

GILBERT CHU

SPOUSE Sharon Long
CHILDREN Alex Chu (b. 8/1987)
Jason Chu (b. 3/1991)

ACADEMIC RESUME

UNIVERSITY EDUCATION

1967 Princeton University, A.B., Physics, magna cum laude, Phi Beta Kappa
Senior thesis: A study of the possibility of time reversal non-invariance
1973 MIT, Ph.D., Physics
Thesis (with Dr. Francis Low): Phenomenological dual models
1980 Harvard Medical School, M.D., magna cum laude
Thesis (with Dr. Herman Eisen): The kinetics of T cell killing: a description by Poisson statistics

POSTDOCTORAL AND RESIDENCY TRAINING

1973-1975 Postdoctoral Fellow in Theoretical Physics
Lawrence Berkeley Laboratory, Berkeley, CA
1975-1976 Postdoctoral Fellow in Theoretical Physics
Stanford Linear Accelerator Center, Stanford, CA
1980-1982 Intern and Resident in Internal Medicine
Massachusetts General Hospital, Boston, MA
1982-1984 Clinical Fellow in Oncology, Department of Medicine
Stanford University School of Medicine, Stanford, CA
1983 American Board of Internal Medicine
1984-1986 Postdoctoral Fellow (with Dr. Paul Berg), Department of Biochemistry
Stanford University School of Medicine, Stanford, CA

ACADEMIC AND RESEARCH AWARDS

1963-1967 Princeton University Scholar
1967-1968 Woodrow Wilson Fellow
1973 Giulio Racah Prize, International School of Subnuclear Physics, Erice, Italy
1975 Sigma Xi
1977-1979 John Stevens Scholar, Harvard/MIT Division in Health Sciences and Technology
1980 Henry Asbury Christian Award for Notable Scholarship, Harvard Medical School
1984-1986 Jane Coffin Childs Fellow
1988-1989 Hume Faculty Scholar, Stanford
1988-1992 Rita Allen Foundation Scholar
1989-1990 Robert W. Cahill Faculty Prize in Cancer Research, Stanford
1990, 1996 Leutje-Stubbs Faculty Scholar for Cancer Research, Stanford
1997-2002 Burroughs-Wellcome Clinical Scientist Award for Translational Research
2018 Fellow, American Physical Society (Division of Biological Physics) for *"contributions at the intersection of physics and life sciences, including PET, electrophoresis, and statistical methods for microarrays. For discovering and characterizing proteins involved in DNA repair and developing instrumentation for assessing toxicity associated with cancer chemotherapy"*
2025 Stanford Medical Humanities Faculty Fellowship

PROFESSIONAL ASSOCIATIONS

1967-**NOW** American Physical Society
1975-**NOW** Sigma Xi

1987-**NOW** American Association for the Advancement of Science
 1997-**NOW** Environmental Mutagenesis and Genomics Society
 1997-**NOW** American Society of Clinical Oncology
 1999-**NOW** Society for Chinese Bioscientists in America

EMPLOYMENT HISTORY

1968, 1969 Member Technical Staff in Theoretical Physics
 Autonetics, North American Rockwell, Anaheim, CA
 1987-1994 Assistant Professor, Department of Medicine (Oncology)
 Stanford University School of Medicine, Stanford, CA
 1990-1994 Assistant Professor, Department of Biochemistry (by courtesy)
 Stanford University School of Medicine, Stanford, CA
 1994-2002 Associate Professor, Departments of Medicine (Oncology) and Biochemistry
 Stanford University School of Medicine, Stanford, CA
 2002-**NOW** Professor, Departments of Medicine (Oncology) and Biochemistry
 Stanford University School of Medicine, Stanford, CA

ACADEMIC COMMITTEE SERVICE

Stanford Academic Leadership

1989-1991 Co-Chair, Beckman Symposium on Molecular & Genetic Medicine
 2004 Co-Chair, Beckman Symposium on Cancer
 2006-**NOW** Director for Tseng Memorial Lectureship
 2008-2009 Chair, Committee on Committees for the Stanford University Senate

Stanford School of Medicine

2003-2004 Dean's Committee on reorganization of Department of Health Research & Policy
 2006-2014 Computational Services and Bioinformatics Advisory Board
 2006 Dean's Working Group on Pharmaceutical Conflicts of Interest Policy
 2007-2012 Department of Medicine Appointments and Promotions Committee
 2010-2012 Search Committee for Population Sciences Director, Stanford Cancer Institute
 2013-2016 Search Committee for Gastrointestinal Oncology faculty
 2013-2020 Oncology Division MCL faculty Appointments and Promotions
 2013-2020 Oncology Division UTL faculty Appointments and Promotions
 2013-2015 Search Committee for Stanford ChEM-H faculty

Stanford University

2007-2009 Member, Stanford University Senate

National

1988-1995 Harvard-MIT Health Sciences and Technology Advisory Committee
 1988-2011 Margaret Early Medical Research Trust Scientific Advisory Committee
 1996-1997 U.S. Army Breast Cancer Research Program Molecular Biology Review Panel
 1997-2006 Lawrence Livermore National Lab, Biology and Biotechnology Advisory Committee
 2000 Affymetrix, Santa Clara, CA, User Center Research Committee
 2000 National Cancer Institute site committee, Laboratory of Molecular Pharmacology
 2001-2004 American Society of Clinical Oncology Cancer Education Committee
 2007 Lawrence Livermore National Lab, Chemical, Material, and Life Sciences Directorate
 Review Committee

RESEARCH RESUME

RESEARCH CONTRIBUTIONS

PET scanning. Method for reconstructing the three-dimensional distribution of positron decays for medical imaging.

Pulsed field electrophoresis. Device for separating and analyzing megabase-sized DNA, permitting analysis of large genomic regions.

DNA repair. Discovery of UV-DDB (ultraviolet radiation damaged-DNA binding) protein), which recognizes DNA lesions; discovery that Ku protein is required for nonhomologous end joining (NHEJ); reconstitution of the core NHEJ reaction with purified proteins.

Microarray analysis. Significance Analysis of Microarrays (SAM) and Prediction Analysis of Microarrays (PAM), permitting statistically rigorous analysis of genome-wide expression data.

Blood ammonia. Invention of a portable device to measure ammonia from a 15-microliter drop of blood, allowing for rapid diagnosis of hyperammonemia to prevent brain damage.

