

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Sally A. Camper, Ph.D.		POSITION TITLE James V. Neel Professor & Chair, Department of Human Genetics Professor, Dept. of Internal Medicine	
eRA COMMONS USER NAME (credential, e.g., agency login) scamper			
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
University of Delaware	Newark	DE B.S. 1976	University of Delaware
Michigan State University	E. Lansing	MI Ph.D.	Michigan State University
Institute for Cancer Research	Phila.	PA postdoc.	Institute for Cancer
Princeton University	Princeton	NJ postdoc.	Princeton University

A. Positions and Honors.

Professional Experience

1972 - 1976 Undergraduate University of Delaware, Newark, DE.
 1976 - 1977 Research Assistant, University of Delaware, Newark, DE.
 1977 - 1983 Graduate Student, Michigan State University, East Lansing, MI. Mentor: Fritz Rottman, Ph.D. Coordinator and Instructor for Biochemistry Lecture and Laboratory, 1979.
 1983 - 1984 Research Associate, Case Western Reserve University, Cleveland, OH.
 1984 - 1986 Postdoctoral Fellow, Institute for Cancer Research, Phila., PA. NRSA postdoctoral fellowship
 1986 - 1988 Postdoctoral Fellow, Princeton U., Princeton, NJ. Mentor: Shirley Tilghman, Ph.D.
 1988 - 1993 Assistant Professor, University of Michigan, Ann Arbor, MI
 1988 - present Director of the University of Michigan Transgenic Animal Model Core Facility
 1993 - 2000 Associate Professor, University of Michigan, Ann Arbor, MI
 2000- present Professor, Department of Human Genetics, University of Michigan
 2005 - present James V. Neel Professor, Department of Human Genetics, University of Michigan
 2005 - present Chair, Department of Human Genetics, University of Michigan, Ann Arbor, MI
 Director, Center for Genetics in Health and Medicine, U. of Michigan, Ann Arbor, MI

Awards and Other Professional Activities

Competitive Award for Research Presentation (Regional), 1976. Federation of German-American Clubs Scholarship, 1974. Delta Phi Alpha (language) Honor Society. Affirmative Action Grant, 1977. Basil O'Connor Starter Scholar Award 1989, NARSAD Young Investigator Award, 1992, University of Michigan Career Development Award 1995, Faculty Recognition Award 1996, Boezi Memorial Alumnus Award in Biochemistry, Michigan State University 2000, NIH Merit Award 2002. Co-organizer of the 9th International Mammalian Genome Society Meeting, 1995, Co-Organizer, Mouse Initiatives Meetings, 2001, 2002, Jackson Laboratory, Bar Harbor, ME. Instructor, Frontiers in Reproduction course, 1998-01, Woods Hole, MA. Co-chair of mouse Chr 11 committee, 1990-1996. Mammalian Genetics Study Section 1998-2002, Editorial Boards: Current Biology, Genomics, Molecular Endocrinology (current), Mammalian Genome (current). Endocrine Society, Annual Steering Committee, 2003-2006. Jackson Laboratory Advisory Board (2004-current). Distinguished Faculty Lectureship Award in Biomedical Research, University of Michigan, 2005. Lawson Wilkins Pediatric Endocrine Society Esoterix Lecture Award, 2007. Roy O. Greep Award Lecture for outstanding contributions to endocrinology, Endocrine Society, 2007, Executive Board of the Genetics Society of America (2008-2010), Molecular Endocrinology Reviewer of the year, 2009.

B. Selected peer-reviewed publications (from a total of 150). (*co-first)

Davis SW, Potok MA, Brinkmeier ML, Carninci P, Lyons RH, MacDonald JW, Fleming MT, Mortensen AH, Egashira N, Ghosh D, Steel KP, Osamura RY, Hayashizaki Y, **Camper SA**. Genetics, gene expression and bioinformatics of the pituitary gland. *Hormone Research*, 71:101-115, 2009.
 Brinkmeier ML, Davis SW, Carninci P, MacDonald JW, Kawai J, Ghosh D, Hayashizaki Y, Lyons RH, **Camper SA**. Discovery of transcriptional regulators and signaling pathways in the developing pituitary

gland by bioinformatic and genomic approaches. *Genomics*, 93:449-60, 2009.

