BIOGRAPHICAL SKETCH

NAME: David C. Zawieja, Ph.D.

POSITION TITLE: Regents Professor & Head Medical Physiology, Exec. Dir. of Cardiovascular Research Inst.

EDUCATION/TRAINING

| INSTITUTION AND LOCATION | DEGREE(if applicable) | Completion DateMM/YYYY | FIELD OF STUDY |
| --- | --- | --- | --- |
| University of Wisconsin, Green Bay, WI | B.S. | 05/1978 | Biol/Chem/Pop Dynam. |
| Medical College of Wisconsin | Ph.D. | 05/1986 | Physiology |
| Texas A&M University | Post Doc. | 05/1988 | Physiology |

**A. Positions, Scientific Appointments, and Honors**

2024-present Founding Director of the AeroSpace Medicine Program, School of Medicine

2016-2024 Head, Department of Medical Physiology, College of Medicine, Texas A&M

2015-present Executive Director, Cardiovascular Research Institute, Texas A&M University

2014-2016 Interim Head, Dept of Medical Physiology, TAMUHSC

2005-2014 Vice Chair, Dept of Medical Physiology, TAMUHSC

2013-present Regents Professor, Dept of Medical Physiology, TAMU

2004-2012 Professor, Dept of Medical Physiology, TAMUHSC

2005-2013 Director, Integrated Microscopic Imaging Lab, TAMUSHSC

2003-2020 Director, Div. of Lymphatic Biology, Dept of Medical Physiology, TAMUSHSC

1997-2004 Assoc Professor, Dept of Medical Physiology, TAMUSHSC

1991-1997 Asst Professor, Dept of Medical Physiology, Texas A&M Univ

1988-1991 Asst Research Scientist, Dept of Medical Physiology, Texas A&M Univ

1987-1988 Postdoctoral Fellow, Dept of Medical Physiology, Texas A&M Univ

1986-1987 Postdoctoral Res. Associate, Dept. of Medical Physiology, Texas A&M Univ

**B. Scientific and Management Experience**

My lab group and I have been involved in studies on the physiology of lymph transport for over 30 years. We have a longstanding history in advancing the understanding of the role that the lymphatic vessels play in pathobiology. In 2009 we founded the Division of Lymphatic Biology in our department, which became part of our Cardiovascular Research Institute at Texas A&M that I am the Executive Director of. My goal as the Director was to recruit research faculty from many different disciplines and incorporate their research expertise in the projects and training of our students and postdocs. Over the last 20 years, our focus has been to develop a better understanding of the physiology of the lymphatic transport system and what role its dysregulation has in pathobiology. This includes studies of lymphatic function in situ, in isolated vessels, in dispersed and cultured cells and in computational models. My lab has had several projects (continuously funded since 1988) focusing on the study of lymphatic structure, function, and pathogenesis. Each of these projects has, as one of their objectives, the evaluation of the mechanisms (molecular, cellular, mechanical and tissue-level) regulating different aspects of lymphatic function. These projects focus on the lymphatic pathways that are involved in regulating lymph transport, regulation of lymphatic cell function, the interactions between immune cells, inflammatory agents and the lymphatic cells and the roles of lymphatic function and dysfunction in immunity and vaccine design. We have established the first cultured cell lines of both endothelial and muscle isolated from microlymphatics, acute and cultured isolated microlymphatic tissue preps, methodologies to evaluate lymphatic function at the single vessel, whole tissue and animal levels, methods to measure lymph flow in situ, methodologies to target cell-specific gene manipulation in isolated lymphatic tissues, methodologies to microscopically image in 3D lymphatic networks in cultured cells, in vivo and ex vivo tissues and lymph nodes, computational modeling of lymphatic function and dysfunction in health and disease. My lab group has used these skills and tools to study lymphatic function and dysfunction in the environment of spaceflight and how that impacts astronaut health.

