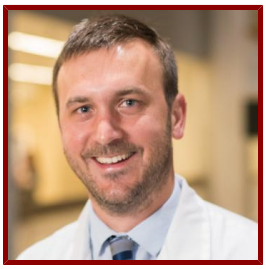
Stanford



Chad S. Weldy, M.D., Ph.D.

Instructor, Medicine - Cardiovascular Medicine

Curriculum Vitae available Online

CLINICAL OFFICE (PRIMARY)

- **Medicine**

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  Stanford, CA 94305

  Tel (650) 725-5071 **Fax** (650) 725-8381

Bio

BIO

Dr. Chad Weldy is a cardiologist and a faculty member (Instructor) within the Division of Cardiovascular Medicine and the Stanford Center for Inherited Cardiovascular Disease. He received his M.D. from Duke University School of Medicine and completed his internal medicine internship, residency, and cardiology fellowship at Stanford University as a member of the Stanford Translational Investigator Program (TIP) where he conducted research within the lab of Dr. Thomas Quertermous focused on epigenetics, RNA editing, and genetic mechanisms of disease. Prior to entering medical school, he received his Ph.D. from the University of Washington and completed a postdoctoral fellowship with the University of Washington, Division of Cardiology where he conducted basic science research investigations within the fields of cardiovascular biology, redox biology, toxicology, and epigenetics. Dr. Weldy has a clinical expertise within the field of inherited cardiomyopathies where he treats patients and families within Stanford's Center for Inherited Cardiovascular Disease (SCICD). As a physician-scientist, Dr. Weldy works to better understand human genetics, epigenetics, and transcriptional regulation in cardiovascular disease. Dr. Weldy has received funding through an NIH/ NHLBI K08 Clinical Scientist Research Career Development Award, an American Heart Association Career Development Award (CDA), an F32 Ruth L. Kirschstein National Research Service Award (NRSA) Individual Postdoctoral Fellowship award, and an NIH Loan Repayment Award on his work focused on the genetic, epigenetic, and RNA editing mechanisms of vascular disease. Within Stanford, Dr. Weldy has been the recipient of the Gerald Reaven Award for Basic Science from the Division of Cardiovascular Medicine, he has been inducted into AOA from the Stanford School of Medicine, and he was the recipient for the Timothy F. Beckett Jr. Award for Best Clinical Teaching from the Department of Medicine.

CLINICAL FOCUS

- Inherited Cardiovascular Disease
- Cardiovascular Genetics
- Cardiovascular Disease

ACADEMIC APPOINTMENTS

- Instructor, Medicine - Cardiovascular Medicine
- Member, Cardiovascular Institute

HONORS AND AWARDS

- NIH/NHLBI K08 Mentored Clinical Scientist Development Award, NIH/NHLBI (August, 2023)
- AHA Career Development Award (CDA), American Heart Association (March, 2023)
- NIH Loan Repayment Program (LRP) Award, NIH/NHLBI (July, 2021)
- Ruth L. Kirschstein National Research Service Award (NRSA) Individual Postdoctoral Fellowship (F32), NIH/NHLBI (July, 2021)
- Gerald Reaven Award for Basic Science, Stanford University (June, 2021)
- Timothy F. Beckett Jr. Award for Best Clinical Teaching by a Medicine Fellow, Stanford University (June, 2021)
- AOA - Alpha Omega Alpha Medical Honor Society, Stanford University School of Medicine (6/2020)
- 2019 Residency Research Travel Award, Stanford University Internal Medicine Residency Program (April, 2019)
- 2014 Paper of the Year Award, Society of Toxicology, Inhalation and Respiratory Specialty Section (March 24, 2014)
- 2014 Postdoctoral Travel Award, Society of Toxicology, Cardiovascular Toxicology Specialty Section (March 25, 2014)
- 1st Place Postdoctoral Presentation Award, Pacific Northwest Association of Toxicologists (September 2013)
- 2012 Innovations in Research Award, University of Washington Center for Ecogenetics and Environmental Health (CEEH) (May 2012)
- Departmental nominee and one of four finalists, University of Washington Graduate School Medal (May 2011)
- Young Investigator Award (YIA), Society for Free Radical Biology and Medicine (SFRBM) (November 2011)
- 1st Place Student/Post Doc Oral Presentation Award, Pacific Northwest Association of Toxicologists (October 2010)
- 2007 Professor Ming-Ho Yu Award: Outstanding Student in Environmental Toxicology, Huxley College of the Environment, Western Washington University (May 2007)

