

# CURRICULUM VITAE

**Ming Li**

(Updated on Dec 2nd, 2013)

## Contact Information

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## Education

B.A. in Mathematical Statistics, Nankai University, Tianjin, China 1995

M.S. in Statistics, University of Michigan, Ann Arbor, Michigan 1999

Ph.D. in Business Administration, with concentration on Statistics and Management Science,  
University of Michigan Business School, Ann Arbor, Michigan 2002

## Academic Appointments

Research Assistant, University of Michigan Business School, Ann Arbor, Michigan 1997-2001

Visiting Scholar, Biostatistics Shared Resources, Vanderbilt-Ingram Cancer Center 2003-2004

Research Assistant Professor, Department of Biostatistics, Vanderbilt University 2004-2011

Research Associate Professor, Department of Biostatistics, Vanderbilt University 2011-Present

## Awards

Guanghua Scholarship, Nankai University, China 1993-1995

Charles H. Gessner Doctoral Scholarship for Outstanding Student from Developing Countries,  
University of Michigan Business School 1999

University of Michigan Business School Fellowship 1997-2001

Career Development Award, SPORE in Gastrointestinal Cancer, Vanderbilt-Ingram Cancer Center  
2004-2006

**Professional Organizations**

International Biometric Society  
American Statistical Association

**Professional Activities**

Project Manager, High Dimensional Data Analysis Core, Cancer Biostatistics Division 2005-Present

**Manuscript review for:**

Bioinformatics  
Clinical Cancer Research  
Clinical Pharmacology and Therapeutics  
Journal of Cellular and Molecular Medicine  
Journal of Thoracic Oncology  
Molecular and Cellular Proteomics  
Proteomics Clinical Application

**Teaching Activities**

Teaching Assistant, MBA Core Statistics course, University of Michigan Business School 2001  
Instructor, BBA Core Statistics course, University of Michigan Business School 2002

**Students**

Member, Master Thesis Committee for Yaoyi Chen (advisor David Tabb) 2011-2012  
Member, Ph.D. Dissertation Committee for Yaoyi Chen (advisor David Tabb) 2012-Present

**Major Research Interest**

Mass spectrometry data pre-processing and analysis  
Genomic and proteomic data analysis  
Statistical methods for high dimensional data  
Statistical consulting

**Research Program****ACTIVE**

5P01 CA116087-05 (Peek)	01/01/09-12/31/13	1.80 calendar months
NCI	\$434,057	

H. pylori-induced inflammation and gastric cancer

The major goal of this project is delineation of the molecular signaling events, initiated by H. pylori - epithelial cell contact, that regulate phenotypes related to gastric carcinogenesis.

5R01 CA102353-08 (Massion)	04/01/10-01/31/15	0.96 calendar months
NCI	\$171,407	

Molecular approaches to early detection of lung cancer

The major goal of this project is to identify markers of molecular instability that could be considered for early detection and for assessment of response to chemoprevention strategies.

5U01 CA152662-04 (Massion)	08/16/10-06/30/15	3.60 calendar months
NCI	\$416,436	

Validation of biomarkers of risk for the early detection of lung cancer

The major goals of this project are to validate 2 candidate biomarkers in samples already available in our biorepository and validate candidate biomarkers in phase 3 in a prospective cohort of high risk individuals.

