



Andres Cardenas

Assistant Professor of Epidemiology and Population Health and, by courtesy, of Pediatrics

CONTACT INFORMATION

- **Administrative Contact**

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Bio

BIO

I am an environmental epidemiologist and serve as an Assistant Professor in the Department of Epidemiology and Population Health at Stanford University. I joined the faculty at Stanford School of Medicine in 2022.

My research focuses on characterizing molecular and epigenetic biomarkers and the extent to which these alterations contribute to disease risk throughout the life course. My group utilizes computational approaches to investigate environmental chemical mixtures, biological aging markers and fetal epigenetic programming. We have several studies looking at chemical and non-chemical stressors in early-life and subsequent health including; neurodevelopment, obesity and immune function.

My research examines the intersection of chemical and social environments in shaping health and disease.

ACADEMIC APPOINTMENTS

- Assistant Professor, Epidemiology and Population Health
- Assistant Professor (By courtesy), Pediatrics
- Member, Bio-X
- Member, Maternal & Child Health Research Institute (MCHRI)

HONORS AND AWARDS

- Outstanding New Environmental Scientist (ONES) award, NIEHS/NIH (2020-2025)
- Young Alumni Award, College of Science, Oregon State University (2020)

LINKS

- Publications: <https://www.ncbi.nlm.nih.gov/myncbi/andres.cardenas.1/bibliography/public/>
- NIH Grants: https://reporter.nih.gov/search/_OxjRyeTAKj-MIHUAu49A/projects
- My Lab Site: <https://med.stanford.edu/cardenas-lab.html>

- X: <https://twitter.com/cardenaasca>

Teaching

COURSES

2024-25

- Epidemiology Research Seminar: EPI 236 (Win)

STANFORD ADVISEES

Postdoctoral Faculty Sponsor

Ixel Hernandez, Dennis Khodasevich, Javier Perez Garcia, Anna Smith

Doctoral Dissertation Co-Advisor (AC)

Hanyang Shen

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Epidemiology (Masters Program)
- Epidemiology (Phd Program)
- Genetics (Phd Program)

Publications

PUBLICATIONS

- **Long-term exposure to ambient air pollution and epigenetic age acceleration in children.** *American journal of epidemiology*
Ni, W., Bozack, A. K., Rifas-Shiman, S. L., Oken, E., Hivert, M. F., Nassikas, N. J., Sordillo, J., Perng, W., Gold, D. R., Cardenas, A., Rice, M. B.
2025
- **Timing of Menarche and Menopause and Epigenetic Aging among U.S. Adults: Results from the National Health and Nutrition Examination Survey 1999-2002.** *medRxiv : the preprint server for health sciences*
Daredia, S., Khodasevich, D., Gladish, N., Shen, H., Nwanaji-Enwerem, J. C., Bozack, A. K., Needham, B. L., Rehkopf, D. H., Deardorff, J., Cardenas, A.
2024
- **Parental arsenic exposure and tissue-specific DNA methylation in Bangladeshi infants with spina bifida.** *Epigenetics*
Tindula, G., Mukherjee, S. K., Ekramullah, S. M., Arman, D. M., Islam, J., Biswas, S. K., Warf, B. C., Christiani, D. C., Lemos, B., Liang, L., Cardenas, A., Mazumdar, M.
2024; 19 (1): 2416345
- **Associations of PFAS concentrations during pregnancy and midlife with bone health in midlife: Cross-sectional and prospective findings from Project Viva.** *Environment international*
Lin, P. D., Cardenas, A., Rokoff, L. B., Rifas-Shiman, S. L., Zhang, M., Botelho, J., Calafat, A. M., Gold, D. R., Zota, A. R., James-Todd, T., Hauser, R., Webster, T. F., Oken, et al
2024; 194: 109177
- **Prenatal metal exposures and kidney function in adolescence in Project Viva.** *Environmental health : a global access science source*
Price, N. F., Lin, P. D., Cardenas, A., Rifas-Shiman, S. L., Zota, A. R., Hivert, M. F., Oken, E., Aris, I. M., Sanders, A. P.
2024; 23 (1): 94
- **Cohort Profile Update: Project Viva Offspring.** *International journal of epidemiology*
Rifas-Shiman, S. L., Aris, I. M., Switkowski, K. M., Young, J., Fleisch, A. F., Perng, W., Chavarro, J. E., Cardenas, A., Gold, D. R., Zhang, M., James, P., Whooten, R. C., Kleinman, et al
2024; 53 (6)
- **Bronchial cell epigenetic aging in a human experimental study of short-term diesel and ozone exposures.** *Environmental epigenetics*