PROFESSIONAL EDUCATION

- Board Certification: Cardiovascular Disease, American Board of Internal Medicine (2023)
- Residency: Stanford University Internal Medicine Residency (2019) CA
- Fellowship: Stanford University Cardiovascular Medicine Fellowship Program CA
- Board Certification: Internal Medicine, American Board of Internal Medicine (2020)
- Medical Education: Duke University School of Medicine (2017) NC
- Cardiovascular Med Fellowship, Stanford University Hospitals , Cardiology (2023)
- Internal Medicine Residency, Stanford University Hospitals , Internal Medicine (2019)
- Internal Medicine Internship, Stanford University Hospitals , Internal Medicine (2018)
- MD, Duke University School of Medicine , Medicine (2017)
- Postdoctoral Fellowship, University of Washington, School of Medicine, Division of Cardiology , Cardiovascular Biology, Heart Failure, Epigenetics (2014)
- PhD, University of Washington, School of Public Health , Toxicology, Vascular Physiology, Free Radical Biology (2012)
- BS, Western Washington University, Huxley College of the Environment , Environmental Toxicology, Chemistry (2007)

LINKS

- Twitter: https://twitter.com/ChadSWeldy
- Personal Website: https://chadweldy.sites.stanford.edu/

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

As a physician-scientist in the lab of Dr. Quertermous I work to understand the genetic basis of cardiovascular disease and the transcriptional and epigenomic mechanisms of atherosclerosis. My work is focused across four main areas of cardiovascular genetics and mechanisms of coronary artery disease and smooth muscle biology:

1. Vascular smooth muscle specific ADAR1 mediated RNA editing of double stranded RNA and activation of the double stranded RNA receptor MDA5
2. Defining on single cell resolution the cellular and epigenomic features of human vascular disease across vascular beds of differing embryonic origin
3. CRISPRi screening with targeted perturb seq (TAPseq) to identify novel CAD genes in human coronary artery smooth muscle cells
4. Investigation of the epigenetic and molecular basis of coronary artery disease and smooth muscle cell transition in mice with conditional smooth muscle genetic deletion of CAD genes Pdgfd and Sox9

My work with Dr. Quertermous is focused on discovery of causal mechanisms of disease through leveraging human genetics with sophisticated molecular biology, single cell sequencing technologies, and mouse models of disease. This work attempts to apply multiple scientific research arms to ultimately lead to novel understandings of vascular disease and discover important new therapeutic approaches for drug discovery.

Grant funding received for this work:

Mentored Clinical Scientist Research Career Development Award (K08)(NIH/NHLBI, 1 K08 HL167699-01), Submitted June, 2022. PI: Weldy, Chad
• Title of proposal: “ADAR Mediated RNA editing is a causal mechanism in coronary artery disease”.
• Pending 08/01/2023 Start date
• $850,000 over 5 years

Career Development Award, American Heart Association (AHA CDA)(23CDA1042900), July, 2023 – June, 2026. PI: Weldy, Chad
• Title of proposal: “Linking RNA editing to coronary artery calcification and disease”
• Activation on 07/01/2023
• $231,000 over three years

NIH Loan Repayment Program (LRP) Award (NIH/NHLBI) Renewal Award, July, 2023. PI: Weldy, Chad
• Title of proposal: “RNA editing is a causal mechanism of coronary artery disease”

Ruth L. Kirschstein National Research Service Award (NRSA) Individual Postdoctoral Fellowship (F32) (NIH/NHLBI, 1 F32 HL160067-01), July, 2021. PI: Weldy, Chad
• Titled, “A transcriptional network which governs smooth muscle transition is mediated by causal coronary artery disease gene PDGFD”
• *Received perfect score with impact score 10, 1st percentile

NIH Loan Repayment Program (LRP) Award (NIH/NHLBI), July, 2021. PI: Weldy, Chad
• Title of proposal: "Single cell transcriptomic and epigenomic features of human atherosclerosis".
• This will award up to $100,000 towards student loans over the next 24 months with opportunity for renewal after 24 months.

