

## CURRICULUM VITAE

### **JUDITH CAMPISI**

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#### **Education**

- 1979 Ph.D. State University of New York, Stony Brook (Biochemistry)  
Mentor: Dr Carl Scandella
- 1974 B.A. State University of New York, Stony Brook (Chemistry)

#### **Academic Positions:**

- 1980 - 1984 Postdoctoral Fellow/Instructor, Dana-Farber Cancer Institute; Harvard Univ Medical School  
Mentor: Dr Arthur Pardee
- 1984 - 1989 Assistant Professor, Department of Biochemistry, Boston University School of Medicine
- 1989 - 1990 Associate Professor, Department of Biochemistry, Boston University School of Medicine
- 1990 - Present Senior Scientist, Life Sciences Division, Lawrence Berkeley National Laboratory (LBNL)
- 1992 - 1997 Group Leader, Carcinogenesis & Differentiation, LBNL
- 1994 - 1999 Head, Department of Cell & Molecular Biology, LBNL
- 1999 - 2008 Co-Head, Center for Research and Education on Aging, LBNL and Univ California Berkeley
- 2002 - Present Professor, Buck Institute for Research on Aging
- 2015 - Present Adjunct Professor, University of Southern California

#### **Major Research/Achievement Awards**

- 1979 Postdoctoral Fellowships, American Cancer Society & National Institutes of Health
- 1985 Evangeline Athanas Cancer Research Scholar Award, American Cancer Society
- 1988 Established Investigator of the American Heart Association
- 1995, 2005 MERIT Awards, National Institute on Aging
- 1997 AlliedSignal Award for Research on Aging
- 1998 Senior Scholar Award, Ellison Medical Foundation
- 1999 Glenn Foundation Award, Gerontological Society of America
- 2002 Irving Wright Award of Distinction, American Federation for Aging Research
- 2010 Longevity Prize, IPSEN Foundation, Paris
- 2011 Bennett Cohen Award, University of Michigan
- 2011 Elected fellow, American Association for the Advancement of Science
- 2013 Schober Award, Halle University Hospital, Germany
- 2015 International Prize in Natural Sciences and Medicine, Olav Thon Foundation
- 2015 ICCNS-Springer Award, International CCN Society

#### **Major Scientific Review and Advisory Positions**

- 1985 - Present Ad hoc Reviewer, Center for Scientific Research, National Institutes of Health
- 1988 - 1992 Biological and Clinical Aging Review Committee, National Institute on Aging
- 1990 - 1991 Biomedical Study Section, California Tobacco-Related Disease Research Program
- 1991 - 2000 Scientific Advisory Committee, California Tobacco-Related Disease Research Program
- 1992 - Present Organizing Faculty, annual Natl Institute on Aging Summer Training Course in Aging Research
- 1993 - Present Science Advisory Board, Alliance for Aging Research
- 1994 - 1998 Board of Scientific Counselors, National Institute on Aging
- 1997 President's Panel on Cancer
- 1999 - 2002 National Advisory Council on Aging, National Institutes of Health
- 2000 - 2003 Board of Directors, American Federation for Aging Research
- 2001 - 2014 Ellison Medical Foundation, Initial Review Group
- 2003 - 2013 Co-Chair, American Association for Cancer Research Task Force on Aging and Cancer
- 2003 - 2012 Scientific Advisory Board, Keystone Symposia
- 2003 Science Advisory Member, Max Planck Commission on Gerontology
- 2004 - Present Medical Research Committee, Progeria Research Foundation
- 2005 - 2014 National Institute on Aging, Biology of Aging Extramural Program Review Committee

2008 National Academies, Grand Challenges of an Aging Society, Planning Committee  
2011-2017 Steering Committee, National Institute on Aging Intervention Testing Program

### **Editorial Board Memberships**

Aging (2008-present)  
Aging Cell (2002-present)  
Aging & Disease (2010-present)  
Cancer Convergence (2016-present)  
Cell Cycle (2002-present)  
EBioMedicine (2016-present)  
Experimental Cell Research (1991-present)  
FASEB Journal (2016-present)  
International Journal of Cancer (2006-2009)  
Journal of Cellular Biochemistry (1991-present)  
Journal of Cellular Physiology (1996-present)  
Journals of Gerontology (1992-1995)  
Mechanisms of Ageing and Development (1999-present)  
Molecular Biology Reports (1996-present)  
Molecular and Cellular Oncology (2014-present)  
Oncoscience (2015-present)  
Oncotarget (2015-present)  
Public Library of Science Biology (PLoS Biol) (2013-2019)  
Rejuvenation Research (1999-present)  
Science of Aging Knowledge Environment (2000-2006)

### **Organizer, Major Conferences and Courses**

1998 Cold Spring Harbor Conference on Genetics of Aging  
1999 Keystone Symposium on Aging: Genetic & Environmental Influences on Life Span  
1999 American Society for Biochemistry & Molecular Biol, Symposium on Cellular Aging and Immortalization  
2002 Keystone Symposium on DNA Helicases, Cancer and Aging  
2006 Cold Spring Harbor Conference on Molecular Genetics of Aging  
2006 NIA Summer Training Course in Experimental Aging Research  
2007 American Association for Cancer Research, Translational Research at the Aging and Cancer Interface  
2008 Cold Spring Harbor Conference on Molecular Genetics of Aging  
2009 NIA Summer Training Course in Experimental Aging Research  
2010 Cold Spring Harbor Conference on Molecular Genetics of Aging  
2012 Progeria Research Foundation, Frontiers in Progeria Research  
2012 NIA Summer Training Course in Experimental Aging Research  
2012 Keystone Symposium on Diseases of Aging  
2012 Cold Spring Harbor Conference on Molecular Genetics of Aging  
2015 NIA Summer Training Course in Experimental Aging Research  
2016 Zing Conference on Cell Fate Diversity in Aging

### **Scientific Founder**

UNITY Biotechnology (co-founders: Jan van Deursen, Mayo Clinic and Daohong Zhou, University of Arkansas)

### **Current basic research support**

1. NIH/NIA, R37 AG009909 Cellular senescence and control of gene expression  
3/01/06 – 6/30/16 Role: PI

This project has been the recipient of two consecutive MERIT awards and is the major grant that funds the fundamental biology of cellular senescence and aging in my laboratory. It continues to explore the molecular and cellular causes of cellular senescence, and the effects of senescent cells on aging phenotypes and age-related pathologies using both mouse models and human cells and tissues. Currently on no-cost extension.

2. NIH/NIA, P01 AG017242 DNA repair, mutations and cell aging

5/01/12 – 4/30/17

Role: PI; Co-PI: Lisa Ellerby, Buck Institute (no salary as per NIH policy)

This grant provides stipends for 10 postdoctoral fellows per year in >30 laboratories at the Buck Institute for Research on Aging, the Lawrence Berkeley National Laboratory, Stanford University and the University of California Berkeley.

4. NIH/NIEHS, R01 ES019935      Novel interactions of DNA repair processes in replication fork maintenance  
12/01/11-11/30/16                      Role: Co-PI; Project PI: Priscilla Cooper, Lawrence Berkeley Natl Laboratory  
This project explores the role of DNA repair proteins XPG and WRN in maintaining replication fork integrity and preventing deleterious DNA damage responses in the face of endogenous and exogenous damage.
5. NIH/NIA, P01 AG041122      Cellular senescence and aging  
5/01/12 – 4/30/17                      Role: Subproject PI; Program PI: James Kirkland, Mayo Clinic  
This subproject determines the mechanisms by which the mTOR longevity pathway drives senescence-associated inflammation, and tests interventions for ability to delay aging and age-related disease.
6. NIH/NCI, R01 CA166347      The role of senescent cells in late-life tumorigenesis  
4/1/12 – 3/31/17                      Role: Co-PI; Project PI: Jan van Deursen, Mayo Clinic  
This project will test the hypothesis that senescent cells fuel cancer progression. The Campisi lab will characterize senescent phenotypes of cells from lung and mammary tumors in INK-ATTAC mouse tissues.
7. NIH/NIA, R56 AG052988      Senescent cells as a source of pro-geronic factors  
04/01/16 – 3/31/17                      Role: PI; Irina Conboy, co-PI  
This 1 year bridge grant provides funds to acquire additional preliminary data exploring the role of senescent cells in creating a pro-aging systemic milieu in mice in anticipation of resubmission. Resubmission is planned for early 2017.
8. NIH/NIA, AG051729      Cellular senescence as a mediator of mitochondrial dysfunction-induced aging  
10/01/16-- 09-30/21 (anticipated)      Role: PI; Martin Brand, co-PI  
This proposal will explore how mitochondrial dysfunction induces cellular senescence, a characteristic secretory phenotype and age-related phenotypes and pathologies in human cells and mouse models.

