

Personal Profile

Name/ Degrees	Liang-Yin Ke, Ph.D.	Gender	Male
Date of Birth	19, 07, 1972	Nationality	Taiwan

Contact Information

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Statement

Specialties and expertise	Proteomics, Lipidomics, Molecular Diagnostics, Molecular Biology
Recent research achievements	
Highly electronegative LDL from patients with ST-elevation myocardial infarction triggers platelet activation and aggregation. (Co-first Author; <i>Blood</i> . 2013;122:3632-3641). We provide evidence for the first time to our knowledge that plasma levels of L5—the most electronegative and atherogenic subfraction of low-density lipoprotein—are drastically elevated in patients with ST-elevation myocardial infarction (STEMI). Furthermore, we show that when L5 isolated from the plasma of STEMI patients was injected into the tail vein of mice, it induced platelet activation and shortened tail-bleeding time. These results indicate that L5 is prothrombotic, which was further demonstrated by the ability of L5 to increase tissue factor and P-selectin expression on endothelial cells, enhance platelet aggregation, and promote platelet–endothelial cell interactions. We also showed that L5 enhanced ADP-induced platelet activation through the PAFR- and LOX-1–mediated PKC α signaling pathway. Our findings strongly suggest that L5 may be a key factor in promoting acute thrombosis that leads to STEMI.	
Research targets and goals	
As partially disclosed by Professor Chu-Huang (Mendel) Chen’s group, the harmful effects of atherogenic LDL, VLDL, and HDL are resultant from their abnormal chemical composition. Therefore, structural characterization of L5 and other lipoprotein subfractions will not only enhance our understanding of lipid trafficking and cell signaling, but will also form the chemical basis for antibody development and receptor cloning. To define the structures and identify the active components, we will employ analytical chemistry, lipidomic, proteomic, and metabolomic analyses of the lipid particles.	

Education/ Training Background

Higher Education (University or other degree-awarding institute)					
From (year)	To (year)	Degree(bachelor /master/PhD)	University/ Institute	Country	Subject
1990	1994	Bachelor	National Chen-Kung University	Taiwan	Medical Laboratory Science & Biotechnology
2000	2002	Master	Kaohsiung Medical University	Taiwan	Graduate Institute of Medicine

2006	2013	Ph.D.	Kaohsiung Medical University	Taiwan	Graduate Institute of Medicine
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Licenses and Certificates (Medical/Educational/ Other Specialties)

License: 1996-present Medical Scientist
Membership: 1996-present Kaohsiung Medical Scientist Association
Membership: 2013-present American Heart Association

Employment History

From (year)	To (year)	Department	Position/ professional status
1994.7	1996.5	National Military Hospital 819, Yun Lin County, Taiwan	Medical Scientist
1996.6	1997.1	Great East Hospital, Feng Shan City, Taiwan	Medical Scientist
1997.1	2008.7	Kaohsiung Medical University Hospital (KMUH), Kaohsiung, Taiwan	Medical Scientist & Research Assistant
2008.7	2009.7	Athero & Vascular Medicine, Baylor College of Medicine, Texas, USA	Pre-Doctoral Fellow
2009.7	2010.8	Vascular and Medicinal Research, Texas Heart Institute, Texas, USA	Pre-Doctoral Fellow
2010.8	2014.7	Kaohsiung Medical University Hospital (KMUH), Kaohsiung	Medical Scientist
2013.1	present	Center for Lipid Biosciences, KMUH, Taiwan	Laboratory Manager
2014.8-	present	Lipid Science & Ageing Research Center (LSARC), KMU, Kaohsiung, Taiwan	Associate Director,
2014.8-	present	Medical Laboratory Science & Biotechnology, KMU, Kaohsiung, Taiwan	Assistant Professor,

Teaching Experiences

Didactic lectures (lecture halls)			
Bedside teaching (to students, residents, fellows)			
Community seminars to lay audiences			
From (year)	To (year)	Department/Venue	Type of Teaching
2006.8	2008.7	Department of Laboratory Medicine	Bedside teaching
2010.8	2013.7	Department of Laboratory Medicine	Bedside teaching
2011.8	2013.7	Medical Laboratory Science & Biotechnology, KMU, Kaohsiung	Bedside teaching
2014.8-	present	Medical Laboratory Science & Biotechnology, KMU, Kaohsiung	Didactic lectures

Awards

1996 Excellent Military Officer
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Invited Seminar and Lectures (International/Domestic)

From (year)	To (year)	University/ Institute	Country	Position/ professional status
July 25, 2015		30th anniversary of Hepato-Biliary-Pancreatic Section, KMH.	TAIWAN	International Conference on Future Hepatology. Lipid metabolism and systemic diseases
Dec 11, 2014		Kaohsiung Medical University	TAIWAN	Research meeting on Integrating Glycomics into Systems Biology. Investigation of antigenic epitopes of electronegative lipoproteins.

