RANDAL K. WADA, M.D.

CURRICULUM VITAE

PERSONAL INFORMATION

Date of Birth:	July 7, 1957
Place of Birth:	Honolulu, Hawaii
Office Address:	Cancer Research Center of Hawaii 1236 Lauhala Street Honolulu, Hawaii 96813 (808) 586-2963 Email: tbear@crch.hawaii.edu
Home Address:	3314 Kamaaina Drive Honolulu, Hawaii 96817 (808) 595-1030
Citizenship:	U.S.A.
Marital Status:	Married; two children
Spouse's Name:	Candace M. Wada, D.D.S.

EDUCATION

1979	B.A., Biology, Northwestern University; Evanston, IL
1979	M.S., Biology, Northwestern University; Evanston, IL
1983	M.D., Emory University School of Medicine; Atlanta, GA

PROFESSIONAL EXPERIENCE

1983-1984	Pediatric Internship, Children's Hospital of Los Angeles; Los Angeles, CA
1984-1986	Pediatric Residency, Children's Hospital of Los Angeles
1986-1988	Post-doctoral Fellowship, Department of Pediatrics, Division of Cancer Immunology and Biology, UCLA School of Medicine; Los Angeles, CA
1988-1989	Pediatric Clinical Fellowship, Department of Pediatrics, Division of Hematology/Oncology, UCLA School of Medicine
1989-1990	Pediatric Research Fellowship, Hematology/Oncology, Children's Hospital of Los Angeles

1990-1996	Assistant Professor, Department of Pediatrics, Division of Hematology/Oncology, UCLA School of Medicine
1996-1998	Associate Clinical Professor, Department of Pediatrics, John A. Burns School of Medicine (JABSOM), University of Hawaii; Research Staff Member, Kapiolani Health Research Institute
1996-	Associate Researcher, Cancer Research Center of Hawaii, University of Hawaii
1998-	Associate Professor, Department of Pediatrics, JABSOM Senior Researcher, Kapiolani Health Research Institute

BOARD CERTIFICATION AND LICENSURE

Licensed Physician and Surgeon, State of California (Number G54495, 1984)
Licensed Physician and Surgeon, State of Hawaii (Number MD9666, 1996)
National Board of Medical Examiners (1984)
American Board of Pediatrics (Number 41682, 1989)
American Board of Pediatrics, Sub-Board Hematology/Oncology (Number 952, 1990)

MEMBERSHIPS

Japanese American Medical Association
American Society of Pediatric Hematology/Oncology
Western Society for Pediatric Research
Society for Pediatric Research
American Association for Cancer Research
American Society for Blood and Marrow Transplantation

HONORS AND AWARDS

B.A.-M.S. Honors Program in Biological Sciences, Northwestern University, 1975-1979
Tumor Immunology Training Grant, UCLA School of Medicine, 1986-1988
American Cancer Society Clinical Fellowship Grant, 1988-1989

COMMITTEE SERVICE

1983-1984	Housestaff Association Representative, Children's Hospital of Los Angeles
1984-1985	Pharmacy and Therapeutics Committee, Children's Hospital of Los Angeles
1991-1996	Jonsson Cancer Center Foundation, Seed Grant Reviewer
1992-1995	Department of Pediatrics Representative, UCLA Academic Senate
1994-1996	UCLA Interdepartmental Experimental Therapeutics Program Committee

TEACHING ACTIVITIES

University of Hawaii

1997-	BIOM 622	Cell/Molecular Biology II	course lecturer
	GENE 699	Directed Research, Genetics	graduate student advisor (Caron Hong,)
	PEDS	Unit 7-Pediatrics	course lecturer
1998-	PEDS	Unit 5-Weekly Conference	course lecturer
1999-	PEDS	Unit 6-Pediatric Clerkship	preceptor, examiner
	BIOL 406	Cellular Biology	course lecturer
	GENE 671	Techniques in Genetics	graduate student advisor (Matthew Tuthill)

