OMB No. 0925-0001 and 0925-0002 (Rev. 03/2020 Approved Through 02/28/2023)

BIOGRAPHICAL SKETCH

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| --- |
| NAME: Thorne, Peter S. |
| eRA COMMONS USER NAME (agency login): PTHORNE |
| POSITION TITLE: Professor and University of Iowa Distinguished Chair |

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

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| --- | --- | --- | --- |
| INSTITUTION AND LOCATION | DEGREE(if applicable) | Completion Date MM/YYYY | FIELD OF STUDY |
| University of Wisconsin, Madison, WI | BS | 09/1978 | Chemical Engineering |
| University of Wisconsin, Madison, WI | MS | 05/1980 | Biomedical Engineering |
| University of Wisconsin, Madison, WI | PHD | 07/1984 | Environmental Toxicology |
| University of Pittsburgh, Pittsburgh, PA | Postdoctoral Fellow | 03/1987 | Immunotoxicology |

### A. Personal Statement

My research experience has been amassed through over three decades of NIH-funded research in pulmonary toxicology, exposomics and environmental epidemiology. My work as an inhalation toxicologist requires a deep understanding of pulmonary toxicology, airway biology, innate immune responsiveness, lung dosimetry and aerosol physics. These skill sets and the tremendous capabilities of our EHSRC Human Toxicology and Exposomics Laboratory will interdigitate well with the proposed research. I am founding member of our NIEHS P30 Environmental Health Science Research Center. I served as Deputy Director 1995-2000, then Director 2000-2020 and since 2020 as Deputy Director. I have served as Director of the Pulmonary Toxicology Facility core for 27 years.

My portfolio of research has been funded by NIEHS, NIAID, NHLBI, FIC, CDC, DOD, NSF and HUD and totals over $65M. The findings of this research have been presented in over 290 peer-reviewed publications. I currently lead a research project within our P42 Iowa Superfund Research Program, a facility core within our P30 center, and am PI of a NIEHS-funded Nanotoxicology U01. As a mentor, I have served as PI and major advisor for 17 Post-doctoral fellows, 24 PhD students and 31 Masters students. I serve12 years as Head of the Department of Occupational and Environmental Health and am currently the Director of the interdisciplinary Human Toxicology Program.

My experience as a member of the National Academy of Sciences (NAS), Board on Environmental Studies and Toxicology; Chair of the NAS Committee on Toxicology and as Chair of the EPA Science Advisory Board have helped me gain insight into the translation of biomedical research to protect the health of the public. I have over 30 years of experience leading pulmonary toxicology research studies and collaborate extensively with investigators worldwide. I have created the infrastructure and equipment for lung exposure studies. Ongoing and recently completed projects that I would like to highlight include:

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| U01 ES027252-06NIH/NIEHS🡪 University of Iowa | Thorne (PI) | 09/01/16-08/31/22 |
| *Biological Response Profiles of Selected Engineered Nanomaterials after Perinatal Exposure* |
| This project will investigate the toxicity and biological response profiles of extensively characterized engineered nanomaterials. We will perform in vitro and in vivo perinatal developmental tox studies.  |

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| P30 ES005605-32NIH/NIEHS🡪 University of Iowa | Thorne/Lehlmer (PI) | 04/01/90-03/31/27 |
| *Environmental Health Sciences Research Center (EHSRC)* |
| The goal of the EHSRC is to promote research interactions among environmental health researchers at the UI, enhancing ongoing environmental health research and facilitating initiation of new collaborative and interdisciplinary environmental health research focused on rural populations. |

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| 5 P42 ES013661-16NIH/NIEHS 🡪 University of Iowa | Hornbuckle (PI)  | 04/01/05-03/31/25 |
| *Superfund Research Program - Semi-volatile PCBs: Sources, Exposures, Toxicities* *Project 3 – AESOP Study: Characterization of Exposures of Urban & Rural Cohorts to Airborne PCB’s –*Thorne: Project Leader |
| The AESOP Study is a longitudinal cohort study of adolescent children and their mothers. The goal is to characterize exposures and adverse health effects of polychlorinated biphenyls. |