5U01 CA152647-04 (Liebler) NCI Vanderbilt biomarker development laboratory The major goals of this project are to develop and apply new informatics tools and approaches to enhance unbiased biomarker discovery and to discover and verify protein biomarker candidates for the assessment of prognosis in colon and lung cancer.	08/20/10-06/30/15 \$374,811	0.96 calendar months
5U24 CA159988-03 (Liebler) NCI Vanderbilt proteome characterization center (CPTAC II) The major goal of this project is to integrate genomic information with proteomic technologies to discover and verify protein biomarkers for cancer.	08/26/11-07/31/14 \$1,755,803	1.80 calendar months
5R01 CA138923-04 (Dikov) NCI Adenosine in tumor-host interaction The major goal of this project is to determine the role of adenosine signaling in aberrant differentiation and activation of tumor-infiltrating myeloid cells, induction of immune suppression, and tolerance and promotion of tumor growth and vascularization.	07/07/10-12/31/14 \$113,218	0.24 calendar months
5R21 CA155946-02 (Lovvorn III) NCI Molecular Analysis of Ethnic Variations in Wilms' Tumor The major goal of this project is to explore the biological basis for ethnic variations in the development and progression of the lethal childhood kidney cancer, Wilms' tumor.	09/20/11-08/31/14 \$114,284	0.36 calendar months
5P50 CA095103-12 (Coffey) NCI SPORE in GI cancer These four projects continue to focus on transforming how we diagnose and treat individuals with colorectal cancer and deepening our understanding of the pathobiology of colorectal neoplasia.	07/25/07-04/30/17 \$1,474,358	0.72 calendar months
5P30 CA068485-16 (Pietenpol) NCI Cancer center support grant The goal of this project is to conduct, coordinate and integrate Vanderbilt University's cancer-related activities.	09/17/97-08/31/15 \$3,781,250	0.72 calendar months
5P30 ES000267-46 (Liebler) NIEHS Center in Molecular Toxicology The main goal of this project is to support work in toxicology and environmental health sciences research at Vanderbilt University.	04/01/10-03/31/15 \$951,326	0.60 calendar months
<b><u>PENDING</u></b>		
1R01 NS086972-01 (Zhu) NINDS Cine-guided spectroscopic imaging of GABA in the CNS for neuropathic pain The main goal of this project is to develop a robust set of spectroscopic imaging methods to identify biomarkers for neuropathic pain (NP) in the human brain and spinal cord (SC).	04/01/14-03/31/19 \$250,000	1.20 calendar months

1R01 NS083695-01A1 (Donahue)	04/01/14-03/31/18	1.20 calendar months
NINDS	\$250,000	
Neurochemical and Hemometabolic Quantitation in Peri-Infarct Tissue after Stroke		
The main goal of this project is to expand the post-stroke imaging infrastructure to enable quantitative tissue-level evaluation of pharmacological interventions intended to promote functional recovery.		
N/A (Massion)	04/01/14-03/31/19	1.20 calendar months
NCI	\$1,616,539	
SPOR in Lung Cancer		
The major goals of this project are to facilitate translational research for lung cancer and provide a focal point to coordinate a diverse research portfolio in lung cancer research.		

## Publications

### Peer Reviewed

1. Shinohara ET, Gonzalez A, Massion PP, Chen H, **Li M**, Freyer AS, Olson SJ, Andersen JJ, Shyr Y, Carbone DP, Johnson DH, Hallahan DE, Lu B (2005) Nuclear survivin predicts recurrence and poor survival in patients with resected nonsmall cell lung carcinoma. *Cancer* 103:1685-92 (PMID 15742356)
2. Slebos RJ, **Li M**, Evjen AN, Coffa J, Shyr Y, Yarbrough WG (2006) Mutagenic effect of cadmium on tetranucleotide repeats in human cells. *Mutation Research* 602:92-9 (PMID 16989872)
3. Dai Q, Shrubsole MJ, Ness RM, Schlundt D, Cai Q, Smalley WE, **Li M**, Shyr Y, Zheng W (2007) The relation of magnesium and calcium intakes and a genetic polymorphism in the magnesium transporter to colorectal neoplasia risk. *American Journal of Clinical Nutrition* 86:743-51 (PMID 17823441; PMC2082111)
4. Yildiz PB, Shyr Y, Rahman JS, Wardwell NR, Zimmerman LJ, Shakhtour B, Gray WH, Chen S, **Li M**, Roder H, Liebler DC, Bigbee WL, Siegfried JM, Weissfeld JL, Gonzalez AL, Ninan M, Johnson DH, Carbone DP, Caprioli RM, Massion PP (2007) Diagnostic accuracy of MALDI mass spectrometric analysis of unfractionated serum in lung cancer. *Journal of Thoracic Oncology* 2:893-901 (PMID 17909350)
5. Slebos RJ, **Li M**, Vadivelu S, Burkey BB, Netterville JL, Sinard R, Gilbert J, Murphy B, Chung CH, Shyr Y, Yarbrough WG (2008) Microsatellite mutations in buccal cells are associated with aging and head and neck carcinoma. *British Journal of Cancer* 98:619-26 (PMID 18212747; PMC2243146)
6. Luo W, Slebos RJ, Hill S, **Li M**, Brábek J, Amanchy R, Chaerkady R, Pandey A, Ham AJ, Hanks SK (2008) Global impact of oncogenic Src on a phosphotyrosine proteome. *Journal of Proteome Research* 7:3447-60 (PMID 18563927; PMC2579752)
7. Slebos RJ, Brock JW, Winters NF, Stuart SR, Martinez MA, **Li M**, Chambers MC, Zimmerman LJ, Ham AJ, Tabb DL, Liebler DC (2008) Evaluation of strong cation exchange versus isoelectric focusing of peptides for multidimensional liquid chromatography-tandem mass spectrometry. *Journal of Proteome Research* 7:5286-94 (PMID 18939861; PMC2669493)