## Publications

### Original Research Articles

- Suzuki H, Nishimura Y, Iketani H, Campisi J, Hirashima A, Inouye M, Hirota Y. 1976. A novel mutation that causes a structural change in a lipoprotein in the outer membrane of *Escherichia coli*. J Bact 127:494-2501.
- Campisi J, Scandella CJ. 1978. Fertilization-induced changes in membrane fluidity of sea urchin eggs. Science 199:1336-1337.
- Campisi J, Scandella CJ. 1980. Bulk membrane fluidity increases after fertilization and partial activation of sea urchin eggs. J Biol Chem 255:5411-5419.
- Campisi J, Scandella CJ. 1980. Calcium induces a decrease in membrane fluidity of the sea urchin cortex after fertilization. Nature 286:185-186.
- Campisi J, Pardee AB. 1981. Cellular mutations and drug resistance probed by herpes simplex virus. J Cell Physiol 109:469-480.
- Campisi J, Medrano EE, Morreo G, Pardee AB. 1982. Restriction point control of cell growth by a labile protein: Evidence for increased stability in transformed cells. Proc Natl Acad Sci USA 79:436-440.
- Campisi J, Pardee AB. 1982. An artifact in measurement of S phase initiation and its implications for the kinetics of S phase-specific enzyme activities. Exp Cell Res 140:389-393.
- Campisi J, Hafner J, Boorstein RB, Pardee AB 1983. Hereditary orotic aciduria, xeroderma pigmentosum and Lesch-Nyhan syndrome probed by herpes simplex virus: <sup>125</sup>I--Iododeoxycytidine incorporation as an assay for viral growth. J Cell Physiol 114:21-28.
- Campisi J, Medrano EE. 1983. Cell cycle perturbations in normal and transformed cells caused by detachment from the substratum. J Cell Physiol 114:53-60.
- Boorstein R, Campisi J, Pardee AB. 1983. The study of DNA repair defects using <sup>125</sup>I-Iododeoxycytidine incorporation as an assay for viral growth. Mutation Res 112:85-95.
- Campisi J, Gray HE, Pardee AB, Dean M, Sonenshein GE. 1984. Cell cycle control of *c-myc* but not *c-ras* is lost following chemical transformation. Cell 36:241-247.
- Campisi J, Morreo G, Pardee AB. 1984. Kinetics of G<sub>1</sub> transit following brief starvation for serum factors. Exp Cell Res 152:459-466.

- fibroblasts: Effects on cellular and viral growth. Proc Natl Acad Sci USA 81:7117-7621.
- Dean M, Levine RA, Campisi J. 1986. *c-myc* regulation during retinoic acid-induced differentiation of F9 cells is posttranscriptional and associated with growth arrest. Molec Cell Biol 6:518-524.
- Dean M, Levine RA, Ran W, Kindy MS, Sonenshein GE, Campisi J. 1986. Regulation of *c-myc* transcription and mRNA abundance by serum growth factors and cell contact. J Biol Chem 261:9161-9166.
- Ran W, Dean M, Levine RA, Henkle C, Campisi J. 1986. Induction of *c-fos* and *c-myc* mRNA by epidermal growth factor and calcium ionophore is cAMP-dependent. Proc Natl Acad Sci USA 83:8216-8220.
- McCaffrey P, Ran W, Campisi J, Rosner MR. 1987. Two independent growth factor-generated signals regulate *c-fos* and *c-myc* mRNA levels in Swiss 3T3 cells. J Biol Chem 262:1442-1445.
- Nepveu A, Levine RA, Campisi J, Greenberg ME, Ziff EB, Marcu KB. 1987. Alternate modes of *c-myc* regulation in growth factor stimulated and differentiating cells. Oncogene 1:243-250.
- Wright TC, Pukac LA, Castellot JJ, Karnovsky MJ, Levine RA, Kim-Park, H-Y, Campisi J. 1989. Heparin suppresses the induction of *c-fos* and *c-myc* mRNA in murine fibroblasts by selective inhibition of a protein kinase C-dependent pathway. Proc Natl Acad Sci USA 86:3199-3203.
- Lu K, Levine RA, Campisi J. 1989. *c-ras-Ha* gene expression is regulated by insulin or insulin-like growth factor and epidermal growth factor in murine fibroblasts. Molec Cell Biol 9:411-3417.
- Seshadri T, Campisi J. 1990. *c-fos* repression and an altered genetic program in senescent human fibroblasts. Science 247:205-209.
- Clement A, Campisi J, Farmer SR, Brody JS. 1990. Constitutive expression of growth-related mRNAs in proliferating and nonproliferating lung epithelial cells in primary culture: Evidence for growth-dependent translational control. Proc Natl Acad Sci USA 87:318-322.
- Levine RA, Seshadri T, Hann SR, Campisi J. 1990. Posttranscriptional changes in growth factor-inducible gene regulation caused by antiproliferative interferons. Cell Regulation 1:215-226.
- Park HY, Campisi J. 1990. Posttranslational regulation of cAMP-dependent protein kinase by phorbol esters in normal and chemically transformed 3T3 fibroblasts. Cancer Res 50:7145-7152.
- Lu K, Campisi J. 1992. *Ras* proteins are essential and selective for the action of IGF-I late in the G1 phase of the cell cycle in BALB/c mouse fibroblasts. Proc Natl Acad Sci USA 89:3889-3993.
- Desprez PY, Roskelley C, Campisi J, Bissell MJ. 1993. Isolation of functional cell lines from a mouse mammary epithelial cell strain: The importance of basement membrane and cell-cell interaction. Molec Cell Differentiation 1:99-110.
- Seshadri T, Uzman A, Oshima J, Campisi J. 1993. Identification of a transcript that is selectively down-regulated in senescent human fibroblasts: Cloning, sequence analysis and regulation of the human L7 ribosomal protein gene. J Biol Chem 268:18474-18480.
- Oshima J, Steinman K, Campisi J, Schlegel R. 1993. Modulation of cell growth, p34/cdc2 and cyclin A levels by SV40 large T antigen. Oncogene 8: 2987-2993.
- Hara E, Yamaguchi T, Nojima H, Ide T, Campisi J, Okayama H, Oda K. 1994. Id-related genes encoding helix-loop-helix proteins are required for G1 progression and are repressed in senescent human fibroblasts. J Biol Chem 269:2139-2145.
- Dimri GP, Campisi J. 1994. Altered profile of transcription factor binding activities during cellular senescence. Exp Cell Res 212:132-140.
- Dimri GP, Hara E, Campisi J. 1994. Regulation of two E2F-related genes in presenescent and senescent human fibroblasts. J Biol Chem 269:16180-16186.
- Hara E, Campisi J. 1994. cDNA synthesis and asymmetric PCR on Oligotex for subtractive cDNA cloning. J NIH Res 6:77.
- Oshima J, Campisi J, Tannock CA, Sybert VP, Martin GM. 1995. Regulation of *c-fos* in senescing Werner syndrome fibroblasts differs from that observed in senescing fibroblasts from normal donors. J Cell. Physiol 162: 277-283.
- Desprez P, Hara E, Bissell M, Campisi J. 1995. Suppression of mammary epithelial cell differentiation by the helix-loop-helix protein, Id-1. Molec Cell Biol 15:3398-3404.
- Dimri G, Lee, X, Basile G, Acosta M, Scott G, Roskelley C, Medrano EE, Linskens M, Rubelj I, Pereira-Smith O, Peacocke M, Campisi J. 1995. A novel biomarker identifies senescent human cells in culture and aging skin in vivo. Proc Natl Acad Sci USA 92:9363-9367.
- Hara E, Uzman JA, Dimri GP, Nehlin JO, Testori A, Campisi J. 1996. The helix-loop-helix protein Id-1 and a retinoblastoma protein binding mutant of SV40 T antigen synergize to reactivate DNA synthesis in senescent human fibroblasts. Dev Genet 18:161-172.
- Dimri GP, Nakanishi M, Desprez PY, Smith JR, Campisi J. 1996. Inhibition of E2F activity by the p21 inhibitor of cyclin-dependent protein kinases in cells expressing or lacking a functional retinoblastoma protein. Molec Cell Biol