Publications

PUBLICATIONS

- **Genome-Wide Genetic Associations Prioritize Evaluation of Causal Mechanisms of Atherosclerotic Disease Risk.** *Arteriosclerosis, thrombosis, and vascular biology*
  Quertermous, T., Li, D. Y., Weldy, C. S., Ramste, M., Sharma, D., Monteiro, J. P., Gu, W., Worssam, M. D., Palmisano, B. T., Park, C. Y., Cheng, P.
  2024; 44 (2): 323-327

- **Epistasis regulates genetic control of cardiac hypertrophy.** *medRxiv : the preprint server for health sciences*
  Wang, Q., Tang, T. M., Youlton, N., Weldy, C. S., Kenney, A. M., Ronen, O., Hughes, J. W., Chin, E. T., Sutton, S. C., Agarwal, A., Li, X., Behr, M., Kumbier, et al
  2023

- **From Founder to Function: can we unravel phenotype from genotype?** *Heart rhythm*
  Weldy, C. S., Perez, M. V.
  2023

- **Discovery of Transacting Long Noncoding RNAs That Regulate Smooth Muscle Cell Phenotype.** *Circulation research*
  Shi, H., Nguyen, T., Zhao, Q., Cheng, P., Sharma, D., Kim, H. J., Brian Kim, J., Wirka, R., Weldy, C. S., Monteiro, J. P., Quertermous, T.
  2023

- **Molecular mechanisms of coronary artery disease risk at the PDGFD locus.** *Nature communications*
  Kim, H., Cheng, P., Travisano, S., Weldy, C., Monteiro, J. P., Kundu, R., Nguyen, T., Sharma, D., Shi, H., Lin, Y., Liu, B., Haldar, S., Jackson, et al
  2023; 14 (1): 847

- **miR Profile of Chronic Right Ventricular Pacing: a Pilot Study in Children with Congenital Complete Atrioventricular Block.** *Journal of cardiovascular translational research*
  Navarre, B. M., Clouthier, K. L., Ji, X., Taylor, A., Weldy, C. S., Dubin, A. M., Reddy, S.
  2022

- **Dissecting the Genomics of Spontaneous Coronary Artery Dissection.** *Circulation. Genomic and precision medicine*
  Weldy, C. S., Murtha, R., Kim, J. B.
  2022: 101161CIRCGEN122003867

- **The epigenomic landscape of single vascular cells reflects developmental origin and identifies disease risk loci** *bioRxiv*
  Weldy, C. S., Cheng, P. P., Pedroza, A. J., Dalal, A. R., Sharma, D., Kim, H., Shi, H., Nguyen, T., Kundu, R. K., Fischbein, M. P., Quertermous, T.
  2022

- **Mulibrey Nanism and the Real Time Use of Genome and Biobank Engines to Inform Clinical Care in an Ultrarare Disease.** *Circulation. Genomic and precision medicine*
  Weldy, C. S., Ashley, E. A.
  2021: CIRCGEN121003430

- **Towards precision medicine in heart failure.** *Nature reviews. Cardiology*
  Weldy, C. S., Ashley, E. A.
  2021

- **Circulating whole genome miRNA expression corresponds to progressive right ventricle enlargement and systolic dysfunction in adults with tetralogy of Fallot.** *PloS one*
  Weldy, C. S., Syed, S. A., Amsallem, M., Hu, D., Ji, X., Punn, R., Taylor, A., Navarre, B., Reddy, S.
  2020; 15 (11): e0241476

- **In utero exposure to diesel exhaust particulates is associated with an altered cardiac transcriptional response to transverse aortic constriction and altered DNA methylation** *FASEB Journal*
  Goodson, J. M., Weldy, C. S., MacDonald, J. W., Bammler, T. K., Chien, W., Chin, M. T.
  2017: 4935-4945