- Nwanaji-Enwerem, J. C., Bozack, A. K., Ward-Caviness, C., Diaz-Sanchez, D., Devlin, R. B., Bind, M. C., Cardenas, A.
2024; 10 (1): dvae017
- **Corrigendum to Non-essential and essential trace element mixtures and kidney function in early pregnancy - A cross-sectional analysis in project viva [Environ. Res. 216P4 (2023) 114846].** *Environmental research*
Lin, P. D., Cardenas, A., Rifas-Shiman, S. L., Zota, A. R., Hivert, M. F., Aris, I. M., Sanders, A. P.
2024; 262 (Pt 1): 120004
 - **Prenatal Phenol and Phthalate Exposure is Associated with Persistent Changes in DNA Methylation in Childhood**
Khodasevich, D., Harley, K. G., Eskenazi, B., Barcellos, L. F., Cardenas, A., Holland, N.
WILEY.2024: 45
 - **Epigenetic Biomarkers for Understanding Adverse Experiences and Health.** *JAMA network open*
Bozack, A. K., Merrill, S. M., Cardenas, A.
2024; 7 (8): e2427070
 - **First trimester prenatal metal mixtures, vitamins, and hypertensive disorders of pregnancy in the project viva cohort.** *Environment international*
Hernandez-Castro, I., Rifas-Shiman, S. L., Lin, P. D., Chavarro, J. E., Gold, D. R., Zhang, M., Mueller, N. T., James-Todd, T., Coull, B., Hivert, M. F., Oken, E., Cardenas, A.
2024; 190: 108909
 - **Carcinogenicity of talc and acrylonitrile.** *The Lancet. Oncology*
Stayner, L. T., Carreón-Valencia, T., Demers, P. A., Fritz, J. M., Sim, M. R., Stewart, P., Tsuda, H., Cardenas, A., Consonni, D., Davies, L., De Matteis, S., Felley-Bosco, E., Ghio, et al
2024
 - **Prenatal blood metals, per- and polyfluoroalkyl substances and antigen- or mitogen-stimulated cord blood lymphocyte proliferation and cytokine secretion.** *Environmental research*
Smith, A., Lin, P. D., Rifas-Shiman, S. L., Fleisch, A. F., Wright, R. O., Coull, B., Finn, P. W., Oken, E., Gold, D. R., Cardenas, A.
2024: 119555
 - **Prenatal Maternal Occupation and Child Epigenetic Age Acceleration in an Agricultural Region: NIMHD Social Epigenomics Program.** *JAMA network open*
Daredia, S., Bozack, A. K., Riddell, C. A., Gunier, R., Harley, K. G., Bradman, A., Eskenazi, B., Holland, N., Deardorff, J., Cardenas, A.
2024; 7 (7): e2421824
 - **Telehealth Parenting Program and Salivary Epigenetic Biomarkers in Preschool Children With Developmental Delay: NIMHD Social Epigenomics Program.** *JAMA network open*
Merrill, S. M., Hogan, C., Bozack, A. K., Cardenas, A., Comer, J. S., Bagner, D. M., Highlander, A., Parent, J.
2024; 7 (7): e2424815
 - **Prenatal exposure to environmental phenols and phthalates and altered patterns of DNA methylation in childhood.** *Environment international*
Khodasevich, D., Holland, N., Harley, K. G., Eskenazi, B., Barcellos, L. F., Cardenas, A.
2024; 190: 108862
 - **DNA methylation is associated with hair trace elements in female adolescents from two vulnerable populations in the Colombian Caribbean.** *Environmental epigenetics*
Manjarres-Suarez, A., Bozack, A., Cardenas, A., Olivero-Verbel, J.
2024; 10 (1): dvae008
 - **Precision Medicine for Asthma Treatment: Unlocking the Potential of the Epigenome and Microbiome.** *The Journal of allergy and clinical immunology*
Perez-Garcia, J., Cardenas, A., Lorenzo-Diaz, F., Pino-Yanes, M.
2024
 - **Ambient air pollution and urological cancer risk: A systematic review and meta-analysis of epidemiological evidence.** *Nature communications*
Li, J., Deng, Z., Soerensen, S. J., Kachuri, L., Cardenas, A., Graff, R. E., Leppert, J. T., Langston, M. E., Chung, B. I.
2024; 15 (1): 5116

