OMB No. 3145-0279 (Expiration Date 10/31/2026)

NIH BIOGRAPHICAL SKETCH COMMON FORM

Name: Gillette, Jennifer

Persistent Identifier (PID) of the Senior/Key Person: https://orcid.org/0000-0002-2285-5136

Position Title: Endowed Professor and Senior Director for Research

Organization and Location: University of New Mexico Health Sciences Center, Albuquerque, New Mexico, United States

PROFESSIONAL PREPARATION

INSTITUTION AND LOCATION	DEGREE	Start Date	Completion Date	FIELD OF STUDY
National Institutes of Health, Eunice Kennedy Shriver National Institute of Child Health and Human Development, Bethesda, MD, United States	Postdoctoral Fellow	10/2004	10/2010	Cell Biology & Metabolism
University of Colorado, Denver, CO , United States	DOCTOR OF PHILOSOPHY	08/1999	05/2004	Cell and Developmental Biology
Gettysburg College, Gettysburg, PA , United States	BACHELOR OF SCIENCE	08/1995	05/1999	Biology

Appointments and Positions

2024 - present	Endowed Professor and Senior Director for Research, University of New Mexico Health Sciences Center, Albuquerque, New Mexico, United States
2024 - present	Associate Director, Education Training and Mentoring, University of New Mexico Comprehensive Cancer Center, Albuquerque, NM, United States
2023 - present	Professor with Tenure, University of New Mexico Health Sciences Center, Department of Pathology, Albuquerque, NM, United States
2023 - present	Director, Cancer-PREP, University of New Mexico Comprehensive Cancer Center, Albuquerque, NM, United States
2018 - present	Senior Director for Research, University of New Mexico Health Sciences Center, Department of Pathology, Albuquerque, NM, United States
2017 - 2023	Associate Professor with Tenure, University of New Mexico Health Sciences Center, Department of Pathology, Albuquerque, NM, United States
2010 - 2017	Assistant Professor, University of New Mexico Health Sciences Center, Department of Pathology, Albuquerque, NM, United States
2010 - 2010	Optical Engineer Research Scientist, Tara Oceans Expedition, Abu Dhabi - Mumbai, Bethesda, MD, United States
2006 - 2008	Teaching Assistant, Marine Biological Laboratoires, Physiology Course, Woods Hole, MA , United States
2004 - 2010	Post Doctoral Fellow , National Institutes of Health, Eunice Kennedy Shriver National Institute of Child Health and Human Development, Bethesda, MD, United States
1999 - 2004	Graduate Student, University of Colorado Health Sciences Center, Denver, CO , United States

Products

Products Closely Related to the Proposed Project

1. Restrepo Cruz S, Wester MJ, Pankratz VS, Lidke DS, Lidke KA, Gillette JM. Tetraspanin CD82 shapes EGFR signaling outcomes through nanoscale receptor organization. J Cell Biol. 2026 May 4;225(5) PubMed Central PMCID: PMC13045677.
2. Pascetti E, Floren M, Fernandes TDS, Anastasio C, Doyle L, Gillette J. Tetraspanin CD82 regulates transforming growth factor-β signaling in hematopoietic stem and progenitor cells. Mol Biol Cell. 2025 Jul 1;36(7):br19. PubMed Central PMCID: PMC12260167.
3. Saito-Reis CA, Balise VD, Pascetti EM, Jiminez M, Gillette JM. Tetraspanin CD82 regulates S1PR(1)-mediated hematopoietic stem and progenitor cell mobilization. Stem Cell Reports. 2021 Oct 12;16(10):2422-2431. PubMed Central PMCID: PMC8514849.

4. Saito-Reis CA, Marjon KD, Pascetti EM, Floren M, Gillette JM. The tetraspanin CD82 regulates bone marrow homing and engraftment of hematopoietic stem and progenitor cells. Mol Biol Cell. 2018 Nov 26;29(24):2946-2958. PubMed Central PMCID: PMC6329911.
5. Termini CM, Cotter ML, Marjon KD, Buranda T, Lidke KA, Gillette JM. The membrane scaffold CD82 regulates cell adhesion by altering α4 integrin stability and molecular density. Mol Biol Cell. 2014 May;25(10):1560-73. PubMed Central PMCID: PMC4019488.