Grants (International/Governmental/Institutional/Industrial/Philanthropic)

Development of enzyme-based devices for detoxification of atherogenic low-density lipoprotein; KMH-Q104019, 2015/01/01~2015/12/31
Service platform for atherogenic lipoproteins; KMH-TP103D19, 2014/08/01~2015/07/31
Roles of electronegative low density lipoproteins L5 and GNMT in chronic hepatitis B viral infection related hepatocellular carcinoma; NSYSUKMH103-I010-4, 2014/01/01~2014/12/31

Languages

Languages	Very good	Good	Fair	Poor
Chinese	V			
English		V		

Hobbies and skills

Hobbies	Traveling, music
Skills	Bioinformatic Software: DNA star (Lasergene v6), Affymetrix gene chip operation software, Genotyping console, Partek genomic suite v7, SPSS v19, JMP v10, beacon designer v7, NCBI Sequin v, GeneMapper v3.1, sequencing v5.2, Mega v6. ProteinLynx global server v3.0, MassLynx v4.1 Laboratory skills: LC/MS ^E , UPLC (ultra-performance liquid chromatography), FPLC (fast-performance liquid chromatography), Next-generation sequencing, whole exon/ transcriptome sequencing, Affymetrix SNP chip, Human Transcriptome Array, miRNAs, primer design, real-time PCR, direct sequencing, primer extension, western blot, flow cytometry, molecular cloning, expression and phylogenetic analysis.

Inventions and patents

Patent No. I359196: Early detection of <i>Borrelia burgdorferi</i> sensu lato, the PCR primer pair and diagnostic method.
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Publications

Full manuscripts-published

1. Stancel N, Chen CC, **Ke LY**, Chu CS, Lu J, Sawamura T, Chen CH*. Interplay between CRP, atherogenic LDL, and LOX-1 and its potential role in the pathogenesis of atherosclerosis. *Clin Chem*. 2015 (accepted).
2. Tung YC, **Ke LY**, Lu PL, Lin KH, Lee SC, Lin YY, Chou LC, Tsai WC. Comparison of the Roche COBAS AmpliPrep/COBAS TaqMan HIV-1 test v1.0 with v2.0 in HIV-1 viral load quantification. *Kaohsiung J Med Sci*. 2015 Apr;31(4):188-93.
3. Tung YC, **Ke LY**, Tsai WC, Lin KH, Tsai SM, Wang CF, Lee HF, Su HJ, Lu PL. The development of a beacon-based real-time PCR for cytomegalovirus and its application in immunocompromised patients. *Clin Lab*. 2014;60(11):1895-901.
4. **Ke LY**[†], Stancel N[†], Bair H, Chen CH*. The underlying chemistry of electronegative LDL's atherogenicity. *Curr Atheroscler Rep*. 2014;16:428. doi: 10.1007/s11883-014-0428-y. PMID: 24890631
5. Tung YC, **Ke LY**, Tsai SM, Lu PL, Tsai WC. High seroprevalence of human herpesvirus 8 infection in patients with systemic lupus erythematosus. *Int J Rheum Dis*. 2013 Dec;16(6):709-14.
6. Chan HC[†], **Ke LY**[†] (co-first), Chu CS, Lee AS, Shen MY, Cruz MA, Hsu JF, Cheng KH, Chan HC, Lu J, Lai WT, Sawamura T, Sheu SH, Yen JH*, Chen CH*. Highly electronegative LDL from patients with ST-elevation myocardial infarction triggers platelet activation and aggregation. *Blood*. 2013;122:3632-3641. PMID: 24030386 (Featured with editorial comment*).
7. Tung YC, Lu PL, **Ke LY**, Tsai WC. CMV Infection and Pregnancy. *Curr Obstet Gynecol Rep* (2012) 1:216-222; 1(4). DOI:10.1007/s13669-012-0028-1.
8. Ke GM, Lin KH, Lu PL, Tung YC, Wang CF, **Ke LY**, Lee MS, Lin PC, Su HJ, Lin YY, Huang TP, Wang JR, Wang SY, Hsu LC, Chu PY. Molecular epidemiology of Echovirus 30 in Taiwan, 1988-2008. *Virus Genes*. 2011 Apr;42(2):178-88.
9. **Ke LY**, Engler DA, Lu J, Matsunami RK, Chan HC, Wang GJ, Yang CY, Chang JG, Chen CH*. Chemical composition-oriented receptor selectivity of L5, a naturally occurring atherogenic low-density lipoprotein. *Pure Appl Chem*. 2011;83:1731-1740. PMID: 24198440.
10. Chan HC, **Ke LY**, Liu CC, Chang LL, Tsai WC, Liu HW, Yen JH. Increased expression of suppressor of cytokine signaling 1 mRNA in patients with rheumatoid arthritis. *Kaohsiung J Med Sci*. 2010 Jun;26(6):290-8.
11. Chan HC, **Ke LY**, Chang LL, Liu CC, Hung YH, Lin CH, Li RN, Tsai WC, Liu HW, Yen JH. Suppressor of cytokine signaling 1 gene expression and polymorphisms in systemic lupus erythematosus. *Lupus*. 2010 May;19(6):696-702.
12. Ke GM, Yu SW, Ho CH, Chu PY, **Ke LY**, Lin KH, Tsai YC, Liu HJ, Lin MY. Characterization of newly emerging Newcastle disease viruses isolated during 2002-2008 in Taiwan. *Virus Res*. 2010 Feb;147(2):247-57.
13. Chu PY, Ke GM, Chang CH, Lin JC, Sun CY, Huang WL, Tsai YC, **Ke LY**, Lin KH. Molecular epidemiology of coxsackie A type 24 variant in Taiwan, 2000-2007. *J Clin Virol*. 2009 Aug;45(4):285-91.
14. Chen CH*, Dixon RAF, **Ke LY**, Willerson JT. Vascular progenitor cells in diabetes mellitus: Roles of Wnt signaling and negatively charged LDL. *Circ Res*. 2009;104:1038-1040. PMID:19423862.

