitale, . To minimize the risk of such misidentification, the result of the Vitek MS should be correlated with some basic morphological features.

Covers the nature of bacterial identification schemes, the differentiation of procaryotic from eucaryotic microorganisms, and major categories and groups of bacteria.

A practical and well-illustrated guide to microbiological, haematological, and blood transfusion techniques. The microbiology chapter focuses on common tropical infections. The haematology chapter deals with the investigation of anaemia and haemoglobinopathies. The blood transfusion chapter provides guidelines on the use of blood and blood substitutes, selection of donors and collection.

16 pages of colour plates to aid identificationOnly published text available where all relevant material is referenced togtherThis manual enables the isolation and identification of bacteria that are found in aquatic animals (particularly fish). The emphasis is on bacteria from farmed aquatic animals (fish,molluscs and crustacea) but some attention is also given to other marine and freshwater animals such as mammals and birds, both captive (as in zoos) or wild, as well as aquarium fish.

The book presents a concise account of clinical microbiology, with an attempt to integrate basic microbiology with clinical practice as per guidelines of MCI. It is designed specifically to meet the needs of the students pursuing undergraduate medical, dental and pharmacy courses.

This dissertation, "Multiplex Identification of Gram-negative Bacteria From Positive Blood Culture Broths: Evaluation of an Automated Microarray-based Molecular Assay" by Man-po, Tam, ???, was obtained from The University of Hong Kong (Pokfulam, Hong Kong) and is being sold pursuant to Creative Commons: Attribution 3.0 Hong Kong License. The content of this dissertation has not been altered in any way. We have altered the formatting in order to facilitate the ease of printing and reading of the dissertation. All rights not granted by the above license are retained by the author. Abstract: Bloodstream infection is life threatening and lead to high mortality. Conventional culture is time consuming which is unfavorable to patient outcome. Rapid identification of causative agent is needed to aid the selection of appropriate antimicrobial agent and improve clinical outcome. The recent study is the first multicenter study to evaluate the performance of the Verigene blood culture BC-GN assay against conventional culture methods on bacteria identification in Hong Kong. A total of 139 non-duplicated positive blood culture (BC) samples with Gram negative bacteria were collected from 3 hospitals (UCH, PMH and PYNEH) and the sensitivity of Verigene BC-GN assay and reduction in time to result compared to reference methods (biochemical tests and MADLI-TOF MS) will be calculated. There were 131 pure cultures and 8 mixed cultures. The overall sensitivity for pure culture and mixed culture were 92.4% (121/131) and 25% (2/8) respectively and the specificity of the assay is

99.3%. A total of 147 strains were isolated from 139 BC samples. The overall isolate sensitivity of Verigene result with conventional culture was 91.8% (135/147) and up to 97.1% (135/139) when only in panel organisms were counted. It accurately detected 98% E.coli, 90.9% K. pneumoniae, and 100% of P. aeruginosa, Proteus spp., Enterobacter spp. and Acinetobacter species. There was 1 case misidentified E. colias Enterobacter species, 2 cases considered as falsely positive, 2 K. pneumonia and 1 E. coli were not detected whileanother2 K. pneumoniae were later confirmed as K. variicola. There were 5.8% (8/139) BC recovered with bacteria not featured in the panel including 4 Aeronomas species, 1 Salmonella species, 2 K. variicola and 1 P. pseudoalcaligenes. During the whole study, tno-call rate of BC-GN assay was 0%. The Verigene provides a high level of agreement in bacteria identification. The time from positive Gram result to final report issued is greatly reduced from 36.84 hours to 2 hours when identification shifted from biochemical test to Verigene BC-GN assay. The reduction in turnaround time is significant to clinical management and patient outcome. It also reduces the length of hospital stay and trims down the medical cost. Subjects: Blood - Examination Pathogenic bacteria

Now in its sixth edition, Poultry Diseases is once again fully revised with the addition of vital new material. It remains the standard reference work on health and disease for those involved in the poultry industry, government and veterinary education. Following a familiar structure, readers of the sixth edition gain concise but major reviews on current knowledge of general and disease-specific topics discussed over 45 (5 new) chapters in seven sections. With a large international team of contributors led by an authoritative editor team and a Foreword by Professor Frank Jordan, Poultry Diseases is an invaluable resource for the practicing veterinarian, poultry inspector, agricultural manager or veterinary student. Covers common and rarer diseases found in all species of poultry (including chickens, ducks, turkeys, game birds and guinea-fowl). Each chapter outside the General Overview section identifies clearly Epidemiology, Clinical Signs and Differential Diagnosis, Pathogenesis, Treatment and Control. Systems chapters discuss disorders of selected body systems in detail, leading to differential diagnosis of the specific disorder Comprehensive Appendices of Useful Data, Glossary of Terms, and Lists of diseases specific to Turkeys and Ducks (cross-referenced to the disease organisms in the main text) Worldwide coverage from a recognized international team of editors and contributors 5 new chapters and major chapter revisions on biosecurity in poultry management; avian influenza; legislation and poultry welfare New contributors and 2 new prominent editors make up a 4 strong editorial team Two color format with over 60 2-colour illustrations highlights key information Viral chapters now include information on zoonoses

This book focuses on practical, proven applications to automate the microbial identification process economically and with greater levels of safety and quality for patients. A diverse group of recognized experts survey the topic and present the latest techniques and technologies for microbial detection. They cover bacteria and yeasts, the technology of automation, equipment, methods, and the validation issues involved in "going automated." They also explore the challenges of detection and quantititation of contaminants in the increasing number of biologic injectable drugs and identify current trends in the industry. Features

Metabolic were used to evaluate Enterococcus as an indicator of faecal pollution.

Enterococci were isolated using m-Enterococcus agar and speciated using conventional biochemical tests. Forty percent of the isolates were identified and metabolically characterized by the automated Biolog system. The biochemical test scheme recognized 16 enterococcal species, while Biolog recognized nine. Both methods identified E. faecalis at the greatest frequency. Overall species frequencies varied between the two methods. Biolog was unable to identify 31% of the isolates; 7% of the isolates were unidentified by the biochemical test scheme. Of the identified isolates, metabolic profiling with Biolog achieved speciation with 60 substrates. Unique profiles were obtained for 89% of the isolates. Isolates also demonstrated inter-trial differntial metabolism of substrates. This and the large number of unidentified isolates suggest great diversity among enterococci. Diversity and inter-trial metabolic inconsistencies will complicate use of enterococcal metabolic profiles as a source-tracking tool.

'Analytical Techniques in Biotechnology' by Bhowmik and Bose offers a unique compendium of fundamental experiments, which forms the crucial foundation to understand this contemporary subject that has enormous impact on many other branches of life sciences. In addition to its simple and lucid language, the main focus of the book is to equip a beginner with the skill and ability required to conduct independent experimentation and research in laboratories. Carefully structured to cover the complete spectra of subjects under the umbrella of 'Biotechnology', this book is sure to prove a ready reference for students, faculties and researchers, all alike!