Other Significant Products Highlighting Contributions to Science

1. Floren M, Restrepo Cruz S, Termini CM, Marjon KD, Lidke KA, Gillette JM. Tetraspanin CD82 drives acute myeloid leukemia chemoresistance by modulating protein kinase C alpha and β1 integrin activation. Oncogene. 2020 May;39(19):3910-3925. PubMed Central PMCID: PMC7210072.
2. Marjon KD, Termini CM, Karlen KL, Saito-Reis C, Soria CE, Lidke KA, Gillette JM. Tetraspanin CD82 regulates bone marrow homing of acute myeloid leukemia by modulating the molecular organization of N-cadherin. Oncogene. 2016 Aug 4;35(31):4132-40. PubMed Central PMCID: PMC4877306.
3. Larochelle A, Gillette JM, Desmond R, Ichwan B, Cantilena A, Cerf A, Barrett AJ, Wayne AS, Lippincott-Schwartz J, Dunbar CE. Bone marrow homing and engraftment of human hematopoietic stem and progenitor cells is mediated by a polarized membrane domain. Blood. 2012 Feb 23;119(8):1848-55. PubMed Central PMCID: PMC3293639.
4. Gillette JM, Larochelle A, Dunbar CE, Lippincott-Schwartz J. Intercellular transfer to signalling endosomes regulates an ex vivo bone marrow niche. Nat Cell Biol. 2009 Mar;11(3):303-11. PubMed Central PMCID: PMC2748410.
5. Manley S, Gillette JM, Lippincott-Schwartz J. Single-particle tracking photoactivated localization microscopy for mapping single-molecule dynamics. Methods Enzymol. 2010;475:109-20. PubMed Central PMCID: PMC3690942.

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.

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NIH BIOGRAPHICAL SKETCH SUPPLEMENT

Name: Gillette, Jennifer

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Position Title: Endowed Professor and Senior Director for Research

Organization and Location: University of New Mexico Health Sciences Center, Albuquerque, New Mexico, United States

Personal Statement

I have the expertise, leadership, and motivation necessary to successfully develop programs and mentor trainees, from high school, undergraduate, graduate, and postgraduate levels, in training programs underway at University of New Mexico Health Sciences Center (UNMHSC) and in my laboratory. I am tenured Professor and Senior Director for Research in the Department of Pathology at UNMHSC and the Associate Director for the UNM Comprehensive Cancer Center (UNMCCC) Cancer Research Training & Education Coordination Core (CRTECC). I began my leadership in education programs in 2014 when I was recruited to serve as the Program Director for the UNMHSC Undergraduate Pathways Network (UPN) Summer Research Experience. In my role as UPN Director, I organize and oversee the highly successful summer research experience, which has grown to >50 students each summer. I used the UPN program to provide the programmatic foundation for the following training grants for which I am the PI: American Cancer Society (ACS) Research Internship program, our NCI R25 YES "Continuing Umbrella for Research Experiences (CURE) for Cancer" program and the NCI R25 "Cancer Research – Scholarship and Training Experience's in Population Science (C-STEPS). These collective programs expand the UPN experience, providing new opportunities, including a cancer-specific curriculum that discusses current treatment paradigms and the broader community impact. Additionally, our CURE for Cancer grant includes career development and cancer-relevant programing for high school and middle school scholars. Furthermore, I am the PI of the ACS UNM Cancer-Post Baccalaureate Research and Education Program (PREP) and the former Chair of the UNMHSC Biomedical Sciences Graduate Program Admissions Committee. Thus, I am acutely aware of the need for well-prepared high school, undergraduates and postgraduates as a pipeline into UNM research and clinical programs and I am particularly committed to training the next generation of clinicians and researchers for careers in cancer care and discovery.

