Role Of The Mannose Binding Lectin In Innate Immunity

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In recent years increased scientific attention has been given to immediate defense mechanisms based on non-clonal recognition of microbial components. These mechanisms constitute the innate immunity arm of the body s defense. Identification of pathogens by these mechanisms involves primarily receptors recognizing sugar moieties of various microorganisms. Innate immunity based mechanisms are essential for the existence of multicellular organisms. They are evolutionarily conserved and designed to provide immediate protection against microbial pathogens to eradicate infection. Activation of innate immunity is crucial for transition to specific immunity and for its orientation, and to assist the specific immune response in the recognition of pathogens and their destruction. Innate immunity is regularly involved in the arrest of bacterial, mycotic, viral and parasitic infections, giving the specific immune response time to become effective. It becomes critically essential in immunocompromised patients who fail to mount specific immune responses due to congenital or acquired immunodeficiencies as a result of chemotherapy, dialysis, immunosuppressive drugs, or HIV infection. The Innate Immunity arsenal constitutes polymorphonuclear and mononuclear phagocytes, mast cells, the complement system, Natural Killer cells, antimicrobial peptides, and presumably a subset of T lymphocytes with TCRl receptors.

Animal Lectins: Form, Function and Clinical Applications presents up-to-date knowledge of animal lectins. Detailed descriptions on biological activities, tissue and/or subcellular distribution, molecular structure, gene organization, possible functions, clinical applications, lectin-ligand interactions and their intervention for therapeutic purposes are provided. The recently discovered C-type lectins as well as further novel super-families of this group of molecules are described in detail. Furthermore, the clinical significance of animal lectins in inflammatory diseases, defects of immune defense and autoimmunity are described and their application as drugs and therapeutic targets is discussed. With the increasing interest in lectins in biomedical research and their therapeutic applications, this book on animal lectins and associated proteins is a must have for researchers in the area.

The Role of Mannose-binding Lectin in Health and Disease

Biology and Clinical Implications

Lessons in Immunity

Type 2 Immunity

The Role of Mannose Binding Lectin in Infection and Inflammation

Offering a broad appeal to microbiologists, immunologists, and infectious disease specialists, this four volume encyclopedia covers all autoimmune, tropical, and infectious diseases. Emphasis will also be placed on genetics, physiology, metabolism, pathogenesis and applied microbiology. Under the leadership of some of the most world renowned names in the field, the encyclopedia will bring together an outstanding collection of contributio of fields. Volumes 1-3: Diseases will be divided by the 11 main sections of the body, namely Integumentary, Skeletal, Respiratory, Digestive, Urinary, and Reproductive. For some of the autoimmune disease, more then one system will be involved but the delineation serves to broadly break down the diseases into systems. Volume 4 will cover the vaccines for said diseases and future prospects will be offered by leaders in industry and acade down into all the body systems, as in the other two volumes. For each vaccine, for each disease, and in each system the following will be included: • A list of the vaccines currently available along with a list of the companies that manufacture them • Molecular Immunology of the Vaccine • Type of Immunity involved in protection • Mode of Vaccination for each vaccine; repeated boosters and length of immunological memory • Commercial pro of vaccines • Standardization and Control of Vaccines • WHO programs and World-Wide Disease Eradication Programs based upon Vaccines.

