CURRICULUM VITAE

NAME: Shingo Kajimura, Ph.D.

POSITION: Associate Professor, Step 2
University of California, San Francisco
Department of Cell and Tissue Biology
UCSF Diabetes Center
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EDUCATION:

1996 - 2000	The University of Tokyo, Japan	B.A.
2000 - 2003	The University of Tokyo, Japan	M.S.
2003 - 2006	The University of Tokyo, Japan	Ph.D.
2006 - 2008	Harvard Medical School, Boston Dana-Farber Cancer Institute	Post-doc

POSITION:

2009 - 2011	Harvard Medical School, Boston Dana-Farber Cancer Institute	Instructor
2011 - 2016	University of California, San Francisco	Assistant Professor
2016 - Present	University of California, San Francisco	Associate Professor

HONORS AND AWARDS:

2015	NISTEP Award, National Institute of Science and Technology Policy, Japan
2014	The Helmholtz Young Investigator in Diabetes Award, Nature Medicine
2014	Baker IDI Metabolism & Inflammation Distinguished Lecture
2013	The Presidential Early Career Award for Scientists and Engineers from the White House (**PECASE Award**)
2013	The Ellison Medical Foundation on New Scholar Award in Aging (declined)
2013	Pew Scholar
2011	BD Biosciences Stem Research Award
2010	NIH Pathway to Independence K99/R00
2009	American Heart Association, Scientist Development Award
2007	JSPS Fellowship for Research Abroad, The Japanese Society for the Promotion of Science
2006	Aubrey Gorbman Award for Graduate Student The Society for Integrative and Comparative Biology
2006	JSPS Postdoctoral Fellowship, The Japanese Society for the Promotion of Science
2000	Crown Prince Akihito Scholar
2000	Dean Amemiya Honor Award, The University of Tokyo

PROFESSIONAL ORGANIZATIONS:

2010 - Present American Diabetes Association

EDITORIAL BOARD:

2013 - Present Molecular Metabolism
2015 - Present Molecular and Cellular Biology
2016 - Present Journal of Clinical Investigation Insight

KEYWORDS/AREAS OF INTEREST:

Obesity, metabolic syndrome, diabetes, adipocyte development, gene transcription, epigenetics, mitochondrial homeostasis

PEER REVIEWED PUBLICATIONS:

1. Altshuler-Keylin S, Shinoda K, Hong H, Hasegawa Y, Ikeda K, Yang Y, Perera RM, Debnath J, & Kajimura S. (2016) Beige adipocyte maintenance is regulated by autophagy-induced mitochondrial clearance. ***Cell Metabolism*** 24(3):402-19. PMC5023491

   [Research highlight in *Cell Metabolism* 2016; *Nature Reviews Endocrinology 2016*]
2. Inagaki T, Sakai J, & Kajimura S. (2016) Transcriptional and epigenetic control of brown and beige adipose cell fate and function. ***Nature Review Molecular Cell Biology*** (8):480-95. PMC4956538
3. Chondronikola M, Volpi E, Børsheim E, Porter C, Saraf MK, Annamalai P, Yfanti C, Chao T, Wong D, Shinoda K, Labbė SM, Hurren NM, Cesani F, Kajimura S, & Sidossis LS. (2016) Brown adipose tissue activation is linked to distinct systemic effects on lipid metabolism in humans. ***Cell Metabolism*** 23(6):1200-6. PMC4967557
4. Ohyama K, Nogusa Y, Shinoda K, Suzuki K, Bannai M. & Kajimura S. (2016) A synergistic anti-obesity effect by a combination of capsinoids and cold temperature through promoting beige adipocyte biogenesis. ***Diabetes*** 65(5):1410-23. PMC4839206

   [Research highlight in *Nature Reviews Endocrinology 2016*]
5. Camarda R, Zhou AY, Kohnz RA, Balakrishnan S, Mahieu C, Anderton B, Eyob H, Kajimura S, Tward A, Krings G, Nomura DK, & Goga A. (2016) Inhibition of fatty acid oxidation as a therapy for MYC-overexpressing triple-negative breast cancer. ***Nature Medicine*** (4):427-32. PMC4892846
6. Svensson KJ, Long JZ, Jedrychowski MP, Cohen P, Lo JC, Serag S, Kir S, Shinoda K, Tartaglia JA, Rao RR, Chédotal A, Kajimura S, Gygi SP, & Spiegelman BM. (2016) A secreted Slit2 fragment regulates adipose tissue thermogenesis and metabolic function. ***Cell Metabolism*** 23(3):454-66. PMC4785066
7. Klionsky DJ et al., (2016) Guidelines for the use and interpretation of assays for monitoring autophagy (3rd edition). ***Autophagy*** 12(1):1-222. PMC4835977
8. Shinoda K, Ohyama K, Hasegawa Y, Chang H-Y, Ogura M, Sato A, Hong H, Hosono T, Sharp LZ, Scheel DW, Graham M, Ishihama Y, & Kajimura S. (2015) Phosphoproteomics Identifies CK2 as a negative regulator of beige adipocyte thermogenesis and energy expenditure. ***Cell Metabolism*** 22(6):997-1008.

