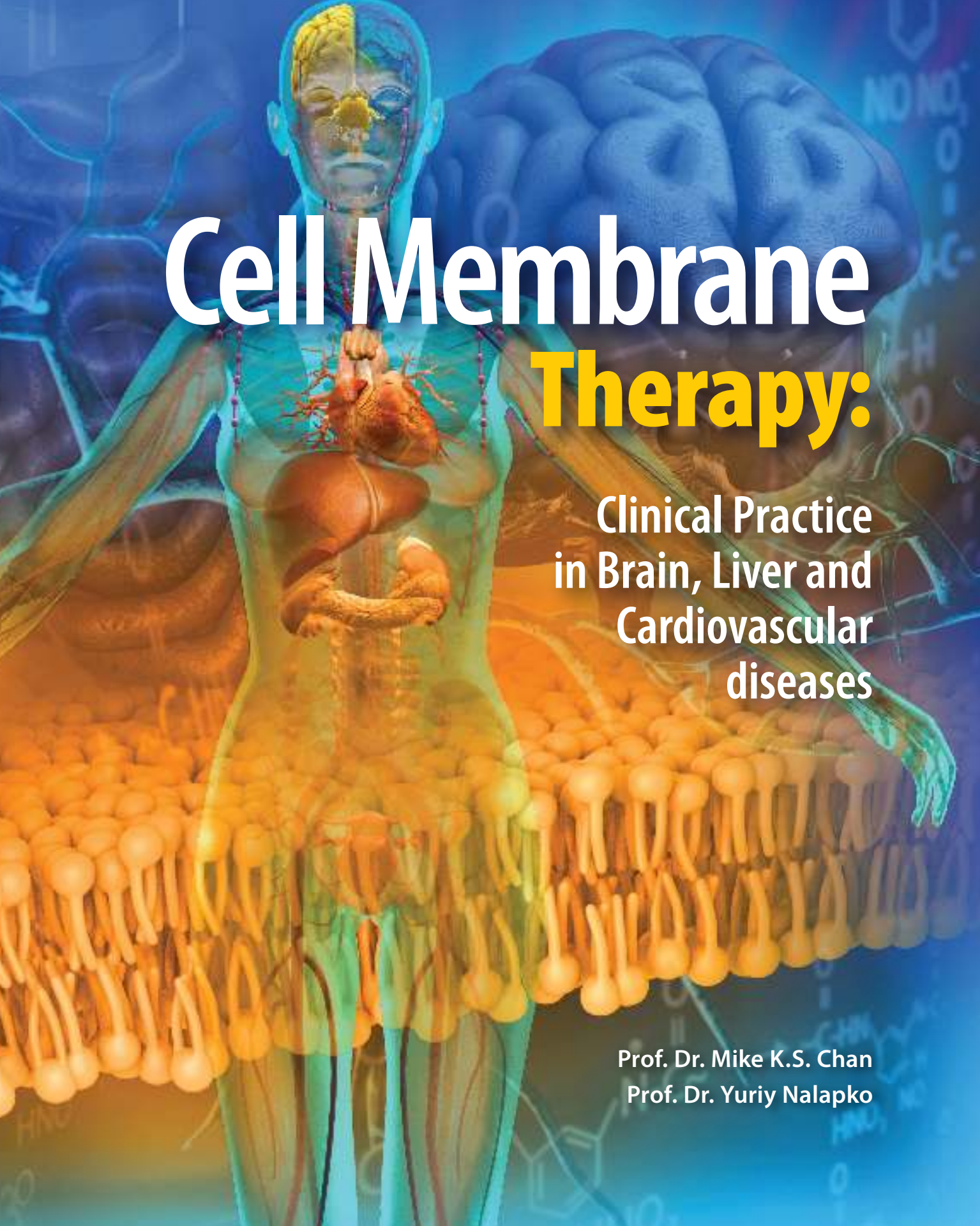

# Cell Membrane Therapy:

## Clinical Practice in Brain, Liver and Cardiovascular diseases

Prof. Dr. Mike K.S. Chan
Prof. Dr. Yuriy Nalapko

Prof. Dr. Mike K.S. Chan

Prof. Dr. Yuriy Nalapko

***Human Cell Membrane Therapy*** explores the theoretical and practical dimensions of improving service provision on majority of the diseases caused by cell damage. This readable and well-structured book is based on the reviews of current scientific publications on cellular membranes, its chemical structure and changes in many diseases. This monograph opens the new overview of the concepts of cell membranes therapy. Detailed role of phosphatidylcholine as the principal component of the cell membranes is described. Among the important issues discussed are Parkinson's and Alzheimer's diseases, atherosclerosis, fatty liver disease, diabetes mellitus etc. The final chapter evaluated progress in the use of phosphatidylcholine-based substance, which is able to restore the cell membranes and provide significant health improvement. This detailed review and authors experience will be of value to anyone with an interest in the area of regenerative, biomolecular, and anti-aging medicine.