This dissertation, "The Role of Mannose Binding Lectin in Pandemic H1N1 Influenza Virus Infection" by Man-to, Ling, ???, 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 disse by the above license are retained by the author. Abstract: Mannose-binding lectin (MBL) functions as pattern recognition molecule to mediate first-line host defense against invading pathogens. Although MBL is well-known for its anti-bacterial action, its role towards virus infection is less comprehensively understood. In 2009, the pandemic H1N1 2009 (pdmH1N1) influenza A virus caused more than 18,000 deaths worldwide and is still circul a seasonal strain. In this study, the role of MBL in pdmH1N1 infection was investigated. Using in vitro microtiter capture assay, MBL was found to bind to pdmH1N1 virus via its carbohydrate recognition domain. Under transmission electron microscope (TEM), MBL was clearly visible on the surface of pdmH1N1 virus. By infecting C57B6/J wild-type (WT) and MBL knockout (KO) mice with a sub-lethal dose of pdmH1N1 virus, WT mice displa more severe lung damage than MBL KO mice. Using flow cytometry-based profiling analysis of the lung homogenates isolated from infected mice, a variety of proinflammatory cytokines and chemokines were found to be significantly up-regulated. These results indicate that the presence of MBL can cause excess proinflammatory cytokine production and result in a more severe pdmH1N1 infection. To provide physiologically relevant insight of MBL, the investigation was further extended to the use of human cell line model. Infection of A549 cells, which is a human lung epithelial cell line, with MBL-bound pdmH1N1 virus elevated the production of MCP1, RANTES and IL-8 significantly more than unbound pdmH1N1 infection. The increased production of chemokines also enhanced recruitment of monocytes as demonstrated by transwell migration assay. Interestingly, MBL did n replication kinetics. TEM and confocal imaging revealed the presence of MBL-bound pdmH1N1 inside infected A549 cells, suggesting that the endocytosed MBL may interact with intracellular components to promote the release of cytokines and chemokines. To this end, expressions of Toll-like receptors were examined (TLR3, TLR7, TLR8 and TLR9) and found that TLR3 expression was dramatically enhanced upon pdmH1N1 infection. Int pdmH1N1 infection, TLR3 mRNA and protein expression was significantly higher than unbound pdmH1N1 infection in A549 cells. In addition, the NF-?B signaling was further activated in the presence of MBL-bound pdmH1N1. A novel physical interaction between MBL and TLR3 was also delineated as evidenced by MBL's capability to bind to TLR3 in vitro; and their colocalization in the endosomes of the infected A549 cells. In summary, M virus but fails to inhibit its infection in human lung epithelial cell line. Upon pdmH1N1 infection, MBL is internalized with the virus into the cell, where it may associate with TLR3 to further amplify the NF-?B signaling and augment the cytokine production in the human lung epithelial cells. The present findings advocate the adverse immunomodulating role of MBL during pdmH1N1 infection. DOI: 10.5353/th_b5060559 Subjects: Influenza A viru - Immunological aspects Lectins

Background: Despite identical treatment protocols during childhood ALL treatment, some children suffer from more frequent episodes of febrile neutropenia than others. The reason for this is still not fully known. Polymorphisms in the gene coding for MBL, called MBL2, have been correlated to infection susceptibility in a wide range of infections. However, the literature is showing conflicting results for the association between genetic variation infections in children with cancer. Methods: Children diagnosed with ALL at Astrid Lindgren Childrenu2019s hospital, Stockholm, during 2004-2014 were enrolled in the study. Three different polymorphisms in the MBL2 gene were analyzed using pyrosequencing. The frequency of febrile neutropenia was retrospectively collected from medical records during the 2.5 years of treatment. Results: Eighty-nine children were enrolled in the analys episodes of febrile neutropenia were 3 (range 0-9). Twenty-six children (29%) were heterozygote/homozygote for at least one polymorphism in the MBL2 gene. There were no statistically significant differences in frequency of febrile neutropenia when comparing those carrying polymorphism in the MBL2 gene and those that do not. Conclusion: In this cohort, there were no correlation between polymorphisms in the MBL2 gene and risk for fe years of treatment for ALL. Further statistical analyses and comparisons during specific time-points of the treatment and analyses for the gene coding for TLR4 will be added during the spring of 2018.

Whole Genome Expression in Mice Containing a Human Mannose Binding Gene (hMBL)

The Role of Monocyte-Derived Dendritic Cells and Mannose-Binding Lectin in Innate Immunity Against Apoptotic Cells and Candida Albicans

The Biology and Pathology of Innate Immunity Mechanisms

Principles of Medical Biochemistry E-Book

Molecular Regulation of Endocytosis is a compilation of scientific "short stories" about the entry of external substances into cells. As one can see from the chapters, endocytosis regulates diverse processes such as homeostasis of the cell, signal transduction, entry of pathogens and viruses. In addition to the experimental techniques embedded in each chapter, entire chapters are dedicated to experimental approaches that will be useful to all scientists and their model systems. For those more clinically oriented, the final chapters look to the future and ways of utilizing endocytic pathways for therapeutic purposes.