- **Maternal age is related to offspring DNA methylation: A meta-analysis of results from the PACE consortium.** *Aging cell*
Yeung, E., Biedrzycki, R. J., Gómez Herrera, L. C., Issarapu, P., Dou, J., Marques, I. F., Mansuri, S. R., Page, C. M., Harbs, J., Khodasevich, D., Poisel, E., Niu, Z., Allard, et al
2024: e14194
- **Protocol for CARES-HAPIN: an ambidirectional cohort study on exposure to environmental tobacco smoke and risk of early childhood caries.** *BMJ open*
Patil, S. S., Puttaswamy, N., Cardenas, A., Barr, D. B., Ghosh, S., Balakrishnan, K.
2024; 14 (5): e083874
- **Epigenome-wide association study of lung cancer among never smokers in two prospective cohorts in Shanghai, China.** *Thorax*
Rahman, M. L., Breeze, C. E., Shu, X. O., Wong, J. Y., Blechter, B., Cardenas, A., Wang, X., Ji, B. T., Hu, W., Cai, Q., Hosgood, H. D., Yang, G., Shi, et al
2024
- **Air pollution mixture associated with oxidative stress exacerbation and symptoms deterioration in allergic rhinitis patients: Evidence from a panel study.** *The Science of the total environment*
Li, J., Wu, H., Xing, W., Li, X., Han, Z., Ji, R., Deng, Z., Jung, M., Sun, S., Chung, B. I., Cardenas, A., Langston, M. E.
2024: 172688
- **Associations of prenatal one-carbon metabolism nutrients and metals with epigenetic aging biomarkers at birth and in childhood in a US cohort.** *Aging*
Bozack, A. K., Rifas-Shiman, S. L., Baccarelli, A. A., Wright, R. O., Gold, D. R., Oken, E., Hivert, M. F., Cardenas, A.
2024; 16
- **DNA Methylation-Based Biomarkers of Protein Levels and Cardiovascular Disease Risk: Opportunities and Challenges for Precision Cardiology.** *Circulation. Genomic and precision medicine*
Bozack, A. K., Navas-Acien, A., Cardenas, A.
2024: e004571
- **First trimester prenatal metal mixtures, vitamins, and hypertensive disorders of pregnancy in the project viva cohort** *Environment International*
Hernandez-Castro, I., Rifas-Shiman, S. L., Lin, P. D., Chavarro, J. E., Gold, D. R., Zhang, M., Mueller, N. T., James-Todd, T., Coull, B., Hivert, M., Oken, E., Cardenas, A.
2024
- **Cross-sectional and prospective associations of early childhood circulating metals with early and mid-childhood cognition in the project viva cohort.** *Environmental research*
Thilakarathne, R., Lin, P. D., Rifas-Shiman, S. L., Landero, J., Wright, R. O., Bellinger, D., Oken, E., Cardenas, A.
2023: 118068
- **Infant Feeding Practices and Metal Concentrations in Children's Blood.** *JAMA network open*
Smith, A. R., Thilakarathne, R., Lin, P. D., Rifas-Shiman, S. L., Hivert, M., Oken, E., Cardenas, A.
2023; 6 (12): e2348230
- **Associations between prenatal blood metals and vitamins and cord blood peptide hormone concentrations** *ENVIRONMENTAL EPIDEMIOLOGY*
Smith, A. R., Lin, P. D., Rifas-Shiman, S. L., Switkowski, K. M., Fleisch, A. F., Wright, R. O., Coull, B., Oken, E., Hivert, M., Cardenas, A.
2023; 7 (6)
- **Associations Between Prenatal Blood Metals and Vitamins and Cord Blood Peptide Hormone Concentrations.** *Global reproductive health*
Smith, A. R., Lin, P. D., Rifas-Shiman, S. L., Switkowski, K. M., Fleisch, A. F., Wright, R. O., Coull, B., Oken, E., Hivert, M. F., Cardenas, A.
2023; 7 (6)
- **Environmental tobacco smoke and children's health: a bibliometric and altmetric analysis of 100 most cited articles.** *BMC public health*
Patil, S. S., Puttaswamy, N., Sarode, S. C., Sarode, G. S., Patil, S. S., Cardenas, A., Gandhirajan, R. K., Balakrishnan, K.
2023; 23 (1): 2208
- **Associations Between Epigenetic Age Acceleration and microRNA Expression Among U.S. Firefighters.** *Epigenetics insights*
Jung, A. M., Furlong, M. A., Goodrich, J. M., Cardenas, A., Beitel, S. C., Littau, S. R., Caban-Martinez, A. J., Gulotta, J. J., Wallentine, D. D., Urwin, D., Gabriel, J., Hughes, J., Graber, et al

