

Yize (Henry) LI, PhD

Department of Microbiology, Perelman School of Medicine, University of Pennsylvania

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EDUCATION

- PhD Institute Pasteur of Shanghai, Chinese Academy of Sciences, 7/2012
Shanghai, China
Unit of Emerging Viruses
Advisor: Vincent Deubel, Ph.D
"The study of Japanese encephalitis virus nonstructural protein 1 as a subunit vaccine and a diagnostic marker"
- BE Chongqing University, 6/2005
Chongqing, China
Department of Bioengineering

HONORS and AWARDS

- 2014 Travel Award of the 33th Annual Meeting of the American Society for Virology
2010 Traineeship grant, Institute Pasteur International Network (RIIP)
2008-2009 Outstanding student of Graduate School of Chinese Academy of Sciences

WORK and RESEARCH EXPERIENCE

- 2016-Current Research Associate
University of Pennsylvania School of Medicine, Department of Microbiology
Mentor: Susan R. Weiss, PhD
"The pathogenesis of human coronavirus: SARS-CoV-2 and MERS-CoV"
"Mechanisms of activation of the OAS-RNase L antiviral innate immune pathway"
"Pathogenic effects of endogenous dsRNA and regulation of innate immunity by ADAR1"
- 2013-2016 Postdoctoral Researcher
University of Pennsylvania School of Medicine, Department of Microbiology
Mentor: Susan R. Weiss, PhD
"The pathogenesis of murine hepatitis viruses"
"Activation and antagonism of the OAS-RNase L antiviral innate immune pathway"
- 2012-2013 Associate Scientist
Asia Veterinary Research & Development Center, Boehringer Ingelheim,
Shanghai, China.
Mentor: Shishan Yuan, DVM, PhD
"Research and development of swine and poultry vaccines"
- 2005-2012 Ph.D Candidate
Institut Pasteur of Shanghai, Chinese Academy of Sciences
Mentor: Vincent Deubel, PhD
"The study of Japanese encephalitis virus nonstructural protein 1 as a subunit vaccine and a diagnostic marker"
- 2011 Institut Pasteur, Paris, France, Department of Virology

Mentor: Frederic Tangy, PhD and Pierre-Olivier Vidalain, PhD
“The interactome of host protein with NS1 protein of Japanese encephalitis virus”

2008 Institut Pasteur, Paris, France, Department of Virology
Mentor: Felix A. Rey, PhD and Marie Flammand, PhD
“The utilization of flavivirus NS1 protein as diagnostic marker”

MEMBERSHIP

2014-current Associate member of the American Society for Virology
2017-current Associate Faculty of Faculty of 1000.

MENTORSHIP

2017 Hispanic undergraduates in a program for underrepresentative minority students
(Joangela Nouel)
2018 Hispanic undergraduates in a program for underrepresentative minority students
(Alejandra Fausto)

Both students were admitted to the University of Pennsylvania Biomedical Graduate Studies
PhD programs after my mentoring.

JOURNAL REVIEWERS

Nucleic Acids Research
Cell reports
Scientific Reports
Journal of Medical Virology
Journal of Virological Methods
Frontiers in Microbiology
Viruses
PeerJ
Medicine
Vaccine
Analytical Biochemistry

PUBLICATIONS

1. Li YZ, Counor D, Lu P, Liang GD, Vu TQ, Phan TN, Huynh TK, Sun G, Grandadam M, Butrapet S, Lavergne JP, Flamand M, Yu YX, Solomon T, Buchy P, Deubel V. A specific and sensitive antigen capture assay for NS1 protein quantitation in Japanese encephalitis virus infection. *J Virol Methods*. 2012 Jan;179(1):8-16. doi: 10.1016/j.jviromet.2011.06.008. Epub 2011 Jun 15. PubMed PMID: 21704081.
2. Li Y, Counor D, Lu P, Duong V, Yu Y, Deubel V. Protective immunity to Japanese encephalitis virus associated with anti-NS1 antibodies in a mouse model. *Virol J*. 2012 Jul 24;9:135. doi: 10.1186/1743-422X-9-135. PubMed PMID: 22828206; PubMed Central PMCID: PMC3416663.
3. Zhao L, Birdwell LD, Wu A, Elliott R, Rose KM, Phillips JM, Li Y, Grinspan J, Silverman RH, Weiss SR. Cell-type-specific activation of the oligoadenylate synthetase-RNase L pathway by a murine coronavirus. *J Virol*. 2013 Aug;87(15):8408-18. doi: 10.1128/JVI.00769-13. Epub 2013 May 22. PubMed PMID: 23698313; PubMed Central PMCID: PMC3719824.