I also have extensive experience with laboratory research mentoring, having successfully trained several high school, undergraduate, PREP, medical, and graduate students (3 HS, 19 UG, 1 PREP, 1 MS, 6 PhD, 2 MD), as well as 5 postdoctoral fellows (1 MD, 4 PhD) and numerous junior faculty members. Trainees in my lab have received numerous awards/fellowships (F31, T32 and K12 fellowships) and have gone on to successful careers in academic science and industry. My 20 years of experience in biomedical research has mainly focused on hematopoietic stem cell / leukemic cell niche signaling with a current emphasis on the role of the regulatory scaffold protein, CD82. Our NIH and ACS-funded studies have taken an innovative, multi-scale approach that combines quantitative methods such as super resolution imaging with mouse models to identify the mechanism by which membrane scaffolds regulate stem cell signaling within the bone marrow microenvironment. Thus, trainees in my laboratory have the opportunity to work with animal models, sophisticated microscopy and are exposed to cell biology, biochemical, and genetic techniques. Collectively, my research and mentoring expertise, and my strong commitment to the training of future generations of researchers/clinicians ensure that I am well suited to serve as the Associate Director for the UNMCCC CRTECC.

Honors

2026	Distinguished Teaching Award, University of New Mexico Health Sciences Center
2024	Peter A. Winograd Endowed Professorship , University of New Mexico Comprehensive Cancer Center
2022	University of New Mexico School of Medicine Regents' Lecturer, University of New Mexico Health Sciences Center
2020	University of New Mexico Rainforest Innovations Featured UNM Inventor, University of New Mexico
2019	Presidential Early Career Award for Science and Engineering (PECASE) Award, US Department of Health and Human Services
2018	New Mexico IDeA Network of Biomedical Research Excellence Research Recognition Award, New Mexico IDeA Network of Biomedical Research Excellence (NM INBRE)
2015	University of New Mexico Health Sciences Center Junior Faculty Research Excellence Award, University of New Mexico Health Sciences Center

2015	University of New Mexico Health Sciences Center Teaching Excellence Award, University of New Mexico Health Sciences Center
2015	University of New Mexico Health Sciences Center Outstanding Mentor Award, University of New Mexico Health Sciences Center
2014	Young Alumni Achievement Award for Career Development, Gettysburg College
2007 - 2009	National Institutes of Health Fellows Award for Research Excellence, National Institutes of Health
2006	American Society for Cell Biology Novel and Newsworthy Research Award, American Society for Cell Biology
2002	Gettysburg College Women of Distinction Award, Gettysburg College
2002 - 2004	NASA Graduate Student Research Fellowship, NASA
2002 - 2003	National Osteoporosis Foundation's Mazees Student Fellowship, National Osteoporosis Foundation

Contributions to Science

1. Annexin 2A and the bone microenvironment.
   In my early publications as a graduate student, my work focused on the cellular mechanisms of osteoblast differentiation and the development of bone cancer metastases. This work identified annexin 2A as a novel regulator of alkaline phosphatase activity, which modulates osteoblast differentiation and more specifically osteoblast mineralization. My work found that upon annexin 2a overexpression, osteoblasts were capable of producing more calcium phosphate mineral (Gillette et al. 2004). In support of this work, I received graduate student fellowships from NASA and the National Osteoporosis Foundation. Furthermore, I showed that annexin 2A is down regulated when osteosarcoma metastasizes to the lung. By down regulating annexin 2A, the osteosarcoma cells reduce their differentiation potential, which in turn increases cell proliferation leading to enhanced lung metastases (Gillette et al. 2004). As such, this work established annexin 2A as a target for both bone differentiation and osteosarcoma metastasis. Finally, I also established novel human osteosarcoma cell lines from patient tumors that are available to the scientific community (Gillette et al. 2009).

