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

NIH BIOGRAPHICAL SKETCH COMMON FORM

Name: WELCH, DANNY

Persistent Identifier (PID) of the Senior/Key Person: https://orcid.org/0000-0002-1951-4947

Position Title: Professor of Cancer Biology

Organization and Location: University of Kansas Medical Center, Kansas City, Kansas, United States

PROFESSIONAL PREPARATION

INSTITUTION AND LOCATION	DEGREE	Start Date	Completion Date	FIELD OF STUDY
UT-MDAnderson Cancer Center, Houston, TX, USA	Not applicable	05/1984	08/1984	Postdoc - Metastasis
University of Texas - Houston, Houston, TX, USA	DOCTOR OF PHILOSOPHY	07/1980	05/1984	Biomed Sci - Tumor Biol.
University of California - Irvine, Irvine, CA, USA	BACHELOR OF SCIENCE	09/1976	06/1980	Biological Sciences

Appointments and Positions

2011 - present	Professor of Cancer Biology, University of Kansas Medical Center, Kansas City, Kansas, United States
2018 - present	Associate Director for Cancer Education and Career Development, University of Kansas Cancer Center, Kansas City , KS, USA
2016 - 2019	Director - Graduate Programs in Cancer Biolgoy, University of Kansas Medical Center, Kansas City, KS, USA
2012 - present	Hall Family Professor of Molecular Medicine, University of Kansas Medical Center, Kansas City, KS, USA
2011 - present	Professor and Founding Chair - Cancer Biology, University of Kansas Medical Center, Kansas City, KS, USA
2011 - 2018	Associate Director for Basic Sciences, University of Kansas Cancer Center, Kansas City, KS, USA
2004 - 2011	Professor of Cell Biology, University of Alabama - Birmingham, Birmingham, AL, USA
2002 - 2011	Leonard H Robinson Professor of Pathology, University of Alabama - Birmingham, Birmingham, AL, USA
2002 - 2011	Professor of Pharmacology & Toxicology, University of Alabama - Birmingham, Birmingham, AL, USA
1997 - 2003	Assoc. Prof. - Pathology, Penn State College of Medicine, Hershey, PA, USA
1990 - 1997	Asst. Prof. - Pathology, Penn State College of Medicine, Hershey, PA, USA
1988 - 2002	Director - NFCR Center for Metastasis Research, Penn State College of Medicine, Hershey, PA, USA
1988 - 1990	Sr. Scientist III/Res. Investigator - Dept. Chemotherapy, Glaxo Research Laboratories, Research Triangle Park, NC, USA
1984 - 1988	Scientist I/II - Cancer & Infectious Diseases Research, The Upjohn Company, Kalamazoo, MI, USA

Certification:

I certify that the information provided is current, accurate, and complete. This includes but is not limited to information related to domestic and foreign appointments and positions.

I also certify that, at the time of submission, I am not a party to a malign foreign talent recruitment program.

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: WELCH, DANNY

Persistent Identifier (PID) of the Senior/Key Person: https://orcid.org/0000-0002-1951-4947

Position Title: Professor of Cancer Biology

Organization and Location: University of Kansas Medical Center, Kansas City, Kansas, United States

Personal Statement

I have studied various aspects of cancer biology, tumor progression and metastasis since I was a student at UCI. I was the first grad student in the Dept. of Tumor Biology at M.D. Anderson , where I studied phenotypic and genetic instability leading to development of heterogeneity in addition to developing liposomal drug delivery methods under the tutelage of Garth Nicolson. Following graduate school, I worked my way through the ranks at Upjohn and Glaxo before taking a first faculty position at Penn State-Hershey, where I was the first hire into the Gittlen Cancer Inst. There the focus of my research shifted to metastasis genetics. There we cloned KISS1 and BRMS1 metastasis suppressors (Msg) and began to characterize their function(s). I was recruited to UAB where my lab defined regulatory pathways & mechanisms of action for these and an additional 4 MsG. Since moving to the Univ. of Kansas Cancer Center, we discovered two more MsG and began a more translational focus, applying our past genetics and epigenetics work to studying the roles of mitochondrial genetics in regulating complex diseases, focusing on metastasis. The major tumor types studied in my lab are breast, melanoma, PDAC, but I also have experience in colonl, lymphoma, ovarian, bladder, prostate and neuroblastoma. Research Expertise: My lab has published on a a breadth of topics as we characterized MsG, including bone metastasis, G-protein coupled receptors, phosphoinositide signaling, dormancy, chromatin, epigenetics, ncRNA regulation/function and mitochondrial genetics. Thus, I have experience in genetics, epigenetics, protein and membrane biochemistry, molecular biology, mouse models, and cell biology.