4. Zhang R*, Li Y*, Cowley TJ, Steinbrenner AD, Phillips JM, Yount BL, Baric RS, Weiss SR. The nsp1, nsp13, and M proteins contribute to the hepatotropism of murine coronavirus JHM.WU. *J Virol*. 2015 Apr;89(7):3598-609. doi: 10.1128/JVI.03535-14. Epub 2015 Jan 14. PubMed PMID: 25589656; PubMed Central PMCID: PMC4403414. *Denote Equal contribution.
5. Banerjee S, Li G, Li Y, Gaughan C, Baskar D, Parker Y, Lindner DJ, Weiss SR, Silverman RH. RNase L is a negative regulator of cell migration. *Oncotarget*. 2015 Dec 29;6(42):44360-72. doi: 10.18632/oncotarget.6246. PubMed PMID: 26517238; PubMed Central PMCID: PMC4792562.
6. Birdwell LD, Zalinger ZB, Li Y, Wright PW, Elliott R, Rose KM, Silverman RH, Weiss SR. Activation of RNase L by Murine Coronavirus in Myeloid Cells Is Dependent on Basal Oas Gene Expression and Independent of Virus-Induced Interferon. *J Virol*. 2016 Jan 6;90(6):3160-72. doi: 10.1128/JVI.03036-15. PubMed PMID: 26739051; PubMed Central PMCID: PMC4810646.
7. Li Y, Banerjee S, Wang Y, Goldstein SA, Dong B, Gaughan C, Silverman RH, Weiss SR. Activation of RNase L is dependent on OAS3 expression during infection with diverse human viruses. *Proc Natl Acad Sci U S A*. 2016 Feb 23;113(8):2241-6. doi: 10.1073/pnas.1519657113. Epub 2016 Feb 8. PubMed PMID: 26858407; PubMed Central PMCID: PMC4776461.
8. Thornbrough JM, Jha BK, Yount B, Goldstein SA, Li Y, Elliott R, Sims AC, Baric RS, Silverman RH, Weiss SR. Middle East Respiratory Syndrome Coronavirus NS4b Protein Inhibits Host RNase L Activation. *MBio*. 2016 Mar 29;7(2):e00258. doi: 10.1128/mBio.00258-16. PubMed PMID: 27025250; PubMed Central PMCID: PMC4817253.
9. Li Y, Weiss SR. Antagonism of RNase L Is Required for Murine Coronavirus Replication in Kupffer Cells and Liver Sinusoidal Endothelial Cells but Not in Hepatocytes. *J Virol*. 2016 Nov 1;90(21):9826-9832. doi: 10.1128/JVI.01423-16. Print 2016 Nov 1. PubMed PMID: 27558415; PubMed Central PMCID: PMC5068532.
10. Kindler E, Gil-Cruz C, Spanier J, Li Y, Wilhelm J, Rabouw HH, Züst R, Hwang M, V'kovski P, Stalder H, Marti S, Habjan M, Cervantes-Barragan L, Elliot R, Karl N, Gaughan C, van Kuppeveld FJ, Silverman RH, Keller M, Ludewig B, Bergmann CC, Ziebuhr J, Weiss SR, Kalinke U, Thiel V. Early endonuclease-mediated evasion of RNA sensing ensures efficient coronavirus replication. *PLoS Pathog*. 2017 Feb;13(2):e1006195. doi: 10.1371/journal.ppat.1006195. eCollection 2017 Feb. PubMed PMID: 28158275; PubMed Central PMCID: PMC5310923.
11. Goldstein SA, Thornbrough JM, Zhang R, Jha BK, Li Y, Elliott R, Quiroz-Figueroa K, Chen AI, Silverman RH, Weiss SR. Lineage A Betacoronavirus NS2 Proteins and the Homologous Torovirus Berne pp1a Carboxy-Terminal Domain Are Phosphodiesterases That Antagonize Activation of RNase L. *J Virol*. 2017 Mar 1;91(5). doi: 10.1128/JVI.02201-16. Print 2017 Mar 1. PubMed PMID: 28003490; PubMed Central PMCID: PMC5309944.
12. Li Y, Banerjee S, Goldstein SA, Dong B, Gaughan C, Rath S, Donovan J, Korennykh A, Silverman RH, Weiss SR. Ribonuclease L mediates the cell-lethal phenotype of double-stranded RNA editing enzyme ADAR1 deficiency in a human cell line. *Elife*. 2017 Mar 31;6. doi: 10.7554/eLife.25687. PubMed PMID: 28362255; PubMed Central PMCID: PMC5404912.
13. Xu J, Sun Y, Li Y, Ruthel G, Weiss SR, Raj A, Beiting D, López CB. Replication defective viral genomes exploit a cellular pro-survival mechanism to establish paramyxovirus persistence. *Nat Commun*. 2017 Oct 6;8(1):799. doi: 10.1038/s41467-017-00909-6. PubMed PMID: 28986577; PubMed Central PMCID: PMC5630589.