- Nehlin JO, Hara E, Kuo W, Collins C, Campisi J. 1997. Genomic organization, sequence and chromosomal localization of the human helix-loop-helix Id-1 gene. *Bioch Biophys Res Comm* 231:628-634.
- Rubelj R, Venable SF, Lednický J, Butel JS, Bilyeu T, Darlington G, Surmacz E, Campisi J, Pereira-Smith OM. 1997. Loss of T antigen sequences allows SV40-transformed human cells to escape crisis and acquire the senescent phenotype. *J Gerontol* 52:8229-8234.
- Chen QM, Bartholomew JC, Campisi J, Acosta M, Reagen JD, Ames BN. 1998. Molecular analysis of H<sub>2</sub>O<sub>2</sub>-induced senescent-like growth arrest in normal human fibroblasts: p53 and Rb control G(1) arrest but not cell replication. *Biochem J* 332:43-50.
- Desprez PY, Thomasset N, Lin CQ, Sympson CJ, Bissell MJ, Campisi J. 1998. A novel pathway for mammary epithelial cell invasion induced by the helix-loop-helix protein Id-1. *Molec Cell Biol* 18:4577-4588.
- Huang S, Li B, Gray MD, Oshima J, Mian S, Campisi J. 1998. The premature aging syndrome protein WRN is a 3' to 5' exonuclease. *Nature Genet* 20:114-116.
- Kim SH, Kaminker P, Campisi J. 1999. Tin2, a new regulator of telomere length in human cells. *Nature Genet* 23:405-412.
- Dimri GP, Acosta M, Itahana K, Campisi J. 2000. Regulation of a senescence checkpoint by the E2F1 transcription factor and p14/ARF tumor suppressor. *Molec Cell Biol* 20:273-285.
- Xu W, Haddad MM, Bischof O, Campisi J, Medrano EE. 2000. Regulation of Microphthalmia-associated transcription factor MITF levels by association with the ubiquitin-conjugating enzyme hUBC9. *Exp Cell Res* 255:135-143.
- Xu W, Haddad MM, Angelis K, Shardy DL, Bischof O, Campisi J, Stavenezzer E, Medrano E. 2000. SKI acts as a co-repressor of Smad2 and Smad3 to regulate the response to TGF- $\beta$ . *Proc Natl Acad Sci USA*. 97: 5924-5929.
- Lin CQ, Singh J, Murata K, Itahana Y, Parrinello S, Liang SH, Gillett CE, Campisi J, Desprez P. 2000. A role for Id-1 in the aggressive phenotype and hormone response of human breast cancer cells. *Cancer Res* 60:1332-1340.
- Huang S, Beresten S, Li B, Oshima J, Ellis NA, Campisi J. 2000. Characterization of the human and mouse WRN 3' to 5' exonuclease. *Nucl Acids Res* 28:2396-2405.
- Hsu HL, Gilley D, Galande SA, Hande MP, Allen B, Kim SH, Li GC, Campisi J, Kohwi-Shigematsu T, Chen DJ. 2000. Ku acts in a unique way at the mammalian telomere to prevent end joining. *Genes Dev* 14:2807-2812.
- Bischof O, Galande S, Farzaneh F, Kohwi-Shigematsu T, Campisi J. 2001. Selective cleavage of BLM, the Bloom syndrome protein, during apoptotic cell death. *J Biol Chem* 276:12068-12075.
- Bischof O, Kim SH, Irving J, Beresten S, Ellis NA, Campisi J. 2001. Regulation and localization of the Bloom syndrome protein in response to DNA damage. *J Cell Biol* 153:367-380.
- Kaminker PG, Kim SH, Taylor RD, Zebarjadian Y, Funk WD, Morin GB, Yaswen P, Campisi J. 2001. TANK2, a new TRF1-associated PARP, causes rapid induction of cell death upon overexpression. *J Biol Chem* 276:35891-35899.
- Yannone SM, Roy S, Chan D, Murphy M, Huang S, Campisi J, Chen D. 2001. Werner syndrome protein is regulated and phosphorylated by DNA-dependent protein kinase. *J Biol Chem* 276:38242-38248.
- Krtolica A, Parrinello S, Lockett S, Desprez P, Campisi J. 2001. Senescent fibroblasts promote epithelial cell growth and tumorigenesis: A link between cancer and aging. *Proc Natl Acad Sci USA*. 98:12072-12077.
- Parrinello S, Lin CQ, Murata K, Itahana Y, Singh J, Krtolica A, Campisi J, Desprez PY 2001. Id-1, ITF-2 and Id-2 comprise a network of helix-loop-helix proteins that regulate mammary epithelial cell proliferation, differentiation and apoptosis. *J Biol Chem* 276:39213-39219.
- Lim CS, Mian IS, Dernburg A, Campisi J. 2001. *C. elegans clk-2*, a gene that limits life span, encodes a telomere length regulator similar to yeast telomere binding protein Tel2p. *Curr Biol* 11:1706-1710.
- Oshima J, Huang S, Pae C, Campisi J, Schiestl RH. 2002. Lack of WRN facilitates extensive deletion at non-homologous joining ends. *Cancer Res* 62:547-551.
- Itahana K, Dimri GP, Hara E, Itahana Y, Zou Y, Desprez P, Campisi J. 2002. A role for p53 in maintaining and establishing the quiescence growth arrest in human cells. *J Biol Chem* 277:18206-18214.
- Rubio MA, Kim SH, Campisi J. 2002. Reversible manipulation of telomerase expression and telomere length: Implications for the ionizing radiation response and replicative senescence of human cells. *J Biol Chem* 277:28609-28617.
- Dimri GP, Martinez JL, Jacobs J, Keblusek P, Itahana K, van Lohuizen M, Campisi J, Wazer DE, Band V. 2002. BMI-1 oncogene induces telomerase and immortalizes human mammary epithelial cells. *Cancer Res* 62:4736-4745.
- Krtolica A, Ortiz de Solorzano C, Lockett S, Campisi J. 2002. Quantification of epithelial cell proliferation in co-culture with fibroblasts by fluorescence image analysis. *Cytometry* 49:73-82.
- Itahana K, Zou Y, Itahana Y, Martinez JL, Beausejour C, Jacobs J, van Lohuizen M, Band V, Campisi J, Dimri GP. 2003. Control of the replicative life span of human fibroblasts by p16 and the polycomb protein Bmi-1. *Molec Cell Biol* 23:389-401.
- Kim SH, Parrinello S, Kim J, Campisi. 2003. *Mus musculus* and *Mus spretus* homologues of the human telomere

- Beausejour CM, Krtolica A, Galimi F, Narita M, Lowe S, Yaswen Y, Campisi J. 2003. Reversal of human cellular senescence: Roles of the p53 and p16 pathways. *EMBO J* 22:4212-4222.
- Chen LJ, Huang S, Lee L, Davalos A, Schiestl RH, Campisi J, Oshima J. 2003. WRN, the protein deficient in Werner syndrome, plays a critical structural role in optimizing DNA repair. *Aging Cell* 2:191-199.
- Davalos A, Campisi J. 2003. Bloom syndrome cells undergo p53-dependent apoptosis and delayed assembly of BRCA1 and NBS1 at stalled replication forks. *J Cell Biol* 162:1197-1209.
- Tan S, Guschin D, Davalos A, Lee YL, Snowden AW, Jouvenot Y, Zhang HS, Howes K, McNamara AR, Lai A, Ullman C, Reynolds L, Moore M, Isalan M, Berg LP, Campos B, Qi H, Spratt SK, Case CC, Pabo CO, Campisi J, Gegrory PD. 2003. ZFP-target gene regulation: Genome-wide single gene specificity. *Proc Natl Acad Sci USA* 100:11997-12002.
- Chen D, Xu W, Bales E, Colmenares C, Conacci-Sorrell M, Ishii S, Stavenezer E, Campisi J, Fisher DE, Ben-Ze'ev A, Medrano EE. 2003. SKI activates Wnt/beta-catenin signaling in human melanoma. *Cancer Res* 63:6626-6634.
- Busuttil RA, Rubio M, Dolle MET, Campisi J, Vijg J. 2003. Oxygen accelerates the accumulation of mutations during the senescence and immortalization of murine cells in culture. *Aging Cell* 2:287-294.
- Rubio M, Davalos A, Campisi J. 2004. Telomere length regulates the effects of telomerase on the cellular response to genotoxic stress. *Exp Cell Res* 298:17-27.
- Chiang J, Hatchcock K, Kim SH, Campisi J, Hodes R. 2004. Telomere associated protein TIN2 is essential for early embryonic development through a telomerase independent pathway. *Molec Cell Biol* 24:6631-6634.
- Kim SH, Beausejour C, Davalos AR, Kaminker P, Heo SJ, Campisi J. 2004. TIN2 mediates the functions of TRF2 at telomeres. *J Biol Chem* 279:43799-43804.
- Davalos AR, Kaminker P, Hansen RK, Campisi J. 2004. ATR and ATM-dependent movement of BLM helicase during replication stress ensures optimal ATM activity and 53BP1 focus formation. *Cell Cycle* 3:1579-1586.
- Parrinello S, Coppe JP, Krtolica A, Campisi J. 2005. Stromal-epithelial interactions in aging and cancer: Senescent fibroblasts can alter epithelial cell differentiation. *J Cell Sci* 118:485-496.
- Kaminker P, Plachot C, Kim SH, Chung P, Crippin D, Petersen OW, Bissell MJ, Campisi J, Lelievre SA. 2005. Higher order nuclear organization in growth arrest of human mammary epithelial cells: A novel role for telomere-associated protein TIN2. *J Cell Sci* 118:1321-1330.
- Goldstein J, Rodier F, Garbe JC, Stampfer MR, Campisi J. 2005. Caspase-independent cytochrome c release is a sensitive measure of low level apoptosis in cell culture models. *Aging Cell* 4:217-222.
- Busuttil RA, Rubio M, Dolle MET, Campisi J, Vijg J. 2006. Mutation frequencies and spectra depend on growth state and passage number in cells cultured from lacZ-plasmid reporter mice. *DNA Repair* 5:52-60.
- Huang S, Chen L, Libina N, Janes J, Martin GM, Campisi J, Oshima J. 2006. Correction of cellular phenotypes of Hutchinson-Gilford Progeria cells by RNA interference. *Hum Molec Genet* 118:444-450.
- Chiang J, Nguyen M, Gurunathan S, Kaminker P, Tessarollo L, Campisi J, Hodes R. 2006. Generation and characterization of telomere length maintenance in tankyrase 2-deficient mice. *Molec Cell Biol* 26:2037-2043.
- Cheng WH, Kusumoto R, Opresko PL, Sui XF, Huang S, Nicolette ML, Pauli TT, Campisi J, Seidman M, Bohr VA. 2006. Collaboration of Werner syndrome protein and BRCA1 in cellular responses to DNA interstrand cross-links. *Nucl Acids Res* 34:2751-2760.
- Coppe JP, Kauser K, Campisi J, Beausejour CM. 2006. Secretion of vascular endothelial growth factor by primary human fibroblasts at senescence. *J Biol Chem* 281:29568-29574.
- Beliveau A, Bassett E, Lo AT, Garbe J, Rubio MA, Bissell MJ, Campisi J, Yaswen P. 2007. p53-dependent integration of telomere and growth factor deprivation signals. *Proc Natl Acad Sci USA* 104:4431-4436.
- Kim SH, Davalos A, Heo SJ, Rodier F, Zou Y, Kaminker P, Yannone S, Campisi J. 2008. Telomere dysfunction and cell survival: Roles for distinct TIN2-containing complexes. *J Cell Biol* 181:447-460.
- Coppe JP, Boysen M, Sun CH, Wong BJB, Mo K, Park NH, Desprez PY, Campisi J, Krtolica A. 2008. A role for fibroblasts in mediating the effects of tobacco-induced epithelial cell growth and invasion. *Molec Cancer Res* 6:1085-1098.
- Busuttil RA, Munoz DP, Garcia AM, Rodier F, Kim WH, Suh Y, Hasty P, Campisi J, Vijg J. 2008. Effect of Ku80 deficiency on mutation frequencies and spectra at a lacZ reporter locus in mouse tissues and cells. *PLoS ONE* 3:e3458.
- Bhaumik D, Scott GK, Schokrpur S, Patil CK, Campisi J, Benz CC. 2008. Expression of microRNA 146 suppresses NF-kB activity with reduction of metastatic potential in breast cancer cells. *Oncogene* 27:5643-5647.
- Holcomb V, Rodier F, Choi YJ, Busuttil R, Vogel H, Vijg J, Campisi J, Hasty P. 2008. Ku80 deletion suppresses spontaneous tumors and induces p53-mediated DNA damage responses. *Cancer Res*. 68:9497-9502.
- Coppe JP, Patil CK, Rodier F, Sun Y, Munoz DP, Goldstein J, Nelson PS, Desprez PY, Campisi J. 2008. Senescence-associated secretory phenotypes reveal cell non-autonomous functions of oncogenic RAS and the p53 tumor

