
BIOGRAPHICAL SKETCH

NAME: Zhu, Shu

POSITION TITLE: Professor

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
The University of Science and Technology of China	B.S.	07/2006	Biology
Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences	Ph.D.	07/2012	Immunology
Yale University	Postdoctoral	09/2017	Immunology

A. Personal Statement

I am using various mouse models to study intestinal immune responses toward environmental cues including microbes and food.

We demonstrated how dsRNA from enteric viruses (norovirus, rotavirus, and commensal viruses) are recognized by intestinal epithelial cells-specific Nod-like receptors-Nlrp6 and Nlrp9, and activate inflammasome and interferon (**Cell**, 2021; **Nature**, 2017a; **Science**, 2016); and also sensed by DC-expressed Rig-I to sustain the expansion of intraepithelial lymphocytes (**Nature Immunology**, 2019).

Our recent work elucidated that the dietary-antigen-dependent cleavage of Gasdermin D maintains food tolerance irrespective of pyroptosis (**Cell**, 2023).

We have developed strategies (glucosylated nanoparticle encapsulated antibiotics or vitamin supplementation) to intervene microbiota dysbiosis and associated diseases such as IBD (**Nature Biomedical Engineering**, 2022; **Cell Reports**, 2022).

Ongoing and recently completed projects that I would like to highlight include:

2018YFA0508000, Ministry of Science and Technology of China

Zhu, Shu (PI)

2018-2022

Role of Nod like receptors in sensing of intestinal microbes

XDB29030101, Chinese Academy of Sciences

Zhu, Shu (PI)

2019-2023

Immune recognition and evasion of enteric virus, Role: PI

81822021, National Natural Science Foundation of China

Zhu, Shu (PI)

2018-2021

Sensing and immune response towards enteric virus, Role: PI

82061148013, National Natural Science Foundation of China

Zhu, Shu (PI) and Eran Elinav (PI)

2021-2025

Role of oral microbiota in IBD, Role: PI

91842105, National Natural Science Foundation of China

Zhu, Shu (PI)

2018-2021

Role of gut metabolites in neuronal inflammation, Role: PI

31770990, National Natural Science Foundation of China

Zhu, Shu (PI)

2017-2021

Role of Dhx15 in anti-enteric viral infection, Role: PI

B. Positions, Scientific Appointments, and Honors

Positions and Scientific Appointments

2023- Vice president, The young investigators committee, Chinese Society of Immunology
2021- Vice president, Institute of Health and Medicine, Hefei Comprehensive National Science Center
2017- Professor, School of Life Sciences, University of Science and Technology of China.
2014-2017 Postdoctoral Fellow (Helen Hay Whitney Foundation/HHMI), Yale School of medicine, Dr. Richard Flavell Lab
2012-2014 Postdoctoral Associate, Yale School of medicine, Dr. Richard Flavell Lab
2019- Editorial Board member, Medicine in Microecology, Precision Clinical Medicine.
2018- Reviewer, Nature, Cell, Immunity, PNAS, Cell Reports, CMI, etc.

Honors

2022 Vcanbio award for biosciences and medicine
2018 Qiushi Award
(Awarded to only 10 young PIs of all fields each year in top universities of China)
2018 MIT Technology Review 35 Innovators Under 35 (MIT TR35 China)
2014 Helen Hay Whitney Foundation fellowship
2013 Excellent 100 Doctoral Dissertation of Chinese Academy of Sciences
2012 Ray Wu Prize
(The most prestigious biomedical award in China, awarded to 5-10 PhD students each year)
2012 The Chinese Academy of Sciences Dean's Award
(The highest honor for PhD students in CAS, awarded to only one each institute every year)
2012 Olympus Innovation Award for the Eighth Youth Forum in Cell Biology
2011 Johnson & Johnson Asia Outstanding Graduate Thesis Award in Bio-tech
2006 Guo Moruo Scholarship
(The highest honor for undergraduates in USTC, awarded to only one each department every year)

C. Contribution to Science

1. Innate immune sensing mechanisms in the intestine

I identified for the first time that Nlrp6 and a novel NLR, Nlrp9, are critical to mediate host antiviral immune defense to two major enteric viruses, rotavirus and norovirus, through different mechanisms (**Nature**, 2017a; **Science**, 2016).