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| U01 AI126614NIH/NIAID 🡪 Boston Children’s HospitalThorne: PI of Subaward | Phipitanakul (PI) | 07/20/16 – 06/30/23 |
| *Controlling and Preventing Asthma Progression and Severity in Kids* |
| This study seeks to prevention progression from allergic wheezing to asthma and will address the hypothesis that treatment of high-risk children with allergic sensitization and wheeze with omalizumab (anti-IgE) will alter disease progression as reflected by a reduced active diagnosis of asthma 2 yr after completion of therapy. |

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| R01 ES030100-04NIH/NIEHS 🡪 Boston Children’s HospitalThorne: PI of Subaward K464600-CG | Gaffin (PI) | 01/15/19 – 12/31/23 |
| *Indoor Air Quality and Respiratory Morbidity in School-aged Children with Bronchopulmonary Dysplasia* |
| In this study, Dr. Thorne performs exposure assessment for endotoxin, glucans and allergens using samples collected from the homes of study participants with bronchopulmonary dysplasia. |

Citations:

1. **Thorne PS**. Environmental endotoxin exposure and asthma. Invited: Paradigms and Perspectives. Thorne PS. Environmental endotoxin exposure and asthma. ***J Allergy Clin Immunol***. 2021 Jul;148(1):61-63. doi: 10.1016/j.jaci.2021.05.004. Epub 2021 May 14. PMID: 34000345.
2. Lynch TJ, Anderson PJ, Rotti PG, Tyler SR, Crooke AK, Choi SH, Montoro DT, Silverman CL, Shahin W, Zhao R, Jensen-Cody CW, Adamcakova-Dodd A, Evans TIA, Xie W, Zhang Y, Mou H, Herring BP, **Thorne PS**, Rajagopal J, Yeaman C, Parekh KR, Engelhardt JF. Submucosal Gland Myoepithelial Cells Are Reserve Stem Cells That Can Regenerate Mouse Tracheal Epithelium. ***Cell Stem Cell***. 2018 May 3;22(5):653-667.e5. doi: 10.1016/j.stem.2018.03.017. Epub 2018 Apr 12. PMCID: PMC5935589
3. Stein MM, Hrusch CL, Gozdz J, Igartua C, Pivniouk V, Murray SE, Ledford JG, Marques dos Santos M, Anderson RL, Metwali N, Neilson JW, Maier RM, Gilbert JA, Holbreich M, **Thorne PS**, Martinez FD, von Mutius E, Vercelli D, Ober C, Sperling AI. Innate Immunity and Asthma Risk in Amish and Hutterite Farm Children. ***N Engl J Med***. 2016 Aug 4;375(5):411-21. PMCID: PMC5137793
4. Trompette A, Divanovic S, Visintin A, Blanchard C, Hegde RS, Madan R, **Thorne PS**, Wills-Karp M, Gioannini TL, Weiss JP, Karp CL. Allergenicity resulting from functional mimicry of a Toll-like receptor complex protein. ***Nature***. 2009 Jan 29;457(7229):585-8. PMCID: PMC2843411