Mustapha M, Fang Q, Gong T-W, Dolan DF, Raphael Y, **Camper SA** (corresponding author), Duncan RK. Deafness and permanently reduced potassium channel gene expression and function in hypothyroid *Pit1_{dw}* mutants. *J. Neuroscience*, 29:1212-23, 2009.

Nasonkin IO*, Potok MA*, **Camper SA**. Cre-mediated recombination in pituitary somatotropes. *Genesis*, 47:55-60, 2008. *equally contributing author

Charles MA*, Mortensen AH*, Potok MA*, **Camper SA**. *Pitx2* deletion in pituitary gonadotropes is compatible with gonadal development, puberty and fertility. *Genesis*, 46:507-514, 2008. *equally contributing authors

Egashira N, Minematsu T, Miyai S, Takekoshi S, **Camper SA**, Osamura RY. Pituitary changes in *Prop1* transgenic mice: hormone producing tumors and signet-ring type gonadotropes. *Acta Histochem Cytochem*, 41:47-57, 2008.

Potok MA, Cha KB, Hunt A, Brinkmeier ML, Leitges M, Kispert A, **Camper SA**. Wnt signaling affects gene expression in the ventral diencephalon and pituitary gland. *Developmental Dynamics*, 237:1006-20, 2008. (featured on the cover).

Ding F, Li HH, Zhang S, Solomon NM, **Camper SA**, Cohen P, Francke U. SnoRNA Snord116 (*Pwcr1/MBII-85*) Deletion causes growth deficiency and hyperphagia in mice. *PLoS ONE*. 3:e1709, 2008.

Ellsworth BS*, Butts DL*, **Camper SA**. Mechanisms underlying pituitary hypoplasia and failed cell specification in *Lhx3* deficient mice. *Developmental Biology*, 313:118-129, 2008.

Brinkmeier ML, Potok MA, Davis SW, **Camper SA**. TCF4 deficiency expands ventral diencephalon signaling and increases induction of pituitary progenitors. *Developmental Biology*, 311:396-407, 2007.

Hughes ED, Qu YY, Genik SJ, Lyons RH, Pacheco CD, Lieberman AP, Samuelson LC, Nasonkin IO, **Camper SA**, Van Keuren ML, Saunders TL. Genetic variation in C57BL/6 ES cell lines and genetic instability in the Bruce4 C57BL/6 ES cell line. *Mammalian Genome*, 18:549-558, 2007.

Karolyi IJ, Dootz GA, Halsey K, Beyer L, Probst FJ, Johnson KR, Parlow AF, Raphael Y, Dolan DF, **Camper SA**. Dietary thyroid hormone replacement ameliorates hearing deficits in hypothyroid mice. *Mamm Genome*, 8:329-37, 2007. (featured on the cover)

Mustapha M, Beyer LA, Izumikawa M, Swiderski DL, Dolan DF, Raphael Y, **Camper SA**. Whirler mutant hair cells have less severe pathology than shaker 2 or double mutants. *J Assoc Res Otolaryngol*. 8:329-37, 2007. (featured on the cover).

Ward RD, Davis SW, Cho M-C, Esposito C, Lyons RH, Cheng J-F, Rubin EM, Rhodes SJ, Raetzman LT, Smith TPL, **Camper SA**. Comparative genomics reveals functional transcriptional control sequences in the *Prop1* gene. *Mammalian Genome*, 18:521-37, 2007. (Special issue on comparative genomics.)

L'Honoré A, Coulon V, Marcil A, Lebel M, Lafrance-Vanasse J, Gage P, **Camper SA**, Drouin J. Sequential expression and redundancy of *Pitx2* and *Pitx3* genes during muscle development. *Developmental Biology*, 307:421-433, 2007.