2023; 16: 25168657231206301

- **Maternal adverse childhood experiences (ACEs) and DNA methylation of newborns in cord blood.** *Clinical epigenetics*
Collender, P., Bozack, A. K., Veazie, S., Nwanaji-Enwerem, J. C., Van Der Laan, L., Kogut, K., Riddell, C., Eskenazi, B., Holland, N., Deardorff, J., Cardenas, A.
2023; 15 (1): 162
- **Maternal prenatal social experiences and offspring epigenetic aging from birth to mid-childhood.** *Annals of epidemiology*
Laubach, Z. M., Bozack, A., Aris, I. M., Slopen, N., Tiemeier, H., Hivert, M. F., Cardenas, A., Perng, W.
2023
- **Parenting Practices May Buffer the Impact of Adversity on Epigenetic Age Acceleration Among Young Children With Developmental Delays.** *Psychological science*
Sullivan, A. D., Bozack, A. K., Cardenas, A., Comer, J. S., Bagner, D. M., Forehand, R., Parent, J.
2023: 9567976231194221
- **Climate change and epigenetic biomarkers in allergic and airway diseases.** *The Journal of allergy and clinical immunology*
Cardenas, A., Fadadu, R., Bunyavanich, S.
2023
- **Evaluation of pediatric epigenetic clocks across multiple tissues.** *Clinical epigenetics*
Fang, F., Zhou, L., Perng, W., Marsit, C. J., Knight, A. K., Cardenas, A., Aung, M. T., Hivert, M., Aris, I. M., Goodrich, J. M., Smith, A. K., Gaylord, A., Fry, et al
2023; 15 (1): 142
- **Mixtures of Metals and Micronutrients in Early Pregnancy and Cognition in Early and Mid-Childhood: Findings from the Project Viva Cohort.** *Environmental health perspectives*
Thilakaratne, R., Lin, P. D., Rifas-Shiman, S. L., Wright, R. O., Hubbard, A., Hivert, M. F., Bellinger, D., Oken, E., Cardenas, A.
2023; 131 (8): 87008
- **Household air pollution and epigenetic aging in Xuanwei, China.** *Environment international*
Blechter, B., Cardenas, A., Shi, J., Wong, J. Y., Hu, W., Rahman, M. L., Breeze, C., Downward, G. S., Portengen, L., Zhang, Y., Ning, B., Ji, B. T., Cawthon, et al
2023; 178: 108041
- **Epigenome-Wide Association Studies of Allergic Disease and the Environment.** *The Journal of allergy and clinical immunology*
Cardenas, A., Fadadu, R. P., Koppelman, G. H.
2023
- **Long-term exposure to ambient fine particulate matter and carotid intima media thickness at bilateral, left and right in adults from Mexico City: Results from GEA study.** *Chemosphere*
Torrico-Lavayen, R., Vargas-Alarcón, G., Riojas-Rodriguez, H., Sánchez Guerra, M. A., Texcalac-Sangrador, J. L., Ortiz-Panozo, E., Gutiérrez-Avila, I., De Vizcaya-Ruiz, A., Cardenas, A., Posadas-Sánchez, R., Osorio-Yáñez, C. C.
2023: 139009
- **Associations between prenatal phthalate exposure and childhood epigenetic age acceleration.** *Environmental research*
Khodasevich, D., Holland, N., Hubbard, A., Harley, K., Deardorff, J., Eskenazi, B., Cardenas, A.
2023: 116067
- **Association of Early Pregnancy Perfluoroalkyl and Polyfluoroalkyl Substance Exposure With Birth Outcomes.** *JAMA network open*
Zhang, Y., Mustieles, V., Sun, Q., Coull, B., McElrath, T., Rifas-Shiman, S. L., Martin, L., Sun, Y., Wang, Y. X., Oken, E., Cardenas, A., Messerlian, C.
2023; 6 (5): e2314934
- **DNA methylation age at birth and childhood: performance of epigenetic clocks and characteristics associated with epigenetic age acceleration in the Project Viva cohort.** *Clinical epigenetics*
Bozack, A. K., Rifas-Shiman, S. L., Gold, D. R., Laubach, Z. M., Perng, W., Hivert, M. F., Cardenas, A.
2023; 15 (1): 62
- **The prenatal environment and its influence on maternal and child mitochondrial DNA copy number and methylation: A review of the literature.** *Environmental research*
Smith, A. R., Hinojosa Briseno, A., Picard, M., Cardenas, A.