### B. Positions, Scientific Appointments, and Honors

Positions and Employment

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| --- | --- |
| 2022 - present | University of Iowa Distinguished Chair, Iowa City, IA |
| 2020 - present | Director, Human Toxicology Program, Iowa City, IA |
| 2020 - present | Deputy Director, Environmental Health Sciences Research Center, Iowa City, IA |
| 2009 - 2022 | Head, UI Department of Occupational & Environmental Health, Iowa City, IA |
| 2007 - 2007 | Visiting Professor, Aarhus University, Aarhus, Denmark |
| 2006 - 2007 | Visiting Professor, Utrecht University, Utrecht, The Netherlands |
| 2000 - 2020 | Director, Environmental Health Sciences Research Center, Iowa City, IA |
| 1999 - present | Professor of Toxicology, College of Public Health, University of Iowa, Iowa City, IA |
| 1998 - 1998 | Visiting Professor, Wageningen University, Wageningen, The Netherlands |
| 1997 - 1999 | Professor of Toxicology, College of Medicine, University of Iowa, Iowa City, IA |
| 1997 - present | Professor of Environmental Engineering, College of Engineering (Secondary), Iowa City, IA |
| 1993 - 2000 | Deputy Director, Environmental Health Sciences Research Center, Iowa City, IA |
| 1993 - present | Director, U.I. Pulmonary Toxicology Facility, Iowa City, IA |
| 1992 - 1997 | Associate Professor, University of Iowa, Iowa City, IA |
| 1988 - 1992 | Assistant Professor, University of Iowa, Iowa City, IA |
| 1987 - 1988 | Assistant Professor, University of Pittsburgh, Pittsburgh, PA |
| 1984 - 1987 | Faculty Research Associate, University of Pittsburgh, Pittsburgh, PA |
| 1981 - 1984 | Research Assistant, Environ. Toxicology Program, University of Wisconsin, Madison, WI |
| 1980 - 1981 | Teaching Assistant, Dept. Chemical Engineering, University of Wisconsin, Madison, WI |
| 1978 - 1980 | Research Assistant, Veterinary Science, University of Wisconsin, Madison, WI |
| 1976 - 1977 | Engineering Intern, Dept. Mechanical Engineering, University of Wisconsin, Madison, WI |

Scientific Appointments

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| --- | --- |
| 2021-present | Chair, Committee on Toxicology, National Academy of Sciences |
| 2021-present | Science Advisory Board, U.S. EPA, member  |
| 2019-present | Health Effects Institute, Energy Research Board, member |
| 2017-present | Committee on Toxicology, National Academy of Sciences, member  |
| 2017-present | Environmental Policy Committee, American Thoracic Society, member |
| 2013-2020 | Board on Environmental Studies & Toxicology, National Academy of Sciences, member |
| 2011-2017 | Chair, Science Advisory Board, U.S. EPA, member 2011-17, chair 2015-17 |
| 2003-2007 | National Advisory Environmental Health Sciences Council, NIEHS, member |
| 2001-2001 | Chair, Occupational Health Study Section, CSR NIOSH |
| 2000-2007 | Science Advisory Panel, Canadian Animal and Human Health Study of Oil and Gas Drilling |
| 2000-2002 | Chair, Occupational Health Specialty Section, Society of Toxicology |
| 1999-2002 | Occupational Health Study Section, CSR NIOSH, member |
| 1997-1998 | Interagency Coordinating Committee on the Validation of Alternative Methods, NIH-EPA-FDA, member |
| 1993-present | Ad Hoc review groups for NIH, DOD, NIOSH, EPA, member |

Honors

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| 2022 | Named to UI Distinguished Chair, University of Iowa |
| 2018 | Board of Regents Award for Faculty Excellence, State of Iowa |
| 2017 | Scholar of the Year Award, University of Iowa |
| 2013 | Distinguished Faculty Award & Lecture, University of Iowa College of Public Health  |
| 2010 | Inductee, Delta Omega Honorary Public Health Society |
| 2010 | John Doull Award, Society of Toxicology, Central States Chapter |
| 2009 | Faculty Research Award, University of Iowa College of Public Health |
| 2004 | Thomas Bedford Memorial Prize, British Occupational Hygiene Society |
| 2003 | Moira J. Whitehead Memorial Lecturer, Children’s Hospital of Pittsburgh, UPMC |
| 1982-1984 | NIEHS National Research Service Award Trainee, University of Wisconsin, Madison, WI |
| 1981-1982 | Vilas Graduate Fellowship, University of Wisconsin, Madison, WI |
| 1978 | Graduate with Honors, College of Engineering, University of Wisconsin,, Madison, WI |