Professor Dato' Sri Dr. Mike KS Chan is one of the pioneers of cellular and cell membrane therapy in Europe and Asia since the early 1980's. He founded and spearheaded one of the world's largest researches for bio-molecular medicine based in Switzerland and Germany with presence in almost 80 countries globally. He conducted more than 1,000 lectures, seminars and symposiums worldwide across more than 60 countries in the field of anti-aging, cell regeneration, regenerative medicine and stem cell therapies.

Dr. Yuriy Nalapko is academician and practical doctor in anesthesiology and intensive care. One of the areas of his scientific interests is longevity and a cell functioning in different diseases. His Philosophy Degree dissertation was devoted to the intensive care of brain injury patients. Last time he pays his attention to the cell membranes and the different methods of its structural and functional corrections. He considers the cell membrane therapy as the important component of the regenerative medicine and biomolecular therapy.

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# Cell Membrane Therapy

## Clinical Practice in Brain, Liver and Cardiovascular Diseases

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# CELL MEMBRANE THERAPY

## Clinical Practice in Brain, Liver and Cardiovascular Diseases

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To our beloved children – Linus, Lionel, Lester and Valeriia –
whose health and happiness make sense of our lives.

Mike Chan and Yuriy Nalapko

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# FOREWORD

It is a well-known fact,that carbon dioxide and water are the final products of the metabolism of carbohydrates, lipids and proteins. Any medical student knows what is at point A (our mouth) as well as at point Z (metabolic wastes). But what is in the gap from A to Z? Our heartbeats, dreams, appetite, hair growth, enzyme secretion, feeling cold or hot, immunity, muscle contractions etc, etc, etc… How can they be caused by carbs, fats and proteins? Why do people have the same food but different health? And, most importantly, what can we (medical doctors) do to improve the quality of our lives?

As often happens, the clear answer to this question was given many years ago and nowadays is hidden under the masses of "modern" knowledge: Omnis cellula e cellula, Omne vivum ex ovo; a cell is the basic form of life – no cell, no life; no life, no cell. This basic postulate of Rudolph Virchow's theory fully discovers how our body works: all our processes depend on cell health, its functional activity and anatomical structure.

This book helps to understand how to improve cell membrane health. The cell membrane is one of the principal structures of any cell. At the same time, phosphatidylcholine is the basic structural molecule of any human cell. We make the effort to explain how phosphatidylcholine works, how this molecule can change the cell's functional state, and what the modern approaches to use this substance in the complex treatment of diseases are.

Google "phosphatidylcholine" and you will find millions of references. Search "phosphatidylcholine in medicine", and the result will be the same. Modern medicine has a very rich experience of treatment by phosphatidylcholine. Together with the obvious benefits of such treatment, sometimes we are faced with a fiasco… analyzing the biochemical and biological laws, we tried to find its roots. It could be described by one word: balance. Phospholipids in our cell membranes are represented not by phosphatidylcholine only!

Recently, we synthesized a new phospholipid-based formula. Here, in this book, we will demonstrate the objective results of this new approach to the cell membrane treatment in different areas of medical science: atherosclerosis, neurodegenerative disorders, fatty liver disease, etc.

We hope we have become closer to the solving of the cutting-edge problems of medicine – keeping our brain, heart, liver, endothelial and lung cells healthy and active. Healthy cells – that is what we call biological happiness!

Professor Dr Mike Chan and Professor Dr Yuriy Nalapko

# Her Holiness Sai Maa

## MD

Mike is very devoted, dedicated, service oriented, ethical, humble, high quality and high energy. He is like a "chef d'orchestre", the way he sees substance and creates it. He creates masterpieces. He is so passionate, and his style of work resonates with my passion and work to serve humanity to be happier and healthier.

> *"He is someone who can bring the light of each cell in the physical body to surface."*

He is like an artist of scientifically grounded information, of life extension as an experience. He likes exploring on a cellular level and structure. He is one who can really guide the stream of medicine right now, for the medical community to shift from an old medical paradigm to the next level, to see patients as whole, holistic in its full spectrum. He is someone who can bring the light of each cell in the physical body to surface. For someone as myself who is always looking for efficacious solutions to live a longer, gracious, fulfilling life expression, solutions that are cutting edge medically, scientifically and esoterically with all the modalities that I see in myself, I appreciate that about Professor Mike Chan.