Leadership & Teaching: I serve on the external advisory boards for numerous CCSG and T32 grants as well as not-for-profit research and educational foundations. I have been primary mentor for 25 graduate students and 45 postdoctoral fellows, all of whom have obtained research positions in cancer research in academia, industry and government. I have served on committees for >125 others. I have launched and led three graduate programs (Cancer Biology at PSU, UAB and KUMC; and at UAB, and an HHMI-funded Med-to-Grad program (2009-13) in translational research) and have broad managerial experience, including personnel development, budget preparation, communication, and leadership of multi-investigator programs. I have reviewed for numerous NIH, DOD, HHMI graduate programs in addition to service on the Board of Directors for CABTRAC as Treasurer and President. In those roles, I was the lead author on a white paper defining the criteria for education with NCI-designated Cancer Centers and co-author on a white paper assessing challenges and opportunities related to diversity in graduate education. I also served on the AACR Science Education Committee as Co-chair of the subcommittee for post-doctoral researchers and as liaison with the AACR Associate Member Council. I am currently Associate Director for CRTEC at the NCI-designated KU Comprehensive Cancer Center.

Peer-reviewed = 248; Books/chapters = 48; H-factor = 85; i10 index = 218 Times cited >40,000; Avg. Citations per publication >67. For this Application: I am pleased to serve on the External Advisory Board for the Arizona Cancer Center.

Honors

2025	Ruth Bohan Teaching Professorship, KUMC
2025	Professor (honorary) - Centers for Biotechnology & Translational Research, Amity University
2020	Research Investigator Award, University of Kansas Medical Center
2016	Reuben Lotan Distinguished Lectureship , M.D. Anderson Cancer Center
2013 - 2018	Director's Award for Baslc Research (2013) Mentorship (2018), University of Kansas Cancer Center
2012 - 2024	Fellow NFCR, National Foundation for Cancer Research
2011 - 2018	Eminent Scholar, Kansas Bioscience Authority
2010 - 2019	Komen Scholar, Susan G. Komen for the Cure
2008	Dean's Award for Excellence in Mentoring, UAB
2008	Paget-Ewing Award for Excellence in Metastasis Research, Metastasis Research Society
2003 - 2009	UAB Molecular and Cellular Pathology Graduate Student Teaching Award, UAB

2001	Chairman's Award for Outstanding Efforts in Cancer Control, American Cancer Society
1994 - 2014	President (2006-8), Board of Directors 1998-2014), Metastasis Research Society
1983	Sigma Xi, Univerisity of Texas - Houston

Contributions to Science

1. Discovered 8 of the 30 functionally defined metastasis suppressors

   a. Lee JH, Miele ME, Hicks DJ, Phillips KK, Trent JM, Weissman BE, Welch DR. KiSS-1, a novel human malignant melanoma metastasis-suppressor gene. J Natl Cancer Inst. 1996 Dec 4;88(23):1731-7. PubMed PMID: 8944003.

   b. Seraj MJ, Samant RS, Verderame MF, Welch DR. Functional evidence for a novel human breast carcinoma metastasis suppressor, BRMS1, encoded at chromosome 11q13. Cancer Res. 2000 Jun 1;60(11):2764-9. PubMed PMID: 10850410.

   c. Young ED, Manley SJ, Beadnell TC, Shearin AE, Sasaki K, Zimmerman R, Kauffman E, Vivian CJ, Parasuram A, Iwakuma T, Grandgenett PM, Hollingsworth MA, O'Neil M, Welch DR. Suppression of pancreatic cancer liver metastasis by secretion-deficient ITIH5. Br J Cancer. 2021 Jan;124(1):166-175. PubMed Central PMCID: PMC7782545.

   d. Zimmermann RC, Sardiu ME, Manton CA, Miah MS, Banks CAS, Adams MK, Koestler DC, Hurst DR, Edmonds MD, Washburn MP, Welch DR. Perturbation of BRMS1 interactome reveals pathways that impact metastasis. PLoS One. 2021;16(11):e0259128. PubMed Central PMCID: PMC8598058.

2. First to identify the pro-metastatic role for neutrophils (similar to myeloid-derived suppressor cells) and pro-invasive/pro-metastasis effects of TGFβ

   a. McGary CT, Miele ME, Welch DR. Highly metastatic 13762NF rat mammary adenocarcinoma cell clones stimulate bone marrow by secretion of granulocyte-macrophage colony-stimulating factor/interleukin-3 activity. Am J Pathol. 1995 Dec;147(6):1668-81. PubMed Central PMCID: PMC1869940.

   b. Welch DR, Fabra A, Nakajima M. Transforming growth factor beta stimulates mammary adenocarcinoma cell invasion and metastatic potential. Proc Natl Acad Sci U S A. 1990 Oct;87(19):7678-82. PubMed Central PMCID: PMC54811.

   c. Welch DR, Schissel DJ, Howrey RP, Aeed PA. Tumor-elicited polymorphonuclear cells, in contrast to "normal" circulating polymorphonuclear cells, stimulate invasive and metastatic potentials of rat mammary adenocarcinoma cells. Proc Natl Acad Sci U S A. 1989 Aug;86(15):5859-63. PubMed Central PMCID: PMC297730.