8. Wu H, Dai Q, Shrubsole MJ, Ness RM, Schlundt D, Smalley WE, Chen H, **Li M**, Shyr Y, Zheng W (2009) Fruit and vegetable intakes are associated with lower risk of colorectal adenomas. *Journal of Nutrition* 139:340-4 (PMID 19091801; PMC2646202)
9. Chen S\*, **Li M**\*, Hong D, Billheimer D, Li H, Xu BJ, Shyr Y (2009) A novel comprehensive wave-form MS data processing method. *Bioinformatics* 25:808-14 (PMID 19176559; PMC2732299) (\*co-first author)
10. Xu BJ, Li J, Beauchamp RD, Shyr Y, **Li M**, Washington MK, Yeatman TJ, Whitehead RH, Coffey RJ, Caprioli RM (2009) Identification of early intestinal neoplasia protein biomarkers using laser capture microdissection and MALDI MS. *Molecular and Cellular Proteomics* 8:936-45 (PMID 19164278; PMC2689774)
11. Wujcik D, Shyr Y, **Li M**, Clayton MF, Ellington L, Menon U, Mooney K (2009) Delay in diagnostic testing after abnormal mammography in low-income women. *Oncology Nursing Forum* 36:709-15 (PMID 19887359; PMC3479661)
12. Sprung RW Jr, Brock JW, Tanksley JP, **Li M**, Washington MK, Slebos RJ, Liebler DC (2009) Equivalence of protein inventories obtained from formalin-fixed paraffin-embedded and frozen tissue in multidimensional liquid chromatography-tandem mass spectrometry shotgun proteomic analysis. *Molecular and Cellular Proteomics* 8:1988-98 (PMID 19467989; PMC2722776)
13. **Li M**, Gray W, Zhang H, Chung CH, Billheimer D, Yarbrough WG, Liebler DC, Shyr Y, Slebos RJ (2010) Comparative shotgun proteomics using spectral count data and quasi-likelihood modeling. *Journal of Proteome Research* 9:4295-305 (PMID 20586475; PMC2920032)
14. **Li M**, Chen S, Zhang J, Chen H, Shyr Y (2011) Wave-spec: a preprocessing package for mass spectrometry data. *Bioinformatics* 27:739-40 (PMID 21208983; PMC3105479)
15. Rahman SM, Gonzalez AL, **Li M**, Seeley, EH, Zimmerman LJ, Zhang XJ, Manier ML, Olson SJ, Shah RN, Miller AN, Putnam JB, Miller YE, Franklin WA, Blot WJ, Carbone DP, Shyr Y, Caprioli RM, Massion PP (2011) Lung cancer diagnosis from proteomic analysis of preinvasive lesions. *Cancer Research* 71:3009-17 (PMID 21487035; PMC3110721)
16. Denny JC, Choma NN, Peterson JF, Miller RA, Bastarache L, **Li M**, Peterson NB (2012) Natural language processing improves identification of colorectal cancer testing in the electronic medical record. *Medical Decision Making* 32:188-97 (PMID 21393557)
17. Baumann JL, **Li M**, Poulsen A, Chadwick NS, Cai Q, Chung CH, Shyr Y, Olsen JH, Zheng W, Slebos RJ (2012) Analysis of microsatellite mutations in buccal cells from a case-control study for lung cancer. *Cancer Epidemiology* 36:e33-9 (PMID 22056752; PMC3259162)
18. Zimmerman LJ, **Li M**, Yarbrough WG, Slebos RJ, Liebler DC (2012) Global stability of plasma proteomes for mass spectrometry-based analyses. *Molecular and Cellular Proteomics* 11:M111.014340 (PMID 22301387; PMC3433892)
19. Pecot CV, **Li M**, Zhang XJ, Rajanbabu R, Calitri C, Bungum A, Jett JR, Putnam JB, Callaway-Lane C, Deppen S, Grogan EL, Carbone DP, Worrell JA, Moons KG, Shyr Y, Massion PP (2012) Added value of a serum proteomic signature in the diagnostic evaluation of lung nodules. *Cancer Epidemiology, Biomarkers and Prevention* 21:786-92 (PMID 22374995)