For nearly 30 years, Principles of Medical Biochemistry has integrated medical biochemistry with molecular genetics, cell biology, and genetics to provide complete yet concise coverage that links biochemistry with clinical medicine. The 4th Edition of this award-winning text by Drs. Gerhard Meisenberg and William H. Simmons has been fully updated with new clinical examples, expanded coverage of recent changes in the field, and many new case studies online. A highly visual format helps readers retain complex information, and USMLE-style questions (in print and online) assist with exam preparation. Just the right amount of detail on biochemistry, cell biology, and genetics – in one easy-to-digest textbook. Full-color illustrations and tables throughout help students master challenging concepts more easily. Online case studies serve as a self-assessment and review tool before exams. Online access includes nearly 150 USMLE-style questions in addition to the questions that are in the book. Glossary of technical terms. Clinical Boxes and Clinical Content demonstrate the integration of basic sciences and clinical applications, helping readers make connections between the two. New clinical examples have been added throughout the text.

This book provides researchers the opportunity to investigate type-2-associated diseases in their laboratories. Beginning with chapters describing various models of type-2 immunity, the volume then continues by detailing cellular protocols designed to identify, characterize, and assess the function of key adaptive and innate immune cells involved in type-2 inflammation; approaches to isolate and evaluate specific cellular subsets at the genetic, epigenetic, and molecular level; protocols to assess type-2 immunity and its relationship to organismal and metabolic systems (ex. Microbiome). This book concludes with a section that explores the use of primary human cells in evaluating relevance to the clinic. 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. Vital and authoritative, Type 2 Immunity: Methods and Protocols aims to provide a broad network of methods that can be used to develop a hypothesis and investigate its potential from bench to beside.

The Role of Mannose Binding Lectin Associated Serine Protease MASP-3 in Complement Mediated Haemolysis and the Utility of Recombinant Properdin in Fighting Streptococcus Pneumoniae Infection

The Immune Response

The Role of Mannose Binding Lectin in Influenza Virus Infection

The Role of Monocyte-derived Dendritic Cells and Mannose-binding Lectin in Innate Immunity Against Apoptotic Cells and Candidaalbicans

The Role of Mannose Binding Lectin in Pandemic H1N1 Influenza Virus Infection

The topic of this book, Collectins, is a family of proteins whose major function is in innate immunity, where Collectins act as pattern recognition receptors (PRRs). In general they recognize targets such as microbial surfaces and apoptotic cells, and once bound to a target, Collectins promote the clearance of microorganisms and damaged host tissue. New cell-surface proteins and glycoproteins, which act as Collectin receptors, are currently being identified. Some Collectins, particularly MBL, activate the complement system, which enhances the ability of antibodies to fight pathogens, via three MBL-associated proteases, the MASPs. Additionally, recent research has begun to show wider-ranging activities of Collectins, such as: · Their role in metabolism, and therefore their involvement in lifestyle diseases such as obesity and cardiovascular disease. · Their ability to modulate the adaptive immune response, as well as to recognize and trigger apoptosis of cancer cells, which makes them effective in the annihilation of cancer cells with multiple mutations. · The regulation of their expression by gonadal steroid hormones implicates them with critical roles in both male and female fertility. · Altered levels of Collectins have been associated with various autoimmune diseases. This book brings together current knowledge of the structure, functions and biological activities of Collectins, to describe their integral role in human health.

Lessons in Immunity: From Single-cell Organisms to Mammals stems from the activity of the Italian Association of Developmental and Comparative Immunobiology (IADCI), represented by the editors. This book is presented as a series of short overviews that report on the current state of various relevant fields of immunobiology from an evolutionary perspective. The overviews are written by authors directly involved in the research, and most are members of the IADCI or have otherwise been involved in the related research for their respective overview. This publication offers scientists and teachers an easy and updated reference tool. Provides simple and updated reviews on the immunobiology of a wide spectrum of organisms, considered in an evolutionary context Focuses on both cells and humoral components of a variety of non-classical model organisms Offers in a single volume many contributions which can help with understanding the evolution of immune responses and the main adaptations in animal phyla Presents a valuable holistic cross-sectional approach for teaching immunology and its applications