- a. **Zhu S***, Ding S*, Wang P, Wang G, Lei X, Palm N, Pan W, Zheng Y, Feng N, Lu J, Shan L, Abraham C, Fikrig E, Greenberg H[#], Flavell R[#]. Nlrp9b recognizes and restricts rotavirus infection in intestinal epithelial cells. 2017. **Nature**. doi:10.1038/nature22967. (Comment in Nature, doi:10.1038/nature23090, Comment in Nat Rev Gastroenterol Hepatol. doi: 10.1038/nrgastro.2017.94. Research highlight in Cell Research, doi: 10.1038/cr.2017.93, Evaluated by Faculty of 1000 Biology).
- b. Penghua Wang*, **Shu Zhu***, Long Yang, Shuan Cui, Wen Pan, Ruaidhri Jackson, Yunjiang Zheng, Anthony Rongvaux, Qiangming Sun, Guang Yang, Shandian Gao, Rongtuan Lin, Fuping You, Richard Flavell[#], Erol Fikrig[#]. 2015. Nlrp6 regulates intestinal antiviral innate immunity. **Science**. 10.1126/science.aab3145.

My laboratory has elucidated the mechanisms and functions of RNA sensing in the intestine in collaboration with Hao Wu's lab, Rongbin Zhou's lab and Richard Flavell's lab: Viral RNA/NLRP6 forms Liquid-liquid phase separation to mediate inflammasome activation in intestinal epithelial cells (**Cell**, 2021); commensal viruses induce Rig-I/IRF1/IL-15 in DCs to maintain the numbers of intraepithelial lymphocytes (**Nature Immunology**, 2019); nucleic RNA helicase DHX9 cooperates with STAT1 to transcribe antiviral ISGs in the intestine (**Science Advance**, 2022); the RNA helicase DHX15 mediates Wnt-induced anti-microbial protein expression in paneth cells (**PNAS**, 2021).

- c. C Shen*, R Li*, R Negro, J Cheng, S Vora, T Fu, A Wang, K He, L Andreeva, P Gao, Z Tian, R Flavell, **S Zhu[#]**, and H Wu[#], Phase Separation Drives RNA Virus-Induced Activation of the NLRP6 Inflammasome. **Cell** 184: 5759-5774 PMID: PMC8643277 *Co-first authors, contributed equally, # Co-corresponding authors, contributed equally.
- d. L Liu*, T Gong*, W Tao*, B Lin, C Li, X Zheng, **S Zhu[#]**, W Jiang[#], R Zhou[#]. 2019. Commensal viruses maintain the homeostasis of intestinal intraepithelial lymphocytes via non-canonical RIG-I signaling. **Nat Immunol**. 10.1038/s41590-019-0513-z. (Research highlight in Nature Reviews immunology, 2019 Dec;19(12):721. doi: 10.1038/s41577-019-0241-5; Comment in Nature Immunology, 2019 Dec;20(12):1563-1564. doi: 10.1038/s41590-019-0530-y; Evaluated by Faculty of 1000 Biology)
- e. X Ren*, D Wang*, G Zhang*, T Zhou, Z Wei, Y Yang, Y Zheng, X Lei, W Tao, A Wang, M Li[#], R Flavell[#], **Zhu S[#]**. Nucleic DHX9 Cooperates with STAT1 to Transcribe Interferon-Stimulated Genes. **Science Advance**. DOI: 10.1126/sciadv.add5005
- f. Y Wang*, K He*, B Sheng*, X Lei, W Tao, X Zhu, Z Wei, R Fu, A Wang, S Bai, Z Zhang, N Hong, C Ye, Y Tian, J Wang, K Zhang, H Yang, L Li[#], H Li[#], R Flavell[#], **S Zhu[#]**. The RNA helicase Dhx15 mediates Wnt-induced anti-microbial protein expression in Paneth cells. **PNAS**. 10.1073/pnas.2017432118
- g. R Li, **S Zhu[#]**. 2019. NLRP6 Inflammasome. **Mol Aspect Med**. doi.org/10.1016/j.mam.2020.100859
- h. T Wan*, Y Wang*, K He*, **S Zhu[#]**. Microbial sensing in the intestine. **Protein & Cell**, pwad028, 2023. doi.org/10.1093/procel/pwad028. (IF=15.3)