14. Case JB, **Li Y**, Elliott R, Lu X, Graepel KW, Sexton NR, Smith EC, Weiss SR, Denison MR. Murine Hepatitis Virus nsp14 Exoribonuclease Activity Is Required for Resistance to Innate Immunity. *J Virol*. 2018 Jan 1;92(1). doi: 10.1128/JVI.01531-17. Print 2018 Jan 1. PubMed PMID: 29046453; PubMed Central PMCID: PMC5730787.
15. Chitrakar A, Rath S, Donovan J, Demarest K, **Li Y**, Sridhar RR, Weiss SR, Kottenko SV, Wingreen NS, Korennykh A. Real-time 2-5A kinetics suggest that interferons β and λ evade global arrest of translation by RNase L. *Proc Natl Acad Sci U S A*. 2019 Feb 5;116(6):2103-2111. doi: 10.1073/pnas.1818363116. Epub 2019 Jan 17. PubMed PMID: 30655338; PubMed Central PMCID: PMC6369740.
16. Banerjee S, Gusho E, Gaughan C, Dong B, Gu X, Holvey-Bates E, Talukdar M, **Li Y**, Weiss SR, Sichei F, Sauntharajah Y, Stark GR, Silverman RH. OAS-RNase L innate immune pathway mediates the cytotoxicity of a DNA-demethylating drug. *Proc Natl Acad Sci U S A*. 2019 Mar 12;116(11):5071-5076. doi: 10.1073/pnas.1815071116. Epub 2019 Feb 27. PubMed PMID: 30814222; PubMed Central PMCID: PMC6421468.
17. Comar CE, Goldstein SA, **Li Y**, Yount B, Baric RS, Weiss SR. Antagonism of dsRNA-Induced Innate Immune Pathways by NS4a and NS4b Accessory Proteins during MERS Coronavirus Infection. *MBio*. 2019 Mar 26;10(2). doi: 10.1128/mBio.00319-19. PubMed PMID: 30914508; PubMed Central PMCID: PMC6437052.
18. Whelan JN, **Li Y**, Silverman RH, Weiss SR. Zika Virus Production Is Resistant to RNase L Antiviral Activity. *J Virol*. 2019 Aug 15;93(16). doi: 10.1128/JVI.00313-19. Print 2019 Aug 15. PubMed PMID: 31142667; PubMed Central PMCID: PMC6675901.
19. **Li Y**, Dong B, Wei Z, Silverman RH, Weiss SR. The activation of RNase L in Egyptian Roussette bat derived RoNi/7 cells is dependent primarily on OAS3 and independent on MAVS Signaling. *Mbio*, 2019 Nov 12;10(6). pii: e02414-19. doi: 10.1128/mBio.02414-19. PMID: 31719180 PMCID: PMC6851283
20. Talukdar M, Dong Beihua, Banerjee Shuvojit, **Li Yize**, Duffy Nicole M, Daou Salima, Ogunjimi Abiodun A, Gaughan Christina, Jha Babal Kant, Weiss SR, Silverman RH., Sichei F. A Phenolic small molecules inhibitor of RNase L prevents cell death from ADAR1 deficiency. *Proceedings of the National Academy of Sciences of the United States of America (PNAS)*. 2020.
21. Ancar Rachel, **Li Yize**, Kindler Eveline , Cooper DA., Ransom Monica, Silverman RH., Thiel Volker, Weiss RS, Hesselberth JR., and Barton DJ. Physiologic RNA targets and refined sequence specificity of coronavirus EndoU. *RNA*. 2020.
22. Stuart Weston, Christopher M. Coleman, Robert Haupt, James Logue, Krystal Matthews, **Yize Li**, Hanako M. Reyes, Susan R. Weiss, Matthew B. Frieman. Broad anti-coronaviral activity of FDA approved drugs against SARS-CoV-2 *in vitro* and SARS-CoV *in vivo*. *Journal of Virology*. 2020
23. **Yize Li**, David M Renner, Courtney E Comar, Jillian N Whelan, Hanako M Reyes, Fabian Leonardo Cardenas-Diaz, Rachel Truitt, Li Hui Tan, Beihua Dong, Konstantinos Dionysios Alysandratos, Jessie Huang, James N Palmer, Nithin D Adappa, Michael A Kohanski, Darrell N Kotton, Robert H Silverman, Wenli Yang, Edward Morrissey, Noam A Cohen, Susan R Weiss. SARS-CoV-2 induces double-stranded RNA-mediated innate immune responses in respiratory epithelial derived cells and cardiomyocytes. *BioRxiv*, 2020