I appreciate his entrepreneurial mind, youthful and visionary, using protocols as I used to when I had my practice: being bold on a cellular level and structure. He understands the quantum behind everything else. He represents for me an example of the new medicine system, new medicine protocol. The beauty of him is that he has the power to bring the paradigm of the new diagnosis, the new detox system, the repair, the rejuvenation, the regeneration, the hormones, all advanced techniques from dark field to high level of colonics, IVs, nutrients, hyperbaric, any device including the subtleness of peptides work in all its variety. He is the example of the real medicine in its full spectrum, all the way from organs and glands to neurogenerative.

*Her Holiness Sai Maa, MD*

*https://www.sai-maa.com/en*
*https://www.sai-maa.com/en/about-sai-maa*
*https://en.wikipedia.org/wiki/Sai_Maa*

# Dr. W. Andralia Kartolo

MSc (UK), MD

Prof. Dato' Sri Dr. Mike Chan has never stop amusing me and the whole world in Antiaging Society. His works are always so profounding and mind-blowing. Thank you for sharing your magnificent creations with us. It has been an honour to write a sincere foreword to your Stem cell, Biological wellness and Cell membrane books.

Dr. W . Andralia Kartolo, MSc (UK), MD

> *"profounding and mind-blowing"*

# Dr. Mulyadi Tedjapranata

## DTM&H, MTh.FIAS

Prof. Mike K.S.Chan and Prof. Dr. Yuriy Nalapko has written a great book that share with you Cell Membrane Therapy: Clinical Practice in Brain, Liver, Cardiovascular diseases. Human Cell Membrane Therapy explores thr theoretical and practical dimension of improving service provision on majority of the diseases caused by cell damage. This readable and well structured book is based on the reviews of current scientific publications on cellular membrane; its chemical structure and changes in many diseases. Apply the principles of the book and you will be able to achieve exceptional results in the many areas of your knowledges. I salute the great efforts of both of you to empower the millions of people all over the world.

Dr. Mulyadi Tedjapranata DTM &H, MTh.FIAS

*"I salute the great efforts of both of you to empower the millions of people all over the world."*


# Prof. Dr. Deby Vinski

## Msc, PhD

"Cell Membrane Therapy" is a wonderful book, easy to read, researched and written by Prof. Dr. Mike K.S. Chan & Prof. Dr. Yuriy Nalapko. I met them some years ago and discovered we share the same scientific principles about Clinical Practice in Brain, Liver and Cardiovascular diseases. Congratulations to Prof. Dr. Mike K.S. Chan & Prof. Dr. Yuriy Nalapko on their timely book in which they share the secrets to not only live longer but also to reverse the aging process and stay young, healthy and happy.

> *"a wonderful book"*

Prof. Dr. Deby Vinski, Msc, PhD
*President of World Council of Preventive, Regenerative and Anti-aging Medicine (WOCPM)*

> *"they share the secrets"*

# FOREWORD

## 賀林

1953年7月出生于北京，
遗传生物学家，中国科学院院士、
第三世界科学院院士，上海交通大
学生命科学技术学院教授、
博士生导师。

Academician of the Chinese Academy of Sciences
Members of the Chinese Academy

## 李保界

1966年9月生，上海交通
大学特聘教授，教育部“长江学者奖
励计划”特聘教授，博导，Bio-X研
究院副院长，骨骼干细胞信号转导
研究组组长。北京师范大学学士，
美国阿尔伯特爱因斯坦医学院博士，
哥伦比亚大学博士后。

Distinguished Professor of Shanghai Jiao Tong University, Distinguished Professor of Changjiang scholar award program of ministry of education, doctoral supervisor, vice President of bio-x research institute, leader of bone stem cell signal transduction research group

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The authors have pooled their years of experience and dynamics of their perspective in seeing beyond what's going on between admission and discharge. The moment of thought when one starts to doubt what one has learnt and what one has been told to do, a moment when you start questioning the protocols and the social system integrated into the planet's biosphere – this provides important information about the author's intentions and the scope of the book.

As indicated by the authors, this book truly satisfies the friendly curiosity on the topic of biological medicine and wellness. Credit goes to the organization of the protocols by the easy to manoeuvre chapters of Diagnose, Detox, Repair & Rejuvenation. To an extent, this encapsulates the measures of patient management. The authors' credentials weighs on their work of this division in practice. It is inevitably points to functional medicine, coarsely referencing.