20. Chen YY, Dasari S, Ma ZQ, Vega-Montoto LJ, **Li M**, Tabb DL (2012) Refining comparative proteomics by spectral counting to account for shared peptides and multiple search engines. *Analytical and Bioanalytical Chemistry* 404:1115-25 (PMID 22552787)
21. Sherrod SD, Myers MV, **Li M**, Myer JS, Carpenter KL, Maclean B, Maccoss MJ, Liebler DC, Ham AJ (2012) Label-free quantitation of protein modifications by pseudo selected reaction monitoring with internal reference peptides. *Journal of Proteome Research* (PMID 22559222; PMC3368409)
22. Sousa JF, Ham AJ, Whitwell C, Nam KT, Lee HJ, Yang HK, Kim WH, Zhang B, **Li M**, LaFleur B, Liebler DC, Goldenring JR (2012) Proteomic profiling of paraffin-embedded samples identifies metaplasia-specific and early-stage gastric cancer biomarkers. *Journal of Pathology* 181:1560-72 (PMID 22944598; PMC3483808)
23. Kikuchi T, Hassanein M, Amann JM, Liu Q, Slebos RJ, Rahman SM, Kaufman JM, Zhang X, Hoeksema MD, Harris BK, **Li M**, Shyr Y, Gonzalez AL, Zimmerman LJ, Liebler DC, Massion PP, Carbone DP (2012) In-depth proteomic analysis of nonsmall cell lung cancer to discover molecular targets and candidate biomarkers. *Molecular and Cellular Proteomics* 11:916-32 (PMID 22761400; PMC3494148)
24. Demory Beckler M, Higginbotham JN, Franklin JL, Ham AJ, Halvey PJ, Imasuen IE, Whitwell C, **Li M**, Liebler DC, Coffey RJ (2013) Proteomic analysis of exosomes from mutant KRAS colon cancer cells identifies intercellular transfer of mutant KRAS. *Molecular and Cellular Proteomics* 12:343-55 (PMID 23161513; PMC3567858)
25. Pedchenko T, Mernaugh R, Parekh D, **Li M**, Massion PP (2013) Early detection of NSCLC with scFv selected against IgM autoantibody. *PLoS One* 8(4):e60934 (PMID 23585862; PMCID PMC3621672)
26. Chen YY, Chambers MC, **Li M**, Ham AL, Turner JL, Zhang B, Tabb DL (2013) IDPQuantify: combining precursor intensity with spectral counts for protein and peptide quantification. *Journal of Proteome Research* 12:4111-21 (PMID 23879310; PMC3804902)
27. Axt J, Abdallah F, Axt M, Githanga J, Hansen E, Lessan J, **Li M**, Musimbi J, Mwachiro M, Newton M, Ndungu J, Njuguna F, Nzioka A, Oruko O, Patel K, Tenge R, Ukoli F, White R, O'Neill JA Jr, Lovvorn HN (2013) Wilms tumor survival analysis in Kenya. *Journal of Pediatric Surgery* 48:1254-62 (PMID 23845615; PMC3710438)
28. Halvey PJ, Wang X, Wang J, Bhat A, Dhawan P, **Li M**, Zhang B, Liebler DC, Slebos RJ (2013) Proteogenomic analysis reveals adaptations to DNA mismatch repair deficiency in colorectal tumor cells. *Cancer Research* (PMID 24247723)

### **Submitted**

29. **Li M**, Shyr Y (2013) An efficient dilution strategy for optimal estimation on sample DNA concentration.
30. Udyavar AR, Clark J, Zou Y, **Li M**, Chen H, Statnikov A, Shyr Y, Liebler DC, Field J, Eisenberg R, Estrada L, Quaranta V, Massion PP (2013) Subtypes of small-cell cancer distinguished by expression of oxidative stress and DNA damage response networks.