PATENTS

- 1992 Nov 24 Electrophoresis using contour-clamped electric fields
G. Chu, D. Vollrath, R. Davis, Patent No. 5,165,898
- 2008 Apr 22 Significance analysis of microarrays
G. Chu, R. Tibshirani, V. Tusher, Patent No. 7,363,165
- 2008 Dec 16 Methods and compositions for determining treatment toxicity
G. Chu, V. Tusher, J. Tang, K. Rieger, W.J. Hong, R. Tibshirani, Patent No. 7,465,542
- 2012 Sep 11 Mismatched end DNA ligase
G. Chu, C. Tsai, S. Kim, Patent No. 8,263,332
- 2013 Mar 05 Assessing risk for encephalopathy induced by 5-fluorouracil or capecitabine
G. Chu, patent pending
- 2014 Feb 11 Rapid small volume detection of blood ammonia
T. Veltman, C. Tsai, M. Kanan, **G. Chu**, Patent No. 9625443

CONSULTING

- 1988-90 Consultant, BioRad, Richmond, CA
- 1992 Consultant, Gilead Sciences, Foster City, CA
- 1996 Consultant, ISIS Pharmaceuticals, Carlsbad, CA
- 2000-02 Scientific Advisory Board, X-mine, Inc., Brisbane, CA
- 2001-03 Scientific Advisory Board, Variagenics, Cambridge, MA
- 2004-06 Scientific Advisory Board, Abmaxis, Santa Clara, CA
- 2004-06 Scientific Advisory Board, Pathwork Informatics, San Jose, CA
- 2005 Consultant, PARC, Palo Alto, CA

RESEARCH PUBLICATIONS

Total: 101; citations 33,683; h-index 57; i10-index 85

* Primary authors contributed equally to the work

Corresponding authors contributed equally to the work

PEER-REVIEWED JOURNAL ARTICLES AND REVIEWS

1. **Chu G**, Dudley D, Bristol T: Interaction between an electromagnetic plane wave and a spherical shell. J Appl Phys 40: 2904, 1969
2. Brower R, **Chu G**: A phenomenological six pion amplitude. Phys Rev D7: 56, 1973.
3. **Chu G**: Dual model and prism plot applied to $\pi^+ p \rightarrow \pi^+ \pi^0 p$. Phys Rev D8:2887, 1973.
4. **Chu G**, Gunion J: Probing parton distribution functions in massive lepton pair production. Phys Rev D10: 3672, 1974.

5. **Chu G**, Gunion J: Production of heavy leptons in proton - proton collisions and the parton model. *Phys Rev D* 11: 73, 1975.
6. **Chu G**, Koplik J: Direct muon production in a multiperipheral model. *Phys Letters* 55B:466, 1975.
7. **Chu G**, Koplik J: Multiperipheral model for direct muon production. *Phys Rev D* 11:3134, 1975.
8. **Chu G**, Tam K: Three-dimensional imaging in the positron camera using Fourier techniques. *Phys Med Biol* 22: 245-265, 1977.
9. Tam K, **Chu G**, Perez-Mendez V, Lim C: Three-dimensional reconstruction in planar positron cameras using Fourier deconvolution of generalized tomograms. *IEEE Trans Nuc Sci NS-25*: 152, 1978.
10. **Chu G**: The kinetics of target cell lysis by cytotoxic T lymphocytes: a description by Poisson statistics. *J Immunol* 120: 1261-1267, 1978.
11. **Chu G**, Sharp PA: SV40 DNA transfection of cells in suspension: analysis of the efficiency of transcription and translation of T antigen. *Gene* 13: 197-202, 1981.
12. **Chu G**, Sharp PA: A gene chimera of SV40 and mouse beta globin is transcribed and properly spliced. *Nature* 289: 378-382, 1981.
13. Naumovski L, **Chu G**, Berg P, Friedberg EC: The rad3 gene of *S. cerevisiae*: nucleotide sequence of wild type and mutant alleles, transcript mapping and aspects of gene regulation. *Mol Cell Biol* 5: 17-26, 1985.
14. **Chu G**, Berg P: Rapid assay for detection of *Escherichia coli* xanthine-guanine phosphoribosyl-transferase activity in transduced animal cells. *Nuc Acids Res* 13: 2921-2930, 1985.
15. **Chu G**, Vollrath D, Davis RW: Separation of large DNA molecules by contour-clamped homogeneous electric fields. *Science* 234: 1582-1585, 1986.
16. **Chu G**, Hayakawa H, Berg P: Electroporation for the efficient transfection of mammalian cells with DNA. *Nuc Acids Res* 15: 1311-1325, 1987.
17. **Chu G**, Berg P: Cisplatin cross-linked DNA: a new probe for the DNA repair defect in xeroderma pigmentosum. *Mol Biol Med* 4: 277-290, 1987.
18. **Chu G**, Chang E: Xeroderma pigmentosum group E cells lack a nuclear factor that binds to damaged DNA. *Science* 242: 564-567, 1988.
19. Patterson M, **Chu G**: Evidence that xeroderma pigmentosum group E is deficient in a homolog of yeast photolyase. *Mol Cell Biol* 9: 5105-5112, 1989.
20. **Chu G**: Pulsed field electrophoresis for the resolution of DNA by size or topology. *Electrophoresis* 10: 290-295, 1989.
21. **Chu G**, Chang E: Cisplatin resistant cells express increased levels of a factor that recognizes damaged DNA. *Proc Natl Acad Sci USA* 87: 3324-3327, 1990.
22. **Chu G**, Chang E, Patterson M: How cells recognize damaged DNA: clues from xeroderma pigmentosum and yeast. *Prog Clin Biol Res* 340A: 275-282, 1990.
23. **Chu G**: Pulsed-field gel electrophoresis: theory and practice. *Methods* 1: 129-142, 1990.
24. **Chu G**: Apparatus for contour-clamped homogeneous electric fields. *Methods* 1: 212-214, 1990.
25. **Chu G**, Gunderson K: Separation of large DNA by a variable-angle contour-clamped homogeneous electric field apparatus. *Anal Biochem* 194: 439-446, 1991.
26. Gunderson K, **Chu G**: Pulsed-field electrophoresis of megabase-sized DNA. *Mol Cell Biol* 11: 3348-3354, 1991.
27. **Chu G**: Bag model for DNA migrating in a pulsed electric field. *Proc Natl Acad Sci USA* 88: 11071-11075, 1991.
28. Zelenetz A, **Chu G**, Galili N, Bangs C, Horning S, Donlon T, Cleary M, Levy R: Enhanced detection of the t(14;18) translocation in malignant lymphoma using pulsed-field gel electrophoresis. *Blood* 78: 1-9, 1991.
29. Hwang B, **Chu G**: Purification and characterization of a human protein that binds to damaged DNA. *Biochemistry* 32: 1657-1666, 1993.
30. **Chu G**, Mantin R, Shen Y-M, Baskett G, Sussman H: Massive cisplatin overdose by accidental substitution for carboplatin: toxicity and management. *Cancer* 72: 3707-3714, 1993.
31. **Chu G**: Cellular responses to cisplatin. *J Biol Chem* 269: 787-790, 1994.
32. Rathmell WK, **Chu G**: A DNA-end-binding factor involved in double-strand break repair and V(D)J recombination. *Mol Cell Biol* 14: 4741-4748, 1994.