- Rodier F, Coppe JP, Patil CK, Hoeijmakers WAM, Munoz DP, Raza SR, Freund A, Campeau E, Davalos AR, Campisi J. 2009. Persistent DNA damage signaling triggers senescence-associated inflammatory cytokine secretion. *Nature Cell Biol* 11:973-979.
- Campeau E, Ruhl VE, Rodier F, Smith CL, Rahmberg BL, Fuss JO, Campisi J, Yaswen P, Cooper PK, Kaufman PD. 2009. A versatile viral system for expression and depletion of proteins in mammalian cells. *PLoS ONE* 6:e6529.
- Bhaumik D, Scott GK, Schokrpur S, Patil CK, Orjalo A, Rodier F, Lithgow G, Campisi J. 2009. MicroRNAs miR-146a/b negatively modulate the senescence-associated inflammatory mediators IL-6 and IL-8. *Aging* 1:402-411.
- Orjalo A, Bhaumik D, Gengler B, Scott GK, Campisi J. 2009. Cell surface IL-1a is an upstream regulator of the senescence-associated IL6/IL-8 cytokine network. *Proc Natl Acad Sci USA* 106:17030-17035.
- Coppe JP, Patil CK, Rodier F, Krtolica A, Beausejour C, Parrinello S, Hodgson G, Chin K, Desprez PY, Campisi J. 2010. A human-like senescence-associated secretory phenotype is conserved in mouse cells dependent on physiological oxygen. *PLoS ONE* 5:e9188.
- Arnoult N, Schluth-Bolard C, Letessier A, Draskovic I, Bouarich-Bourimi R, Campisi J, Kim SH,\* Boussouar A, Ottaviani A, Magdinier F, Gilson E, Londono-Vallejo A. 2010. Replication timing of human telomeres is chromosome-specific, influenced by subtelomeric structures and connected to nuclear localization. *PLoS Genet* 6:e1000920.
- Held JM, Danielson SR, Behring JB, Atsriku C, Britton GJ, Puckett RL, Schilling B, Campisi J, Benz CC, Gibson BW. 2010. Targeted quantitation of site-specific cysteine oxidation in endogenous proteins using a differential alkylation and multiple reaction monitoring mass spectrometry approach. *Molec Cell Proteomics* 9:1400-1410.
- Le O, Rodier F, Fontaine F, Coppe JP, Campisi J, DeGregori J, Iavardiere C, Kokta N, Haddad E, Beausejour C. 2010. Ionizing radiation-induced long term senescence markers in mice is independent of p53 and immune status. *Aging Cell* 9:398-409.
- Bazarov AV, van Sluis M, Hines C, Bassett E, Beliveau A, Campeau E, Mukhopadhyay R, Lee WJ, Melodyev S, Zaslavsky Y, Lee L, Rodier F, Chicas A, Lowe SW, Benhattar J, Ren B, Campisi J, Yaswen P. 2010. p16 mediated suppression of telomerase in normal and malignant human breast cells. *Aging Cell* 9:736-746.
- Rodier F, Munoz DP, Teachenor R, Chu V, Le O, Bhaumik D, Coppe JP, Campeau E, Beausejour C, Kim SH, Davalos AR, Campisi J. 2011. DNA-SCARS: Distinct nuclear structures that sustain the damage-induced senescence growth arrest and inflammatory cytokine secretion. *J Cell Sci* 124:68-81.
- Krtolica A, Larocque N, Genbacev O, Dusko I, Coppe JP, Patil C, Zdravkovic T, McMaster M, Campisi J, Fisher S. 2011. Groa, which supports human embryonic stem cell self-renewal or adoption of a neuronal fate, operates in the context of cell-cell and cell-matrix contracts. *Differentiation* 81:222-232.
- Freund A, Patil CK, Campisi J. 2011. p38MAPK is a novel DNA damage response-independent regulator of the senescence-associated secretory phenotype. *EMBO J* 30:1536-1548.
- Trego KS, Chernikova SB, Davalos AR, Perry JJ, Finger LD, Ng C, Tsai MS, Yannone SM, Tainer JA, Campisi J, Cooper PK. 2011. The DNA repair endonuclease XPG interacts directly and functionally with the WRN helicase defective in Werner syndrome. *Cell Cycle* 10:1998-2007.
- Bird JL, Jennert-Burton KC, Bachler MA, Mason PA, Lowe JE, Heo SJ, Campisi J, Faragher RG, Cox LS. 2011. Recapitulation of Werner syndrome sensitivity to camptothecin by limited knock down of WRN helicase/exonuclease. *Biogerontol* 13: 49-62.
- Coppe JP, Rodier F, Patil CK, Freund A, Desprez PY, Campisi J. 2011. Tumor suppressor and aging biomarker p16(INK4a) induces cellular senescence without the associated inflammatory secretory phenotype. *J Biol Chem* 286:36396-36403.
- Velarde MC, Flynn JM, Day NU, Melov S, Campisi J. 2012. Mitochondrial oxidative stress caused by Sod2 deficiency promotes cellular senescence and aging phenotypes in the skin. *Aging* 4:3-12.
- Haines B, Demaria M, Mao X, Xie L, Campisi J, Jin K, Greenberg DA. 2012. Hypoxia-inducible factor-1 and neuroglobin expression. *Neurosci Lett* 514: 137-140.
- Freund A, Laberge RM, Demaria M, Campisi. 2012. Lamin B1 loss is a senescence-associated biomarker. *Molec Biol Cell* 23:2066-2075.
- Demaria M, Misale S, Giorgi C, Miano V, Camporeale A, Campisi J, Pinton P, Poli V. 2012. STAT3 can serve as a hit in the process of malignant transformation of primary cells. *Cell Death Differ* 19: 1390-1397.
- Laberge RM, Zhou L, Sarantos MR, Rodier F, Freund A, deKeizer PLJ, Liu S, Demaria M, Cong YS, Kapahi P, Desprez PY, Hughes RE, Campisi J. 2012. Glucocorticoids suppress selected components of the senescence-associated secretory phenotype. *Aging Cell* 11:569-578.
- Zou Y, Zhang N, Ellerby LM, Davalos AR, Zeng X, Campisi J, Desprez PY. 2012. Responses of human embryonic stem cells and their differentiated progeny to ionizing radiation. *Biochem Biophys Res Comm* 426: 100-105.
- Gombar S, Jung HJ, Dong F, Calder B, Atzmon G, Barzilai N, Tian XL, Pothof J, Howieijmakers JH, Campisi J, Vijg J,

