

NIH BIOGRAPHICAL SKETCH COMMON FORM

Name: Sieren, Jessica C.

Persistent Identifier (PID) of the Senior/Key Person: <https://orcid.org/0000-0002-1109-7886>

Position Title: Associate Professor

Organization and Location: University of Iowa Healthcare, Iowa City, Iowa, United States

PROFESSIONAL PREPARATION

INSTITUTION AND LOCATION	DEGREE	Start Date	Completion Date	FIELD OF STUDY
University of Iowa, Iowa City, Iowa, United States	Postdoc	01/2009	12/2009	Internal Medicine
University of Iowa, Iowa City, Iowa, United States	PhD	01/2003	12/2008	Biomedical Engineering
Flinders University of South Australia, Adelaide, South Australia, AU	Bachelor of Science	01/1998	12/2002	Biomedical Engineering
Flinders University of South Australia, Adelaide, South Australia, AU	Bachelor of Engineering (Honors)	01/1998	12/2002	Biomedical Engineering

Appointments and Positions

2020 - present	Associate Professor, University of Iowa Healthcare, Iowa City, Iowa, United States
2025 - present	Associate Director, Holden Comprehensive Cancer Center, Career Enhancement, Iowa City, Iowa, United States
2025 - present	Deputy Director, University of Iowa, Advanced Pulmonary Physiomic Imaging Laboratory, Iowa City, Iowa, United States
2023 - present	Director, University of Iowa, Radiology Core Lab, Iowa City, Iowa, United States
2020 - present	Associate Professor, University of Iowa, Radiology and Biomedical Engineering, Iowa City, Iowa, United States
2020 - 2023	Co-Director, University of Iowa, Radiology Core Lab, Iowa City, Iowa, United States
2017 - present	Associate Mentor, University of Iowa, Medical Scientist Training Program, Iowa City, Iowa, United States
2012 - present	Associate Member, University of Iowa, Environmental Health Science Research Center, Iowa City, Iowa, United States
2011 - 2025	Associate Director, University of Iowa, Advanced Pulmonary Physiomic Imaging Laboratory, Iowa City, Iowa, United States
2011 - 2020	Assistant Professor, University of Iowa, Radiology and Biomedical Engineering, Iowa City, Iowa, United States
2009 - 2010	Assistant Research Engineer, University of Iowa, Internal Medicine, Iowa City, Iowa, United States

Products

Products Closely Related to the Proposed Project

1. Dawes K, Mills JA, Hoffman RM, Froehlich EM, deBlois K, Sieren JC, Williams C, Merkle S, Long JD, Beach SR, Philibert RA. A DNA Methylation-based algorithm Improves Lung Cancer risk prediction in the Prostate, Lung, Colorectal and Ovarian Cancer Screening Trial. Lung Cancer. 2026 Jul;217:109462. PubMed Central PMCID: [PMC13309997](#).
2. Sieren JC, Newell JD Jr, Guerra CE, Hoffman RM. Applying artificial intelligence to ensure high quality and equitable lung cancer screening. Transl Lung Cancer Res. 2026 May 31;15(5):148. PubMed Central PMCID: [PMC13263822](#).
3. Schroeder KE, Knoernschild K, Averill SL, Hoffman RM, Sieren JC. Performance comparison of four published lung cancer prediction models applied to a cohort from the National Lung Screening Trial. Transl Lung Cancer Res. 2025 Sep 30;14(9):3577-3588. PubMed Central PMCID: [PMC12541660](#).
4. Philibert R, Beach SRH, Mills JA, Dawes K, Hoffman RM, Sieren JC, Froehlich EM, deBlois KM, Long JD. Epigenetic assessments of alcohol consumption predict mortality in smokers at risk for lung cancer in the prostate, lung, colorectal and ovarian cancer screening trial. PLoS One. 2025;20(5):e0322783. PubMed Central PMCID: [PMC12097613](#).

5. Zakharia Y, Reis RJ, Kroll MR, Rataan AO, Manchikanti S, Rahim B, Garje R, Swami U, Mott SL, Zamba KD, Sieren JC, Salem AK, Rustum Y. Phase I Clinical Trial of High Doses of Seleno-L-methionine in Combination with Axitinib in Patients with Previously Treated Metastatic Clear-cell Renal Cell Carcinoma. Clin Cancer Res. 2025 Apr 1;31(7):1204-1211. PubMed Central PMCID: [PMC11961314](#).