31. Smith GT, **Li M**, Moore B, Walker RC, Massion PP (2013) Reproducibility of volumetric computed tomography (vCT) of stable calcified pulmonary nodules: Implication on sensitivity of vCT in detection of lung cancer.
32. Olmsted IR, Hassanein M, Hoeksema M, Kussrow A, **Li M**, Massion Pierre, Bornhop DJ (2013) Non-small cell lung cancer biomarker validation and quantification using backscattering interferometry.
33. Libes JM, Seeley EH, **Li M**, Axt J, Pierce J, Correa H, Newton M, Hansen E, N'Dungu J, Oruko O, Githanga J, Abdullah F, Musimbi J, Njuguna F, Patel K, Ellsworth G, Mwachiro M, White R, Caprioli RM, Naranjo A, Huff V, O'Neill Jr. JA, and Lovvorn III HN (2013) Race Disparities in Peptide Profiles of North American and Kenyan Wilms Tumor Specimens

### **Book chapter**

34. Hong D, Li H, **Li M**, Shyr Y (2007) Some recent progress on proteomic data analysis. In *Quantitative Medical Data Analysis Using Mathematical Tools and Statistical Techniques*. Edited by Hong D and Shyr Y. World Scientific Publisher, LLC.

### **Presentations**

- Li M**, Lenk PJ, Andrews RW. A hierarchical Bayes model of international interest and inflation rates. ISF2000, Lisbon, Portugal. June 22, 2000.
- Lenk PJ, **Li M**, Andrews RW. International inflation and interest rates. International Bayesian Nonparametric Conference, Ann Arbor, Michigan. July 2001.
- Li M**, Shyr Y. Adjustable Bayesian two-stage design for phase II clinical trials. ENAR Meeting, Pittsburgh, Pennsylvania. March 2004.
- Li M**, Li H, Hong D, Shyr Y. Wavelets and evolution algorithms for mass spectrometry data processing. ENAR Meeting, Austin, Texas. March 2005.
- Matthews C, **Li M**, Shrubsole J, Ness R, Dai Q, Smalley W, Shyr Y, Coffey R, Zheng W. Energy balance and risk for adenomatous colorectal polyps. AACR Frontiers in Cancer Prevention Research, Oct 30-Nov 2, 2005.
- Li M**. Statistical analysis strategies for shotgun proteomics data. Shanghai Institutes for Biological Science Chinese Academy of Sciences. Shanghai, China. April 15, 2008.
- Li M**. Statistical analysis strategies for shotgun proteomics data. Biostatistics and Bioinformatics Workshop for High-Dimensional Data Analysis. Tamkang University, Tamsui, Taiwan. Oct 3-5, 2008.
- Bi X, Rexer B, Arteaga CL, Guo M, **Li M**, Mahadevan-Jansen A. Determination of HER2 amplification status in breast cancer cells using Raman spectroscopy, 2010, -- in: Biomedical Vibrational Spectroscopy VI: Advances in Research and Industry, Bios 2010, San Francisco, CA.

**Li M.** Quasi-likelihood method for shotgun proteomics data. JSM 2010, Vancouver, Canada. August 2010.

**Li M.** Quasi-likelihood method for shotgun proteomics data. Inter-SPORE, Vancouver, Canada. August 2010.

## Workshops and Seminars

Wavelets and Evolution Algorithms for Mass Spectrometry Data Processing. VICC-UAB Biostatistics/Bioinformatics Workshop	April 2005
Frequentist and Bayesian Two-Stage Designs in Phase II Clinical Trials. Department of Biostatistics Seminar	Feb 2006
Statistical Analysis Strategies for MALDI-TOF and Shotgun Proteomics Data. Cancer Biostatistics Center Workshop	Nov 2008
QuasiTel and Beyond. Ayers Institute Bioinformatics Meeting	Oct 2010
Beyond QuasiTel: Introduction to Generalized Linear Mixed Model. Ayers Institute Bioinformatics Meeting	Apr 2011
High Dimensional Data Analysis: A Comprehensive Case Study on MALDI-TOF MS Data. Cancer Biostatistics Workshop	June 2011
Extend QuasiTel: Generalized Linear Mixed Model. Ayers Institute Bioinformatics Meeting	Oct 2011
LC-MRM-MS Data Analysis Strategy. Ayers Institute Bioinformatics Meeting	July 2012
Prediction Models for Colon Cancer Protein Biomarkers Ayers Institute Bioinformatics Meeting	Dec 2012
Prediction Models for Colon Cancer Protein Biomarkers: Methods and Results Updates Ayers Institute Bioinformatics Meeting	May 2013