My lab also revealed that proteinaceous dietary antigen induces the CASP3/7-dependent cleavage of Gasdermin D, the 13kD N-terminus fragment translocate to the nucleus to transcribe MHCII in IECs, therefore induce Tr1 cells to maintains food tolerance (**Cell**, 2023). This study supports that differential cleavage of GSDMD can be understood as a regulatory hub controlling immunity versus tolerance in the small intestine.

a. K He*, T Wan*, D Wang*, J Hu*, T Zhou, W Tao, Z Wei, Q Lu, R Zhou, Z Tian, R Flavell#, and **S Zhu**#. Gasdermin D licenses MHCII induction to maintain food tolerance in small intestine. *Cell*. 2023 Jun 9;S0092-8674(23)00577-9. doi: 10.1016/j.cell.2023.05.027.

2. Epigenetic regulation of Th17 cell differentiation and cytokine secretion in intestinal inflammation and autoimmune diseases.

I am among the first to study the role of epigenetic regulators (m6A modification, DNA hypomethylation, and microRNAs) in Th17 cell differentiation in intestinal inflammation and autoimmune diseases (*Elife*, 2022; *Nature*, 2017b; *Nature Communications*, 2015; *J Immunol*, 2010).

- a. A Wang, W Tao, J Tong, J Gao, J Wang, G Hou, C Qian, G Zhang, R Li, D Wang, X Ren, K Zhang, S Ding, R Flavell, HB Li, W Pan#, **S Zhu**#. m6A modifications regulate intestinal immunity and rotavirus infection. *Elife*. 2022;11:e73628.
- b. H Ma*, W Tao*, and **S Zhu**#. 2019. T Lymphocytes in Intestinal Mucosa: Defense and Tolerance. *Cell Mol Immunol*. (2019) 16:216–224.
- c. Hua-Bing Li*, Jiyu Tong*, **Shu Zhu***, Pedro Batista, Jun Zhao, Will Bailis, Yi Yang, Geng Wang, Howard Y. Chang, Zhinan Yin, Richard A. Flavell. m6A mRNA methylation controls T cell homeostasis by targeting IL-7 pathway. 2017. *Nature*. doi:10.1038/nature23450. (Comment in *Immunol Cell Biol*. 2017)
- d. J Tong, X Wang, Y Liu, X Ren, A Wang, Z Chen, J Yao, K Mao, T Liu, F Meng, W Pan, Q Zou, J Liu, Y Zhou, Q Xia#, R Flavell#, **S Zhu**#, HB Li#. Pooled CRISPR Screening Identifies m6A as a Positive Regulator of Macrophage Activation. *Science Advance*. 10.1126/sciadv.abd4742
- e. Wen Pan*, **Shu Zhu***, Dai Dai, Zheng Liu, Dan Li, Bin Li, Nicola Gagliani, Yunjiang Zheng,.. Youcun Qian, Yingxuan Chen, Jingyuan Fang, Ronald Herbst, Laura Richman, Bahija Jallal, John B. Harley, Richard A. Flavell, Yihong Yao and Nan Shen. 2015. MiR-125a targets effector programs to stabilize Treg mediated immune homeostasis and controls autoimmunity. *Nature Communication*. DOI: 10.1038/ncomms8096.
- f. Pan, W*, **S. Zhu***, M. Yuan, H. Cui, L. Wang, X. Luo, J. Li, H. Zhou, Y. Tang, and N. Shen. 2010. MicroRNA-21 and microRNA-148a contribute to DNA hypomethylation in lupus CD4+ T cells by directly and indirectly targeting DNA methyltransferase 1. *J Immunol*. 184:6773-6781.