33. Payne A, **Chu G**: Xeroderma pigmentosum group E binding factor recognizes a broad spectrum of DNA damage. *Mutation Res* 310: 89-102, 1994.
34. Rathmell WK, **Chu G**: Involvement of the Ku autoantigen in the cellular response to DNA double-strand breaks. *Proc Natl Acad Sci USA* 91: 7623-7627, 1994.
35. Fox M, Feldman B, **Chu G**: A novel role for DNA photolyase: binding to DNA damaged by drugs is associated with enhanced cytotoxicity in *Saccharomyces cerevisiae*. *Mol Cell Biol* 14: 8071-8077, 1994.
36. Smider V, Rathmell WK, Lieber M, **Chu G**: Restoration of X-ray resistance and V(D)J recombination in mutant cells by Ku cDNA. *Science* 266: 288-291, 1994.
37. Hwang BJ, Liao J, **Chu G**: Isolation of a cDNA encoding a UV-damaged DNA binding factor defective in xeroderma pigmentosum group E cells. *Mutation Res* 362: 105-117, 1996.
38. Hwang BJ, **Chu G**: Trichloroacetic acid precipitation by ultracentrifugation to concentrate dilute protein in viscous solution. *Biotechniques* 20: 982-983, 1996.
39. Errami A, Smider V, Rathmell WK, He DM, Hendrickson E, Zdzienicka M, **Chu G**: Ku86 defines the genetic defect and restores X-ray resistance and V(D)J recombination to complementation group 5 hamster cell mutants. *Mol Cell Biol* 16: 1519-1526, 1996.
40. **Chu G**, Mayne L: Xeroderma pigmentosum, Cockayne syndrome and trichothiodystrophy: do the genes explain the diseases? *Trends Genet* 12: 187-192, 1996.
41. Hwang BJ, Smith A, **Chu G**: Internal sequence analysis of proteins eluted from polyacrylamide gels. *J. Chromatog B: Biomed Applic* 686: 165-175, 1996.
42. Rathmell WK, Kaufmann WK, Hurt JC, Byrd LL, **Chu G**: DNA-dependent protein kinase is not required for accumulation of p53 or cell cycle arrest after DNA damage. *Cancer Res* 57: 68-74, 1997.
43. **Chu G**: Double-strand break repair. *J. Biol. Chem.* 272: 24097-24100, 1997.
44. Smider V, **Chu G**: The end-joining reaction in V(D)J recombination. *Sem Immun* 9: 189-197, 1997.
45. Hammarsten O, **Chu G**: DNA-dependent protein kinase: DNA binding and activation in the absence of Ku. *Proc Natl Acad Sci USA* 95: 525-530, 1998.
46. Hwang BJ, Toering S, Francke U, **Chu G**: p48 activates UV-damaged DNA binding factor and is mutated in xeroderma pigmentosum group E. *Mol Cell Biol* 18: 4391-4399, 1998.
47. Smider V, Rathmell WK, Brown G, Lewis S, **Chu G**: Failure of hairpin-ended and nicked DNA to activate DNA-dependent protein kinase: implications for V(D)J recombination. *Mol Cell Biol* 18: 6853-6858, 1998.
48. Hwang BJ, Ford J, Hanawalt PC, **Chu G**: Expression of the p48 xeroderma pigmentosum gene is p53-dependent and is involved in global genomic repair. *Proc Natl Acad Sci USA* 96: 424-428, 1999.
49. Leuther K, Hammarsten O, Kornberg R, **Chu G**: Structure of DNA-dependent protein kinase: implications for its regulation by DNA. *EMBO J* 18: 1114-1123, 1999.
50. Hammarsten O, DeFazio L, **Chu G**: Activation of DNA-dependent protein kinase by single-stranded DNA ends. *J Biol Chem* 275: 1541-1550, 2000.
51. Tang J, Hwang BJ, Ford JM, Hanawalt PC, **Chu G**: Xeroderma pigmentosum p48 gene enhances global genomic repair and suppresses UV-induced mutagenesis. *Molecular Cell* 5: 737-744, 2000.
52. Thorstenson YR, Oefner PJ, Goss V, Davis RW, Gatti RA, **Chu G**: Comprehensive mutational analysis of the ATM gene by HPLC. *Am J Hum Genet* 67 [Suppl. 2]: 100, 2000.
53. Tusher V, Tibshirani R & **Chu G**: Significance analysis of microarrays applied to the ionizing radiation response. *Proc Natl Acad Sci USA* 98: 5116-5121, 2001.
54. Thorstenson Y, Shen P, Tusher V, Wayne T, Davis R, **Chu G**, Oefner P: Global analysis of ATM polymorphism reveals a high degree of functional constraint. *Am J Hum Genet* 69: 396-412, 2001.
55. Hastie T, Tibshirani R, Narasimhan B, **Chu G**: Impute: imputation for microarray data. *Bioinformatics* 17: 520-525, 2001.
56. **Chu G**: Global genomic repair and p53 in a dance after DNA damage. *Cancer Biol. Therapy* 1: 150-151, 2002.

57. Lossos I, Thorstenson Y, Wayne T, Oefner P, Levy R, **Chu G**: Mutation of the ATM gene is not involved in the pathogenesis of either follicle center lymphoma or its transformation to higher-grade lymphoma. *Leukemia and Lymphoma* 43: 1079-1085, 2002.
58. Tan T, **Chu G**: p53 binds and activates the xeroderma pigmentosum DDB2 gene in humans but not mice. *Mol Cell Biol* 22: 3247-3254, 2002.
59. Tibshirani R, Hastie T, Narasimhan B, **Chu G**: Diagnosis of multiple cancer types by shrunken centroids of gene expression. *Proc Natl Acad Sci USA* 99: 6567-6572, 2002.
60. DeFazio L, Stansel R, Griffith J, **Chu G**: Synapsis of DNA ends by the DNA-dependent protein kinase. *EMBO J* 21: 3192-3200, 2002.
61. **Chu G**: Global genomic repair and p53 in a dance after DNA damage. *Cancer Biol Ther* 1: 150-151, 2002.
62. Tang J, **Chu G**: Xeroderma pigmentosum group E and UV-damaged DNA binding protein. *DNA Repair* 1: 601-616, 2002.
63. Cong F, Tang J, Hwang BJ, Voung B, **Chu G**, Goff S: Interaction between UV-damaged DNA binding protein and the c-Abl tyrosine kinase. *J Biol Chem* 277: 34870-34878, 2002.
64. Tibshirani R, Hastie T, Narasimhan B, and **Chu G**: Class prediction by nearest shrunken centroids, with applications to DNA microarrays. *Statistical Sci* 18:104-117, 2003.
65. Thorstenson Y, Roxas A, Kroiss R, Jenkins M, Yu K, Bachrich T, Mühr D, Wayne T, **Chu G**, Davis R, Wagner T, Oefner P: Contributions of ATM mutations to hereditary breast and ovarian cancer. *Cancer Res* 63: 3325-3333, 2003.
66. Rieger K, Hong WJ, Tusher VG, Tang J, Tibshirani R, **Chu G**: Toxicity from radiation therapy associated with abnormal transcriptional responses to DNA damage. *Proc Natl Acad Sci USA* 101: 6635-6640, 2004.
67. Rieger K, **Chu G**: Portrait of transcriptional responses to ultraviolet and ionizing radiation in human cells. *Nuc Acids Res* 32: 4786-4803, 2004.
68. Budman J, **Chu G**: Processing of DNA for nonhomologous end-joining by cell free extract. *EMBO J* 24: 849-860, 2005.
69. Sugasawa K, Okuda Y, Saijo M, Nishi R, Matsuda N, **Chu G**, Mori T, Iwai S, Tanaka K, Tanaka K, Hanaoka F: UV-induced ubiquitylation of XPC protein mediated by UV-DDB-ubiquitin ligase complex. *Cell* 121: 387-400, 2005.
70. Hong WJ, Warnke R, **Chu G**: Immune signatures in follicular lymphoma (Letter). *N Engl J Med* 352: 1496-1497, 2005.
71. Budman J, **Chu G**: Assays for nonhomologous end-joining in extracts. *Methods Enzymol* 408: 430-444, 2006.
72. Smider V, Hwang BJ, **Chu G**: Electrophoretic mobility shift assays to study protein binding to damaged DNA. *Methods Mol Biol* 314: 323-344, 2006.
73. Budman J, Kim S, **Chu G**: Processing of DNA for nonhomologous end joining is controlled by kinase activity and XRCC4/Ligase IV. *J Biol Chem* 282: 11950-11959, 2007.
74. Tsai C, Kim S, **Chu G**: Cernunnos/XLF promotes ligation of mismatched and non-cohesive DNA ends. *Proc Natl Acad Sci USA* 104: 7851-7856, 2007.
75. Andres SN, Modesti M, Tsai C, **Chu G**, Junop MS: Crystal structure of human Cernunnos/XLF: a new twist in non-homologous end-joining, *Molecular Cell* 28: 1093-1101, 2007.
76. **Chu G**, Yang W: Here comes the sun: recognition of UV-damaged DNA. *Cell* 135: 1172-1174, 2008.
77. Hong WJ, Tibshirani R, **Chu G**: Local false discovery rate facilitates comparison of different microarray experiments. *Nuc Acids Res* 37: 7483-7497, 2009.
78. **Chu G**: Finding a Cure (response to Malcolm Gladwell article). *The New Yorker*, June 28, 2010.
79. Glotzbach JP*, Januszyk M*, Vial IN*, Wong VW, Gelbard A, Kalisky T, Thangarajah H, Longaker MT, Quake SR, **Chu G**, Gurtner GC: An information theoretic, microfluidic-based single cell analysis permits identification of subpopulations among putatively homogeneous stem cells. *PLoS One* 6: e21211, 2011.
80. Tsai C, Smider V, Hwang BJ, **Chu G**: Electrophoretic mobility shift assays for protein-DNA complexes involved in DNA repair. *Methods Mol Biol* 920: 53-78, 2012.