- Sun Y, Campisi J, Higano C, Beer TM, Porter P, Coleman I, True L, Nelson PS. 2012. Treatment-induced damage to the tumor microenvironment promotes prostate cancer therapy resistance through WNT16B. *Nature Med* 18:1359-1368.
- Davalos AR, Kawahara M, Malhotra GK, Schaum N, Huang J, Ved U, Beausejour C, Coppe JP, Rodier F, Campisi J. 2013. p53-dependent release of Alarmin HMGB1 is a central mediator of senescent phenotypes. *J Cell Biol* 201:613-629.
- Laberge RM, Adler D, Demaria M, Mecgtouf N, Teachenor R, Cardin GB, Desprez PY, Campisi J, Rodier F. 2013. Mitochondrial DNA damage induces apoptosis in senescent cells. *Cell Death & Disease* 4:e727.
- Sepulveda JC, Tome M, Fernandez ME, Delgado M, Campisi J, Bernad A, Gonzalez JA. 2014. Cell senescence abrogates the therapeutic potential of human mesenchymal stem cells in a lethal endotoxemia model. *Stem Cells* 32:1865-1877.
- Tome M, Sepulveda JC, Delgado M, Andrades JA, Campisi J, Gonzalez JA, Bernad A. 2014. Mir-335 correlates with senescence/aging in human mesenchymal stem cells and inhibits their therapeutic actions through inhibition of AP-1 activity. *Stem Cells* 32:2229-2244.
- Demaria M, Ohtani N, Youssef SA, Rodier F, Toussaint W, Mitchell JR, Laberge RM, Vijg J, van Steeg H, Dolle ME, Hoeijmakers JH, de Bruin A, Hara E, Campisi J. 2014. An essential role for senescent cells in optimal wound healing through secretion of PDGF-AA. *Dev Cell* 31:722-733.
- White RR, Milholland B, de Bruin A, Curran S, Laberge RM, van Steeg H, Campisi J, Maslov AY, Vijg J. 2015. Controlled induction of DNA double-strand breaks in the mouse liver induces features of tissue aging. *Nature Comm* 6:6790.
- Laberge RM, Sun Y, Orjalo AV, Patil PK, Freund A, Zhou L, Curran SC, Davalos AR, Wilson-Edell KA, Liu S, Limbad C, Demaria M, Li P, Hubbard GB, Ikeno Y, Javors M, Desprez PY, Benz CC, Kapahi P, Nelson PS, Campisi J. 2015. mTOR regulates the tumour-promoting senescence-associated secretory phenotype by promoting IL-1a translation. *Nature Cell Biol* 17:1049-1061.
- Christy B, Demaria M, Campisi J, Huang J, Jones D, Dodds SG, Williams C, Hubbard G, Livi CB, Gao X, Weintraub S, Curiel T, Sharp ZD, Hasty P. 2015. p53 and rapamycin are additive. *Oncotarget* 6:15802-15813.
- Velarde MC, Demaria M, Melov S, Campisi J. 2015. Pleiotropic age-dependent effects of mitochondrial dysfunction on epidermal stem cells. *Proc Natl Acad Sci USA* 112:10407-10412.
- Mendez JA, Benboudjema L, Vellon L, Rubio MA, Espinoza I, Campisi J, Lupu R. 2015. Heregulin, a new interactor of the telosome/shelterin complex in human telomeres. *Oncotarget* 6:39408-39421.
- Mendez JA, Rubio MA, Campisi J, Lupu R. 2015. Heregulin, a new regulator of telomere length in human cells. *Oncotarget* 6:39422-39436.
- Kang C, Xu Q, Martin TD, Li MZ, Demaria M, Aron L, Lu T, Yankner BA, Campisi J, Elledge SJ. 2015. The DNA damage response activates inflammation and senescence by protecting GATA4 from selective autophagy. *Science* 349:aaa5612.
- Liu S, Uppal H, Demaria M, Desprez PY, Campisi J, Kapahi P. 2015. Simvastatin suppresses breast cancer cell proliferation induced by senescent cells. *Science Rep* 5:17895.
- Kruiswijk F, Hasenfuss SC, Sivapatham R, Baar MP, Putavet D, Naipal KA, van den Broek NJ, Kruit W, van der Spek PJ, van Gent DC, Brenkman AB, Campisi J, Burgering BM, Hoeijmakers JH, de Keizer PL. 2015. Targeted inhibition of metastatic melanoma through interference with Pin1-FOXO1 signaling. *Oncogene* 35:2166-2177.
- Chang J, Wang Y, Shao L, Laberge RM, Demaria M, Campisi J, Janakiraman K, Sharpless NE, Ding S, Feng W, Luo Y, Wang X, Aykin-Burns N, Krager K, Ponnappan U, Hauer-Jensen M, Meng A, Zhou D. 2016. Clearance of senescent cells by ABT263 rejuvenates aged hematopoietic stem cells in mice. *Nature Med* 22:78-83.
- Wiley CD, Velarde MC, Lecot P, Liu S, Sarnoski EA, Shirakawa K, Lim H, Davis S, Ramanathan A, Gerencser AA, Verdin E, Campisi J. 2016. Mitochondrial dysfunction induces senescence with a distinct secretory phenotype. *Cell Metab* 23:303-314.
- Menon R, Behnia F, Poletini J, Saade GR, Campisi J, Velarde M. 2016. Placental membrane aging and HMGB1 signaling associated with human parturition. *Aging* 8:216-230.
- Trego KS, Groesser T, Davalos AR, Pappys AC, Zhao W, Nelson MR, Hlaing A, Shih B, Rydberg B, Pluth JM, Tsai MS, Hoeijmakers JH, Sung P, Weise C, Campisi J, Cooper PK. 2016. Non-catalytic roles for XPG with BRCA1 and BRCA2 in homologous recombination and genome stability. *Molec Cell* 61:535-546.
- Andriani GA, Almeida VP, Faggioli F, Mauro M, Tsai WL, Santambrogio L, Maslov A, Gadina M, Campisi J, Vijg J, Montagna C. 2016. Whole Chromosome Instability induces senescence and promotes the SASP. *Science Rep* 6:35218.
- Childs BG, Baker DJ, Wijshake T, Conover CA, Campisi J, van Deursen JM. 2016. Senescent intimal foam cells are deleterious at all stages of atherosclerosis. *Science* 354:472-477.



- Deursen JM, Campisi J, Elisseff JH. Clearance of senescent cells attenuates the development of post-traumatic osteoarthritis and creates a pro-regenerative environment. *Nature Med* (in press)
- Baar MP, Brandt RM, Klein JD, Putavet DA, Derks KW, van Cappellen WA, van Ijcken WF, Houtsmuller AB, Potof J, de Bruin RW, Hoeijmakers JH, Campisi J, de Keizer PL. Targeted apoptosis of senescent cells through FOXO4 inhibition counteracts chemotoxicity and features of aging in vivo. *Cell* (in press).

### **Review Articles, Book Chapters and Commentaries**

- Pardee AB, Campisi J, Croy RG. 1982. Differences in growth regulation of normal and tumor cells. *Ann NY Acad Sci* 397:121-129.
- Campisi J, Pardee AB. 1983. The initiation of DNA synthesis in cycling mammalian cells: Control by somatomedin (IGF-1) and rapid protein synthesis. In: *Progress in Cell Cycle Controls*. Chaloupka J, Kotyk A and Streiblova E, eds. Czech Academy of Science, Prague; pp. 96-105.
- Pardee AB, Campisi J, Gray HE, Dean M, Sonenshein G. 1985. Cellular oncogenes and growth control of 3T3 cells. In: *Mediators in Cell Growth and Differentiation*. Ford RJ and Maizel AL, eds. Raven Press, NY; pp. 21-29.
- Pardee AB, Campisi J, Croy RG. 1985. New directions: Molecular basis of growth regulation. *Cold Spring Harbor Symp Quant Biol (Growth Factors)* 12:389-392.
- Campisi J, Dean M, Sonenshein GE, Pardee AB. 1985. Regulation of *myc* and *ras* proto-oncogenes by exogenous factors and hormones. *Proc Intnatl Symp Growth and Differentiation of Cells in a Hormonally Defined Environment*. Springer Verlag, Amsterdam; pp. 411-417.
- Campisi J, Fingert H, Pardee AB. 1986. Basic biology and biochemistry of cancer. In: *Gynecological Oncology*, 1<sup>st</sup> ed; Knapp RC, Berkowitz RS, eds. Macmillan Co, NY; pp. 3-46.
- Ran W, Dean M, Levine RA, Campisi J. 1986. Activation of protooncogene expression by growth regulatory signals. *Curr Top Microbiol Immunol* 132:313-319.
- Dean M, Cleveland J, Kim-Park HY, Campisi J, Levine RA, Ihle JN, Rapp U. 1988. Deregulation of the *c-myc* and *N-myc* genes in transformed cells. *Curr Top in Microbiol Immunol* 141:216-222.
- Campisi J. 1989. Growth factors, protooncogenes and the control of cell proliferation: Lessons from the fibroblast. In: *Growth Factors and the Ovary*, Hirschfield A, ed.; Plenum Publ Corp, NY; pp. 61-74.
- Levine RA, Seshadri T, Hann SR, Campisi J. 1989. Interactions between interferon and growth factors in modulating cell proliferation. In: *Mechanisms of action and therapeutic application of biologicals in cancer and immune deficiency*. Alan P Liss, Inc, NY; pp. 229-238.
- Seshadri T, Campisi J. 1989. Growth factor-inducible gene expression in senescent human fibroblasts. *Exp Gerontol* 24:515-522.
- Clement A, Campisi J. 1991. Cell cycle regulation and growth control. In: *Comprehensive Textbook of Oncology*. Moossa AR, Schimpff SC, eds. Williams and Wilkins, Baltimore; pp. 6-13.
- Peacocke M, Campisi J. 1991. Cellular senescence: A reflection of normal growth control, differentiation, or aging? *J Cell Biochem* 45:147-155.
- McCormick A, Campisi J. 1991. Cellular aging and senescence. *Curr Opinion Cell Biol* 3:230-234.
- Campisi J. 1991. Growth control mechanisms and the state of cellular differentiation. In: *Perspectives on Cellular Regulation: From Bacteria to Cancer*. Campisi J, Cunningham D, Inouye M, Riley M, eds. Wiley-Liss, Inc, NY; pp. 153-164.
- Warner HR, Campisi J, Cristofalo VJ, Miller RA, Papaconstantinou J, Pereira-Smith O, Smith JR, Wang E. 1992. Control of cell proliferation in senescent cells. *J Gerontol* 47:185-189.
- Campisi J. 1992. Oncogenes, protooncogenes and tumor suppressor genes: A hitchhikers guide to senescence? *Exp Gerontol* 27:397-401.
- Fingert H, Campisi J, Pardee AB. 1992. Basic biology and biochemistry of cancer. In: *Gynecological Oncology*, 2<sup>nd</sup> ed. Knapp RC, Berkowitz RS, eds. Macmillan Co, NY; pp. 3-35.
- Campisi J. 1992. Gene expression in quiescent and senescent fibroblasts. *Ann NY Acad Sci* 663:195-202.
- Fingert H, Campisi J, Pardee AB. 1993. Cancer biology: Cell proliferation and differentiation. In: *Cancer Medicine*, 3<sup>rd</sup> ed. Holland JF, Frei E, Bast RC, Kufe DW, Morton DL, Weichselbaum RR, eds. Lea & Febiger, Inc, Philadelphia, pp. 1-14.
- Dimri GP, Campisi J. 1994. Molecular and cell biology of replicative senescence. *Cold Spring Harbor Symp on Quant Biol (Molecular Genetics of Cancer)* 59:67-73.
- Campisi J, Dimri GP, Hara E. 1996. Control of replicative senescence. In: *Handbook of the Biology of Aging*, 4<sup>th</sup> ed. Schneider E, Rowe J, eds. Academic Press, NY; pp. 121-149.
- Campisi J. 1996. Replicative senescence: An old lives tale? *Cell* 84:497-500.
- Campisi J, Dimri GP, Nehlin J, Testori A, Yoshimoto K. 1996. Coming of age in culture. *Exp Gerontol* 31:7-12.