My works also identified the checkpoints of IL-17 mediating downstream signals and inflammation (*Nature Medicine*, 2012; *J Exp Med*, 2010).

- g. **Zhu, S.***, W. Pan*, X. Song, Y. Liu, Y. Tang, H. Wang, W. Liu, Y. Shi, D. He, J.B. Harley, N. Shen and Y. Qian. 2012. The microRNA miR-23b suppresses IL-17-associated autoimmune inflammation by targeting TAB2, TAB3 and IKK- α . *Nature Medicine*. 18: 1077-1086. DOI 10.1038/nm.2815
- h. **Zhu, S.**, W. Pan, P. Shi, H. Gao, F. Zhao, X. Song, Y. Liu, L. Zhao, X. Li, Y. Shi, and Y. Qian. 2010. Modulation of experimental autoimmune encephalomyelitis through TRAF3-mediated suppression of interleukin 17 receptor signaling. *J Exp Med*. 207:2647-2662.

3. The potential intestinal infection of SARS-CoV-2

My laboratory is among the first to study the potential intestinal infection of SARS-CoV-2 and disease consequences (*Nature Reviews Gastroenterology & Hepatology*, 2021; *Pathogen*, 2021; *Protein & Cell*, 2020; *Medicine in Microecology*, 2020)

- a. M Guo*, W Tao*, R Flavell#, and **S Zhu**#. Potential intestinal infection and fecal–oral transmission of SARS-CoV-2. *Nature Reviews Gastroenterology & Hepatology*. 10.1038/s41575-021-00416-6
- b. Z Zhao*, G Zhang*, M Guo*, W Tao*, X Liu, H Wei, T Jin#, Y Zhang#, **S Zhu**#. The Potential Role of an Aberrant Mucosal Immune Response to SARS-CoV-2 in the Pathogenesis of IgA Nephropathy. *Pathogens*. 2021, 10(7), 881. doi: 10.3390/pathogens10070881

- c. W Tao*, G Zhang*, X Wang*, X Ma, T Jin, L Liu#, J Weng#, and **S Zhu**#. Analysis of the intestinal microbiota in COVID-19 patients and its correlation with the inflammatory factor IL-18. *Medicine in Microecology*. 10.1016/j.medmic.2020.100023
- d. W Tao*, X Wang*, G Zhang*, M Guo, H Ma, D Zhao, L Liu, K Zhang, J Weng, Y Wang, X Ma#, T Jin# and **S Zhu**#. Re-detectable positive SARS-CoV-2 RNA tests in patients who recovered from COVID-19 with intestinal infection. *Protein & Cell*. 10.1007/s13238-020-00778-8
- e. W Wen*, G Zhang*, S Luo*, Z Bai, W Tao, M Guo, S Jia, W Liu, K Zhang, J Weng#, **S Zhu**#. Next-generation sequencing revealed influenza and Chlamydia infection in recurrent pneumonia in a recovered COVID-19 patient. *Precision Clinical Medicine*. 10.1093/pcmedi/pbaa033

4. The intervention of microbiota dysbiosis and associated diseases

We have developed strategies to intervene microbiota dysbiosis and associated diseases. We developed a glucosylated nanoparticle for the oral delivery of antibiotics to the proximal small intestine to protect mice from gut dysbiosis associated obesity, as well as ARG accumulation (*Nature Biomedical Engineering*, 2022). We illustrated how an IBD-association lincRNA regulates the intestinal host-commensal homeostasis, and how the mutation leads to IBD (*Cell Research*, 2023). We found dysbiosis associated deficiency of vitamin B5 in part of autoimmune disease patients such as IBD and MS patients, and demonstrated vitamin B5 rewires Th17 cell metabolism via impeding PKM2 nuclear translocation (*Cell Reports*, 2022); we have collaborated with clinician in Changhai Hospital to start an IIT to investigate whether supplementation of vitamin B5 relieve the IBD symptoms. We also found increased accumulation of α -Synuclein in inflamed appendix of Parkinson's disease patients where most abundant microbiota resides (*Movement Disorders*, 2021); we have collaborated with clinician in USTC-affiliated hospital to start an IIT to investigate whether appendectomy improve the PD symptoms.