This book does address therapeutic modalities and here, I am keen to dwell more on the morpho-physiologic function of the modalities used, to contribute to my continuous medical education as an integral part of life-long learning and clinical practice.

> *“this book truly satisfies the friendly curiosity on the topic of biological medicine and wellness.”*

Certainly, by means of the intermediate explorations they have both taken, they leave the physician satiated in the stride to do more for the patients, further than diagnosing and eliminating certain symptoms. It leads to see beyond. Looking forward to the evolution of the pace unveiled herein. Especially in view of how biological regenerative medicine can become the mainstream solution to current clinical conundrums to the authors, wonderful work, keep continuing!

# Dr. Untoyo Wibowo

SpAK

The world of medicine and wellness are always evergrowing, especially nowadays with more advanced technology and researches. These breakthroughs in the field of medical has always fascinate me and encourage me to seek more knowledge regarding it.

In all my 15 years of friendship with Prof Dr Mike Chan, it has always been a real pleasure discussing with him about innovations in the field of medicine, especially regenerative medicine and cell therapy. Hereby I congratulate him for his books and profoundly appreciate the knowledge shared within these books

> *“These breakthroughs in the field of medical has always fascinate me”*

Dr. Untoyo Wibowo SpAK

# Colin Chan

## MD, DABFM, CCFP, DABAARM

Cell Membrane Therapy: Clinical Practice in Brain, Liver and Cardiovascular Diseases is the authoritative presentation of the essential biologic compound that is vastly underutilized in medicine yet can significantly improve many of the most common and serious diseases of the modern world including cardiovascular diseases, Alzheimer's disease, diabetes, and liver diseases. This in-depth discussion of phosphatidylcholine's biochemistry and health implications concludes with evidence-based protocols that a clinician can use immediately to positively impact every one of their patient's health. Authored by world renowned experts in regenerative medicine, Profs. Dr. Mike Chan and Dr. Yurily Nalapko, this fascinating discussion of the unique molecule that makes up all human cell membranes will help the reader to understand its ability to restore the cell membrane integrity and lead ultimately to anti-aging benefits and increase longevity. As a specialist in anti-aging and regenerative medicine in clinical practice for over 20 years I am grateful to Prof. Dr. Mike Chan for sharing his knowledge and wisdom in this and his prior two books, A Comprehensive Guide to Biological Medicine and Wellness and Stem Cells in Regenerative Medicine Carpe Diem- Carpe Vitam! with co-author Dr. Dimitry Klokol. This invaluable knowledge will make every physician a better healer for themselves, their family and their patients.

*"This in-depth discussion of phosphatidylcholine's biochemistry and health implications concludes with evidence-based protocols that a clinician can use immediately to positively impact every one of their patient's health."*

*Colin Chan, MD, DABFM, CCFP, DABAARM*
*Scientific Advisory Board Member AARM*
*American Academy of Stem Cell Physicians*

# PREFACE

Cell membrane is a selectively permeable structure, which is essential for the separation of cells and organelles from their surroundings. Membrane fluidity plays a significant role in the function of biological membranes, and fluidity is decisively influenced by the composition of phospholipids. The basic structure of biological membranes is a series of continuing units of lipid-protein complexes.

The integrity and function of the external (cellular) and internal (subcellular) membranes depend on their composition and the integrity of their phospholipid structure. In addition to the content of cholesterol and proteins, and the nature and charge of the polar head groups of the phospholipids, membrane fluidity depends on the length of the fatty acid chains of the phospholipids as well as the number and type of their double bonds.

No mammalian cellular membranes are formed without phospholipids.

Phospholipids are essential components of all cellular and subcellular membranes. Apart from phospholipids, other structural elements of membrane are cholesterol, glycolipids, and peripheral and integral proteins. In 1850, Theodore Gobley described a substance, "lecithin", which he named after the Greek word "lekythos", meaning egg yolk. In the year of 1862, Adolph Strecker noted that when lecithin is heated it generates a new nitrogenous chemical compound that he named "choline". In 1865, Liebreich identified a new substance in the brain, which he called "neurine". Lecithin was eventually characterized as being phosphatidylcholine. In 1954, Eugene Kennedy described the cytidine 5-diphosphocholine pathway, by which choline is incorporated into phosphatidylcholine. Another route, the phosphatidylethanolamine N-methyltransferase pathway, was identified.