   [Research highlight in *Cell Metabolism* 2015]
9. Shinoda K, Luijten IHN, Hasegawa Y, Hong H, Sonne SB, Xue R, Chondronikola M, Kim M, Cypess AM, Tseng Y, Nedergaard J, Sidossis LS, & Kajimura S. (2015) Genetic and functional characterization of clonally-derived adult human brown adipocytes. ***Nature Medicine*** 21(4):389-94. PMC4427356 [Research highlight in *Nature Medicine* 2015]

10. Kazak K, Chouchani ET, Jedrychowski MP, Erickson BK, Shinoda K, Cohen P, Vetrivelan R, Lu GZ, Laznik-Bogoslavski D, Hasenfuss SC, Kajimura S, Gygi SP, & Spiegelman BM. (2015) A creatine-driven substrate cycle enhances energy expenditure and thermogenesis in beige fat. ***Cell*** 163 (3): 643–55. PMC4656041
11. Kajimura S, Spiegelman BM, & Seale P. (2015) Brown and beige fat: Physiological roles beyond heat-generation. ***Cell Metabolism*** 22(4):546-59 (Review) PMC4613812
12. Sidossis L, & Kajimura S. (2015) Brown and beige fat in humans: thermogenic adipocytes that control energy and glucose homeostasis. ***Journal of Clinical Investigation*****.** 125(2):478-86. PMC4319444
13. Abe Y, Rozqie R, Matsumura Y, Kawamura T, Nakaki R, Tsurutani Y, Tanimura-Inagaki K, Shiono A, Magoori K, Nakamura K, Ogi S, Kajimura S, Kimura H, Tanaka T, Fukami K, Osborne TF, Kodama T, Aburatani H, Inagaki T, & Sakai J. (2015) JMJD1A is a signal-sensing scaffold that regulates acute chromatin dynamics via SWI/SNF association for thermogenesis. ***Nature Communications*** 7;6:7052. PMC4432656
14. Oh CM, Namkung J, Go Y, Shong KE, Kim K, Kim H, Park BY, Lee HW, Jeon YH, Song J, Shong M, Yadav VK, Karsenty G, Kajimura S, Lee IK, Park S, & Kim H. (2015) Regulation of systemic energy homeostasis by serotonin in adipose tissues ***Nature Communications*** 13;6:6794. PMC4403443
15. Güller I, McNaughton S, Crowley T, Gilsanz V, Kajimura S, Watt M, & Russell AP. (2015) Comparative analysis of microRNA expression in mouse and human brown adipose tissue. ***BMC Genomics.*** 16(1):820. PMC4617708
16. Kajimura S. Promoting brown and beige adipocyte biogenesis through the PRDM16 pathway. **Int J Obesity** Suppl. 2015 Aug;5(Suppl 1):S11-4. (Review)
17. Galmozzi A*, Sonne SB*, Keylin S, Hasegawa Y, Shinoda K, Luijten I, Chang JW, Sharp LZ, Cravatt BF, Saez E, & Kajimura S. (2014) ThermoMouse: an *in vivo* model to identify modulators of UCP1 expression in brown adipose tissue. ***Cell Reports*** S2211-1247. PMC4268417