The Role of Mannose Binding Lectin in Infection and InflammationThe Role of Mannose-binding Lectin in Health and DiseaseThe Role of Mannose Binding Lectin (MBL) in Infection and InflammationThe Role of Mannose Binding Lectin in Influenza Virus InfectionOpen Dissertation Press

Molecular Regulation of Endocytosis

Encyclopedia of Medical Immunology

Mannose-binding Lectin

The Clinical Significance of Mannose-binding Lectin (MBL) Deficiency

From Single-cell Organisms to Mammals

The Immune Response is a unique reference work covering the basic and clinical principles of immunology in a modern and comprehensive fashion. Written in an engaging conversational style, the book conveys the broad scope and fascinating appeal of immunology. The book is beautifully illustrated with superb figures as well as many full color plates. This extraordinary work will be an invaluable resource for lecturers and graduate students in immunology, as well as a vital reference for research scientists and clinicians studying related areas in the life and medical sciences. Current and thorough 30 chapter reference reviewed by luminaries in the field Unique 'single voice' ensures consistency of definitions and concepts Comprehensive and elegant illustrations bring key concepts to life Provides historical context to allow fuller understanding of key issues Introductory chapters 1-4 serve as an 'Immunology Primer' before topics are discussed in more detail

Mannose binding lectin (MBL) is known to interact directly with mannose N-linked glycans on the HIV-1 gp120 envelope and with beta amyloid (bA). We hypothesized that MBL unique interactions with both gp120 and bA, in HIV encephalitis (HIVE), and with bA in Alzheimer's disease (AD), facilitate immune complex (IC) deposition and neuroinflammation. Post-mortem brain frontal cortex tissues obtained from California NeuroAIDS Tissue Network and Alzheimer's Disease Research Center were evaluated for the expression and colocalization of MBL, bA, gp120 and monocyte chemoattractant protein -1 (MCP-1) in HIV- controls (n=5), in those with and without HIVE (n=15 each) and AD cases (n=10) using double immunofluorescence and confocal microscopy. Cellular fractionated tissue from frontal cortex of those with and without HIVE and with and without AD was evaluated for MBL and bA expression via western blot. Expression of MBL and bA was enhanced twofold each (p

Sugar chains (glycans) are often attached to proteins and lipids and have multiple roles in the organization and function of all organisms. "Essentials of Glycobiology" describes their biogenesis and function and offers a useful gateway to the understanding of glycans.

Receptor Tyrosine Kinases: Structure, Functions and Role in Human Disease

Studies in Transgenic Mice

Essentials of Glycobiology

Novel Role of Mannose Binding Lectin in Neuroinflammation and Neurocognitive Consequences in HIV-1 Infected Brain

The Role of Mannose Binding Lectin (MBL) in Paediatric Infection

This dissertation, "The Role of Monocyte-derived Dendritic Cells and Mannose-binding Lectin in Innate Immunity Against Apoptotic Cells and Candida Albicans" by Wai-kee, Eddie, Ip, □□□, 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. DOI: 10.5353/th_b3124426 Subjects: Dendritic cells Lectins Candida albicans

This dissertation, "The Role of Mannose Binding Lectin in Influenza Virus Infection" by Man-to, Ling, □□□, 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. DOI: 10.5353/th_b4308529 Subjects: Mannose Lectins Influenza A virus Influenza - Immunological aspects

During a myocardial ischemic event, acute occlusion sets in motion cell necrosis and myocardial tissue injury referred to as a myocardial ischemia-reperfusion (MI/R) injury. The resultant injury is triggered by an immunological response of which a major contributor involves the complement cascade of innate immune system involving mannose binding lectin (MBL). Few anti-complement therapeutics however have been approved for clinical use. Those studies to date have involved extensive whole genome expression in murine models of MI/R injury to assist in drug target elucidation. Studies performed have examined genomic traits and expression of mouse MBL (mMBL), which is not one hundred percent homologous to human mannose binding lectin (hMBL). In this study, novel hMBL+/+ mice treated with a novel mAb 3F8 were protected from MI/R injury as measured by area at risk and myocardial infarct staining when compared to control mice. Whole genome expression with the use of microarray was performed between hMBL mice undergoing MI/R treated with either a novel recombinant mAb 3F8 or mAb 1C10 as control. Mice treated with mAb 3F8 compared to mice treated with 1C10 revealed a significant down regulation in uncharacterized genes of the lncRNA family. Molecular modeling was used to study the three dimensional structural characteristics of mAb 3F8 recognition of hMBL. Within the hinge region of hMBL three possible locations were identified for the mAb 3F8 epitope for hMBL. These structurally similar locations offer possible insight into the ability of mAb 3F8 in protecting against MI/R injuries. These findings will assist in better understanding the genomic role hMBL in MI/R, the ability of a novel murine mAb 3F8 to modulate those effects and aide in continued drug target elucidation.