Invited Talk

Activation of the OAS-RNase L antiviral innate immunity pathway by exogenous and endogenous dsRNA. **International Marine Innovative Drug Development Symposium**. Oct 15-17, 2018; Qingdao China.

Conference Oral Presentations

1. Antagonism of RNase L Is Required for Murine Coronavirus Replication in Kupffer Cells and Liver Sinusoidal Endothelial Cells but Not in Hepatocytes. **American Society for Virology 33rd Annual Meeting, June 21-25, 2014, Colorado State University, Fort Collins, Colorado.**
Presenter: Yize Li.

2. Activation of RNase L Is Dependent on OAS3 Expression during Infection with Diverse Human Viruses. **American Society for Virology, 35th Annual Meeting, June 18-22, 2016, Virginia Tech, Blacksburg, Virginia.**
Presenter: Yize LI

3. OAS-RNase L Antiviral Pathway Mediates Cell Death in Adenosine Deaminase 1 Deficiency Cells. **American Society for Virology, 36th Annual Meeting, June 24-28, 2017, Madison, WI. Presenter: Yize LI**

4. The activation of OAS-RNaseL antiviral Innate immune pathway is dependent on OAS3 expression in bat RoNi/7 cells during viral infection. Yize Li, Zuzhang Wei, Beihua Dong, Robert H. Silverman, Susan R. Weiss. **American Society for Virology, 27th Annual Meeting, July 14-18, 2018, College Park, Maryland.**
Presenter: Yize LI

Conference Poster Presentation

1Activation of RNase L Is Dependent on OAS3 Expression during Infection with Diverse Human Viruses. **2016 Keystone Symposia Conference, Positive-Strand RNA Viruses, May 1 - May 5, 2016, Austin, Texas. Presenter Yize LI.**

Conference Proceeding

Expression and characterization of recombinant Japanese encephalitis virus NS1 protein in Drosophila S2 cell. Yize Li, Marie Flamand, Dorian Counor, Nelly Kieffer, Felix Rey and Vincent Deubel. **Infectious diseases of the nervous system: pathogenesis and worldwide impact. September 10-13 2008, Paris, France. BMC Proceedings 20082(Suppl 1):P36**
<https://doi.org/10.1186/1753-6561-2-s1-p36>.

RESEARCH SUPPORT

Completed research project

1R21AI138564-01

MPI: Yize LI and Susan R. Weiss

02/22/2018 - 01/31/2020

NIH/NIAID

“Endogenous double-stranded RNA induced CNS damage in the absence of ADAR1 activity”. The goals of the project are to identify the cellular source of endogenous dsRNA induced type I interferon that accumulates in the absence of ADAR1 expression; identify the dsRNA induced pathways leading to cell death in the absence of ADAR1; and determine the role of ADAR1 in maintaining the integrity of blood-brain-barrier in a conditional Adar1 knockout mouse model