    [Research highlight *in Nature Biotech 2014; Biotechnology 2014*, Selected in *Faculty1000*]
18. Gridley T. & Kajimura S. (2014) Lightening up a notch: Notch regulation of energy metabolism. ***Nature Medicine*** 20(8):811-2. (Review) PMC4431689
19. Cohen P, Levy JD, Zhang Y, Frontini A, Kolodin DP, Svensson KJ, Lo JC, Zeng X, Ye L, Khandekar MJ, Wu J, Gunawardana SC, Banks AS, Camporez JP, Jurczak MJ, Kajimura S, Piston DW, Mathis D, Cinti S, Shulman GI, Seale P, & Spiegelman B.M. (2014) Ablation of PRDM16 and Beige Adipose Causes Metabolic Dysfunction and a Subcutaneous to Visceral Fat Switch. ***Cell*** 156(1-2):304-16. PMC3922400
20. Ohyama K, Nogusa Y, Suzuki K, Shinoda K, Kajimura S, & Bannai M. (2014) A combination of exercise and capsinoids supplementation additively suppresses diet-induced obesity by increasing energy expenditure in mice. ***Am J Physiol Endocrinol Metab.*** 308(4):E315-23. PMID25516550
21. Kajimura S, & Saito M. (2014) A New Era in BAT Biology: Molecular control of brown fat development and energy homeostasis. ***Annual Review of Physiology*** 76:225-49. (Review) PMC4090362
22. Ohno H, Shinoda K, Ohyama K, Sharp LZ, & Kajimura S. (2013) EHMT1 controls brown adipose cell fate and thermogenesis through the PRDM16 complex. ***Nature*** 504(7478):163-67. PMC3855638

    [Research highlight *in Cell Metabolism* 2014, Selected in *Faculty1000*, NIH director's blog]
23. Gilsanz V, Hu HH, & Kajimura S. (2013) Relevance of brown adipose tissue in infancy and

adolescence. ***Pediatric Research*** (1):3-9. PMC3614088

24. Aune LU, Ruiz L, & Kajimura S. (2013) Isolation of stromal vascular cells and differentiation of preadipocytes to beige/brite cells. ***J. Vis. Exp.*** (73). doi: 10.3791/50191. PMC3641667
25. Ohno H., Shinoda K., Spiegelman B.M. & Kajimura S. (2012) PPARγ agonists induce a white-to-brown fat conversion through stabilization of PRDM16 protein. ***Cell Metabolism*** 15(3), 395-404. PMC3410936
26. Sharp LZ, Shinoda K, Ohno H, Scheel DW, Tomoda E, Ruiz L, Hu H, Wang L, Pavlova Z, Gilsanz V, & Kajimura S. (2012) Human BAT possesses molecular signatures that resemble beige/brite cells. ***PLOS One*** 7(11): e49452. PMC3500293
27. Kang S, Akerblad P, Kiviranta, R, Gupta RK, Kajimura S, Griffin MJ, Baron R, & Rosen ED. (2012) Regulation of Early Adipose Commitment by Zfp521. ***PLOS Biology*** Nov;10(11):e1001433. PMC3507953
28. Boström P, Wu J, Jedrychowski MP, Korde A, Ye L, Lo J, Rasbach KA, Boström EA, Kajimura S, Zingaretti MC, Vind BF, Tu H, Cinti S, Højlund K, Gygi SP, & Spiegelman BM. (2012) A PGC1α-dependent myokine that drives browning of white fat and thermogenesis. ***Nature*** 481(7382), 463-468. PMC3522098 [Selected in *Faculty1000*]
29. Koncarevic A, Kajimura S, Cornwall-Brady M, Andreucci A, Pullen A, Davies M, Sako D, Liu J, Kumar R, Burton R, Tomkinson K, Baker T, Umiker B, Monnell T, Grinberg AV, Liharska K, Underwood KW, Ucran JA, Howard E, Barberio J, Spaits M, Spiegelman BM, Seehra J, & Lachey J. (2012) A novel therapeutic approach to treating obesity through modulation of TGFβ signaling. ***Endocrinology*** 153(7), 3133-3146. PMC3791434
30. Seale P, Conroe H, Estall JL, Kajimura S, Frontini A, Ishibashi J, Cohen P, Cinti S, & Spiegelman BM. (2011) Prdm16 determines the thermogenic program of subcutaneous white adipose tissue. ***Journal of Clinical Investigation*** 121(1), 96-105. PMC3007155
31. Kamei H, Ding Y, Kajimura S, Wells M, Chiang P, & Duan C. (2011) Role of IGF signaling in catch-up growth and accelerated temporal development in zebrafish embryos in response to oxygen availability. ***Development*** 138(4), 777-786. PMID21266413
32. Choi JH, Banks AS*, Estall JL*, Kajimura S*, Boström P, Laznik D, Ruas JL, Chalmers MJ, Kamenecka TM, Blüher M, Griffin PR, & Spiegelman BM. (2010) Anti-diabetic drugs inhibit obesity-linked phosphorylation of PPARgamma by Cdk5. ***Nature*** 466(7305), 451-456. PMC2987584 [Selected in *Faculty1000*]
33. Kajimura S, Seale P. & Spiegelman B.M. (2010) Transcriptional control of brown fat development. ***Cell Metabolism*** 11(4), 257-62. (Review) PMC2857670
34. Kajimura S, Seale P, Kubota K, Lunsford E, Frangioni JV, Gygi SP, & Spiegelman BM. (2009) Initiation of myoblast to brown fat switch by a PRDM16-C/EBP-β transcriptional complex. ***Nature*** 460(7259), 1154-8. PMC2754867