### C. Contributions to Science

1. Through *in vivo* inhalation toxicology studies and advanced *in vitro* methods, my research has elucidated adverse outcome pathways for engineered nanomaterials.
2. Parizek NJ, Steines BR, Haque E, Altmaier R, Adamcakova-Dodd A, O'Shaughnessy PT, **Thorne PS\***. Acute in vivo pulmonary toxicity assessment of occupationally relevant particulate matter from a cellulose nanofiber board. ***NanoImpact*** 2020 Jan; 17:100210. PMCID: PMC7504912
3. Areecheewakul S, Adamcakova-Dodd A, Givens BE, Steines BR, Wang Y, Meyerholz DK, Parizek NJ, Altmaier R, Haque E, O'Shaughnessy PT, Salem AK, **Thorne PS\***. Toxicity assessment of metal oxide nanomaterials using *in vitro* screening and murine acute inhalation studies. ***NanoImpact***. 2020 Apr;18:100214. PMCID: PMC7504913
4. Wang Y, Adamcakova-Dodd A, Steines BR, Jing X, Salem AK, **Thorne PS\***. Comparison of in vitro toxicity of aerosolized engineered nanomaterials using air-liquid interface mono-culture and co-culture models. ***NanoImpact***. 2020 Apr; 18:100215. PMCID: PMC7462419
5. Adamcakova-Dodd A, Monick MM, Powers LS, Gibson-Corley KN, **Thorne PS\***. Effects of prenatal inhalation exposure to copper nanoparticles on murine dams and offspring. ***Part Fibre Toxicol***. 2015 Oct 6;12:30. PMCID: PMC4594905
6. Work from my laboratory has shown that inhalation of lower-chlorinated polychlorinated biphenyls (PCBs) leads to rapid uptake, distribution and metabolism to OH-PCBs and PCB sulfates with associated immunotoxicity and endocrine disruption.
7. Wang H, Adamcakova-Dodd A, Gosse L, Flor S, Lehmler HJ, Hornbuckle KC, **Thorne PS\*.** Comprehensive subchronic inhalation toxicity assessment of an indoor school air mixture of PCBs. **Environ Sci Tech**. 2020 Dec 15:54(24):15976-15985. PMCID: PMC7879961.
8. Wang H, Adamcakova-Dodd A, Lehmler H-J, Hornbuckle KC, **Thorne PS\*.** Toxicity assessment of 91-day repeated inhalation exposure to an indoor school air mixture of PCBs. **Environ Sci Technol**, Available online 7 January 2022, https://doi.org/10.1021/acs.est.1c05084.
9. Hu X, Adamcakova-Dodd A, **Thorne PS\***. The fate of inhaled (14)C-labeled PCB11 and its metabolites in vivo. ***Environ Int***. 2014 Feb;63:92-100. PMCID: PMC3950335.
10. Hu X, Adamcakova-Dodd A, Lehmler HJ, Gibson-Corley KN, **Thorne PS\***. Toxicity evaluation of exposure to an atmospheric mixture of polychlorinated biphenyls by nose-only and whole-body inhalation regimens. ***Environ Sci Technol***. 2015 Sep 8. [Epub ahead of print]. PMC4711378
11. The AESOP Study, a longitudinal cohort study of exposures to PCBs and lead (Pb) among adolescent children and their mothers, has shown that much of the exposure to PCBs comes via inhalation and that indoor exposures in schools are particularly high. There is also substantial exposure to non-legacy, non-Aroclor PCBs. We have also documented longitudinal Pb profiles in this EJ community (East Chicago, IN)
	1. Haque E, **Thorne PS\***, Nghiem A, Yip C, Bostick B. Lead (Pb) concentrations and speciation in residential soils from an urban community impacted by multiple legacy sources., J Hazard. Mater. 2021 Aug 15; 416:125886. doi: 10.1016/j.jhazmat.2021.125886. Epub 2021 Apr 15. PMID: 34492824.