Davis SW, **Camper SA**. Noggin regulates BMP4 activity during pituitary induction. *Developmental Biology*, 305:145-60, 2007.

Raetzman LT, Cai JX, **Camper SA**. *Hes1* is required for pituitary growth and melanotrope specification. *Dev Biol*, 304:455-66, 2007.

Hertzano R, Dror AA, Montcouquiol M, Ahmed Z, Ellsworth B, **Camper S**, Friedman TB, Kelley MW, Avraham KB. *Lhx3*, a LIM domain transcription factor, is regulated by *Pou4f3* in the auditory, but not in the vestibular system. *European Journal of Neuroscience*. 25:999-1005, 2007.

Savage J, Mullen RD, Sloop KW, Franklin CL, **Camper SA**, Rhodes SJ. Transgenic mice expressing LHX3 transcription factor isoforms in the pituitary: effects on the gonadotrope axis and sex-specific reproductive disease. *Journal of Cellular Physiology*. 212:105-117, 2007.

Ellsworth BS, Egashira N, Haller JL, Butts DL, Cocquet J, Clay CM, Osamura RY, **Camper SA**. FOXL2 in the pituitary: molecular, genetic, and developmental analysis. *Mol Endocrinol*. 20:2796-805, 2006.

Raetzman LT, Wheeler BS, Ross SA, Thomas PQ, **Camper SA**. Persistent expression of notch2 delays gonadotrope differentiation. *Mol Endocrinol*. 20:2898-2908, 2006.

Gong TW, Karolyi IJ, Macdonald J, Beyer L, Raphael Y, Kohrman DC, **Camper SA**, Lomax MI. Age-related changes in cochlear gene expression in normal and shaker 2 mice. *J Assoc Res Otolaryngol*. 7:317-28,

2006.

Kanzaki S, Beyer L, Karolyi IJ, Dolan DF, Fang Q, Probst FJ, **Camper SA**, Raphael Y. Transgene correction maintains normal cochlear structure and function in 6-month-old *Myo15a* mutant mice. *Hear Res.* 214:37-44, 2006.

Ward RD, Stone BM, Raetzman LT, **Camper SA**. Cell proliferation and vascularization in mouse models of pituitary hormone deficiency. *Mol Endocrinol.* 20:1378-90, 2006

Charles MA, Saunders TL, Wood WM, Owens K, Parlow AF, **Camper SA**, Ridgway EC, Gordon DF. Pituitary-specific *Gata2* knockout: effects on gonadotrope and thyrotrope function. *Mol Endocrinol.* 20:1366-77, 2006.

C. Research Support.

Ongoing Research Support

R37 HD30428-11 (Camper, PI) 07/01/07 - 06/30/12

NIH/NICHD A panhypopituitary mouse mutation

The aims of this grant are: 1. Determine which cell types arise from *Prop1* progenitors. 2. Test roles of signaling pathways affected by *Prop1*. 3. Identify downstream targets of *Prop1*. 4. Identify cis elements and trans-acting factors necessary for *Prop1* expression (upstream regulators) focusing on humans and mice.

R01HD34283-09 (Camper, PI) 05/01/04 - 06/30/09

NIH/NICHD Cell-specific expression in the pituitary gland

Aims: 1. Role of *Pitx2* in pituitary development and function: mechanistic studies. 2. Role of *Gata2* in gonadotrope and thyrotrope determination and function. 3. Role of *Fox12* in pituitary development. 4. Identify novel markers unique to individual pituitary cell types.

March of Dimes (Camper, PI) 06/01/08-05/31/11

Protection against deafness induced by hypothyroidism

Determine whether the protective *Mus castaneus* locus, Modifier of dw hearing, *Mdwh*, improves neuronal development and synapse formation and/or improves the expression of thyroid hormone regulated genes that are important for hearing and identify the responsible gene.