15. Tung YC, Lin KH, Chiang HC, **Ke LY**, Chen YH, Ke GM, Chen TC, Chou LC, Lu PL. Molecular epidemiology of dengue virus serotype 2 in the Taiwan 2002 outbreak with envelope gene and nonstructural protein 1 gene analysis. *Kaohsiung J Med Sci.* 2008 Aug;24(8):398-407.
16. Tung YC, Lin KH, Chang K, **Ke LY**, Ke GM, Lu PL, Lin CY, Chen YH, Chiang HC. Phylogenetic study of dengue-3 virus in Taiwan with sequence analysis of the core gene. *Kaohsiung J Med Sci.* 2008 Feb;24(2):55-62.
17. Tsai JJ, Sun HY, **Ke LY**, Tsai KS, Chang SY, Hsieh SM, Hsiao CF, Yen JH, Hung CC, Chang SC. Higher seroprevalence of *Entamoeba histolytica* infection is associated with human immunodeficiency virus type 1 infection in Taiwan. *Am J Trop Med Hyg.* 2006 Jun;74(6):1016-9.
18. Ke GM, Cheng HL, **Ke LY**, Ji WT, Chulu JL, Liao MH, Chang TJ, Liu HJ. Development of a quantitative Light Cycler real-time RT-PCR for detection of avian reovirus. *J Virol Methods.* 2006 Apr;133(1):6-13.
19. Hsu MC, Tsai PY, Chen KT, Li LH, Chiang CC, Tsai JJ, **Ke LY**, Chen HY, Li SY. Genotyping of *Chlamydia trachomatis* from clinical specimens in Taiwan. *J Med Microbiol.* 2006 Mar;55(Pt 3):301-8.
20. Lin KH, Hwang KP, Ke GM, Wang CF, **Ke LY**, Hsu YT, Tung YC, Chu PY, Chen BH, Chen HL, Kao CL, Wang JR, Eng HL, Wang SY, Hsu LC, Chen HY. Evolution of EV71 genogroup in Taiwan from 1998 to 2005: an emerging of subgenogroup C4 of EV71. *J Med Virol.* 2006 Feb;78(2):254-62.