- Campisi J. 1998. Cell senescence and aging. In: Germ Cell Development, Division, Disruption and Death. Zirkin BR, ed., Springer-Verlag, NY; pp. 121-129.
- Campisi J. 1998. The role of cellular senescence in skin aging. *J Invest Dermatol* 3:1-5.
- Campisi J. 1999. Replicative senescence and immortalization. In: The Molecular Basis of Cell Cycle and Growth Control. Stein G, Baserga R, Giordano A, Denhardt D, eds. Wiley-Liss, NY, pp 348-373.
- Campisi J. 1999. Cell senescence, aging and cancer. In: Molecular Biology of Aging, Alfred Benzon Symp 44:112-118.
- Campisi J. 1999. Cellular aging/Replicative senescence. In: Studies of Aging/Springer Lab Manual; Sternberg H, Timiras PS, eds. Springer-Verlag, Berlin, pp 35-45.
- Campisi J. 2000. Cancer, aging and cellular senescence. *In Vivo* 14:183-188.
- Campisi J. 2000. Aging chromatin and caloric restriction: Connecting the dots. *Science* 289:2062-2063.
- Campisi J, Warner HR. 2001. Aging in mitotic and post-mitotic cells. In: The role of DNA damage and repair in aging; Gilchrest B, Bohr W, eds. *Adv Cell Aging & Gerontol* 4:1-16.
- Campisi J. 2001. From cells to organisms: Can we learn about aging from cells in culture? *Exp Gerontol* 36:607-618.
- Itahana K, Dimri GP, Campisi J. (2001) Regulation of cellular senescence by p53. *Eur J Biochem* 268: 2784-2791.
- Bandhyopadhyay D, Timchenko N, Suwa T, Hornsby PJ, Campisi J, Medrano EE. 2001. The human melanocyte: A model system to study the complexity of cellular aging and transformation in non-fibroblastic cells. *Exp Gerontol* 36:1265-1275.
- Campisi J. 2001. Cellular senescence as a tumor suppressor mechanism. *Trends in Cell Biol* 11:27-31.
- Campisi J, Kim, SH, Lim CS, Rubio M. 2001. Cellular senescence, cancer and aging: The telomere connection. *Exp Gerontol* 36:1619-1637.
- Kim SH, Kaminker PG, Campisi J. 2002. Telomeres, cancer and aging: In search of a happy ending. *Oncogene* 21:503-511.
- Campisi, J. 2002. Between Scylla and Charybdis: p53 links tumor suppression and aging. *Mech Ageing Dev* 123:567-573.
- Krtolica A, Campisi J. 2002. Cancer and aging: A model for the cancer promoting effects of the aging stroma. *Int J Biochem Cell Biol* 34:1401-1414.
- Campisi J. 2002. Cellular senescence and cell death. In *Physiological Basis of Aging and Geriatrics*; Timiras PS, ed. CRC Press, Boca Raton FL; pp. 47-60.
- Campisi J. 2003. Cellular senescence. In *Chromosomal Instability and Aging: Basic Science and Clinical Implication*; Hisama FM, Weissman SM, Martin GM, eds. Marcel Dekker, NY; pp 29-49.
- Campisi J. 2003. Cellular senescence and apoptosis: How cellular responses may influence aging phenotypes. *Exp Gerontol* 38:5-11.
- Hasty P, Campisi J, Hoeijmakers J, Van Steeg H, Vijg J. 2003. Aging and genome maintenance: Lessons from the mouse? *Science* 299:1355-1359.
- Campisi J. 2003. Analysis of tumor suppressor gene-induced senescence. *Methods Molec Biol* 223:155-171.
- Campisi J. 2003. Cancer and ageing: Rival demons? *Nature Cancer Rev* 3:339-349.
- Krtolica A, Campisi J. 2003. Integrating epithelial cancer, aging stroma and cellular senescence. *Adv Gerontol* 11:109-116.
- Campisi J. 2004. Fragile fugue: p53 in aging, cancer and IGF signaling. *Nature Med* 10:231-232.
- Itahana K, Campisi J, Dimri GP. 2004. Mechanisms of cellular senescence in human and mouse cells. *Biogerontol* 5:1-10.
- Busuttill RA, Dolle M, Campisi J, Vijg J. 2004. Genomic instability, aging and cellular senescence. *Ann NY Acad Sci* 1019:245-255.
- Campisi J. 2004. Proliferative senescence and cancer. In: *Comprehensive Geriatric Oncology*, 2nd ed. Balducci L, Lyman GH, Ershler WB, Extermann M, eds. Taylor & Francis, NY; pp 127-137.
- Campisi J. 2005. Aging, tumor suppression and cancer: High wire act! *Mech Ageing Dev* 126:51-58.
- Campisi J. 2005. Senescent cells, tumor suppression and organismal aging: Good citizens, bad neighbors. *Cell* 120:513-522.
- Rodier F, Kim SH, Nijjar T, Yaswen P, Campisi J. 2005. Cancer and aging: The importance of telomeres in genome maintenance. *Int J Bioch Cell Biol* 37:977-990.
- Campisi J. 2005. Suppressing cancer: The importance of being senescent. *Science* 309:886-887.
- Patil CK, Mian IS, Campisi J. 2005. The thorny path linking cellular senescence to organismal aging. *Mech Ageing Dev* 126:1040-1045.
- Beausejour CB, Campisi J. 2006. Balancing regeneration and cancer. *Nature* 443:404-405.
- Yaswen P, Campisi J. 2007. Oncogene-induced senescence pathways weave an intricate tapestry. *Cell* 128:233-234.
- Benz CC, Campisi J, Cohen HJ, Ershler WB, Irminger-Finger I. 2007. Translational research at the aging cancer

- Campisi J. 2007. Cellular senescence, cell death and transgenic models of aging. In: *Physiological Basis of Aging and Geriatrics*, 4th ed. Timiras P, ed. Taylor & Francis, pp. 41-53.
- Campisi J, d'Adda di Fagagna F. 2007. Cellular senescence: When bad things happen to good cells. *Nature Rev Molec Cell Biol* 8:729-740.
- Rodier F, Campisi J, Bhaumik D. 2007. Two faces of p53: Aging and tumor suppression. *Nucl Acids Res* 35:7475-7484.
- Sedivy JM, Munoz-Najar UM, Jeyapalan JC, Campisi J. 2008. Cellular senescence: Link between tumor suppression and organismal aging? In: *The Molecular Biology of Aging*. Guarente L, Wallace D, Partridge L, eds. Cold Spring Harbor Press; pp 185-214.
- Campisi J. 2008. Aging and cancer cell biology, 2008. *Aging Cell* 7:281-284.
- Vijg J, Campisi J. 2008. Puzzles, promises and a cure for aging. *Nature* 454:1065-1071.
- Blagosklonny MV, Campisi J. 2008. Cancer and aging: More puzzles, more promises? *Cell Cycle* 7:2615-1618.
- Campisi J. 2008. Cellular senescence and its effects on carcinogenesis. *Beyond Apoptosis: Cellular outcomes of cancer therapy*. Roninson IB, Brown JM, Bredesen DE, eds. Informa Healthcare; pp 175-193.
- Campisi J, Yaswen P. 2009. Aging and cancer cell biology, 2009. *Aging Cell* 8:221-225.
- Campisi J. 2008. Cellular senescence. *The Molecular Basis of Cancer*, 3rd ed. Mendelsohn J, Howley PM, Israel MA, Liotta LA, eds. Elsevier. Chpt 16: 221-228.
- Debacq-Chainiaux, Erusalimsky J, Campisi J, Toussaint O. 2009. Protocols to detect senescence-associated beta-galactosidase (SA-betaGal) activity, a biomarker of senescent cells, in culture and in vivo. *Nature Protocols* 4:1798-1806.
- Rodier F, Campisi J. 2009. When DNA damage goes invisible. *Cell Cycle* 8:3632-3633.
- Campisi J, Vijg J. 2009. Does damage to DNA and other macromolecules play a role in aging? If so, how? *J Gerontol* 64:175-178.
- Campisi J, Sedivy J. 2009. How does proliferative homeostasis change with age? What causes it and how does it contribute to aging? *J Gerontol* 64:164-166.
- Blagosklonny MV, Campisi J, Sinclair DA. 2009. Aging: Past, present and future. *Aging* 1:1-5.
- Coppe JP, Desprez PY, Krtolica A, Campisi J. 2010. The secretory phenotype of senescent cells: The dark side of tumor suppression. *Ann Rev Pathol* 5:99-118.
- Freund A, Orjalo AV, Desprez PY, Campisi J. 2010. Inflammatory networks during cellular senescence: causes and consequences. *Trends Molec Med* 16:238-246.
- Davalos AR, Coppe JP, Campisi J, Desprez P. 2010. Senescent cells as a source of inflammatory factors during tumor progression. *Cancer Metastasis Rev* 29:273-283.
- Rae MJ, Butler RN, Campisi J, de Grey AD, Finch CE, Gough M, Martin GM, Vijg J, Perrot KM, Logan BJ. 2010. The demographic and biomedical case for late-life interventions in aging. *Science Transl Med* 2:40cm21.
- De Keizer PL, Laberge RM, Campisi J. 2010. p53: pro-aging or pro-longevity? *Aging* 2:377-379.
- Campisi J. 2010. Cellular senescence: putting the paradoxes in perspective. *Curr Opinion Genet* 21:107-112.
- Rodier F, Campisi J. 2011. Four faces of cellular senescence. *J Cell Biol* 192:547-556.
- Campisi J. 2011. Parsing p53 transactivation. *Dev Cell* 20:573-574.
- Campisi J, Andersen JK, Kapahi P, Melov S. 2011. Cellular senescence: a link between cancer and age-related degenerative disease? *Sem Cancer Biol* 21:354-359.
- Demaria M, Campisi J. 2012. Matters of life and breath: A role for hypoxia in determining cell fate. *Aging* 4:523-524.
- Laberge RM, Awad P, Campisi J, Desprez PY. 2012. Epithelial-mesenchyme transitions induced by senescent fibroblasts. *Cancer Microenviron* 5:39-44.
- Hasty P, Sharp ZD, Curiel TJ, Campisi J. 2013. mTORC1 and p53: Clash of the gods? *Cell Cycle* 12:20-25.
- Howcroft TK, Campisi J, Louis GB, Smith MT, Wise B, Wyss-Coray T, Augustine AD, McElhaney JE, Kohanski R, Sierra F. 2013. The role of inflammation in age-related disease. *Aging* 5:84-93.
- Velarde MC, Demaria M, Campisi J. 2013. Senescent cells and their secretory phenotype as targets for cancer therapy, *Interdisciplin Top Gerontol* 38:17-27.
- Chinta SJ, Lieu CJ, Demaria M, Laberge RM, Campisi J, Andersen J. 2013. Environmental stress, aging and glial cell senescence: A novel mechanistic link to Parkinson's disease? *J Intern Med* 273:429-436.
- Tchkonia T, Zhu Y, van Deursen J, Campisi J, Kirkland JL. 2013. Cellular senescence and the senescent secretory phenotype: therapeutic opportunities. *J Clin Invest* 123:966-972.
- Campisi J. 2013. Aging, cellular senescence and cancer. *Annu Rev Physiol* 75:685-705.
- Franceschi C, Campisi J. 2014. Chronic inflammation (inflammaging) and its potential contribution to age-associated disease. *J Gerontol* 69:4-9.
- Childs BG, Baker DJ, Kirkland JL, Campisi J, van Deursen JM. 2014. Senescence and apoptosis: dueling or

