Kilean Lucas, Ph.D.

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Summary

Passionate Medical Writer with over 10 years of experience in medical and scientific writing, cancer diagnostics, and medical devices. Skilled at translating complex scientific and clinical data for diverse audiences in a multitude of formats while following applicable industry guidelines (e.g. GPP3, AMA, CONSORT). Expertise in publication planning, presentation preparation and plain-language summaries as evidenced by a history of 15+ scientific publications. Advanced knowledge of journal guidelines for publication. Strong communication and interpersonal skills with the ability to mentor junior writers, engage cross-functional internal and external stakeholders, and maintain the highest professional standards.

Professional Experience

Process Development Scientist | T2 Biosystems, Inc. | Lexington, MA

April 2024 – February 2025

- Delivered high-quality training on scientific topics for diverse audiences, developing customized training content and providing one-on-one guidance to improve knowledge in relevant therapeutic areas.
- Worked with commercial and marketing teams as a technical SME to develop plain-language materials for researchers, clinicians, and patients.
- Prepared presentations on key research findings for commercial team stakeholder meetings to update on current projects and provide continuous learning opportunities.
- Led the review of internal and external documentation as a technical SME to ensure consistent messaging.
- Worked effectively in teams across all major departments (Manufacturing, R&D, QC/QA, Commercial) leading meetings and coordinating the presentation and publication of critical scientific documents while adhering to project timelines and budgets.

Postdoctoral Fellow | Center for Systems Biology, Massachusetts General Hospital / Harvard Medical School | Boston, MA

February 2021 – February 2024

- Drafted and published multiple first and co-author publications following GPP guidelines in the field of immunology, cancer biology and cancer diagnostics for high-impact journals.
- Interpreted highly complex scientific data and drafted figures and plain-language summaries to deliver at internal symposia and for regulatory bodies.
- Prepared and delivered weekly presentations for group meetings to communicate the project status and timelines and key findings effectively.

- Co-chaired an international Gordon Research Seminar, including abstract review, presenter selection, and session organization, demonstrating leadership, communication, and organizational skills on an international stage.

Graduate Researcher | Department of Biomedical Engineering, University of Rochester | Rochester, NY

September 2015 – January 2021

- Invented a novel, non-invasive microfluidic platform for early and recursive bladder cancer detection, resulting in multiple publications and two patents.
- Maintained a bi-weekly blog for communicating research results to a multidisciplinary research group and the general public.
- Drafted grant applications and research proposals, securing funding and demonstrating strategic planning and writing skills.
- Competed in the Falling Walls competition, presenting research in a concise format and showcasing the ability to communicate effectively under pressure.
- Mentored and supervised research students, demonstrating leadership, coaching, and knowledge transfer abilities.
- Performed extensive biomarker profiling on clinical samples using integrated lab-on-chip systems with qPCR, ELISA, and immunofluorescence, utilizing online medical resources for literature review and context.

Education

Ph.D. in Biomedical Engineering | University of Rochester | Rochester, NY

August 2015 – January 2021

Thesis: Catch and display profiling of small extracellular vesicles: a microfluidic approach for surveillance of cancer and immunity

Advisor: Dr. James McGrath

B.S. in Chemical Engineering | Montana State University | Bozeman, MT

August 2010 – May 2015

B.S. in Bioengineering | Montana State University | Bozeman, MT

August 2010 – May 2015

Skills

Experienced in scientific and medical writing, technical documentation, grant writing, data analysis, publication planning (GPP3), project management, and public speaking. Adept at using software such as the Microsoft Office Suite, Python, R, GraphPad Prism, and Minitab.

Publications & Patents

First and Co-First Author Publications

1. Walker, S.N., Lucas, K., Dewey, M.J., Badylak, S.F., Hussey, G.S., Flax, J., McGrath, J.L. (2025). Rapid assessment of biomarkers on single extracellular

vesicles using "catch and display" on ultrathin nanoporous silicon nitride membranes. Small, 21(4).

2. Lucas, K., Oh, J., Hoelzl. J., & Weissleder, R. (2022). Cellular point-of-care diagnostics using an inexpensive layer-stack microfluidic device. Lab on a Chip, 22(11).
3. Lucas, K., Dehghani, M., Khire, T., Gaborski, T., Flax, J. D., Waugh, R. E., & McGrath, J. L. (2021). A predictive model of nanoparticle capture on ultrathin nanoporous membranes. Journal of Membrane Science, 633.
4. Dehghani, M., Lucas, K., Flax, J., McGrath, J., Gaborski, T. (2019). Tangential flow microfluidics for the capture and release of nanoparticles and extracellular vesicles on conventional and ultrathin membranes. Advanced Materials Technologies, 4(11).
5. Ko, J., Lucas, K., Kohler, R., Wilkovitsch, M., Carlson, J.C.T., Weissleder, R. (2022). In vivo click chemistry enables multiplexed intravital microscopy. Advanced Science, 9(24).
6. Lucas, K. (2023). Cycling, fasting, fishing, and other things: the emerging world of biocompatible chemistries. Advanced Biology, 7(1).
7. Lucas, K., Ahmad, S.D., Dehghani, M., Gaborski, T., McGrath, J. (2020). Critical flux behavior of ultrathin membranes in protein-rich solutions. Separation and Purification Technology, 251.
8. Madejski, G., Lucas, K., Pascut, F.C., Webb, K.F., McGrath, J.L. (2018). TEM tomography of pores with application to computational nanoscale flows in nanoproous silicon nitride (NPN). Membranes, 8(2).