81. Carragee EJ, **Chu G**, Rohatgi R, Hurwitz EL, Weiner BK, Yoon ST, Comer G, Kopjar B: Cancer risk after use of bone morphogenetic protein-2 for spinal fusion. *J Bone Joint Surg* 95: 1537-1545, 2013.
82. Tsai C, **Chu G**: Cooperative assembly of a protein-DNA filament for nonhomologous end joining. *J Biol Chem* 288: 18110-20, 2013.
83. **Chu G**: Double-strand break repair. *Molecular Life Sciences: An Encyclopedia Reference*, 2014.
84. **Chu G**: *Molecular Foundations of Medicine* (Stanford EdX on-line course). 2015-NOW. <https://www.edx.org/course/molecular-foundations-of-medicine>
85. **Chu G**, Salzman J: Hyperammonemia after capecitabine associated with occult impairment of the urea cycle. *Cancer Med* 8: 1996-2004, 2019
86. Silberman R*, Steiner D*, Lo A, Gomez A, Zehnder J, **Chu G**#, Suarez C#: Complete and prolonged response to immune checkpoint blockade in a POLE-mutated colorectal cancer. *JCO Precision Oncol* 3: 1-5, 2019
87. Hall E, Zhang J, Kim EJ, Hwang G, **Chu G**, Bhatia S, Reddy S: Economics of alternative dosing strategies for pembrolizumab and nivolumab at a single academic cancer center. *Cancer Med* 9: 2106-2112, 2020
88. Veltman T, Tsai C, Gomez-Ospina N, Kanan M#, **Chu G**#: Point-of-care analysis of blood ammonia with a gas phase sensor. *ACS Sensors* 5: 2415-2421, 2020

SUBMITTED OR IN PREPARATION

89. **Chu G**, Agarwal A, Chi K, Madhok J, Salzman J: Chemotherapy-induced encephalopathy in cancer patients. Submitted.
90. Tsai C, Cheng C, Malkovskiy A, Das R, **Chu G**: Probing the structure of the protein-DNA complex mediating nonhomologous end joining. In preparation.

ARTICLES IN CONFERENCE PROCEEDINGS

91. Tam K, **Chu G**, Perez-Mendez V, Lim C: Three-dimensional reconstruction in planar positron cameras using filtered deconvolution. *Third Biomedical Engineering Symposium*, Davis, CA 1977.
92. Leaf A, **Chu G**, Schultz SG: The significance of relative membrane resistances in determining the work of transport across epithelia. In **Proceedings of Workshop on Epithelial Ion and Water Transport**. Dunedin, New Zealand, Raven Press, 1980
93. Davis RW, Vollrath, **Chu G**, Fasullo M, Hieter P, Thomas M: In vitro and in vivo manipulation of very large DNA molecules. In **DNA Probes: Applications in Genetic and Infectious Disease and Cancer**. Ed: Lerman L, Cold Spring Harbor Laboratory, New York, pp 97-99, 1986.
94. Hastie T, Tibshirani R, Narasimhan B, **Chu G**: Supervised learning from microarray data. *COMPSTAT 2002: Proc Computational Stat* 67-77, 2002.

BOOKS AND MONOGRAPHS

95. Hodgson K, Winick H, **Chu G** (eds): **Synchrotron Radiation Research and the Stanford Synchrotron Radiation Project: The Experience and Prospects of Using a Multi GeV Storage Ring**. Stanford University, 291 pp, 1976.

BOOK CHAPTERS

96. **Chu G**, Marshall W: Medical diagnostic radiology. In **Synchrotron Radiation Research**, 1976.
97. **Chu G**: Wiggler magnets and synchrotron radiation spectra. In **Synchrotron Radiation Research**, 1976.
98. **Chu G**: How does Ku protein act in V(D)J recombination and repair? In **Current Topics in Microbiology and Immunology: Molecular Analysis of DNA Rearrangements in the Immune System**. Ed: Jessberger R, Lieber M, Springer-Verlag, Heidelberg, pp 113-132, 1996.
99. Rathmell WK, **Chu G**: Mechanisms for DNA double-strand break repair in eukaryotes. In **DNA Damage and Repair**. Ed: Nickoloff J, Hoekstra MF, Humana Press, pp 299-316, 1998.

100. Hwang BJ, Smider V, **Chu G**: The use of electrophoretic mobility shift assays to study DNA repair. In **DNA Repair Protocols: Eukaryotic Systems**. Ed: Henderson D, Humana Press, pp 103-120, 1999.
101. Hastie T, Tibshirani R, Narasimhan B, **Chu G**: Supervised learning from microarray data. In **Compstat**. Physica-Verlag HD, pp 67-77, 2002.