- a. Zhang G*, Wang Q*, Tao W*, Jiang W, Elinav E, Wang Y#, **Zhu S**#. Glucosylated nanoparticles for the oral delivery of antibiotics to the proximal small intestine protect mice from gut dysbiosis. 2022. *Nature Biomedical Engineering*. s41551-022-00903-4.
- b. H Ma, T Hu, W Tao, J Tong, Z Han, D Herndler-Brandstetter, Z Wei, X Xu, K Zhang, R Liu, T Zhou, Q Liu, J Cho, HB Li, H Huang, R Flavell, and **Zhu S**#. A lincRNA from an inflammatory bowel disease risk locus maintains intestinal host-commensal homeostasis. *Cell Research*. doi.org/10.1038/s41422-023-00790-7.
- c. Chen C*, W Zhang*, T Zhou, Q Liu, C Han, Z Huang, S Chen, Q Mei, C Zhang, K Zhang, H Ma, R Zhou, W Jiang, Wen Pan, **Zhu S**#. Vitamin B5 rewires Th17 cell metabolism via impeding PKM2 nuclear translocation. *Cell Reports*. 2022 Nov 29;41(9):111741. doi: 10.1016/j.celrep.2022.111741.
- d. Y Chen, S Zhao, J Hu, C Han, X Lv, G Wang, S Wang, P Bo, J Zhang, W Wu, W Gui, Q Tang#, Q Liu#, **S Zhu**#, F Yu#. Increased accumulation of α -Synuclein in inflamed appendix of Parkinson's disease patients. *Movement Disorders*. 2021 Apr 20. doi: 10.1002/mds.28553

Complete List of Published Works is listed below and in Google Scholar:

2023

63. K He*, T Wan*, D Wang*, J Hu*, T Zhou, W Tao, Z Wei, Q Lu, R Zhou, Z Tian, R Flavell#, and **S Zhu**#. Gasdermin D licenses MHCII induction to maintain food tolerance in small intestine. *Cell*. 2023 Jun 9;S0092-8674(23)00577-9. doi: 10.1016/j.cell.2023.05.027. (IF=66.9)

62. X Wang*, C Chen*, H Sun*, K Mao*, J Yao, W Zhang, M Zhan, H-B Li, Z Zhang#, **S Zhu**#, L Lu#. m6A mRNA modification potentiates Th17 functions to inflame autoimmunity. *Sci. China Life Sci*. (2023). <https://doi.org/10.1007/s11427-022-2323-4>. (IF=10.4)

61. T Wan*, Y Wang*, K He*, **S Zhu**. Microbial sensing in the intestine. *Protein & Cell*, pwad028, 2023. doi.org/10.1093/procel/pwad028. (IF=15.3)

60. H Ma*, T Hu*, W Tao, J Tong, Z Han, D Herndler-Brandstetter, Z Wei, X Xu, K Zhang, R Liu, T Zhou, Q Liu, J Cho, HB Li#, H Huang#, R Flavell#, and **Zhu S#**. A lncRNA from an inflammatory bowel disease risk locus maintains intestinal host-commensal homeostasis. *Cell Research*. 2023. doi.org/10.1038/s41422-023-00790-7. (IF=46.3)

59. X Ren, D Wang, G Zhang, T Zhou, Z Wei, Y Yang, Y Zheng, X Lei, W Tao, A Wang, M Li#, R Flavell#, **Zhu S#**. Nucleic DHX9 Cooperates with STAT1 to Transcribe Interferon-Stimulated Genes. *Science Advance*. DOI: 10.1126/sciadv.add5005 (IF=14.1)

2022

58. Zhang G*, Wang Q*, Tao W*, Jiang W, Elinav E, Wang Y#, **Zhu S#**. Glucosylated nanoparticles for the oral delivery of antibiotics to the proximal small intestine protect mice from gut dysbiosis. 2022. *Nature Biomedical Engineering*. s41551-022-00903-4. (IF=29.2)