- **Neonatal Diesel Exhaust Particulate Exposure Does Not Predispose Mice to Adult Cardiac Hypertrophy or Heart Failure** *INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH*

Liu, Y., Weldy, C. S., Chin, M. T.
2016; 13 (12)

- **Myocardial deletion of transcription factor CHF1/Hey2 results in altered myocyte action potential and mild conduction system expansion but does not alter conduction system function or promote spontaneous arrhythmias** *FASEB JOURNAL*
  Hartman, M. E., Liu, Y., Zhu, W., Chien, W., Weldy, C. S., Fishman, G. I., Laflamme, M. A., Chin, M. T.
  2014; 28 (7): 3007-3015

- **In Utero Exposure to Diesel Exhaust Air Pollution Promotes Adverse Intrauterine Conditions, Resulting in Weight Gain, Altered Blood Pressure, and Increased Susceptibility to Heart Failure in Adult Mice** *PLOS ONE*
  Weldy, C. S., Liu, Y., Liggitt, H. D., Chin, M. T.
  2014; 9 (2)

- **In utero and early life exposure to diesel exhaust air pollution increases adult susceptibility to heart failure in mice** *PARTICLE AND FIBRE TOXICOLOGY*
  Weldy, C. S., Liu, Y., Chang, Y., Medvedev, I. O., Fox, J. R., Larson, T. V., Chien, W., Chin, M. T.
  2013; 10

- **Inhalation of diesel exhaust does not exacerbate cardiac hypertrophy or heart failure in two mouse models of cardiac hypertrophy** *PARTICLE AND FIBRE TOXICOLOGY*
  Liu, Y., Chien, W., Medvedev, I. O., Weldy, C. S., Luchtel, D. L., Rosenfeld, M. E., Chin, M. T.
  2013; 10

- **Glutathione (GSH) and the GSH synthesis gene Gclm modulate plasma redox and vascular responses to acute diesel exhaust inhalation in mice** *INHALATION TOXICOLOGY*
  Weldy, C. S., Luttrell, I. P., White, C. C., Morgan-Stevenson, V., Cox, D. P., Carosino, C. M., Larson, T. V., Stewart, J. A., Kaufman, J. D., Kim, F., Chitaley, K., Kavanagh, T. J.
  2013; 25 (8): 444-454

- **The Glutathione Synthesis Gene Gclm Modulates Amphiphilic Polymer-Coated CdSe/ZnS Quantum Dot-Induced Lung Inflammation in Mice** *PLOS ONE*
  McConnachie, L. A., Botta, D., White, C. C., Weldy, C. S., Wilkerson, H., Yu, J., Dills, R., Yu, X., Griffith, W. C., Faustman, E. M., Farin, F. M., Gill, S. E., Parks, et al
  2013; 8 (5)

- **Glutathione (GSH) and the GSH synthesis gene Gclm modulate vascular reactivity in mice** *FREE RADICAL BIOLOGY AND MEDICINE*
  Weldy, C. S., Luttrell, I. P., White, C. C., Morgan-Stevenson, V., Bammler, T. K., Beyer, R. P., Afsharinejad, Z., Kim, F., Chitaley, K., Kavanagh, T. J.
  2012; 53 (6): 1264-1278

- **DIESEL particulate exposed macrophages alter endothelial cell expression of eNOS, iNOS, MCP1, and glutathione synthesis genes** *TOXICOLOGY IN VITRO*
  Weldy, C. S., Wilkerson, H., Larson, T. V., Stewart, J. A., Kavanagh, T. J.
  2011; 25 (8): 2064-2073

- **Heterozygosity in the glutathione synthesis gene Gclm increases sensitivity to diesel exhaust particulate induced lung inflammation in mice** *INHALATION TOXICOLOGY*
  Weldy, C. S., White, C. C., Wilkerson, H., Larson, T. V., Stewart, J. A., Gill, S. E., Parks, W. C., Kavanagh, T. J.
  2011; 23 (12): 724-735