2023; 227: 115798

- **Occupational Years of Service and Leukocyte Epigenetic Aging: Relationships in United States Firefighters.** *Journal of occupational and environmental medicine*
Nwanaji-Enwerem, J. C., Cardenas, A., Goodrich, J. M., Furlong, M. A., Jung, A. M., Collender, P., Caban-Martinez, A. J., Grant, C., Beitel, S., Littau, S., Urwin, D., Gabriel, J., Hughes, et al
2023
- **Analysis of Pregnancy Complications and Epigenetic Gestational Age of Newborns.** *JAMA network open*
Ladd-Acosta, C., Vang, E., Barrett, E. S., Bulka, C. M., Bush, N. R., Cardenas, A., Dabelea, D., Dunlop, A. L., Fry, R. C., Gao, X., Goodrich, J. M., Herbstman, J., Hivert, et al
2023; 6 (2): e230672
- **OxPhos defects cause hypermetabolism and reduce lifespan in cells and in patients with mitochondrial diseases.** *Communications biology*
Sturm, G., Karan, K. R., Monzel, A. S., Santhanam, B., Taivassalo, T., Bris, C., Ware, S. A., Cross, M., Towheed, A., Higgins-Chen, A., McManus, M. J., Cardenas, A., Lin, et al
2023; 6 (1): 22
- **Associations of Prenatal First Trimester Essential and Nonessential Metal Mixtures with Body Size and Adiposity in Childhood.** *Epidemiology (Cambridge, Mass.)*
Smith, A. R., Lin, P. D., Rifas-Shiman, S. L., Wright, R. O., Coull, B., Hivert, M. F., Hubbard, A., Oken, E., Cardenas, A.
2023; 34 (1): 80-89
- **Psychological Stress and Epigenetic Aging in Older Men: The VA Normative Aging Study.** *Translational medicine of aging*
Nwanaji-Enwerem, J. C., Cardenas, A., Gao, X., Wang, C., Vokonas, P., Spiro, A., Osborne, A. D., Kosheleva, A., Hou, L., Baccarelli, A. A., Schwartz, J.
2023; 7: 66-74
- **Prenatal trimester-specific intake of micronutrients: global DNA methylation and hydroxymethylation at birth and persistence in childhood.** *Journal of developmental origins of health and disease*
Parsons, E., Rifas-Shiman, S. L., Bozack, A. K., Baccarelli, A. A., DeMeo, D. L., Hivert, M., Godderis, L., Duca, R., Oken, E., Cardenas, A.
2022: 1-8
- **Early pregnancy essential and non-essential metal mixtures and maternal antepartum and postpartum depressive symptoms.** *Neurotoxicology*
Rokoff, L. B., Cardenas, A., Lin, P. D., Rifas-Shiman, S. L., Wright, R. O., Enlow, M. B., Coull, B. A., Oken, E., Korrick, S. A.
2022
- **A multi-omics longitudinal aging dataset in primary human fibroblasts with mitochondrial perturbations.** *Scientific data*
Sturm, G., Monzel, A. S., Karan, K. R., Michelson, J., Ware, S. A., Cardenas, A., Lin, J., Bris, C., Santhanam, B., Murphy, M. P., Levine, M. E., Horvath, S., Belsky, et al
2022; 9 (1): 751
- **Non-essential and essential trace element mixtures and kidney function in early pregnancy - A cross-sectional analysis in project viva.** *Environmental research*
Lin, P. D., Cardenas, A., Rifas-Shiman, S. L., Zota, A. R., Hivert, M. F., Aris, I. M., Sanders, A. P.
2022; 216 (Pt 4): 114846
- **Increased epigenetic age acceleration in the hidradenitis suppurativa skin.** *Archives of dermatological research*
Lukac, D., Pagani, K., Collender, P. A., Fadadu, R. P., Cardenas, A., McGee, J. S.
2022
- **Short-Term Exposure of PM2.5 and Epigenetic Aging: A Quasi-Experimental Study.** *Environmental science & technology*
Gao, X., Huang, J., Cardenas, A., Zhao, Y., Sun, Y., Wang, J., Xue, L., Baccarelli, A. A., Guo, X., Zhang, L., Wu, S.
2022
- **Epigenome-wide analysis of DNA methylation and optimism in women and men.** *Psychosomatic medicine*
Wang, C., DeMeo, D. L., Kim, E. S., Cardenas, A., Fong, K. C., Lee, L. O., Spiro, A. 3., Whitsel, E. A., Horvath, S., Hou, L., Baccarelli, A. A., Li, Y., Stewart, et al
2022