57. Chen C*, W Zhang*, T Zhou, Q Liu, C Han, Z Huang, S Chen, Q Mei, C Zhang, K Zhang, H Ma, R Zhou, W Jiang, Wen Pan, **Zhu S#**. Vitamin B5 rewires Th17 cell metabolism via impeding PKM2 nuclear translocation. *Cell Reports*. 2022 Nov 29;41(9):111741. doi: 10.1016/j.celrep.2022.111741. (IF=10.0)

56. A Wang, W Tao, J Tong, J Gao, J Wang, G Hou, C Qian, G Zhang, R Li, D Wang, X Ren, K Zhang, S Ding, R Flavell, HB Li, W Pan#, **S Zhu#**. m6A modifications regulate intestinal immunity and rotavirus infection. *Elife*. 2022;11:e73628 DOI: https://doi.org/10.7554/eLife.73628 (IF=8.1)

55. Y Chen, X Wang, X Hao, B Li, W Tao, **S Zhu**, K Qu, H Wei, R Sun, H Peng, Z Tian. Ly49E separates liver ILC1s into embryo-derived and postnatal subsets with different functions. *J Exp Med*. 2022, 219(5): e20211805. (IF=17.58)

2021

54. Shen C*, Li R*, Negro R, Cheng J, Vora SM, Fu TM, Wang A, He K, Andreeva L, Gao P, Tian Z, Flavell RA, **Zhu S#**, Wu H#. Phase separation drives RNA virus-induced activation of the NLRP6 inflammasome. *Cell*. 2021 Oct 14;S0092-8674(21)01115-6. doi:10.1016/j.cell.2021.09.032. (IF=41.6)

53. M Guo*, W Tao*, R Flavell#, and **S Zhu#**. Potential intestinal infection and fecal–oral transmission of SARS-CoV-2. *Nature Reviews Gastroenterology & Hepatology*. 10.1038/s41575-021-00416-6 (IF=46.8)

52. Y Wang*, K He*, B Sheng*, X Lei, W Tao, X Zhu, Z Wei, R Fu, A Wang, S Bai, Z Zhang, N Hong, C Ye, Y Tian, J Wang, K Zhang, H Yang, L Li#, H Li#, R Flavell#, **S Zhu#**. The RNA helicase Dhx15 mediates Wnt-induced anti-microbial protein expression in Paneth cells. *PNAS*. 10.1073/pnas.2017432118 (IF=11.2)

51. Z Zhang*, G Zhang*, M Guo*, W Tao*, X Liu, H Wei, T Jin#, Y Zhang#, **S Zhu#**. The Potential Role of an Aberrant Mucosal Immune Response to SARS-CoV-2 in the Pathogenesis of IgA Nephropathy. *Pathogens*. 2021, 10(7), 881. doi: 10.3390/pathogens10070881 (IF=3.5)

50. J Tong, X Wang, Y Liu, X Ren, A Wang, Z Chen, J Yao, K Mao, T Liu, F Meng, W Pan, Q Zou, J Liu, Y Zhou, Q Xia#, R Flavell#, **S Zhu#**, HB Li#. Pooled CRISPR Screening Identifies m6A as a Positive Regulator of Macrophage Activation. *Science Advance*. 10.1126/sciadv.abd4742 (IF=14.1)

49. Y Chen, S Zhao, J Hu, C Han, X Lv, G Wang, S Wang, P Bo, J Zhang, W Wu, W Gui, Q Tang#, Q Liu#, **S Zhu#**, F Yu#. Increased accumulation of α -Synuclein in inflamed appendix of Parkinson's disease patients. *Movement Disorders*. 2021 Apr 20. doi: 10.1002/mds.28553 (IF=10.3)

48. X Zheng, L Liu, G Meng, **S Zhu**, R Zhou[#], W Jiang[#]. IL-18 maintains the homeostasis of mucosal immune system via inflammasome-independent but microbiota-dependent manner. *Science Bulletin*. Doi: 10.1016/j.scib.2021.01.025 (IF=11.8)