- Kennedy BK, Berger SL, Brunet A, Campisi J, Cuervo AM, Epel ES, Franceschi C, Lithgow GJ, Morimoto RI, Pessin JE, Rando TA, Richardson A, Schadt EE, Wyss-Coray T, Sierra F. 2014. Geroscience: linking aging to chronic disease. *Cell* 159:709-173.
- Neves J, Demaria M, Campisi J, Jasper H. 2015. Of flies, mice and men: Evolutionarily conserved tissue damage responses and aging. *Dev Cell* 32:9-18.
- Demaria M, Desprez PY, Campisi J, Velarde MC. 2015. Cell autonomous and non-autonomous effects of senescent cells in the skin. *J Invest Dermatol* 135:1722-1726.
- Lecot P, Alimirah F, Desprez PY, Campisi J, Wiley C. 2016. Context-dependent effects of cellular senescence in cancer development. *Br J Cancer* 114:1180-1184.
- Wiley CD, Campisi J. 2016. From ancient pathways to aging cells – Connecting metabolism and cellular senescence. 2016. *Cell Metab* 23:1013-1021.
- Pinti M, Appay V, **Campisi J**, Frasca D, Fülöp T, Sauce D, Larbi A, Weinberger B, Cossarizza A. 2016. Aging of the immune system: Focus on inflammation and vaccination. *Eur J Immunol* 46: 2286-2301.
- Hasty P, Campisi J, Sharp ZD (2016) Do p53 stress responses impact organismal aging? *Transl Cancer Res* 5:635-691.
- Hodes RJ, Sierra F, Austad SN, Epel E, Neigh GN, Erlandson KM, Schafer MJ, LeBrasseur NK, Wiley C, Campisi J, Sehl ME, Scalia R, Eguchi S, Kasinath BS, Halter JB, Cohen HJ, Demark-Wahnefried W, Ahles TA, Barzilai N, Hurria A, Hunt PW. 2016. Disease drivers of aging. *NY Acad Sci* 1386:45-68.
- Campisi J. 2016. Cellular senescence and lung function during aging: Yin and yang. 2016. *Ann Am Thorac Soc Suppl* 5:402-406.

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## Training activities

### Graduate students trained

<u>Name</u>	<u>Degree/year</u>
Wendy Ran	PhD, 1987
Tara Seshadri	PhD, 1990
Kuanghui Lu	PhD, 1990
Junko Oshima	PhD, 1992
Simona Parrinello	PhD, 2005
Jean-Philippe Coppe	PhD, 2007
Adam Freund	PhD, 2010
Bridget Gengler	MS, 2010
Lili Zhou	PhD, 2011
Marco Demaria	PhD, 2012
Kevin Perrott	PhD, expected 2017
Chandani Limbad	PhD, expected 2017
Chisaka Kuenemann	PhD, expected 2019

### Postdoctoral fellows trained

<u>Name</u>	<u>Last known affiliation</u>
Roy A. Levine	Cornell University, Ithaca NY
Hee-Young (Kim) Park	Boston University Medical School, Boston MA
Annick Clement	Hopital Trousseau, Paris, France
Amlan RayChaudhury	Harvard University Medical School, Boston MA
Ewa Surmacz	Jefferson Cancer Center, Philadelphia PA
Akif James Uzman	University of Houston, Houston TX
Eiji Hara	Osaka University, Osaka, Japan
Goberdhan Dimri	George Washington University, Washington DC
George Basile	Stanford University, Palo Alto CA
Jan Nehlin	Gerontological Research Center, Copenhagen, Denmark
Pierre Desprez	California Pacific Medical Center, San Francisco CA

Patrick Kaminker	Human Genome Sciences, Baltimore MD
Baomin Li	University of Southern California, Los Angeles CA
Hiromi Fujisawa	Nara University, Kyoto, Japan
Albert Davalos	San Francisco State University, San Francisco CA
Sashwati Roy	University of Ohio, Columbia OH
Miguel Rubio	Netherlands Cancer Institute, Amsterdam, Netherlands
Seok-Jin Heo	Children's Hospital Oakland Research Institute, Oakland CA
Christian Beausejour	Ste Justine Hospital Research Center, U Montreal, Montreal, Canada
Young You	University of California, Los Angeles CA
Joshua Goldstein	Novartis Research Foundation, San Diego CA
Francis Rodier	University of Montreal, Montreal, Canada
Dipa Bhaumik	Buck Institute for Research on Aging, Novato CA
Christopher Patil	Broad Institute, Boston MA
Sahn-ho Kim	Henry Ford Health Sciences Research Center, Detroit MI
Arturo Orjalo	Genentech, South San Francisco CA
Peter de Keizer	Erasmus University, Rotterdam, Netherlands
Julie Mangada	Buck Institute Educational Department, Novato CA
Marco Demaria	European Institute for the Biology of Aging, Groningen, Netherlands
Michael Velarde	University of the Philippines Diliman. Philippines
Remi-Martin Laberge	Unity Biotechnology, Brisbane CA
Su Liu	Scientist, BioMarin
Christopher Wiley	Present
Fatouma Alimirah	Present
Amit Sharma	Present
Abhijit Kale	Present
Jose Lopez-Dominguez	Present
Nate Bastisty	Present
Clare Kim	Present

## Recent Invited Scientific Speaking Engagements (since 2012)

### 2012

Speaker, Progeria Research Foundation, Frontiers in Progeria Research, Boston MA  
 Seminar, National Institute for Allergy and Infectious Disease, Bethesda MD  
 Seminar, Brown University, Providence RI  
 Seminar, MD Andersen Cancer Center, Houston TX  
 Speaker, Gordon Research Conference on Biology of Aging, Ventura CA  
 Seminar, Cedar-Sinai Immunology and Cancer Biology Forum, Los Angeles CA  
 Seminar, University of California Santa Cruz, Santa Cruz CA  
 Seminar, Harris Lecture, Massachusetts Institute of Technology, Boston MA  
 Sunday seminar, Oakmont Community Center, Oakmont CA  
 Seminar, University of South Carolina, Columbia SC  
 Keynote lecture, Bay Area Aging Meeting, Novato CA  
 Seminar, Amgen Inc, South San Francisco CA  
 Seminar, University of Pennsylvania, Philadelphia  
 Speaker, Longevity and Aging conference, Moscow RUSSIA  
 Seminar, Genome Institute of the Novartis Research Foundation, San Diego CA  
 Seminar, Barshop Institute, University of Texas Health Science Center, San Antonio TX  
 Grand Rounds, Karmanos Cancer Institute, Wayne State University, Detroit MI  
 Keynote lecture, Karolinska Institute annual retreat, Stockholm SWEDEN  
 Speaker, Keystone symposium on Inflammation and Cancer, Dublin IRELAND  
 Speaker, European Calcified Tissue Society, Stockholm SWEDEN  
 Speaker, Glenn Foundation symposium, Santa Barbara CA  
 Speaker, Alliance for Cancer and Aging workshop, Chicago IL  
 Speaker, NIA Summer Institute, Bethesda MD  
 Lecturer, RAND Mini-Medical School, Los Angeles CA