- **Consensus on the Key Characteristics of Immunotoxic Agents as a Basis for Hazard Identification.** *Environmental health perspectives*
Germolec, D. R., Lebrech, H., Anderson, S. E., Bureson, G. R., Cardenas, A., Corsini, E., Elmore, S. E., Kaplan, B. L., Lawrence, B. P., Lehmann, G. M., Maier, C. C., McHale, C. M., Myers, et al
2022; 130 (10): 105001
- **Associations of cord blood leukocyte telomere length with adiposity growth from infancy to adolescence.** *Pediatric obesity*
Qureshi, F., Aris, I. M., Rifas-Shiman, S. L., Perng, W., Oken, E., Rich-Edwards, J., Cardenas, A., Baccarelli, A. A., Enlow, M. B., Belfort, M. B., Tiemeier, H.
2022: e12977
- **Health Effects of Pesticide Exposure in Latin American and the Caribbean Populations: A Scoping Review.** *Environmental health perspectives*
Zuniga-Venegas, L. A., Hyland, C., Munoz-Quezada, M. T., Quiros-Alcala, L., Butinof, M., Buralli, R., Cardenas, A., Fernandez, R. A., Foerster, C., Gouveia, N., Gutierrez Jara, J. P., Lucero, B. A., Munoz, et al
2022; 130 (9): 96002
- **Corrigendum to "Association of DNA methylation in circulating CD4+ T cells with short-term PM2.5 pollution waves: A quasi-experimental study of healthy young adults" [Ecotoxicol. Environ. Saf. 239 (2022) 1-8/113634].** *Ecotoxicology and environmental safety*
Jiang, M., Wang, X., Gao, X., Cardenas, A., Baccarelli, A. A., Guo, X., Huang, J., Wu, S.
2022; 243: 113970
- **Prenatal and birth associations of epigenetic gestational age acceleration in the Center for the Health Assessment of Mothers and Children of Salinas (CHAMACOS) cohort** *EPIGENETICS*
Daredia, S., Huen, K., van der Laan, L., Collender, P. A., Nwanaji-Enwerem, J. C., Harley, K., Deardorff, J., Eskenazi, B., Holland, N., Cardenas, A.
2022: 1-16
- **A mass-balance approach to evaluate arsenic intake and excretion in different populations** *ENVIRONMENT INTERNATIONAL*
Beene, D., Collender, P., Cardenas, A., Harvey, C., Huhmann, L., Lin, Y., Lewis, J., Lolacono, N., Navas-Acien, A., Nigra, A., Steinmaus, C., van Geen, A.
2022; 166: 107371
- **Long-Term Exposure to Ozone and Fine Particulate Matter and Risk of Premature Coronary Artery Disease: Results from Genetics of Atherosclerotic Disease Mexican Study.** *Biology*
Posadas-Sanchez, R., Vargas-Alarcon, G., Cardenas, A., Texcalac-Sangrador, J. L., Osorio-Yanez, C., Sanchez-Guerra, M.
2022; 11 (8)
