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Institute of Microbiology and Immunology
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Positions and employment:

2021 – present: **Associate Professor**, Institute of Microbiology and Immunology, National Yang Ming Chiao Tung University, Taipei, Taiwan

2013 – 2021: Assistant Professor, Institute of Microbiology and Immunology, National Yang-Ming University, Taipei, Taiwan

Education and Research Experience:

2007-2012: **Postdoctoral fellow**, Molecular and Cell Biology Department, University of California, Berkeley, USA
Mentor: Ellen A Robey, PhD
Project: Visualizing the negative selection in the thymus

2001-2007: **PhD in Immunology**, Duke University, Durham, NC
Advisor: You-Wen He, M.D., Ph.D.
Dissertation: The role of the anti-apoptotic molecules Bcl-2 and Mcl-1 in the development and function of the immune system

1994-2000: **Doctor of Medicine**, Trakia University Medical School, Stara Zagora, Bulgaria

Honors and Awards:

2016 – Outstanding poster award at the Frontiers in Glycoscience: Host-pathogen interactions, Academia Sinica, Taipei, Taiwan
2015 – Outstanding poster award at the Glycoscience Symposium, Academia Sinica, Taipei, Taiwan
2010 – 2012: Irvington Institute postdoctoral fellowship of the Cancer Research Institute

Editor for: Frontiers in Cell and Developmental Biology

Ad hoc reviewer for: Frontiers in Immunology, Scientific Reports, Autophagy, Frontiers in Cell and Developmental Biology

Invited speaker:
2024 – Chang Gung University
2024 – 2024 Taiwan GlycoForum Retreat – Yilan
2023 – 2nd Academia Sinica – Tohoku Medical and Pharmaceutical University Joint Symposium, Sendai, Japan
2022 – Center for Translational Research, National Biotechnology Research Park, Academia Sinica, Taipei, Taiwan
2022 – The 36th Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan
2021 – 10x Genomics monthly event
2019 – 25th International Symposium on Glycoconjugates (Glyco25), Milan, Italy
2019 – Taiwan GlycoForum Retreat, Pacific Hot Spring Hotel Green Bay, New Taipei city, Taiwan
2016 - Frontiers in Glycoscience: Host-pathogen interactions, Academia Sinica, Taipei, Taiwan
2015 – Glycoscience Symposium, Academia Sinica, Taipei, Taiwan
2013 – Chang Gung University, Taoyuan, Taiwan
2012 – Academia Sinica, Taipei, Taiwan
2012 – National Yang-Ming University, Taipei, Taiwan
2011 – EUThyme Rolduc meeting, Noordwijkerhout, Netherlands
2011 – American Association of Immunologists meeting, San Francisco, CA
2010 – 14th International Congress of Immunology, Kobe, Japan
2010 – National Yang-Ming University, Taipei, Taiwan
2010 – National Taiwan University, Taipei, Taiwan

Publications:
1. Lu YS, Hung WC, Hsieh YT, Tsai PY, Tsai TH, Fan HH, Chang YG, Cheng HK, Huang SY, Lin HC, Lee YH, Shen TH, Hung BY, Tsai JW, **Dzhagalov I**, Cheng IH, Lin CJ, Chern Y, Hsu CL.; Equilibrative

nucleoside transporter 3 supports microglial functions and protects against the progression of Huntington's disease in the mouse model. *Brain Behav Immun. 2024 Aug;120:413-429. doi: 10.1016/j.bbi.2024.06.021.*

2. Gainullina A, Mogilenko DA, Huang LH, Todorov H, Narang V, Kim KW, Yng LS, Kent A, Jia B, Seddu K, Krchma K, Wu J, Crozat K, Tomasello E, Dress R, See P, Scott C, Gibbings S, Bajpai G, Desai JV, Maier B, This S, Wang P, Aguilar SV, Poupel L, Dussaud S, Zhou TA, Angeli V, Blander JM, Choi K, Dalod M, **Dzhagalov I**, Gautier EL, Jakubzick C, Lavine K, Lionakis MS, Paidassi H, Sieweke MH, Ginhoux F, Guilliams M, Benoist C, Merad M, Randolph GJ, Sergushichev A, Artyomov MN; ImmGen Consortium; Network analysis of large-scale ImmGen and Tabula Muris datasets highlights metabolic diversity of tissue mononuclear phagocytes. *Cell Rep.* 2023 Jan 27;42(2):112046. doi: 10.1016/j.celrep.2023.112046.