Core service related (*Transgenic animal model core and DNA sequencing and genotyping core*)

P30CA46592 (Wicha, PI) 06/01/06 - 05/31/11

NCI University of Michigan Cancer Center

Role: Camper Director of Transgenic Animal Core

This grant provides salary support for individuals working in the transgenic animal core and a small portion of salary for administering the core.

P60AR20557-22 Sub: 9006 (Fox, PI) 08/01/06 to 07/31/11

NIH University of Michigan Multipurpose Rheumatic Diseases Center

Role: Camper Director of Transgenic Animal Core

This grant provides salary support for individuals working in the transgenic animal core and a small portion of my salary for administering the core.

DK034933-22 (Owyang, PI) 12/01/05 to 11/30/10

NIH University of Michigan Gastrointestinal Peptide Research Center

Role: Camper Director of Transgenic Animal Core

This grant provides salary support for individuals working in the transgenic animal core and a small portion of my salary for administering the core.

AG13283-12 (Faulkner, PI) 07/01/05 to 06/30/10

NIH University of Michigan Nathan Shock Center.

Role: Camper Director of Transgenic Animal Core

This grant provides salary support for individuals working in the transgenic animal core and a small portion

of my salary for administering the core.

Completed Research Support

(Camper, Raphael, co-PI) 09/01/07-08/31/08.

University of Michigan Institute for Clinical and Health Research Pilot Feasibility Study

Mouse model of progressive hearing loss: dominant mutations in gamma-actin.

Generate a mouse model for *DFNA20/26* by creating the missense mutation in P332A in the mouse gamma actin gene. Assess the consequences of the mutation on interaction with myosin, cochlear hair cell morphology, and hearing.

1S10RR0236888-01 (Camper, Lyons, co-PIs) 04/01/07-03/31/08

NIH/NCRR Illumina BeadStation 500GX

Establish high through-put genotyping with 300,000 SNP panels for genome scans in humans and mice, develop custom panels of 384 and 1536 SNPs for human and mouse, gene expression analysis of human and mouse RNA.

(Camper, Ghosh, Lyons, co-PIs) 11/01/06-10/31/07

University of Michigan Center for Computational Medicine and Biology Pilot Research Grant Program

Mechanisms underlying hypopituitarism in mice.

The aims of this grant are to 1) use bioinformatics to evaluate the effects of sex and different litters on gene expression in newborn mice. 2) develop computational methods to integrate microarray and cDNA library information.

R37 HD30428- 11 (Camper, PI) 07/01/02 - 06/30/07

NIH/NICHD A panhypopituitary mouse mutation

The aims of this grant are: 1. Characterize new *Prop1* alleles. 2. Determine the role of WNT signaling in pituitary development. 3. Advance knowledge from a simple genetic hierarchy to molecular mechanisms. 4. Identify putative *Prop1* target genes by expression analyses.

R01 DC05053-01 (Camper, PI) 08/01/01-07/31/06

NIH/NIDCD Myosin 15 in hearing and deafness: genetics, pathology and therapeutic potential

Aims: 1. Longevity and potential side effects of *Myo15* transgene correction. 2. Developmental onset of pathology in hair bundle mutants. 3. Assess functional overlap of *Myo15*, *Myo6*, *Myo7a*, *Whrn*, and *pirouette*. 4. Alterations in gene expression induced by *Myo15* deficiency.

(van de Woude, PI) 07/01/01-05/30-06

State of Michigan Michigan Animal Model Consortium

Role: Camper Director of Transgenic Animal Core for transgenic core

The purpose of the award is to stimulate infrastructure development to support the generation of transgenic animals at major universities and research institutes in the state.

AG13283-12 (Faulkner, PI) 07/01/05 to 06/30/10

NIH University of Michigan Nathan Shock Center.

Role: Camper Director of Transgenic Animal Core

This grant provides salary support for individuals working in the transgenic animal core and a small portion of my salary for administering the core.