Co-authored Publications

9. Klaczko, M.E., Lucas, K., Salminen, A.T., McCloskey, M.C., Ozgurun, B., Ward, B.M., Flax, J., McGrath, J.L., (2022). Rapid and specific detection of intact viral particles using functionalized microslit silicon membranes as a fouling-based sensor. Analyst, 147(2).
10. Krantz, G.P., Lucas, K., Wunderlich, E.L., Hoang, L.T., Avci, R., Siuzdak, G., Fields, M.W. (2019). Bulk phase resource ratio alters carbon steel corrosion rates and endogenously produced extracellular electron transfer mediators in a sulfate-reducing biofilm. Biofouling, 35(6).
11. Riazanski, V., Mauleon, G., Lucas, K., Walker, S., Zimnicka, A.M., McGrath, J.L., Nelson, D.J. (2022). Real time imaging of single extracellular vesicle pH regulation in a microfluidic cross-flow filtration platform. Communications Biology, 5(1).
12. Korolj, A., Kohler, R.H., Scott, E., Halabi, E.A., Lucas, K., Carlson, J.C.T., Weissleder, R. (2023). Perfusion window chambers enable interventional analyses of tumor microenvironments. Advanced Science, 10(34).
13. Khire, T.S., Salminen, A.T., Swamy, H., Lucas, K.S., McCloskey, M.C., Ajalik, R.E., Chung, H.H., Gaborski, T.R., Waugh, R.E., Glading, A.J., McGrath, J.L. (2020). Microvascular mimetics for the study of leukocyte-endothelial interactions. Cellular and Molecular Bioengineering, 13(2).

14. Avci, R., Davis, B.H., Wolfenden, M.L., Kellerman, L.R., Lucas, K., Martin, J., Deliorman, M. (2015). A practical method for determining pit depths using x-ray attenuation in EDX spectra. Corrosion Science, 93.
15. Avci, R., Davis, B.H., Wolfenden, M.L., Beech, I.B., Lucas, K., Paul, D. (2013). Mechanism of MnS-mediated pit initiation and propagation in carbon steel in an anaerobic sulfidogenic media. Corrosion Science, 76.
16. Avci, R., Davis, B.H., Suo, Z., Lucas, K., Beech, I.B., Sunner, J.A., Hammond, J., Paul, D. (2012). Initiation of nanopits at MnS nano-inclusions on carbon steel exposed to anaerobic sulfate-reducing bacterium Desulfoglaeba alkanexedens. Microscopy and Microanalysis, 18(S2).
17. Suo, Z., Deliorman, M., Lucas, K., Loetterle, L., Yang, X., Celikkol, S., Beech, I., Sunner, J., Avci, R. (2012). Rapid anaerobic degradation of carbon steel exposed to Desulfoglaeba alkanexedens media. NACE, NACE Corrosion.
18. Avci, R., David, B.H., Rieders, N., Lucas, K., Nandasiri, M., Mogk, D. (2018). Role of metallurgy in the localized corrosion of carbon steel. Journal of Minerals and Materials Characterization and Engineering, 6(6).

Patents and Patent Applications

19. McGrath, J.L., Lucas, K.S., Chung, H.H., (2024). Device and method for isolating extracellular vesicles from biofluids. (11959841).
20. Roussie, J.A., McGrath, J.L., Waugh, R.E., Lucas, K.S., Miller, J.J. (2024). Devices, methods, and kits for isolation and detection of analyses using microslit filters. (11931739).
21. McGrath, J.L., Flax, J.D., Lucas, K.S., Walker, S.N. (2024) Nanomembrane device and method for biomarker sampling. (18/681,988).

Conference Presentations

22. Lucas, K. (2017). Breaking the Wall of Cancer Diagnostics. Falling Walls Lab. Berlin, Germany.
23. Lucas, K. (2018). Exosome purification using silicon nanomembranes in microfluidic tangential flow filtration. Gordon Research Seminar - Extracellular Vesicles. Newry, Maine.
24. Lucas, K., (2019). Optimizing microfluidic nanoparticle capture from biofluids on ultrathin silicon nanomembranes: a computational and experimental analysis of tangential flow for analyte capture (TFAC). North American Membrane Society Annual Meeting. Pittsburgh, Pennsylvania.

Invited Talks

25. Lucas, K., (2017). The benefits of being thin: the revolutionary potential of ultrathin membranes for biology and medicine. University of Nottingham, Nottingham, United Kingdom.
26. Lucas, K. (2018). Silicon nanomembranes for rapid liquid biopsies from whole blood and urine. Center for Biofilm Engineering. Montana State University, Bozeman, Montana.

27. Lucas, K. (2019). Catch and display profiling of small extracellular vesicles: a microfluidic approach for surveillance of cancer and immunity. Research in Progress Seminar. University of Rochester, Rochester, New York.
28. Lucas, K. (2018). COMSOL Multiphysics modeling of particle capture on silicon nanomembranes in a modified tangential flow filtration microfluidic system. Center for Integrated Research and Computing. University of Rochester, Rochester, New York.