INVITED RESEARCH TALKS

- 1989 University of Utah, Department of Genetics, Salt Lake City, UT, "Xeroderma pigmentosum and the recognition of damaged DNA"
- 1989 Gordon Conference, Mammalian DNA Repair, Oxnard, CA, "Damaged DNA probes to identify protein factors involved in xeroderma pigmentosum"
- 1989 American Electrophoresis Society Annual Meeting, Washington, DC, "Contour-clamped homogeneous electric fields"
- 1989 Fifth International Conference on Environmental Mutagens, Cleveland, OH, "Xeroderma pigmentosum, yeast, and how cells recognize damaged DNA"
- 1989 Joint Meeting of the California Radiation Biology Symposium and the Northern California Cancer Center, Palo Alto, CA, "Pulsed field electrophoresis: theory and practice"
- 1989 Johns Hopkins University School of Medicine, Baltimore, MD, "How human cells recognize damaged DNA: clues from xeroderma pigmentosum"
- 1990 Smith Kline Beecham Laboratories, King of Prussia, PA, "DNA repair and XYZ (xeroderma, yeast, and zippers)"
- 1990 Banbury Conference, Electrophoresis of Large DNA Molecules: Theory, Practice, and Future, Cold Spring Harbor, NY, "Separation of very large DNA with a variable angle CHEF device"
- 1990 MIT, Cambridge, MA, "Xeroderma pigmentosum and how human cells recognize damaged DNA"
- 1990 Harvard Medical School, Boston, MA, "Xeroderma pigmentosum and how human cells recognize damaged DNA"
- 1991 Gordon Conference, Mammalian DNA Repair, Oxnard, CA, "XPE binding factor, a protein involved in xeroderma pigmentosum and the recognition of damaged DNA"
- 1991 American Academy of Allergy and Immunology Annual Meeting, San Francisco, CA, "Principles of gel electrophoresis and nucleic acid hybridization"
- 1993 International conference, Cell Cycle Checkpoints, DNA repair and DNA replication strategies, Cambridge, England, "The recognition of DNA damage: from bulky adducts to double-strand breaks"
- 1994 Vanderbilt University, Nashville, TN, "How cells recognize UV and X-ray damaged DNA: implications for DNA repair and V(D)J recombination"
- 1994 March of Dimes Clinical Genetics Conference, Genes in Development and Cancer, Orlando, FL, "DNA repair disorders"
- 1994 MIT, Cambridge, MA, "A DNA end-binding protein: associations with double-strand break repair, V(D)J recombination, and p53"
- 1994 Good Samaritan Hospital, San Jose, CA, "How cells recognize damaged DNA: implications for DNA repair diseases and cancer"
- 1994 International conference, V(D)J Recombination, DNA Repair, and Hypermutation, Brighton, England, "Involvement of the Ku autoantigen in the cellular response to DNA double-strand breaks"
- 1994 Imperial Cancer Research Fund, South Mimms, England, "Ku autoantigen participates in X-ray-induced double-strand break repair and V(D)J recombination"
- 1994 Vanderbilt University, Nashville, TN, "Ku, V(D)J recombination, and DNA repair"
- 1995 University of North Carolina, Chapel Hill, NC, "DNA repair, V(D)J recombination, and the Ku autoantigen"
- 1995 EMBO Workshop on Lymphocyte Neoplasia and DNA Rearrangements in the Immune System, Basel, Switzerland, "Ku autoantigen is involved in both DNA double-strand break repair and V(D)J recombination"

- 1995 UCLA, Los Angeles, CA, "Role of Ku autoantigen in V(D)J recombination and double-strand break repair"
- 1995 Loyola University Medical Center, Chicago, IL, "Role of Ku autoantigen in V(D)J recombination and the repair of DNA double-strand breaks"
- 1995 University of Chicago, Chicago, IL, "Role of Ku autoantigen in V(D)J recombination and the repair of DNA double-strand breaks"
- 1996 FASEB Conference on Transcriptional Regulation During Cell Growth, Differentiation, and Development, Snowmass Village, CO, "Role of Ku in V(D)J recombination and double-strand break repair"
- 1997 Environmental Mutagen Society Meeting, Minneapolis, MN, "The biochemical role of Ku/DNA-dependent protein kinase in double-strand break repair and V(D)J recombination"
- 1997 Gordon Conference on Molecular Concepts in Radiation Oncology, New Plymouth College, NH, "The role of Ku and DNA-PK in double-strand break repair"
- 1997 Erasmus University, Rotterdam, Netherlands, "Theme and variation in recognizing DNA damage: XPE binding factor and DNA-dependent protein kinase"
- 1997 MIT, Cambridge, MA, "DNA repair: from xeroderma pigmentosum to V(D)J recombination"
- 1999 Midwinter Conference of Immunologists, Pacific Grove, CA, "DNA-dependent protein kinase: biochemical and structural implications for V(D)J recombination"
- 1999 8th International Symposium of Society of Chinese Bioscientists in America, Hong Kong, "Recognizing DNA damage: from cyclobutane dimers to double-strand breaks"
- 1999 National Institute of Environmental Health Sciences Symposium, Wayne State University, Detroit, MI, "Recognizing DNA damage"
- 1999 ASM Conference on DNA Repair and Mutagenesis, Hilton Head, SC, "Structure of DNA-dependent protein kinase and requirements for its activation by DNA"
- 1999 Harvard Medical School, Boston, MA, "Cellular responses to ultraviolet and ionizing radiation: implications for V(D)J recombination and cancer"
- 1999 Lawrence Livermore Laboratory, Livermore, CA (video conference for national DNA repair group) "Recognizing DNA damage"
- 2000 University of Texas Health Science Center, San Antonio, TX, "How cells recognize and respond to damaged DNA"
- 2001 Environmental Mutagen Society meeting, San Diego, CA, "Activation of DNA-dependent protein kinase by DNA: implications for double-strand break repair and V(D)J recombination"
- 2001 National Cancer Institute, Bethesda, MD, "Significance analysis of microarrays applied to the radiation response"
- 2001 University of Toronto, Toronto, Ontario, Canada, "How cells respond to damaged DNA"
- 2001 10th International Symposium of Society of Chinese Bioscientists in America, Taipei, Taiwan, "Significance analysis of microarrays applied to the radiation response of human cells"
- 2001 MIT, Cambridge, MA, "Predicting cancer risk and treatment toxicity by microarray analysis of transcriptional responses to DNA damage"
- 2002 Environmental Mutagen Society meeting, Anchorage, AL, "Predicting treatment toxicity in cancer patients from microarrays"
- 2002 UC Davis, Davis, CA, "How do human cells and humans respond to ionizing radiation?"
- 2002 Chemogenomics Seminar, Redwood City, CA, "Transcriptional responses to DNA damage predict toxicity from radiation therapy"
- 2002 AACR meeting on Frontiers in Cancer Prevention Research, Boston, MA, "Transcriptional responses to DNA damage predict toxicity from radiation therapy"
- 2003 American Society of Hematology Annual Meeting, San Diego, CA, "Toxicity from radiation therapy associated with abnormal transcriptional responses to DNA damage"
- 2003 Columbia University, New York, NY, "How humans respond to double-strand breaks: from DNA repair to cancer treatment"
- 2004 Stanford Linear Accelerator Center, Stanford, CA. "How humans respond to double strand breaks in their DNA"