3. Hsieh YT, Tsai TL, Huang SY, Heng JW, Huang YC, Tsai PY, Tu CC, Chao TL, Tsai YM, Chang PC, Lee CK, Yu GY, Chang SY, **Dzhagalov IL**; Hsu CL. IFN-stimulated metabolite transporter ENT3 facilitates viral genome release. *EMBO Rep*. 2023 Jan 18:e55286. doi: 10.15252/embr.202255286

4. Tsai TL, Tsai PY, **Dzhagalov IL**, Hsu CL; Protocol for standardized intrathymic injection in mice. *STAR Protoc*. 2023 Jan 12;4(1):102010. doi: 10.1016/j.xpro.2022.102010.

5. Zhou TA, Hsu HP, Tu YH, Cheng HK, Lin CY, Chen NJ, Tsai JW, Robey EA, Huang HC, Hsu CL, **Dzhagalov IL**; Thymic macrophages consist of two populations with distinct localization and origin. *Elife*. 2022 Nov 30;11:e75148. doi: 10.7554/eLife.75148.

6. Herrera-Heredia SA, Hsu HP, Kao YC, Tsai YH, Yamaguchi Y, Roers A, Hsu CL, **Dzhagalov IL**; Heparin is required for the formation of granules in connective tissue mast cells. *Front Immunol.* 2022; Nov 09; 13:1000405. doi: 10.3389/fimmu.2022.1000405

7. Tsai TL, Zhou TA, Hsieh YT, Wang JC, Cheng HK, Huang CH, Tsai PY, Fan HH, Feng HK, Huang YC, Lin CC, Lin CH, Lin CY, **Dzhagalov IL**, Hsu CL; Multiomics reveal the central role of pentose phosphate pathway in resident thymic macrophages to cope with efferocytosis-associated stress. *Cell Rep.* 2022; Jul 12; 40(2):111065. *doi: 10.1016/j.celrep.2022.111065.*

8. Fan HH, Tsai TL, **Dzhagalov IL**, Hsu CL; Evaluation of Mitochondria Content and Function in Live Cells by Multicolor Flow Cytometric Analysis. *Methods Mol Biol.* 2021;2276:203-213. *doi: 10.1007/978-1-0716-1266-8_15*

9. Hsu HP, Chen YT, Chen YY, Lin CY, Chen PY, Liao SY, Lim CCY, Yamaguchi Y, Hsu CL, **Dzhagalov IL**; Heparan sulfate is essential for thymus growth. *J Biol Chem. 2021 Feb 15:100419. doi: 10.1016/j.jbc.2021.100419.*

10. Chu CF, Feng HK, Sun KH, Hsu CL, **Dzhagalov IL**; Examination of Fas-Induced Apoptosis of Murine Thymocytes in Thymic Tissue Slices Reveals That Fas Is Dispensable for Negative Selection. *Front. Cell Dev. Biol. 2020 8:586807. doi: 10.3389/fcell.2020.586807*

11. Maslova A, Ramirez RN, Ma K, Schmutz H, Wang C, Fox C, Ng B, Benoist C, Mostafavi S; Immunological Genome Project. Deep learning of immune cell differentiation. *Proc Natl Acad Sci U S A. 2020 Sep 25:202011795. doi: 10.1073/pnas.2011795117.*

12. Immunological Genome Project. ImmGen at 15. *Nat Immunol.* 2020 Jul;21(7):700-703. doi: 10.1038/s41590-020-0687-4.

13. Chou YJ, Lin CC, **Dzhagalov IL**, Chen NC, Lin CH, Lin CC, Chen ST, Chen KH, Fu SL. Vaccine adjuvant activity of a TLR4-activating synthetic glycolipid by promoting autophagy. *Sci Rep.* 2020 May 21;10(1):8422. Doi: 10.1038/s41598-020-65422-1

14. Zhou TA, Hsu CL, **Dzhagalov IL**. Testing the Efficiency and Kinetics of Negative Selection Using Thymic Slices. *Methods Mol Biol.* 2020;2111:205-219. doi: 10.1007/978-1-0716-0266-9_17.