3. Developed and characterized many widely used metastasis models; wrote key methods review to perform metastasis assays; and, defined the first iteration of the hallmarks of cancer metastasis

   a. Welch DR, Bisi JE, Miller BE, Conaway D, Seftor EA, Yohem KH, Gilmore LB, Seftor RE, Nakajima M, Hendrix MJ. Characterization of a highly invasive and spontaneously metastatic human malignant melanoma cell line. Int J Cancer. 1991 Jan 21;47(2):227-37. PubMed PMID: 1671030.

   b. Welch DR, Lobl TJ, Seftor EA, Wack PJ, Aeed PA, Yohem KH, Seftor RE, Hendrix MJ. Use of the Membrane Invasion Culture System (MICS) as a screen for anti-invasive agents. Int J Cancer. 1989 Mar 15;43(3):449-57. PubMed PMID: 2925275.

   c. Welch DR, Hurst DR. Defining the Hallmarks of Metastasis. Cancer Res. 2019 Jun 15;79(12):3011-3027. PubMed Central PMCID: PMC6571042.

   d. Welch DR. Technical considerations for studying cancer metastasis in vivo. Clin Exp Metastasis. 1997 May;15(3):272-306. PubMed PMID: 9174129.

4. Defined the first molecular pathways regulating metastasis and metabolism (includes microRNA) and how KISS1 induces dormancy of already disseminated cells and regulates metabolism

   a. Goldberg SF, Miele ME, Hatta N, Takata M, Paquette-Straub C, Freedman LP, Welch DR. Melanoma metastasis suppression by chromosome 6: evidence for a pathway regulated by CRSP3 and TXNIP. Cancer Res. 2003 Jan 15;63(2):432-40. PubMed PMID: 12543799.

b. Hurst DR, Edmonds MD, Scott GK, Benz CC, Vaidya KS, Welch DR. Breast cancer metastasis suppressor 1 up-regulates miR-146, which suppresses breast cancer metastasis. Cancer Res. 2009 Feb 15;69(4):1279-83. PubMed Central PMCID: PMC2754225.

c. Nash KT, Phadke PA, Navenot JM, Hurst DR, Accavitti-Loper MA, Sztul E, Vaidya KS, Frost AR, Kappes JC, Peiper SC, Welch DR. Requirement of KISS1 secretion for multiple organ metastasis suppression and maintenance of tumor dormancy. J Natl Cancer Inst. 2007 Feb 21;99(4):309-21. PubMed Central PMCID: PMC1820615.

d. Young ED, Manley SJ, Beadnell TC, Shearin AE, Sasaki K, Zimmerman R, Kauffman E, Vivian CJ, Parasuram A, Iwakuma T, Grandgenett PM, Hollingsworth MA, O'Neil M, Welch DR. Suppression of pancreatic cancer liver metastasis by secretion-deficient ITIH5. Br J Cancer. 2021 Jan;124(1):166-175. PubMed Central PMCID: PMC7782545.

5. Developed the MNX mouse to study cross-talk between mitochondrial and nuclear DNA for the study of cancer, cardiovascular disease and other complex diseases. Defined mitochondrial QTL

a. Beadnell TC, Fain C, Vivian CJ, King JCG, Hastings R, Markiewicz MA, Welch DR. Mitochondrial genetics cooperate with nuclear genetics to selectively alter immune cell development/trafficking. Biochim Biophys Acta Mol Basis Dis. 2020 May 1;1866(5):165648. PubMed Central PMCID: PMC7071984.

b. Brinker AE, Vivian CJ, Beadnell TC, Koestler DC, Teoh ST, Lunt SY, Welch DR. Mitochondrial Haplotype of the Host Stromal Microenvironment Alters Metastasis in a Non-cell Autonomous Manner. Cancer Res. 2020 Mar 1;80(5):1118-1129. PubMed Central PMCID: PMC7056497.

c. Feeley KP, Bray AW, Westbrook DG, Johnson LW, Kesterson RA, Ballinger SW, Welch DR. Mitochondrial Genetics Regulate Breast Cancer Tumorigenicity and Metastatic Potential. Cancer Res. 2015 Oct 15;75(20):4429-36. PubMed Central PMCID: PMC4610037.

d. Vivian CJ, Brinker AE, Graw S, Koestler DC, Legendre C, Gooden GC, Salhia B, Welch DR. Mitochondrial Genomic Backgrounds Affect Nuclear DNA Methylation and Gene Expression. Cancer Res. 2017 Nov 15;77(22):6202-6214. PubMed Central PMCID: PMC5690839.

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