	2. Marek RF, **Thorne PS\***, Herkert NJ, Awad AM, Hornbuckle KC. [Airborne PCBs and OH-PCBs Inside and Outside Urban and Rural U.S. Schools.](https://www.ncbi.nlm.nih.gov/pubmed/28656752) ***Environ Sci Techn***ol. 2017 Jul 18;51(14):7853-7860. PMCID: PMC5777175.
	3. Ampleman MD, Martinez A, DeWall J, Rawn DF, Hornbuckle KC, **Thorne PS\***. Inhalation and dietary exposure to PCBs in urban and rural cohorts via congener-specific measurements. ***Environ Sci Technol***. 2015 Jan 20;49(2):1156-64. PMCID: PMC4303332.
	4. Koh WX, Hornbuckle KC, **Thorne PS\***. Human Serum from Urban and Rural Adolescents and Their Mothers Shows Exposure to Polychlorinated Biphenyls Not Found in Commercial Mixtures. Environ Sci Technol. ***Environ Sci Technol***. 2015 July 7; 49(13): 8105–8112. Published online 2015 June 18. PMCID: PMC4774248
12. My research has helped elucidate the role of inhaled endotoxin in lung inflammation, asthma and environmental and occupational lung and cardiac diseases.
	1. Trompette A, Divanovic S, Visintin A, Blanchard C, Hegde RS, Madan R, **Thorne PS**, Wills-Karp M, Gioannini TL, Weiss JP, Karp CL. Allergenicity resulting from functional mimicry of a Toll-like receptor complex protein. ***Nature***. 2009 Jan 29;457(7229):585-8. PMCID: PMC2843411.
	2. **Thorne PS\***, Cohn RD, Mav D, Arbes SJ, Zeldin DC. Predictors of endotoxin levels in U.S. housing. ***Environ Health Perspect***. 2009 May;117(5):763-71. PMCID: PMC2685839.
	3. Salo PM, Wilkerson J, Rose KM, Cohn RD, Calatroni A, Mitchell HE, Sever ML, Gergen PJ, **Thorne PS**, Zeldin DC. Bedroom allergen exposures in US households. J Allergy Clin Immunol. ***J Allergy Clin Immunol***. 2018 May;141(5):1870-1879.e14. PMCID: PMC5938098.
	4. Mendy A, Wilkerson J, Salo PM, Cohn RD, Zeldin DC, **Thorne PS\***. [Exposure and Sensitization to Pets Modify Endotoxin Association with Asthma and Wheeze.](https://www.ncbi.nlm.nih.gov/pubmed/29684578) ***J Allergy Clin Immunol*** ***Pract*.** 2018 Apr 21. pii: S2213-2198(18)30280-0. PMCID: PMC5899028.
13. My group has developed and optimized methodology for quantitative exposure assessment for endotoxin, glucans and allergens.
	1. **Thorne PS\***, Perry SS, Saito R, O'Shaughnessy PT, Mehaffy J, Metwali N, Keefe T, Donham KJ, Reynolds SJ. Evaluation of the Limulus amebocyte lysate and recombinant factor C assays for assessment of airborne endotoxin. ***Appl Environ Microbiol***. 2010 Aug;76(15):4988-95. PMCID: PMC2916455.
	2. Kilburg-Basnyat B, Metwali N, **Thorne PS\***. Effect of deployment time on endotoxin and allergen exposure assessment using electrostatic dust collectors. ***Ann Occup Hyg***. 2015 Jan;59(1):104-15. PMCID: PMC4303768.
	3. Hoppe Parr KA, Hađina S, Kilburg-Basnyat B, Wang Y, Chavez D, **Thorne PS**, Weiss JP. Modification of sample processing for the Limulus amebocyte lysate assay enhances detection of inflammogenic endotoxin in intact bacteria and organic dust. ***Innate Immun***. 2017 Apr;23(3):307-318. Epub 2017 Jan 1. PMCID: PMC5814115
	4. Kilburg-Basnyat B, Peters TM, Perry SS, **Thorne PS\***. Electrostatic dust collectors compared to inhalable samplers for measuring endotoxin concentrations in farm homes. ***Indoor Air***. 2015 Aug 22. [Epub ahead of print] PMCID: PMC4850132

A full list of my published work and publications emanating from my grants as PI are available at:

http://www.ncbi.nlm.nih.gov/sites/myncbi/1fET8FSy-d9Qa/bibliography/45504163/public/