15. Kurd NS, Lutes LK, Yoon J, Chan SW, **Dzhagalov IL**, Hoover AR, Robey EA. A role for phagocytosis in inducing cell death during thymocyte negative selection. *Elife*. 2019 Dec 23;8. pii: e48097

16. Fontaine MAC, Westra MM, Bot I, Jin H, Franssen AJPM, Bot M, de Jager SCA, **Dzhagalov I**, He YW, van Vlijmen BJM, Gijbels MJJ, Reutelingsperger CP, van Berkel TJC, Sluimer JC, Temmerman L, Biessen EAL. Low human and murine Mcl-1 expression leads to a pro-apoptotic plaque phenotype enriched in giant-cells. *Sci Rep.* 2019 Oct 10;9(1):14547. doi: 10.1038/s41598-019-51020-3.

17. Hsu C-L, **Dzhagalov IL**. Metabolite Transporters—The Gatekeepers for T Cell Metabolism. *Immunometabolism*. 2019;1:e190012. https://doi.org/10.20900/immunometab20190012

18. Chen ST, Chen L, Lin DS, Chen SY, Tsao YP, Guo H, Li FJ, Tseng WT, Tam JW, Chao CW, Brickey WJ, **Dzhagalov** I, Song MJ, Kang HR, Jung JU, Ting JP. NLRP12 Regulates Anti-viral RIG-I Activation via Interaction with TRIM25. *Cell Host Microbe.* 2019 Apr 10;25(4):602-616.e7. doi: 10.1016/j.chom.2019.02.013. Epub 2019 Mar 19.

19. Wei CW, Zhou TA, **Dzhagalov IL**, Hsu CL. Multicolor Flow Cytometry-based Quantification of Mitochondria and Lysosomes in T Cells. *J. Vis. Exp.* 2019 Jan 8;(143), e58844, doi:10.3791/58844.

20. Hsu MJ, Chang FP, Lu YH, Hung SC, Wang YC, Yang AH, Lee HJ, Sung SH, Wang YF, Yu WC, Hsu TR, Huang PH, Chang SK, **Dzhagalov I**, Hsu CL, Niu DM. Identification of lysosomal and extralysosomal globotriaosylceramide (Gb3) accumulation before the occurrence of typical pathological changes in the endomyocardial biopsies of Fabry disease patients. *Genet Med.* 2018 Jun 6. doi: 10.1038/s41436-018-0010-z.

21. Wei CW, Lee CY, Lee DJ, Chu CF, Wang JC, Wang TC, Jane WN, Chang ZF, Leu CM, **Dzhagalov IL**, Hsu CL. Equilibrative Nucleoside Transporter 3 Regulates T Cell Homeostasis by Coordinating Lysosomal Function with Nucleoside Availability. *Cell Rep*. 2018 May 22; 23(8):2330-2341. doi: 10.1016/j.celrep.2018.04.077.

22. Hsu TR, Hung SC, Chang FP, Yu WC, Sung SH, Hsu CL, **Dzhagalov I**, Yang CF, Chu TH, Lee HJ, Lu YH, Chang SK, Liao HC, Lin HY, Liao TC, Lee PC, Li HY, Yang AH, Ho HC, Chiang CC, Lin CY, Desnick RJ, Niu DM. Later Onset Fabry Disease, Cardiac Damage Progress in Silence: Experience With a Highly Prevalent Mutation. *J Am Coll Cardiol*. 2016 Dec 13;68(23):2554-2563. doi: 10.1016/j.jacc.2016.09.943

23. **Dzhagalov IL**, Chen KG, Herzmark P, Robey EA. Elimination of Self-Reactive T cells in the Thymus: A Timeline of Negative Selection. *PLoS Biol.* 2013 May;11(5):e1001566. doi: 10.1371/journal.pbio.1001566. Epub 2013 May 21.