- **Comparison of DNA methylation measurements from EPIC BeadChip and SeqCap targeted bisulphite sequencing in PON1 and nine additional candidate genes** *EPIGENETICS*
Khodasevich, D., Smith, A. R., Huen, K., Eskenazi, B., Cardenas, A., Holland, N.
2022: 1-12
- **Association of DNA methylation in circulating CD4+T cells with short-term PM2.5 pollution waves: A quasi-experimental study of healthy young adults** *ECOTOXICOLOGY AND ENVIRONMENTAL SAFETY*
Jiang, M., Wang, X., Gao, X., Cardenas, A., Baccarelli, A. A., Guo, X., Huang, J., Wu, S.
2022; 239: 113634
- **The impact of prenatal and early-life arsenic exposure on epigenetic age acceleration among adults in Northern Chile** *ENVIRONMENTAL EPIGENETICS*
Bozack, A. K., Boileau, P., Hubbard, A. E., Sille, F. M., Ferreccio, C., Steinmaus, C. M., Smith, M. T., Cardenas, A.
2022; 8 (1): dvac014
- **In vitro relationships of galactic cosmic radiation and epigenetic clocks in human bronchial epithelial cells** *ENVIRONMENTAL AND MOLECULAR MUTAGENESIS*
Nwanaji-Enwerem, J. C., Boileau, P., Galazka, J. M., Cardenas, A.
2022; 63 (4): 184-189
- **Epigenome-wide association study and epigenetic age acceleration associated with cigarette smoking among Costa Rican adults.** *Scientific reports*
Cardenas, A., Ecker, S., Fadadu, R. P., Huen, K., Orozco, A., McEwen, L. M., Engelbrecht, H., Gladish, N., Kobor, M. S., Rosero-Bixby, L., Dow, W. H., Rehkopf, D. H.
2022; 12 (1): 4277

- **Meta-analysis of epigenome-wide associations between DNA methylation at birth and childhood cognitive skills** *MOLECULAR PSYCHIATRY*
Caramaschi, D., Neumann, A., Cardenas, A., Tindula, G., Alemany, S., Zillich, L., Pesce, G., Lahti, J. T., Havdahl, A., Mulder, R., Felix, J. F., Tiemeier, H., Sirignano, et al
2022; 27 (4): 2126-2135
- **Environment-induced epigenetic modifications as therapeutic targets for prevention and treatment** *Environment-induced epigenetic modifications as therapeutic targets for prevention and treatment*
Ward-Caviness, C., Kraus, W. E., Dhingra, R., Martin, C. L., Cardenas, A., Nwanaji-Enwerem, J., Cascio, W. E.
Elsevier.2022
- **Maternal adverse childhood experiences before pregnancy are associated with epigenetic aging changes in their children** *AGING-US*
Nwanaji-Enwerem, J. C., van der Laan, L., Kogut, K., Eskenazi, B., Holland, N., Deardorff, J., Cardenas, A.
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