47. Song H, Song J, Cheng M, Zheng M, Wang T, Tian S, Flavell RA, **Zhu S**, Li HB, Ding C, Wei H, Sun R, Peng H, Tian Z. METTL3-mediated m6A RNA methylation promotes the anti-tumor immunity of natural killer cells. *Nat Commun*. 2021 Sep 17;12(1):5522. doi: 10.1038/s41467-021-25803-0. (IF=14.9)

46. G Xu, C Liu, S Zhou, Q Li, Y Feng, P Sun, H Feng, Y Gao, J Zhu, X Luo, Q Zhan, S Liu, **S Zhu**, H Deng, D Li, P Gao. Viral tegument proteins restrict cGAS-DNA phase separation to mediate immune evasion. *Molecular Cell*. doi.org/10.1016/j.molcel.2021.05.002 (IF=18.0)

45. H Han, Y Cao, C Feng, Y Zheng, **S Zhu**, C Shang, C Yuan, G Zong. Association of a Healthy Lifestyle with All-Cause and Cause-Specific Mortality Among Individuals with Type 2 Diabetes: A Prospective Study in UK Biobank Short Running. *Diabetes Care*. doi.org/10.2337/dc21-1512 (IF=19.1)

2020

44. W Tao^{*}, X Wang^{*}, G Zhang^{*}, M Guo, H Ma, D Zhao, L Liu, K Zhang, J Weng, Y Wang, X Ma[#], T Jin[#] and **S Zhu**[#]. Re-detectable positive SARS-CoV-2 RNA tests in patients who recovered from COVID-19 with intestinal infection. *Protein & Cell*. 10.1007/s13238-020-00778-8 (IF=10.2)

43. R Li, **S Zhu**[#]. 2019. NLRP6 Inflammasome. *Mol Aspect Med*. doi.org/10.1016/j.mam.2020.100859 (IF=9.6)

42. W Tao^{*}, G Zhang^{*}, X Wang^{*}, X Ma, T Jin, L Liu[#], J Weng[#], and **S Zhu**[#]. Analysis of the intestinal microbiota in COVID-19 patients and its correlation with the inflammatory factor IL-18. *Medicine in Microecology*. 10.1016/j.medmic.2020.100023

41. W Wen^{*}, G Zhang^{*}, S Luo^{*}, Z Bai, W Tao, M Guo, S Jia, W Liu, K Zhang, J Weng[#], **S Zhu**[#]. Next-generation sequencing revealed influenza and Chlamydia infection in recurrent pneumonia in a recovered COVID-19 patient. *Precision Clinical Medicine*. 10.1093/pcmedi/pbaa033

40. L Yang^{*}, T Geng^{*}, G Yang^{*}, J Ma, L Wang, H Ketkhar, D Yang, T Lin, J Hwang, **S Zhu**, Y Wang, J Dai, F You, G Cheng, A Vella, R Flavell[#], E Fikrig[#], P Wang[#]. Macrophage scavenger receptor 1 controls Chikungunya virus 2 infection through autophagy in mice. *Communications Biology*. 3, 556. https://doi.org/10.1038/s42003-020-01285-6 (IF=4.2)

2019

39. L Liu^{*}, T Gong^{*}, W Tao^{*}, B Lin, C Li, X Zheng, **S Zhu**[#], W Jiang[#], R Zhou[#]. 2019. Commensal viruses maintain the homeostasis of intestinal intraepithelial lymphocytes via non-canonical RIG-I signaling. *Nat Immunol*. 10.1038/s41590-019-0513-z. (Research highlight in Nature Reviews immunology, 2019 Dec;19(12):721. doi: 10.1038/s41577-019-0241-5; Comment in Nature Immunology, 2019 Dec;20(12):1563-1564. doi: 10.1038/s41590-019-0530-y; Evaluated by Faculty of 1000 Biology, *co-first author). (IF=21)

38. H Ma^{*}, W Tao^{*}, and **S Zhu**[#]. 2019. T Lymphocytes in Intestinal Mucosa: Defense and Tolerance. *Cell Mol Immunol*. (2019) 16:216–224. (Invited review) (IF=9)

37. A Wang and **S Zhu**[#]. 2019. Gut Viruses Firm the “Great Wall”. *Precision Clinical Medicine*. doi.org/10.1093/pcmedi/pbz027.