24. Dunkle A, **Dzhagalov I**, Gordy C, He YW. Transfer of $CD8^+$ T Cell Memory Using Bcl-2 as a Marker. *J Immunol*. 2013 Feb 1;190(3):940-7. doi: 10.4049/jimmunol.1103481

25. **Dzhagalov IL**, Melichar HJ, Ross JO, Herzmark P, Robey EA. Two-photon imaging of the immune system. *Current Protocols in Cytometry* 2012 Apr;Chapter 12:Unit12.26.

26. Dunkle A, **Dzhagalov I**, He, YW. Cytokine-dependent and cytokine-independent roles for Mcl-1: genetic evidence for multiple mechanisms by which Mcl-1 promotes survival in primary T lymphocytes. *Cell Death Dis*. 2011 Oct 6;2:e214 doi: 10.1038/cddis.2011.95.

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28. Phee H, **Dzhagalov I**, Mollenauer M, Wang Y, Irvine DJ, Robey E, Weiss A. Regulation of thymocyte positive selection and motility by GIT2, *Nat Immunol* 2010 May 11:503-511

29. **Dzhagalov I** and Robey EA. Multitasking in the medulla, *Nat Immunol* 2010 May 11:461-462

30. Dunkle A**, Dzhagalov I**, He YW Mcl-1 promotes survival of thymocytes by inhibition of Bak in a pathway separate from Bcl-2, *Cell Death Differ* 2010 17:994-1002

31. Le Borgne M, Ladi E, **Dzhagalov I**, Herzmark, P, Liao YF, Chakraborty AK, Robey, EA. The impact of negative section on thymocyte migration in the medulla, *Nat Immunol* 2009 Aug:10(8):823-30

32. Gordy C, **Dzhagalov I**, He YW. Regulation of CD8(+) T cell functions by RARgamma, *Semin Immunol* 2009 Feb;21(1):2-7

33. **Dzhagalov I,** Dunkle A, He YW. The anti-apoptotic Bcl-2 family member Mcl-1 promotes T lymphocyte survival at multiple stages, *J Immunol* 2008 Jul:181(1):521-8

34. **Dzhagalov I**, Chambon P, He YW. Regulation of CD8+ T Lymphocyte Effector Function and Macrophage Inflammatory Cytokine Production by Retinoic Acid Receptor Gamma, *J Immunol* 2007 Feb:178(4):2113-2121

35. Pua H, **Dzhagalov I**, Chuck M, Mizushima N, He YW. A Critical Role for the Autophagy Gene Atg5 in T Cell Survival and Proliferation. *J Exp Med* 2007 Jan:204(1):25-31

36. **Dzhagalov I**, St John A, He YW. The Anti-apoptotic protein Mcl-1 is essential for the survival of neutrophils but not macrophages. *Blood*. 2007 Feb; 109(4):1620-1626.

37. Zhu M, Koonpaew S, Liu Y, Shen S, Denning T, **Dzhagalov I**, Rhee I, Zhang W. Negative regulation of T cell activation and autoimmunity by the transmembrane adaptor protein LAB. *Immunity*. 2006 Nov;25(5):757-68.

38. Zhang N, Hartig H, **Dzhagalov I**, Draper D, He YW. The role of apoptosis in the development and function of T lymphocytes. *Cell Res*. 2005 Oct;15(10):749-69. Review.

39. Zhang J, Guo J, **Dzhagalov I**, He YW. An essential function for the calcium-promoted Ras inactivator in Fcgamma receptor-mediated phagocytosis. *Nat Immunol*. 2005 Sep;6(9):911-9.

40. **Dzhagalov I**, Zhang N, He YW. The roles of orphan nuclear receptors in the development and function of the immune system. *Cell Mol Immunol*. 2004 Dec;1(6):401-7. Review

41. **Dzhagalov I**, Giguere V, He YW. Lymphocyte development and function in the absence of retinoic acid-related orphan receptor alpha. *J Immunol*. 2004 Sep 1;173(5):2952-9.