# ****C. Bibliography****

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2. Gashev AA, Zhang RZ, Muthuchamy M, **Zawieja DC**, Davis MJ. [Regional heterogeneity of length-tension relationships in rat lymph vessels.](http://www.ncbi.nlm.nih.gov/pubmed/22416912) Lymphat Res Biol. 2012 Mar;10(1):14-9. PubMed PMID: 22416912.
3. Bridenbaugh EA, Wang W, Srimushnam M, Cromer WE, Zawieja SD, Schmidt SE, Jupiter DC, Huang HC, Van Buren V, **Zawieja DC**. [An immunological fingerprint differentiates muscular lymphatics from arteries and veins.](http://www.ncbi.nlm.nih.gov/pubmed/24044756) Lymphat Res Biol. 2013 Sep;11(3):155-71. PubMed PMID: 24044756.
4. Cromer WE, Zawieja SD, Tharakan B, Childs EW, Newell MK, **Zawieja DC**. [The effects of inflammatory cytokines on lymphatic endothelial barrier function.](http://www.ncbi.nlm.nih.gov/pubmed/24141404) Angiogenesis. 2014 Apr;17(2):395-406. doi: 10.1007/s10456-013-9393-2. Epub 2013 Oct 20. PubMed PMID: 24141404.
5. Cromer W. E., Zawieja S. D., Doersch K. M., Stagg H., Hunter F., Tharakan B., Childs E., and **Zawieja D. C.** Burn Injury-Associated MHCII+ Immune Cell Accumulation Around Lymphatic Vessels of the Mesentery and Increased Lymphatic Endothelial Permeability Are Blocked by Doxycycline Treatment. Lymphat Res Biol. 2018 Feb;16(1):56-64. PMID:[29359999](https://pubmed.ncbi.nlm.nih.gov/29359999).
6. Narayanan, S. A., Metzger, C. E., Bloomfield, S. A., Zawieja, D. C. Inflammation-induced lymphatic architecture and bone turnover changes are ameliorated by irisin treatment in chronic inflammatory bowel disease. FASEB J. 2018 Sep;32(9):4848-4861. doi: 10.1096/fj.201800178R. Epub 2018 Mar 29, PMID: 29596023 PMCID: PMC6103167.
7. Cromer, W, **Zawieja, D.** Acute Exposure to Space Flight Results in Evidence of Reduced Lymph Transport, Tissue Fluid Shifts, and Immune Alterations in the Rat Gastrointestinal System. Life Sci Space Res (Amst). 2018 May;17:74-82. doi: 10.1016/j.lssr.2018.03.005. Epub 2018 Mar 28, PMID:29753416.
8. Narayanan, S. A., Ford, J., **Zawieja, D. C.** Impairment of lymphatic endothelial barrier function by X-ray irradiation. Int J Radiat Biol. 2019 May;95(5):562-570. doi: 10.1080/09553002.2019.1562253. Epub 2019 Feb 22, PMID:30570385, PMCID:[PMC6488388](http://www.ncbi.nlm.nih.gov/pmc/articles/pmc6488388/).
9. Mao XW, Nishiyama NC, Byrum SD, Stanbouly S, Jones T, Drew A, Sridharan V, Boerma M, Tackett AJ, **Zawieja D**, Willey JS, Delp M, Pecaut MJ. Characterization of mouse ocular response to a 35-day spaceflight mission: Evidence of blood-retinal barrier disruption and ocular adaptations. Sci Rep. 2019 Jun 3;9(1):8215. doi: 10.1038/s41598-019-44696-0. PMID: 31160660 PMCID: PMC6547757 .
10. Overbey EG, da Silveira WA, Stanbouly S, Nishiyama NC, Roque-Torres GD, Pecaut MJ, **Zawieja DC**, Wang C, Willey JS, Delp MD, Hardiman G and Mao XW. Spaceflight influences gene expression, photoreceptor integrity, and oxidative stress-related damage in the murine retina. Sci Rep. 2019 Sep 16;9(1):13304. PMID: 31527661 PMCID: PMC6746706 DOI: 10.1038/s41598-019-49453-x.
11. Kwok A, Rosas S, Bateman TA, Livingston E, Smith TL, Moore J, **Zawieja DC**, Hampton T, Mao XW, Delp MD and Willey JS. Altered rodent gait characteristics after ~35 days in orbit aboard the International Space Station. *Life Sciences in Space Research*. 2020;24:9-17. Life Sci Space Res (Amst). 2020 Feb;24:9-17. doi:10.1016/j.lssr.2019.10.010. Epub 2019 Nov 8. PMID: 31987483.
12. Kwok AT, Mohamed NS, Plate JF, Yammani RR, Rosas S, Bateman TA, Livingston E, Moore JE, Kerr BA, Lee J, Furdui CM, Tan L, Bouxsein ML, Ferguson VL, Stodieck LS, **Zawieja DC**, Delp MD, Mao XW, Willey JS. [Spaceflight and hind limb unloading induces an arthritic phenotype in knee articular cartilage and menisci of rodents.](https://pubmed.ncbi.nlm.nih.gov/34006989/) Sci Rep. 2021 May 18;11(1):10469. doi: 10.1038/s41598-021-90010-2. PMID:34006989
13. Jin, Y., Wang, J., Liu, Y., Wang, R., Chen, H., Si, H., Srinivasan, S., Tharakan, B., Zhang, S.L. Muthuchamy, M., **Zawieja, D.C**., Peng, X. Cdc42 is required for lymphatic branching, maturation and valve formation during embryonic development. bioRxiv. 2020. doi: <https://doi.org/10.1101/2020.01.28.923847>.

**Complete List of Peer-reviewed Publications in MyBibliography:**

<https://www.ncbi.nlm.nih.gov/myncbi/1fyxq7rzd2KQD/bibliography/public/>