- 2004 Canadian Association of Radiation Oncologists Annual Meeting: Exploring Genomics in Radiation Oncology, Halifax, Nova Scotia, "Toxicity from radiation therapy associated with abnormal transcriptional responses to DNA damage"
- 2004 American Society of Microbiology Conference on DNA Repair and Mutagenesis, Southampton, Bermuda, "Processing of DNA for nonhomologous end-joining by cell-free extract"
- 2005 9th International Conference on Environmental Mutagens, San Francisco, CA, "Nonhomologous end-joining by cell-free extracts"
- 2006 Gordon Research Conference on DNA Damage, Mutation, and Cancer, Oxnard, CA, "Processing DNA ends for non-homologous end-joining"
- 2007 UCLA, Los Angeles, CA, "V(D)J recombination and direct ligation of mismatched DNA ends"
- 2007 MIT, Cambridge, MA, "Direct ligation of mismatched DNA ends: implications for DNA repair and V(D)J recombination"
- 2008 Academia Sinica, Taipei, Taiwan, "Ligation of mismatched DNA ends during nonhomologous end-joining"
- 2009 UCLA, Los Angeles, CA, "Joining DNA breaks and immunological diversity"
- 2009 NIH, Bethesda, MD, "Dealing with breaks: molecules to microarrays"
- 2009 Natl Inst Aging, Baltimore, MD, "Dealing with breaks: molecules to microarrays"
- 2010 Shanghai Institute of Plant Physiology and Ecology, Shanghai, China, "A guide for analyzing microarray experiments"
- 2010 Sun Yat-Sen University, Guangzhou, China, "Mechanism for joining DNA double-strand breaks"
- 2010 City of Hope, Duarte, CA, "Non-homologous end joining: from DNA repair to immunological diversity"
- 2012 UC Davis Cancer Center, Sacramento, CA, "How non-homologous end joining minimizes loss of DNA sequence at double-strand breaks"
- 2014 UC Riverside, Riverside, CA, "How non-homologous end joining conserves DNA at double-strand breaks"
- 2017 Washington State University, Pullman, WA, "Two short stories: repairing DNA & saving brains"
- 2019 U Pittsburgh Medical Center, Pittsburgh, PA, "Chemobrain and ammonia"
- 2019 Huazhong Agricultural University, Wuhan, China, "Filaments bring DNA together for nonhomologous end joining"
- 2023 Rome, Italy, International Conference for Point-of-Care Testing: Home, Hospital and Beyond, "Ammonia at POC for diagnosis and management of inborn errors of metabolism"
- 2024 Cambridge, MA, MIT Sharp Lab 50th Anniversary Symposium, "A Tale of Two Topics: non-homologous end joining and blood ammonia at the point-of care"

SPONSORED RESEARCH PROJECTS

PAST RESEARCH SUPPORT

- Title: Finding the molecular defect in xeroderma pigmentosum
 Source: NIH/NCI
 Role: Principal Investigator Project dates: 05/01/87-04/30/92
- Title: New probes for DNA repair in xeroderma pigmentosum
 Source: American Cancer Society
 Role: Principal Investigator Project dates: 07/01/87-12/31/89
- Title: Protein-protein interactions in the recognition of DNA damage
 Source: Smith-Kline Beecham/Center for Molecular and Genetic Medicine
 Role: Principal Investigator Project dates: 10/01/89-09/30/91

- Title: Finding the molecular defect in xeroderma pigmentosum
Source: NIH/NCI
Role: Principal Investigator
Project dates: 05/01/92-04/30/95
- Title: Administrative supplement to "Genes involved in DNA double-strand break repair: implications for breast cancer"
Source: NIH/NCI
Role: Principal Investigator
Project dates: 09/01/95-08/31/96
- Title: Genes involved in DNA double-strand break repair: implications for breast cancer
Source: U.S. Army Medical Research and Development Command
Role: Principal Investigator
Project dates: 10/01/94-07/31/98
- Title: Radiation hypersensitivity in breast cancer patients
Source: NIH/NCI (in collaboration with Affymetrix)
Role: Principal Investigator
Project dates: 10/01/97-09/30/98
- Title: DNA strand breaks and the genetic basis of lymphomas
Source: NIH/NCI
Role: Principal Investigator
Project dates: 05/01/98-04/30/02
- Title: Predicting breast cancer risk from microarrays
Source: Mary Kay Ash Charitable Foundation
Role: Principal Investigator
Project dates: 07/01/02-06/30/04
- Title: The end-joining reaction in DNA repair and V(D)J recombination
Source: NIH
Role: Principal Investigator
Project dates: 07/01/98-06/30/06
- Title: Proteomic analysis of blood components in autoimmune disease
Project 4: Statistical analysis of proteomics data
Source: NIH
Role: Project P.I.
Project dates: 10/01/02-09/30/09
- Title: Targeting breast cancer with a steroid adapter to inhibit DNA repair
Source: Dept. of Defense
Role: Principal Investigator
Project dates: 06/01/08-05/31/11
- Title: Molecular basis for ligation of mismatched DNA ends
Source: NIH
Role: Project Leader
Project dates: 05/01/09-04/30/13
- Title: Targeting HIF-1 Alpha dysfunction in complications of aging (PI: Geoffrey Gurtner)
Source: NIH
Role: Co-investigator
Project dates: 04/15/11-03/31/16
- Title: Osteogenic enrichment of adipose derived stromal cells (PI: Michael Longaker)
Source: NIH
Role: Co-Investigator
Project dates: 10/01/12-09/30/17
- Title: Drug to block double-strand break repair in breast cancer
Source: California Breast Cancer Research Program

Role: Principal Investigator Project dates: 06/01/14–05/31/15

Title: Small volume detection of blood ammonia
Source: Stanford Innovation Project
Role: Principal Investigator Project dates: 12/01/14–08/16/16

Title: A device that measures blood ammonia in mice
Source: Genzyme-Sanofi
Role: Principal Investigator Project dates: 11/01/15–04/30/15

Title: Measurement of blood ammonia from a finger stick
Source: Stanford-Coulter Translational Research Award
Role: Principal Investigator Project dates: 05/01/16–04/30/18

PUBLIC SERVICE RESUME

Leadership

1997-1998 President, Board of Governors, Eichler Swim and Tennis Club
1999-2004 Chair, Swim Team Committee, Eichler Swim and Tennis Club
2002-2005 Board of Directors, American Cancer Society, Northern California Chinese Unit

Foundations

1999-**NOW** Selection Panel, Paul & Daisy Soros Fellowship for New Americans, New York, NY

Community

1993-2005 AYSO soccer referee
1996 YMCA basketball coach
1995-2009 Junipero Serra Swim League stroke and turn judge, starter
1996-1998 Board of Governors, Eichler Swim and Tennis Club
1996-2009 Piano concerts at Palo Alto Commons residential care facility
2000-2005 AYSO soccer coach
2009-**NOW** Palo Alto VA Medical Center, Christmas caroling for hospitalized veterans
2009-2021 St. Anthony's Padua Dining Room, preparing and serving food for the homeless

TEACHING RESUME

TEACHING CONTRIBUTIONS

Medical students. Course Director and principal lecturer for Molecular Foundations of Medicine, which teaches first-year students molecular biology integrated with patient presentations and small group discussions of articles from the primary literature.