Other Significant Products Highlighting Contributions to Science

1. Sieren JC, Schroeder KE, Kitzmann J, Knoernschild K, Atha J, Alarab N, Guo J, Fain SB, Hoffman EA. Ultra-high Resolution Photon Counting Detector Computed Tomography Imaging for Quantitative Lung Assessment: An Anthropomorphic Phantom Study. Invest Radiol. 2026 Apr 1;61(4):288-296. PubMed Central PMCID: [PMC13248997](#).
2. Sieren JC, Schroeder KE, Guo J, Asosingh K, Erzurum S, Hoffman EA. Menstrual cycle impacts lung structure measures derived from quantitative computed tomography. Eur Radiol. 2022 May;32(5):2883-2890. PubMed Central PMCID: [PMC9038622](#).
3. Uthoff JM, Mott SL, Larson J, Neslund-Dudas CM, Schwartz AG, Sieren JC. Computed Tomography Features of Lung Structure Have Utility for Differentiating Malignant and Benign Pulmonary Nodules. Chronic Obstr Pulm Dis. 2022 Apr 29;9(2):154-164. PubMed Central PMCID: [PMC9166332](#).
4. Sieren JC, Meyerholz DK, Wang XJ, Davis BT, Newell JD Jr, Hammond E, Rohret JA, Rohret FA, Struzynski JT, Goeken JA, Naumann PW, Leidinger MR, Taghiyev A, Van Rheeden R, Hagen J, Darbro BW, Quelle DE, Rogers CS. Development and translational imaging of a TP53 porcine tumorigenesis model. J Clin Invest. 2014 Sep;124(9):4052-66. PubMed Central PMCID: [PMC4151205](#).
5. Sieren JC, Smith AR, Thiesse J, Namati E, Hoffman EA, Kline JN, McLennan G. Exploration of the volumetric composition of human lung cancer nodules in correlated histopathology and computed tomography. Lung Cancer. 2011 Oct;74(1):61-8. PubMed Central PMCID: [PMC3129434](#).

Certification:

I certify that the information provided is current, accurate, and complete. This includes, but is not limited to, information related to current, pending, and other support (both foreign and domestic) as defined in 42 U.S.C. § 6605.

In accordance with Section 10632 of the CHIPS and Science Act of 2022 (42 U.S.C. § 19232), each individual identified as a senior/key person must certify that they are not a party to a malign foreign talent recruitment program.

Research Security Training Requirement for Federal Award Personnel: In accordance with Section 10634 of the CHIPS and Science Act of 2022 (42 U.S.C. § 19234), each individual identified as a senior/key person must certify that they have completed the requisite research security training that meets the requirements specified in Item 2 of Important Notice No. 149 within 12 months prior to proposal submission.

Misrepresentations and/or omissions may be subject to prosecution and liability pursuant to, but not limited to, 18 U.S.C. §§287, 1001, 1031 and 31 U.S.C. §§3729-3733 and 3802.

Certified by Sieren, Jessica C. in SciENcv on 2026-08-19 21:18:27

NIH BIOGRAPHICAL SKETCH SUPPLEMENT

Name: Sieren, Jessica C.

Persistent Identifier (PID) of the Senior/Key Person: <https://orcid.org/0000-0002-1109-7886>

Position Title: Associate Professor

Organization and Location: University of Iowa Healthcare, Iowa City, Iowa, United States

Personal Statement

As Associate Director for Career Enhancement at the Holden Comprehensive Cancer Center (HCCC), I lead the Office of Cancer Career Enhancement and Training (OCCET). My mission is to strengthen the cancer research workforce by promoting high-quality mentoring, structured career development, and clear pathways through each stage of scientific training. My academic background as a biomedical engineer and quantitative imaging scientist informs my commitment to cultivating interdisciplinary trainees who can integrate computational, behavioral, translational, and clinical perspectives to address challenges in cancer care.

Throughout my career, I have mentored trainees across all levels, from high-school, undergraduate (16), research scholar (6) and graduate students (18) through to junior faculty (3). Undergraduate and research scholars in my lab have proceeded to medical school or graduate degrees at major academic medical centers. Graduating doctoral candidates I have mentored have gone on to faculty or post-doctoral positions at institutions such as the University of Buffalo, Mayo Clinic, and the University of Sheffield. These outcomes reflect my commitment to individualized development, scientific skills training, and sustained mentorship across career transitions.

My mentoring and educational philosophy is shaped by formal training through the Iowa Mentoring Academy, Supervisor Training@Iowa, Skills for Educators coursework, and national communication programs such as the Alan Alda Center and Melissa Marshall's Communication Masterclass. These programs equipped me with practical approaches to feedback, communication, and structured developmental planning that I integrate into trainee support and program design.

In addition to educational leadership, I bring substantial administrative experience that strengthens my ability to guide OCCET operations. As Deputy Director of the Advanced Pulmonary Physiomic Imaging Laboratory and Director of the Radiology Core Lab, I have led shared research infrastructure, implemented workflow optimizations, coordinated multidisciplinary teams, and managed multiple federally funded projects. These experiences directly support OCCET responsibilities in program administration, budgeting, evaluation, and continuous improvement.

My leadership in cancer research training is further supported by my role as MPI on an NCI R25 YES program and by participation in American Cancer Society supported training initiatives. These efforts expand early research engagement, deliver structured educational programming, and underscore my ability to coordinate multi-level training activities that meet NCI expectations for cancer center education and career development. Complementing this work, my service as HCCC's Community Outreach and Engagement Program Liaison (2023–2025), and ongoing membership on the Population Research Core Advisory Board (2020–present), strengthen integration between OCCET programs and the priorities of the community. Through the integration of program leadership, mentorship, administrative expertise, and a commitment to professional development, I aim to continue strengthening HCCC's educational infrastructure and ensuring that trainees, faculty, and research staff are well prepared to contribute to the future of the cancer center's research mission.