    [Research highlight in *Nature* 2009; *Cell* 2009; *Science* 2009, Selected in *Faculty1000*]
35. Seale P, Kajimura S, & Spiegelman BM. (2009) Transcriptional control of brown adipocyte development and physiolo.gical function--of mice and men. ***Genes and Development*** 23(7), 788-797. (Review) PMC2763499
36. Seale P, Bjork B, Yang W, Kajimura S, Kuang S, Scime A, Devarakonda S, Chin S, Conroe H, Rudnicki MA, Beier DR, & Spiegelman BM. (2008) PRDM16 controls a brown fat/skeletal muscle developmental switch. ***Nature*** 454(7207),961-7. PMC2583329 [*Faculty1000*]
37. Kajimura S, Seale P, Tomaru T, Erdjument-Bromage H, Cooper MP, Ruas JL, Chin S, Tempst P, Lazar MA, & Spiegelman BM. (2008) Regulation of the brown and white fat gene programs through a PRDM16/CtBP transcriptional complex. ***Genes and Development*** 22(10), 1397-1409. PMC2377193 [Research highlight in *Genes Dev. 2008*]

38. Seale P*, Kajimura S*, Yang W, Chin S, Rohas LM, Uldry M, Tavernier G, Langin D, & Spiegelman BM. (2007) Transcriptional control of brown fat determination by PRDM16. ***Cell Metabolism*** 6(1), 38-54. PMC2564846 (* co-first author)
39. Cooper MP, Uldry M, Kajimura S, Arany Z, & Spiegelman BM. (2008) Modulation of PGC-1 coactivator pathways in brown fat differentiation through LRP130. ***J. Biol. Chem.*** 283(46), 31960-7. PMC2581541
40. Kajimura S, & Duan C. (2007) Insulin-like growth factor-binding protein-1: an evolutionarily conserved fine tuner of insulin-like growth factor action under catabolic and stressful conditions. ***J. Fish. Biol.*** 71, 309-25. (Review)
41. Takahashi H, Prunet P, Kitahashi T, Kajimura S, Hirano T, Grau EG, & Sakamoto T. (2007) Prolactin receptor and proliferating/apoptotic cells in esophagus of the mozambique tilapia in fresh water and in seawater. ***Gen. Comp. Endocrinol.*** 152(2), 326-31. PMID17418192
42. Kajimura S, Aida K, & Duan C. (2006) Understanding hypoxia-induced gene expression in early development: *In vivo* and *in vitro* analysis of HIF-1-regulated zebrafish IGFBP-1 gene expression. ***Molecular and Cellular Biology*** 26(3), 1142-55. PMC1347021
43. Kajimura S, Aida K, & Duan C. (2005) IGF binding protein-1 mediates hypoxia-induced embryonic growth retardation and developmental delay. ***Proc. Natl. Acad. Sci. U S A.*** 102(4), 1240-5. PMC545835
44. Kajimura S, Seale AP, Hirano T, Cooke IM, & Grau EG. (2005) Physiological concentrations of ouabain rapidly inhibit prolactin release from the tilapia pituitary. ***Gen. Comp. Endocrinol.*** 143(3), 240-50. PMID15922343 [Research highlight in *Am J Physiol 2005]*
45. Kajimura S, Kawaguchi N, Kaneko T, Kawazoe I, Hirano T, Visitacion N, Grau EG, & Aida K. (2004) Identification of the growth hormone receptor in an advanced teleost, *Oreochromis mossambicus*: with special reference to its distinct expression pattern in the ovary. ***Journal of Endocrinology*** 181(1), 65-76. PMID15072567
46. Kajimura S, Hirano T, Moriyama S, Vakkuri O, Leppaluoto J, Hirano T, & Grau EG. (2004) Changes in plasma concentrations of immunoreactive ouabain in the tilapia in response to changing salinity: Is ouabain a hormone in fish? ***Gen. Comp. Endocrinol.*** 135(1), 90-9. PMID14644648 [Research highlight in *Am J Physiol 2004]*
47. Kajimura S, Hirano T, Visitacion N, Moriyama S, Aida K, & Grau EG. (2003) Dual mode of cortisol action on GH/IGF-I/IGFBPs in the tilapia, *Oreochromis mossambicus*. ***Journal of Endocrinology*** 178(1), 91-9. PMID 12844340
48. Uchida K, Yoshikawa-Ebesu JS, Kajimura S, Yada T, Hirano T, & Grau EG. (2004) *In vitro* effects of cortisol on the release and gene expression of prolactin and growth hormone in the tilapia, *Oreochromis mossambicus*. ***Gen. Comp. Endocrinol.*** 135(1), 116-25. PMID14644651
49. Uchida K, Kajimura S, Riley LG, Hirano T, Aida K, & Grau EG. (2003) Effects of fasting on growth hormone/insulin-like growth factor I axis in Mozambique tilapia, *Oreochromis mossambicus*. ***Comp. Biochem. Physiol. A.*** 134(2), 429-39. PMID12547273
50. Seale AP, Riley LG, Leedom TA, Kajimura S, Dores RM, Hirano T, & Grau EG. (2002) Effects of environmental osmolality on release of prolactin, growth hormone and ACTH from the tilapia pituitary. ***Gen. Comp. Endocrinol.*** 128(2), 91-101. PMID12392682
51. Yada T, Uchida K, Kajimura S, Azuma T, Hirano T, & Grau EG. (2002) Immunomodulatory effects of prolactin and growth hormone in immune system in the tilapia, *Oreochromis mossambicus*. ***Journal of Endocrinology*** 173(3), 483-92. PMID12065238
52. Kajimura S, Uchida K, Yada T, Aida K, Hirano T, & Grau EG. (2002) Effects of insulin-like growth factors (IGF-I and -II) on growth hormone and prolactin release and gene expression