Laboratory students. Mentoring undergraduate, PhD and MD students, almost going on to research careers in industry and academia.

Oncology fellows. Teaching clinical oncology fellows in the clinic, in-patient service, and interactive journal clubs and patient conferences.

On-line course. Nineteen short videos linked to questions that address key topics at the intersection of molecular biology and clinical medicine.

Undergraduate students. Course Director and principal lecturer for Our Genome, which teaches first-year students the underlying science of genomics with the goal of thinking critically about the implications for personal choices, healthcare, economics, law, society and ethics.

LEADERSHIP

- 1993-2012 Course Director, Oncology Journal Club
Organized and set the curriculum for this weekly meeting, in which faculty and fellows meet to critically discuss current articles from the medical literature.
- 2023-2012 Director, Oncology Training Program
Organized the selection of oncology fellows, their mentorship, and clinical training in the clinics.
- 2004-2012 Course Director, Cancer Education Series
Organized and set the curriculum for this weekly meeting, in which faculty and guest lecturers gave talks on key topic in clinical oncology.
- 2018 Co-chair (with Prof. Tina Cowan), Curriculum Subcommittee on Student Assessment
Recommended best practices for student assessment, undertaken in the context of a medical school-wide initiative for curriculum reform.

TEACHING AWARDS

- 2001 Oncology Divisional Teaching Award, School of Medicine
- 2003 Kaiser Award for Excellence in Preclinical Teaching, School of Medicine
- 2007 Kaiser Award for Excellence in Preclinical Teaching, School of Medicine
- 2014 Lawrence H. Mathers Award for Exceptional Commitment to Teaching and Active Involvement in Medical Student Education, School of Medicine
- 2015 Kaiser Award for Excellence in Preclinical Teaching, School of Medicine
- 2018 Asian American Community Faculty Award
- 2020 Kaiser Award for Excellence in Preclinical Teaching, School of Medicine
- 2020 Kaiser Award for Outstanding and Innovative Contributions to Medical Education
- 2024 Oscar Salvatierra Award for Exceptional Service to Medical Students and the School of Medicine

INVITED TEACHING TALKS

- 2003 American Society of Clinical Oncology Annual Meeting, Chicago, IL, "Critical appraisal of microarrays for clinicians"
- 2015 UC Davis Pre-health Student Alliance Conference, Davis, CA, "What is cancer medicine?"
- 2015 Renaissance Society, California State University, Sacramento, CA, "Breast cancer: Hope for new treatments"
- 2019 U Pittsburgh Medical Center, Pittsburgh, PA, "How to give a talk"

DIDACTIC TEACHING

Course	Learner	Role	Years	Teaching hrs/yr
Frontiers in Biochemistry BIOC215	PhD students	Discussant	1996- NOW	3
Molecular Foundations of Medicine BIOC205	MD students	Director	2003-2023	35
Applied Biochemistry BIOC200	MD students	Discussant	2016- NOW	2
Pharmacological Treatment of Disease INDE260	MD students	Lecturer	2019-2022	3
Our Genome THINK68	First year undergrad	Director	2020-2021	30
Being Mortal Seminar MED217SI	MD and PA students	Lecturer	2018-2020	2
Perspectives in Cancer Care INDE242	MD and PA students	Director	2024- NOW	10

CLINICAL TEACHING

Oncology Journal Club	MD fellows	Speaker	1993- NOW	40
Oncology Patient Conf	MD fellows	Speaker	2013-2018	40

ADDITIONAL TEACHING

Molecular Foundations On-line	5000 students/yr	Director	2015- NOW	8
Oncology Interest Group	MD students	Faculty Mentor	2014- NOW	10
Grant Writing Academy	PhD students	Mentor	2015-2021	3
Cancer Support Group	Patients	Lecturer	2011-2021	2

TRAINEES

Trainee	Position	Dates	Project	Current position
Mark Patterson	Postdoc	88-90	Similarity of photolyase to UV-DDB	Managing Executive Editor, New Open Access Journal, Cambridge, UK
Kevin Gunderson	Research Asst	89-90	Electrophoresis of whole chromosomes	President & Principal Consultant, BlueBarn Bio, CA
Byung Joon Hwang	Predoc	89-97	Role of UV-DDB in DNA repair	Prof Molecular Bioscience, Kangwon National Univ, Korea
Kimryn Rathmell	Predoc	91-96	Role of Ku in DNA repair and V(D)J recombination	Past Director, Natl Cancer Institute, Bethesda, MD CEO for Ohio State University Cancer Center
Aimee Payne	Undergrad	92-93	Spectrum of lesions recognized by UV-DDB	Prof & Chair, Dermatology, Columbia Univ Med Center, NY

Brian Feldman	Research Asst	93-94	Characterization of yeast photolyase	Prof, Division of Pediatric Endocrinology, UCSF, CA
Joseph Liao	MD	93-95	Role of UV-DDB in DNA repair	Prof Urology, Stanford, Chief of Urology, Palo Alto VAMC, CA
Vaughn Smider	Predoc	93-98	Role of Ku in V(D)J recombination	Founder & Pres, Applied Biomed Sci Institute, San Diego, CA
Virginia Goss Tusher	Predoc	96-01	Significance analysis of microarray data	Board of Trustees, Cal Academy of Sciences, SF, CA
Jean Tang	Predoc	96-01	Role of UV-DDB in suppressing mutations	Prof, Dept of Dermatology, Stanford, CA
Ola Hammarsten	Postdoc	97-99	Activation of DNA-PK by DNA ends	Prof, Dept of Laboratory Medicine, Gothenberg University, Box 100, 405 30 Gothenberg, Sweden
Lisa DeFazio-Eli	Predoc	97-02	Synapsis of DNA ends by DNA-PK	Scientific Lead, Oncol Pharma Collab, Monogram, SF, CA
Yvonne Thorstensen	Postdoc	98-02	Mutational analysis of ATM gene	Scientist, Molec Diagnostics, Mountain View, CA
Tom Tan	Predoc	98-03	Regulation of UV-DDB by p53	Director, R&D Microbiology bioMérieux, San Jose, CA
Kerri Rieger	Predoc	00-04	Genome-wide responses to UV & ionizing radiation	Prof & Director Dermatopathology, Stanford, CA
Joe Budman	Predoc	99-05	Cell free nonhomologous end-joining	VP of Biology, Vicinitas Therapeutics, South SF, CA
Sunny Kim	Predoc	02-07	Joining of DNA ends with mismatched overhangs	Assoc Director, Element Biosci, San Diego, CA
Wan-Jen Hong	MD	00-06	Microarray responses to UV and ionizing radiation	Sr VP, Head of Oncol Clin Devel, Dren Bio, Foster City, CA
Chun Tsai	Postdoc	05-08	Reconstituted non-homologous end joining	Sr Research Assoc, Stanford, CA