Honors

2024	Best paper of the year award, Holden Comprehensive Cancer Center, University of Iowa
2024 - 2028	Emerging Imaging Technologies and Applications (EITA) Standing Study Section Member, NIH/CSR
2018	Women in Science Feature Article, IEEE ISBI Daily, Computer Vision News
2015	Donald D. Dorfman Research Award, University of Iowa
2014	Scientific Showstopper, Journal of Clinical Investigation
2013	Young Investigator Award, IASLC World Conference on Lung Cancer
2009	Professional Development Award, University of Iowa
2008	Travel Grant, Australian Lung Foundation
2008	Young Investigator Award, Australia Lung Cancer Conference

Contributions to Science

1. Advancing quantitative CT standards and translating photon-counting CT for high-fidelity lung structure assessment.

I have led multiple efforts to optimize CT acquisition protocols and validate quantitative CT (qCT) biomarkers for assessing lung structure across diverse radiation doses and clinical settings. My work has defined how low- and ultra-low-dose acquisition parameters influence lung density and texture measures (see Sieren JC et al., *Investigative Radiology* 2026). These studies have advanced best practices for qCT reproducibility and positioned our group to evaluate next-generation technologies. Most recently, I have investigated photon-counting CT (PCCT) protocols for quantitative lung evaluation. Collectively, this work contributes foundational knowledge essential for standardizing qCT measures for clinical trials, longitudinal monitoring, and early disease detection.

2. Defining biological sources of variability in quantitative lung imaging, including sex-specific and menstrual cycle effects.

I identified previously unrecognized sources of biological variability in qCT metrics, demonstrating that menstrual cycle phase measurably affects lung structure assessments and should be accounted for in longitudinal studies, normative datasets, and clinical trials involving women (see Sieren JC et al, *European Radiology* 2022). This work provides the first evidence-based recommendations for sex-specific considerations in quantitative lung imaging and is hypothesis generating regarding the etiology of lung disease in women.

3. Advancing radiomics and machine learning to improve specificity in lung cancer screening and nodule management.

I have led the development of advanced radiomic and machine-learning strategies that increase the diagnostic specificity of CT-detected pulmonary nodules. My work demonstrated the value of peri-nodular parenchymal features and standardized radiomic pipelines to distinguish benign from malignant nodules and in the prediction of treatment response (see Uthoff et al, *Chronic Obstructive Pulmonary Disease* 2022). I have also led comparative evaluations of published lung cancer risk models applied to screening populations. Together, this work has advanced the integration of quantitative imaging biomarkers into lung cancer screening and treatment-response evaluation.

4. Creating multi-scale radiologic-pathologic correlation frameworks to decode tumor biology in CT imaging.

I established comprehensive 3D radiologic-pathologic correlation methods for human lung cancer, enabling direct quantification of tumor tissue composition (stroma, necrosis, cellularity) and its radiographic expression (see Sieren JC et al., *Lung Cancer* 2011). As first author on this foundational series, I developed volumetric histopathology registration, automated segmentation, and multiscale mapping techniques that continue to inform radiomics validation, imaging biomarker interpretation, and mechanistic tumor characterization.

5. Developing translational large-animal disease models to accelerate imaging technology, biomarker validation, and preclinical discovery.

A major barrier to advancing imaging technologies is the lack of controlled, translationally relevant models that permit rigorous evaluation of acquisition techniques, contrast mechanisms, and quantitative biomarkers. I have led imaging studies using large-animal (porcine) models of human disease, which provide anatomical and physiological similarity critical for iterative technology development, surgical guidance validation, and longitudinal disease monitoring. Our team published the first genetically engineered TP53-targeted porcine cancer model with confirmed tumor development, establishing a platform for studying tumor evolution and imaging correlates in a clinically relevant system (see Sieren JC et al., *Journal of Clinical Investigation* 2014 - paper selected as a Scientific Showstopper by the journal). I subsequently directed imaging programs for NF1 and CLN2 Batten disease minipig characterization, producing MRI and CT biomarkers supporting translational oncology, neurology, and rare-disease research.

Certification:

I certify that the information provided is current, accurate, and complete. This includes, but is not limited to, information related to current, pending, and other support (both foreign and domestic) as defined in 42 U.S.C. § 6605.

In accordance with Section 10632 of the CHIPS and Science Act of 2022 (42 U.S.C. § 19232), each individual identified as a senior/key person must certify that they are not a party to a malign foreign talent recruitment program.

Research Security Training Requirement for Federal Award Personnel: In accordance with Section 10634 of the CHIPS and Science Act of 2022 (42 U.S.C. § 19234), each individual identified as a senior/key person must certify that they have completed the requisite research security training that meets the requirements specified in Item 2 of Important Notice No. 149 within 12 months prior to proposal submission.

Misrepresentations and/or omissions may be subject to prosecution and liability pursuant to, but not limited to, 18 U.S.C. §§287, 1001, 1031 and 31 U.S.C. §§3729-3733 and 3802.

Certified by Sieren, Jessica C. in SciENcv on 2026-08-19 21:18:27