Full manuscripts under revision or review

21. Wang YC[†], Lee AS[†], Lu LS[†], **Ke LY**, Dong JW, Lu J, Chen ZP, Dou H, Chen WY, Chan HC, Kuzan TY, Dixon RAF, Sawamura T, Chang KC*, Chen CH*. Human electronegative LDL triggers mitochondrial dysfunction to induce TP53-mediated endothelial senescence in vivo. *Eur Heart J.* 2015 (under invited revision).
22. **Ke LY**, Chan HC, Chen CC, Lu J, Marathe GK, Chu CS, Chan HC, Wang CY, Tung YC, McIntyre TM, Yen JH*, Chen CH*. Enhanced sphingomyelinase activity in apolipoprotein B100 contributes to the atherogenicity of electronegative LDL. *J Med Chem.* 2015 (under invited revision).
23. Chu CS, **Ke LY**, Cheng KH, Chan HC, Chen CC, Cheng KH, Lee HC, Kuo HF, Chang Tsai WC, Kuo HF, Chang CT, Sheu SH, Chen CH*, Lai WT*. The Four Statin Benefit Groups Defined by The 2013 ACC/AHA New Cholesterol Guideline are Characterized by Increased Plasma Level of Electronegative LDL. *Acta Cardiol Sin.* 2015 (under invited revision).
24. Lee HC, Lin HT, **Ke LY**, Tsai PS, Wei C, Hsiao YL, Liu IH, Chu CS, Shin SJ, Chen CH, Sheu SH, Wu BN. VLDL of Metabolic Syndrome Individuals Enhances Atrial Fibrillation Vulnerability in Association with Left Atrial Remodeling. *Heart Rhythm.* 2015 (under review).

Speeches/Presentations at international conferences

1. **Ke LY**, Chen CH. Lipid metabolism and systemic diseases. 30th anniversary of Hepato-Biliary-Pancreatic Section, KMUH. International Conference on Future Hepatology. July 25, 2015.
2. Lee HC, Tsai PS, Wei C, Shiao YL, Lin HT, **Ke LY**, Chen CH, Sheu SH, Wu BN. Atherogenic Very-Low-Density Lipoproteins Cause Left Atrial Remodeling and Atrial Fibrillation Vulnerability. The Heart Rhythm Society's 36th Annual Scientific Sessions, Boston, USA. May, 2015.
3. Chen CH, **Ke LY**, Chan HC, Chen CH, Shin SJ*. Electronegative LDL Impairs Kidney through Damage of STRA6 Signaling. Taipei, Taiwan. March, 2015.
4. Lee HC, Wei C, **Ke LY**, Tsai PS, Lin HT, Shiao YL, Wu BN, Chen CH, Sheu SH. Atherogenic Very-Low-Density Lipoprotein Shortens Atrial Action Potential Duration by Increasing

Potassium Currents and Calcium Transient, *Biophysical Journal*, Volume 108 , Issue 2 , 586a, February 11, 2015

5. Chu CS, Chan HC, **Ke LY**, Chan HC, Wang CY, Cheng KH, Lee HC, Kuo HF, Chang GT, Sheu SH, Sawamura T, Lai WT, Chen CH*. Electronegative LDL of metabolic syndrome patients induces release of inflammatory adipocytokines and accumulation of M1 macrophages in adipose tissue. Presented at the *American Heart Association* Scientific Sessions in Chicago, IL, November 15–19, 2014.
6. Chu CS, **Ke LY**, Chan HC, Chan HC, Chen CC, Cheng KH, Lee HC, Kuo HF, Chang GT, Sheu SH, Lai WT, Chen CH*. The four statin benefit groups defined by the 2013 ACC/AHA guideline are characterized by increased plasma level of electronegative LDL. Presented at the *American Heart Association* Scientific Sessions in Chicago, IL, November 15–19, 2014.
7. Chan HC, **Ke LY**, Chan HC, Su H, Lee AS, Lu J, Tsai WC, Ou TT, Wu CC, Chu CS, Shiea J, Yen JH, Chen CH*. Low-density lipoprotein of systemic lupus erythematosus patients contains lysophosphatidylcholine-rich lipid that induces overexpression of CX3CL1 in endothelial cells. Presented at the American Heart Association Scientific Sessions in Chicago, IL, November 15–19, 2014.
8. Chan HC[†], **Ke LY**, Chu CS, Lee AS, Shen MY, Cruz MAC, Chan HC, Cheng KH, Lai WT, Yen JH, Sawamura T, Sheu SHS, Chen CH*. Highly Electronegative LDL is Elevated in Patients With Acute Myocardial Infarction and Triggers Platelet Activation and Aggregation. *Circulation* 2012;126:A9753. Presented at the *American Heart Association* Scientific Sessions in Los Angeles, CA, November 3–7, 2012.
9. Chen CH*, Lu J, Engler DA, **Ke LY**, Yilmaz HR, Dixon RAF, Chen SH, Yang CY. Biologic Significance of Charge-Based Heterogeneity in Diabetic VLDL Subfractions. *Diabetes*. 2011;60(Suppl 1):A157. Presented at the *American Diabetes Association* 71st Scientific Sessions in San Diego, California, June 24-28, 2011.