36. W Zhang and **S Zhu**[#]. 2019. Gut metabolites: make orphans adopted. *Precision Clinical Medicine*.doi:10.1093/pcmedi/pbz012.

35. A Wang*, G Zhang*, W Tao*, **S Zhu**[#]. 2019. The immune response towards enteric virus in inflammatory bowel disease. 2019. *Chin J Inflamm Bowel Dis*. January 2019, Vol.3, No.1 (Invited review)

34. W Tao, **S Zhu**[#]. 2019. Gut virome in health and disease. *Journal of Biology*, 2019, 36(6): 1-. (Invited review)

33. J Wang, MF. Sanmamed, I Datar, T Su, L Ji, J Sun, L Chen, Y Chen, G Zhu, L Zheng, T Zhou, T Badri, S Yao, **S Zhu**, A Boto, M Sznol, I Melero, DA. Vignali, K Schalper and L Chen[#]. 2018. Fibrinogen-like protein 1 is a major ligand of LAG-3 for T-cell suppression and the evasion of tumor immunity. *Cell*. 176, 1–14. doi:org/10.1016/j.cell.2018.11.010. (IF=32)

2018

32. S Ding, **S Zhu**, L Ren, N Feng, X Ge, B Li, RA Flavell, HB Greenberg[#]. 2018. Rotavirus VP3 targets MAVS for degradation to inhibit type III interferon expression in intestinal epithelial cells. *Elife*. 2018 Nov 21;7. pii: e39494. doi: 10.7554/eLife.39494. (IF=8)

31. L Wu, J Cao, WL Cai, SM Lang, JR Horton, DJ Jansen, ZZ Liu, JF Chen, M Zhang, BT Mott, K Pohida, G Rai, SC Kales, MJ Henderson, X Hu, A Jadhav, DJ Maloney, A Simeonov, **S Zhu**, A Iwasaki, MD Hall, X Cheng, GS. Shadel, Q Yan[#]. 2018. KDM5 histone demethylases repress immune response via suppression of STING. *Plos Biology*. 2018 Aug 6;16(8):e2006134. doi: 10.1371/journal.pbio.2006134. (IF=9)

30. J Tong, G Cao, T Zhang, E Sefik, M Amezcua Vesely, J Broughton, **S Zhu**, H Li, B Li, Lei Chen, H Chang, B Su, R Flavell[#] & HB Li[#]. 2018. m6A mRNA methylation sustains Treg suppressive functions. *Cell Research*. doi:10.1038/cr.2018.7 (IF=15)

2017

29. **Zhu S**^{*}, Ding S^{*}, Wang P, Wang G, Lei X, Palm N, Pan W, Zheng Y, Feng N, Lu J, Shan L, Abraham C, Fikrig E, Greenberg H[#], Flavell R[#]. Nlrp9b recognizes and restricts rotavirus infection in intestinal epithelial cells. 2017. *Nature*. doi:10.1038/nature22967. (Comment in Nature, doi:10.1038/nature23090, Comment in Nat Rev Gastroenterol Hepatol. doi: 10.1038/nrgastro.2017.94. Research highlight in Cell Research, doi: 10.1038/cr.2017.93, Evaluated by Faculty of 1000 Biology, *co-first author). (IF=42)

28. Li, H.* , J. Tong*, **S. Zhu**^{*}, P. Batista, J.Zhao, W. Bailis, Y. Yang, G. Wang, Y. Chen, Y. Kluger, Howard Y. Chang, Zhinan Yin[#], Richard A. Flavell[#]. 2017. m6A mRNA methylation controls T cell homeostasis by targeting IL-7/STAT5/SOCS pathway. *Nature*. doi:10.1038/nature23450. (Comment in Immunol Cell Biol. 2017. *co-first author) (IF=42)

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