Speaker, University of California San Francisco Breast Oncology Program, San Francisco CA  
Seminar, Novartis Institutes for Biomedical Research, Cambridge MA  
Organizer, Genetics of Aging conference, Cold Spring Harbor NY  
Speaker, Nathan Shock symposium, University of Texas Health Science Center, San Antonio TX  
Speaker, Keystone symposium on Aging, Tokyo JAPAN  
Seminar, Institute for Biomedical Science, TAIWAN  
Speaker, Mayo Clinic Kogood symposium on aging, Rochester MN  
Keynote speaker, Society for Free Radical Biology and Medicine, San Diego CA  
Speaker, Health Extension salon, Mountain View CA  
Keynote speaker, Jean-Paul Marty symposium on Senescence and Skin, Paris FRANCE  
Seminar, Marshall University, Huntington WV

## **2013**

Seminar, Roswell Park Cancer Institute, Buffalo NY  
Speaker, Sanford-Burnham symposium on Aging, San Diego CA  
Seminar, Weizmann Institute, Rehovot ISRAEL  
Seminar, University of Washington St Louis, St Louis MO  
Seminar, University of Texas Medical Branch, Galveston TX  
Seminar, University of Pittsburgh Cancer Center, Pittsburgh PA  
Speaker, Nobel Forum, Frontiers in Cancer Research and Therapy, Stockholm SWEDEN  
Seminar, George Washington University, Washington DC  
Speaker, Progeria Research Foundation annual meeting, Washington DC  
Speaker, American Association for Immunology annual meeting, Maui HI  
Speaker, NIH workshop on DNA repair and aging, Bethesda MD  
Keynote speaker, University of California Santa Cruz Stem Cell symposium, Santa Cruz CA  
Seminar, Sloane-Kettering Memorial Cancer Center, New York NY  
Speaker, Symposium on Cancer Evolution, San Francisco CA  
Speaker, Gordon Research Conference on Tissue Repair, New London NH  
Speaker, symposium on Aging and Cancer Cell Biology, Athens GREECE  
Lecturer, RAND Mini-Medical School, Los Angeles CA  
Speaker, Cellular Senescence conference, Cambridge UK  
Lecturer, Marine Biological Laboratory, Aging course, Woods Hole MA  
Speaker, Gordon Research Conference on Biology of Aging, Barga ITALY  
Keynote speaker, Stress and Aging conference, Halle GERMANY  
Speaker, Cold Spring Harbor conference on Aging, Suzhou CHINA  
Speaker, EMBO conference on Nuclear Structure, Avignon FRANCE  
Speaker, NIH Geroscience workshop on Inflammation and Aging, Bethesda MD  
Speaker, ERIBA symposium on Molecular Mechanisms of Age-Related Multi-Morbidity, Groningen NETHERLANDS  
Seminar, Tulane University, New Orleans LA  
Seminar, University of Wisconsin, Madison WI  
Seminar, Stanford University, Palo Alto CA  
Seminar, National Institute of Biological Sciences, Beijing CHINA  
Seminar, Peking University, Beijing CHINA  
Seminar, Vienna Institute of Biotechnology, Vienna AUSTRIA

## **2014**

Seminar, University of California Irvine, Irvine CA  
Seminar, Carnegie-Mellon Institute, Baltimore MD  
Speaker, Lorne Cancer Conference, Lorne AUSTRALIA  
Seminar, Children's Medical Research Institute, Sydney AUSTRALIA  
Dean's Lecture, University of Kentucky, Lexington KY  
Speaker, Inaugural Future of Biomedicine conference, Sydney AUSTRALIA  
Speaker, Gordon Research Conference on DNA Repair, Ventura CA  
Speaker, Keystone symposium on Fibrosis, Keystone CO  
Speaker, Genome Institute of Novartis workshop on Cellular Senescence, San Diego CA  
Speaker, Genetics of Aging conference, Sochi RUSSIA

Speaker, Cold Spring Harbor meeting on Cell Cycle, Cold Spring Harbor NY  
Speaker, Abcam symposium on Tumor Microenvironment, Boston MA  
Speaker, Genome Dynamics and Neuroscience symposium, Copenhagen DENMARK  
Lecturer, RAND Mini-Medical School, Los Angeles CA  
Seminar, Instituto Gulbenkian de Ciencia, Lisbon PORTUGAL  
Lecturer, Marine Biological Laboratory, Aging course, Woods Hole MA  
Speaker, SENS conference on Rejuvenation Medicine, Santa Clara CA  
Lecture, EMBO Cancer course, Lausanne SWITZERLAND  
Speaker, Goethe University conference on Aging, Frankfurt GERMANY  
Speaker, Student Society for Stem Cell Research, Berkeley CA  
Speaker/Organizer, Montagna symposium on Skin and Aging, Liberty City OR  
Speaker, International Conference on Aging and Disease, Beijing CHINA  
Speaker, Symposium on Gene Regulation, Stem Cells and Cancer, Barcelona SPAIN  
Seminar, University of Connecticut, Farmington CT  
Seminar, Cancer Research UK, London ENGLAND  
Seminar, University of Manchester, Manchester ENGLAND

## **2015**

Seminar, University of Calgary, Calgary CANADA  
Speaker, Beckman workshop on Initiative for Macular Research, Irvine CA  
Seminar, Harvard University Medical School, Boston MA  
Seminar, University of British Columbia, Vancouver CANADA  
Seminar, Baylor College of Medicine, Houston TX  
Speaker and Achievement Awardee in Natural and Medical Sciences, Olav Thon Award symposium, Oslo NORWAY  
Distinguished Speaker, University of Texas Medical Branch, Galveston TX  
Seminar, University of Oklahoma, Oklahoma City OK  
Seminar, University of Pittsburgh Medical School, Pittsburgh PA  
Speaker, University of California NIEHS student and postdoctoral training grant annual symposium, Davis CA  
Speaker, American Association for Cancer Research (AACR): Aging and Senescence symposium, Philadelphia PA  
Speaker, Science in the Theater, Oakland CA  
Speaker, Cell Cycle and Genomic Instability symposium, University of Virginia, Charlottesville VA  
Distinguished Scientist Lecture, German Cancer Research Center, Heidelberg GERMANY  
Speaker, EMBO workshop on Developmental Circuits in Aging, Heraklion GREECE  
Speaker, Glenn Foundation 50<sup>th</sup> anniversary symposium, Santa Barbara CA  
Lecturer on Aging, RAND mini-Med School, Los Angeles CA  
Keynote speaker, European Cell Senescence Association, Santiago de Compostela SPAIN  
Speaker and Scientific Achievement Awardee, International CCN Society, Nice FRANCE  
Speaker, Cell symposium on Cell Death and Immunity, Berkeley CA  
Seminar, University of Texas Southwest Medical Center, Dallas TX

## **2016**

Speaker, Transatlantic Conference in Lung Disease, Aging, Lung Injury and Regeneration, Lucerne SWITZERLAND  
Distinguished Scientist Seminar, National Jewish Health, Denver CO  
Speaker, AACR Precision Med Series: Cancer Cell Cycle, Tumor Progression & Therapeutic Responses, Orlando FL  
Speaker, Nature symposium on Cancer as an Evolving and Systemic Disease, New York NY  
Plenary speaker, EMBO symposium on Tumor Microenvironment and Signaling, Heidelberg GERMANY  
Seminar, University of Washington, Seattle WA  
Speaker, Disease Drivers of Aging, New York Academy of Sciences, New York NY  
Speaker, Pfizer 9<sup>th</sup> annual Frontiers Symposium, Boston MA  
Keynote Lecture, Institute for Food Research, Norwich UK  
Seminar, Pasteur Institute, Paris FRANCE  
Participant, Progeria Research Foundation summit meeting, Boston MA  
Seminar, Stanford University Medical School, Stanford CA  
Speaker, Nobel symposium on Progeria, Stockholm SWEDEN  
Speaker, Nobel symposium on Cell Cycle, Stockholm SWEDEN  
Seminar, University of Washington Saint Louis, St Louis MO

Speaker, Rejuvenation Biotechnology Conference, Novato CA  
Speaker, Benzon Conference on Genomic Instability and Neurodegeneration, Copenhagen DENMARK  
Speaker, NIA workshop on Autonomous and Non-autonomous Mechanisms of Aging, Bethesda MD  
Speaker, 16<sup>th</sup> Biennial Conference of the Metastasis Research Society, Chengdu CHINA  
Organizer and Speaker, Zing Conference on Cell Fate Diversity in Aging, Dubrovnik CROATIA  
Speaker, 2<sup>ND</sup> International Conference on Aging and Disease, Palo Alto CA  
Speaker, Cell Press/IPSEN workshop on Biology of Commitment, Phoenix AZ  
Seminar, Yale University, New Haven CT  
Seminar, Georgetown University, Washington DC  
Speaker, American Society for Matrix Biology annual meeting, St Petersburg FLA  
Seminar, Temple University, Philadelphia PA  
Seminar, University of West Virginia, Morgantown WV  
Keynote Speaker, German Society for Aging Research, Ulm GERMANY  
Participant, NIA workshop on Human Longevity, Bethesda MD