OTHER TRAINEES

1987-89	Elaine Chang	research assistant
1987-89	Daniel Markowitz	MD student
1989-91	Betty Swyryd	research associate
1990-92	Cynthia Hoy	postdoctoral fellow
1991-92	Yu-Min Shen	undergraduate student
1991-92	Diann Lewis	postdoctoral fellow
1992-93	Mary Fox	postdoctoral fellow
1993-96	Sara Cheng	undergraduate student
1994-95	Paul Mitsis	postdoctoral fellow
1995-97	Tom Narang	undergraduate student
1996-98	Linda Tang	undergraduate student
1997-98	Rita Leung	undergraduate student
2000-01	Una Lee	MD student
2001-03	Bradley Ekstrand	postdoctoral fellow
2002-05	Joy Rusmintratip	MD/PhD student
2002-04	Stephen Sha	undergraduate student
2009-11	Michael Nguyen	undergraduate student

2010-12	Jian Fung	MS student
2010-11	Prajakta Jaju	research assistant

MENTORING OF TEACHING ASSISTANTS (BIOC205 Molecular Foundations of Medicine)

2003-2004	Kelly McCann
2003-2004	Ken Westover
2005	Eric Green
2005	Jeremy Heit
2006	Justin Odegaard
2006	Helena Horak
2007	Megan Insco
2007	Roberto Ricardo
2008-2010	Kevin Yackle
2008-2010	Greg Charville
2011	Andrew Beel
2011	Jaime Brett
2012-2013	Jonathan Tsai
2012-2017	Caitlin Roake
2014-2019	Stan Schor
2014-2017	Payton Marshall
2018-2020	Anthony Cordova
2018-2020	Maria Filsinger Interrante
2019-2020	Vipul Vachharajani
2021-2024	Christine Yeh
2021-2023	Adi Munkind
2021-2023	Sam Scharenberg
2023-2024	Abby Thurm
2023-2024	Maïgane Diop

MENTORING OF TEACHING FELLOWS (THINK68 Our Genome)

2019-2020	Melissa Ko
2019-2020	Racheli Werberger
2019-2020	Cynthia Flores
2021-2022	Amy Braun
2021-2022	Johana Vega
2021-2022	Sahar El Abbadi
2021-2022	Shizuka Yamada

MENTORING ON PH.D. DISSERTATION COMMITTEES

1987	Xiaohua Huang, Chemistry; advisor: Richard Zare
1988	Shelley Sazar, Biological Sciences; advisor: Robert Schimke
1991	Brian Pontius, Biochemistry; advisor: Paul Berg
1992	Lee Bardwell, Cancer Biology; advisor: Errol Friedberg
1992	David van den Berg, Genetics; advisor: Uta Francke
1993	Sandra Ramer, Biochemistry; advisor: Ronald Davis
1993	Lori Lommel, Biological Sciences; advisor: Philip Hanawalt
1993	Frederick Christians, Biological Sciences; advisor: Philip Hanawalt
1993	Carla Henning, Cancer Biology; advisor: Errol Friedberg
1993	Melanie Mahtani, Genetics; advisor: Hunt Willard
1994	Raymond Kelleher, Cell Biology; advisor: Roger Kornberg
1994	Michelle Geschwind, Genetics; advisor: David Botstein
1994	John Harrington, Cancer Biology; advisor: Michael Lieber

1994	Antoine Firmenich, Biochemistry; advisor: Paul Berg
1994	Greg Daniels, Cancer Biology; advisor: Michael Lieber
1994	Daniel Dairaghi, Biophysics; advisor: David Clayton
1995	John Feaver, Cell Biology; advisor: Roger Kornberg
1996	David Koehler, Biological Sciences; advisor: Philip Hanawalt
1996	Gregory Donoho, Biochemistry; advisor: Paul Berg
1996	Sharon Hays, Biochemistry; advisor: Paul Berg
1997	Tim Huer, Cancer Biology; advisor: Pat Brown
1998	Joseph DeRisi, Biochemistry; advisor: Pat Brown
2000	Wei-hau Chang, Structural Biology; advisor: Roger Kornberg
2004	Thomas Purcell, Biochemistry, advisor: James Spudich
2005	Emily Ray, Cancer Biology, advisor: Joe Lipsick
2006	Mark Engelhardt, Biochemistry, advisor: Dan Herschlag
2007	Ryan Nottingham, Biochemistry, advisor: Suzanne Pfeffer
2009	Heather Clemons, Biochemistry, advisor: Pat Brown
2010	Mark Sellmyer, Chemical & Systems Biology, advisors: Tom Wandless, Chris Contag
2011	Greg Allen, Biophysics, advisor: Julie Theriot
2012	Simona Rosu, Developmental Biology, advisor: Anne Villaneuve

TEACHING FOR COURSES AND TRAINING PROGRAMS

Preclinical Medical (past)

1991	Medicine 229, Molecular and Genetic Medicine
1991-1996	Biochemistry 201, Advanced Molecular Biology
1991-1996	Biochemistry 201, Advanced Molecular Biology
1997-2002	Biochemistry 203, Molecular Biology

Clinical

1988-2000	Attending physician in Oncology inpatient and consultation service
2011-2013	Attending physician in Oncology consultation service
1988-2023	Attending physician in Oncology outpatient clinic (1 day/wk)

Undergraduate

1993-2010	Biology 205, DNA Repair and Mutagenesis
1994	Human Biology 3A, Cell Biology
2011	Biology 210, DNA Replication and Genomic Maintenance

Graduate and Postdoctoral

1991-2002	Microbiology/Immunology 215, Principles of Biological Techniques
1996-2006	Microbiology/Immunology 211, Advanced Immunology I
2004-2014	Microbiology/Immunology 212, Advanced Immunology II

Training Programs

1990-2005	Human Genetics Training Program
1997-2006	Molecular Pharmacology Training Program
2008-2014	Career Development in the Genetics & Genomics of Lung Diseases
1994- NOW	Biophysics Training Program
1994- NOW	Cell and Molecular Biology Training Program
1995-2022	Immunology Training Program
1988-2022	Medical Scientist Training Program Admissions Committee
1989- NOW	Cancer Biology Training Program
2006- NOW	Chemical and Systems Biology Training Program

Community Outreach

1963-1964 Trenton Tutorial Project
1993-2002 Palo Verde Elementary School science teaching volunteer
1999-2002 Palo Verde Elementary School Math Club director

TEACHING COMMITTEE SERVICE

Stanford

1992-1994 School of Medicine Committee on Courses and Curriculum
1994-1996 School of Medicine Task Force on Gene Therapy
1995-2005 Dean's Postdoctoral Fellowship Committee
2009-2011 Medical School Genotyping Task Force
2011-2014 School of Medicine Patient-Centered Learning Strategies Working Group
2016-2018 Child Health Research Institute (CHRI) Grant & Postdoc Scientific Review Committee
2010-**NOW** Pre-clerkship Course Directors Committee
2015-**NOW** School of Medicine **Steering** Committee for the Teaching and Mentoring Academy
2020-2024 School of Medicine **Executive** Committee for the Teaching and Mentoring Academy
2017-**NOW** School of Medicine Committee on Curriculum and Academic Policy
2019-2021 Thinking Matters Governing Board

Other institutions

1997-2001 MIT Visiting Committee for Harvard-MIT Program in Health Sciences & Technology