The Role of Mannose Binding Lectin in Pandemic H1n1 Influenza Virus Infection

The Role of Mannose-binding Protein-associated Serine Proteases in Complement Activation

Suseptibility to Respiratory Tract Infections in Young Men

Collagen Glycosylation in Adiponectin and Mannose-binding Lectin Function

The Collectin Protein Family and Its Multiple Biological Activities

Receptor Tyrosine Kinase: Structure, Functions and Role in Human Disease, for the first time, systematically covers the shared structural and functional features of the RTK family. Receptor Tyrosine Kinases (RTKs) play critical roles in embryogenesis, normal physiology and several diseases. And over the last decade they have become the Number 1 targets of cancer drugs. To be able to conduct fundamental research or to attempt to develop pharmacological agents able to enhance or intercept them, it is essential first to understand the evolutionary origin of the 58 RTKs and their roles in invertebrates and in humans, as well as downstream signaling pathways. The assembly of chapters is written by experts and underscores commonalities between and among the RTKs. It is an ideal companion volume to The Receptor Tyrosine Kinase: Families and Subfamilies, which proceeds, family by family through all of the specific subfamilies of RTKs, along with their unique landmarks.

Mannose-binding lectin (MBL) is a plasma protein with an important role in the innate immune system. MBL recognises pathogens through carbohydrate structures present on the surface of a range of pathogenic organisms including viruses, bacteria, fungi and protozoans. These structures may be referred to as pathogen-associated molecular patterns (PAMPs). After binding to PAMPs, MBL promotes C1- and antibody-independent activation of complement, leading to complement-mediated killing and/or phagocytosis. MBL is also known to modulate the secretion of cytokines from macrophages and to mediate the clearance of apoptotic cells as such playing a role in the inflammatory response. This book summarises the actual understanding of human MBL biology and introduces the general aspects of the structure, function and genetics of MBL, as well as an analysis of the role of MBL in the predisposition to clinically relevant diseases.

The Complement FactsBook contains entries on all components of the Complement System, including C1q and Lectins, C3 Family, Serine Proteases, Serum Regulators of Complement Activation, Cell Surface Proteins, and Terminal Pathway Proteins. Domain Structure diagrams are incorporated to clearly illustrate the relationships between all the complement proteins, both within families and between families. The FactsBook also includes the cDNA sequences, marked with intron/exon boundaries, which will facilitate genetic studies. Key Features * Includes the cDNA sequences, marked with intron/exon boundaries, facilitating genetic studies * Presents detailed structural information including cDNA and gene structure for all proteins * Introduces complement function, simply described for each function * Data is as up-to-date as possible, including unpublished work from many contributors * Incorporates domain structures diagrams, which beautifully illustrate the relationship between all the complement proteins, both within, and between, families * Each chapter has been written by an expert in the field * Data is as up-to-date as possible, including unpublished work from many contributors Entries provide information on: * Alternative nomenclature * Physiochemical properties * Structure and function * Tissue distribution and regulation expression * Protein sequence/modules * Chromosomal location * Genomic structure * Database accession numbers * Deficiency and polymorphic variants * Key references

Examining the Immunological Role of MAb 3F8 in Mediating Myocardial Ischemia-reperfusion Injuries

THE ROLE OF MANNOSE BINDING LECTIN AND THE RISK OF MORE FREQUENT EPISODES OF FEBRILE NEUTROPENIA IN CHILDREN WITH ACUTE LYMPHOBLASTIC LEUKEMIA

The Complement FactsBook

Collectins—Advances in Research and Application: 2013 Edition

Interactions with Mannose-binding Protein and Mode of Substrate Recognition