The role of choline as part of the neurotransmitter acetylcholine was established by Loewi and Dale. Charles Best stated that choline prevented the development of a fatty liver in animals. The importance of choline as an essential nutrient for human health was determined in the 1990s through human-controlled feeding studies.

This book is based on the reviews of the publications and recent scientific data, and dedicated to human cell membranes. We discuss techniques of maintenance of the structural integrity and functional capability of the human cell membranes in clinical settings. Chapter 1 covers the basic facts about the structure of human cells and their membranes. We highlight the biochemical properties and function of different essential phospholipids in the maintenance of cell membranes.

The role of phosphatidylcholine, which is one of the essential phospholipids in human cell membranes, is described in Chapter 2. Phosphatidylcholine, acetylcholine and other choline derivatives play an important role in the treatment of a number of medical conditions, such as atherosclerosis, heart disease, immune disorders, neurological and neurodegenerative diseases, and others.

In Chapter 3 we look into recent clinical trials investigating different aspects of the use in medical practice. We aim to cover the cutting-edge problems of clinical medicine – Alzheimer's disease, Parkinson's disease, brain stroke, atherosclerosis, fatty liver disease, diabetes and many others – and to outline the potential clinical benefits of phosphatidylcholine in the treatment of these diseases. We also discuss safety aspects of the use of phosphatidylcholine in clinical application, with emphasis on critical points of its administration protocols.

We hope that a new comprehensive outlook onto the role of phosphatidylcholine as a basic component of human cell membranes allows us to improve the clinical results of the treatment of many diseases, and will also give a stimulus to develop new paradigms in biomolecular medicine.

# ABBREVIATIONS

A-β – beta-amyloid
AD – Alzheimer's disease
ADR – adverse drug reaction
AFLD – alcoholic fatty liver disease
ALD – alcoholic liver disease
ALT – alanine aminotransferase
AP – alkaline phosphatase
ApoE – apolipoprotein E
ARDS – acute respiratory distress syndrome
ASH – alcoholic steatohepatitis
AST – aspartate aminotransferase
ATP – adenosine triphosphate
AVH – acute viral hepatitis
CDP-choline – cytidine diphosphate choline
CHD – coronary heart disease
CHE – cholinesterase
CNS – central nervous system
CT – computed tomography
DC – deoxycholate
DHA – diedocosahexanoic acid
DLPC – 1,2-dilinoleoylphosphatidylcholine
DOC – sodium deoxycholate
EDTA – ethylenediaminetetraacetic acid
EPL – essential phospholipids
ERGp – pattern electroretinogram
FL – fatty liver
FLD – fatty liver disease
GLDH – glutamate dehydrogenase
GM-CSF – granulocyte macrophage colony-stimulating factor
GPL – glycerophospholipids
HbA1c – haemoglobin A1c
HBsAg – surface antigen of the hepatitis B virus
HC – hepatic coma
HDL – high-density lipoprotein
HG – high glucose
HOMA – homeostasis model assessment
HSC – hematopoietic stem cells
IL – interleukin
IOP – intraocular pressure
iv – intravenous
LDL – low-density lipoprotein
LPS – lipopolysaccharide
LXR – liver X receptor
MOI – multiple organ injury
MPO – myeloperoxidase
mRNA – messenger RNA
NADPH – reduced form of nicotinamide adenine dinucleotide phosphate
NAFLD – non-alcoholic fatty liver disease
NASH – non-alcoholic steatohepatitis
NO – nitric oxide

NOX – NADPH-oxidase(s)
PC – phosphatidylcholine
PD – Parkinson's disease
PE – phosphatidylethanolamine
PL – phospholipid
PMN – polymorphonuclear leukocytes
po – orally
PPC – polyenylphosphatidylcholine
PS – phosphatidylserine
qd – daily
RA – rheumatoid arthritis
RGC – retinal ganglion cell
SAE – serious adverse events
SCI – spinal cord injury
SLE – systemic lupus erythematosus
SM – sphingomyelin
T2D – type 2 diabetes
TB – tuberculosis
TBI – traumatic brain injury
TC – serum total cholesterol
TG – serum triglycerides
TGF beta 1 – transforming growth factor beta type 1
tid – three times daily
TLD – toxic liver damage
TLR – toll-like receptors
TMAO – trimethylamine N-oxide
TNF-α – tumor necrosis factor-alpha
US – ultrasonography
VEP – visual evoked potentials
VLDL – very low density lipoprotein
γ-GT – gamma-glutamyl transferase