2. Quantitative imaging and preclinical animal models to evaluate hematopoietic stem cell (HSC) signaling with the bone marrow niche.
   Building on my cellular studies of bone differentiation and metastasis, I moved to the NIH as a post-doctoral fellow in the laboratory of Jennifer Lippincott-Schwartz where I began using various quantitative imaging techniques to evaluate cell-cell communication and signaling between hematopoietic stem cells and the osteoblastic niche. This work identified intercellular transfer from stem cells to osteoblasts as a critical signaling mechanism that regulates osteoblast chemokine production (Gillette et al. 2009). Moreover, in collaboration with my secondary NIH mentor, Cynthia Dunbar, NHLBI, we identified the enrichment of specific tetraspanin proteins at the stem cell / niche cell contact site and the organization of tetraspanin, CD82, into polarized microdomains when stem cells are in the quiescent G0 phase of the cell cycle. Together, these data suggest that quiescent cells, unlike actively cycling cells, display a polarized membrane domain enriched in tetraspanins that mediates homing and engraftment, providing a mechanistic explanation for the homing and engraftment defect of cycling cells and a potential new therapeutic target to enhance engraftment (Larochelle, Gillette et al. 2012). Continuing with these studies in my independent lab, we established CD82 as a specific modulator of HSC homing to the bone marrow niche via regulation of the Rac1 GTPase (Saito-Reis et al. 2018). Moreover, we went on to demonstrate that CD82 modulates S1PR1 signaling and thus serves as a potential clinical target for promoting HSC mobilization (Saito-Reis et al. 2021). More recently, we have found that the CD82 membrane scaffold has a capacity to promote receptor crosstalk between Transforming Growth Factor beta receptors and integrals, which impacts HSC quiescence. (Pascetti et al. 2025).

3. Membrane protein clustering and tetraspanin nanoscale organization regulates leukemia / niche interactions and chemoresistance.
   Communication between acute myeloid leukemia (AML) and the bone marrow microenvironment is known to control disease progression. Therefore, regulation of AML cell trafficking and adhesion to specific protective and proliferative sites is of significant interest. By combining mutational analysis and super-resolution imaging, we identified membrane protein clustering by CD82 as a regulator of AML cell adhesion and bone marrow homing. Cluster analysis of super-resolution data indicates that CD82 microdomain organization regulates the nanoscale clustering of adhesion proteins, N-cadherin and the alpha 4 beta 1 integrin. We demonstrate that the CD82 scaffold regulates the molecular packing of both N-cadherin and integrin alpha 4 beta 1, which promotes bone marrow homing and adhesion. The data suggest a mechanism where the membrane organization of CD82, through specific post-translational modifications, regulates adhesion molecule clustering and membrane protein density, which impacts the in vivo trafficking of leukemia cells (Marjon et al. 2015). Additionally, we have demonstrated that the CD82 scaffold serves as a signaling platform that contributes to the aberrant PKC alpha signal transduction identified in AML (Termini et al. 2016). In follow up studies, we found that aberrant PKC alpha signaling significantly impacts AML chemoresistance (Floren et al. 2019). As such, these observations provide an alternative model for

targeting specific leukemias where modulation of protein organization within the membrane may be an effective treatment therapy to disrupt the cellular interactions critical for AML survival and chemoresistance.

4. Biological extensions of super resolution imaging.
   While a post-doctoral fellow at the NIH, I received a broad training in cell biology and advanced quantitative microscopy techniques, which included extensive experience with the super-resolution imaging technique, photoactivatible localization microscopy (PALM). I was fortunate to be the biologist who worked alongside the physicists to help develop and extend super-resolution imaging to live cell, two-color, and 3D imaging. My contributions were critical for identifying biological applications, designing experimental set-ups, and acquisition of the data. Currently, in my own laboratory, I continue to utilize these developed super resolution imaging techniques to assess the regulation of membrane protein organization and density and its effects on stem cell maintenance and function. Moreover, my group continues to collaborate with physicists to improve on and expand the use of these single molecule imaging modalities and develop novel analysis techniques.

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