in euryhaline tilapia, *Oreochromis mossambicus*. ***Gen. Comp. Endocrinol.*** 127(3), 223-31. PMID12225763

53. Kajimura S, Uchida K, Yada T, Riley LG, Byatt JC, Collier RJ, Aida K, Hirano T, & Grau EG. (2001) Stimulation of insulin-like growth factor-I production by recombinant bovine growth hormone in the euryhaline tilapia, *Oreochromis mossambicus*. ***Fish Physiol. Biochem.*** 25(1), 221-30.
54. Kajimura S, Yoshiura Y, Suzuki M, Utoh T, Hiroe N, Oka H, & Aida K. (2001) Changes in mRNA levels of gonadotropin Ibeta and IIbeta subunits during vitellogenesis in the common Japanese conger. ***Fisheries Science*** 67(1), 1053-62.
55. Kajimura S, Yoshiura Y, Suzuki M, & Aida K. (2001) cDNA cloning of two gonadotropin beta subunits (GTH-Ibeta and -IIbeta) and their expression profiles during gametogenesis in *Paralichthys olivaceus*. ***Gen. Comp. Endocrinol.*** 122(2), 117-29. PMID11316417

PATENTS ISSUED:

1. Publication No. WO/2010/080985; U.S. Provisional Application No. 61/204,607; International Application No. PCT/US2010/020480, Kajimura S. and Spiegelman B.M. “Compositions and methods for induced brown fat differentiation.” Published on July 15 2010
2. Publication No. WO/2011/091134; International Application No. PCT/US2011/021855, Choi, J.Y., Kajimura S., Banks, A., and Spiegelman B.M. “Compositions, kits, and methods for identification, assessment, prevention and therapy of metabolic disorders.” Published on July 28 20

RESEARCH SUPPORT:

ACTIVE

1. RO1DK097441 (PI Kajimura) 09/10/12-06/30/18
NIDDK
Molecular control of brown adipose cell fate and energy metabolism
This proposal aims to determine the physiological roles of EHMT1, a methyltransferase in the PRDM16 complex in brown adipose cell fate specification and whole-body energy homeostasis.

2. RO1DK108822 (PI Kajimura) 04/01/16-02/29/20
NIDDK
BAT-mediated inter-organ communication in energy homeostasis
This proposal will test our hypothesis that Bola3 is a BAT-derived adipokine that acts on skeletal muscle to regulate glucose homeostasis and insulin sensitivity.

3. Pew Charitable Trusts (PI Kajimura) 08/01/13-07/31/17

Molecular control of beige adipose cell fate specification and energy metabolism
The aim for this project is to determine the molecular mechanisms that control maintenance of brown adipose cell identity.

4. RO1DK112268 (PI Kajimura) 09/20/16 -06/30/18
NIDDK
Biological roles and developmental pathway of burn-induced beige fat in humans
This proposal aims to understand the biological roles of human beige fat that are induced by burn injuries.