Other Teaching Activities

1990-1996	Monthly Pediatric Hematology/Oncology Outreach Clinic/Conference, Kern Medical Center, Bakersfield, California
1991-1996	UCLA Pediatric Hematology/Oncology Fellow Research Mentor: 1991-1992 Kelley Woodruff, M.D. 1991-1993 Lisa Goodman, M.D. 1993-1996 Theodore Moore, M.D.
1992	Society for Pediatric Research Medical Student Mentor, Summer Research Program: Janesta Noland
1991-1996	UCLA Student Research Program Mentor: 1991-1995 David Pai 1992-1993 Chin Song 1993-1995 Randal Medzoyan 1994-1996 Jerry Huang 1995-1996 Arnab Biswas
1993-1996	Faculty Member/Advisor, Tumor Cell Biology Training Program, UCLA
1994-1996	Faculty Member/Advisor, Tumor Immunology Training Program, UCLA
1994-1995	Science by Mail: National High School Science Program, Participating Scientist
1996	Department of Medicine STAR (Specialty Training and Advanced Research) Program, Medical Student Research Advisor: Ilona Choekler, UCLA
1996-	Invited Lecturer, Annual Pediatric Board Review Course, UCLA Children's Hospital
1997-1999	Hematology/Oncology Resident Rotation educational curriculum co-director, Department of Pediatrics, JABSOM Sponsoring Laboratory, Society for Pediatric Research, Student Research Program
1999-	Pediatric Resident Advisor, Department of Pediatrics, JABSOM
2000-	General Pediatrics Ward Attending, Department of Pediatrics, JABSOM

	Ad hoc Executive Board Member, Department of Pediatrics Group Practice Plan
1995-1996	Peer Review Task Force, Cell and Tissue Biology Course, Medical School Education Committee, UCLA School of Medicine
	UCLA Clinical Nutrition Research Unit
	Faculty Host, Medical Student Well Being Program, UCLA School of Medicine
	Medical Student Advisor, Medical School Faculty Advisory Program, UCLA School of Medicine
1997-	Cancer Research Center Response Team, Bloodborn Pathogens Exposures
	Cancer Research Center Public Affairs Advisory/Planning Committee
	American Cancer Society Institutional Grant Review Committee, Cancer Research Center of Hawaii
	Bone Marrow Transplant Committee, St. Francis Medical Center
1997-1998	Medical School Admissions Interviewer, JABSOM
1997-1999	Research Unit Representative, University of Hawaii at Manoa Faculty Senate
	Committee on Academic Policy and Planning, University of Hawaii at Manoa Faculty Senate
1998-1999	Workplace Safety Committee, University of Hawaii
	Biological Hazard Safety Officer, Cancer Research Center of Hawaii
1998-	Hawaii State Legislative Committee, American Association for Cancer Research
	Resident Steering Committee, Department of Pediatrics, JABSOM

JOURNAL REVIEW

1990-	*Ad hoc* reviewer, BioTechniques
1996-	*Ad hoc* reviewer, Journal of the National Cancer Institute
1998-	*Ad hoc* reviewer, Molecular Genetics and Metabolism
	Ad hoc reviewer, Cancer Research

CONSULTING SERVICES

1991-1998	Pediatric Liaison, Asians for Miracle Marrow Matches, National Marrow Donor Program
1995-	Consultant and Judge, American Academy of Neurology, Annual National High School Neuroscience Prize Competition
1997-1999	Institutional Review Board, BIS Laboratories
1998-	Medical Advisory Board, Asians for Miracle Marrow Matches

CLINICAL ACTIVITIES

1990-1996	Attending Physician, Department of Pediatrics, Division of Hematology/ Oncology, UCLA School of Medicine
	Pediatric Hematology/Oncology Consultant, Kern Medical Center, Bakersfield, CA
	Member, Children's Cancer Group
1996-	Medical Director, Pediatric Bone Marrow Transplant Unit, Kapiolani Medical Center for Women and Children
1997-	Medical Director, Hawaii Cord Blood Bank
	Member, Pediatric Oncology Group
	Embryonal Tumor Biology Committee, Pediatric Oncology Group
	Neuroblastoma Cell Bank Sub-Committee, Pediatric Oncology Group
	Attending Physician, Children's Blood and Cancer Center, Kapiolani Medical Center for Women and Children
2000-	Minority Affairs Committee, National Marrow Donor Program
2000-	Principal Investigator, Kapi'olani Medical Center Pediatric BMT Program, Pediatric Oncology Group

RESEARCH ACTIVITIES

1977-1978	Processing of mRNA in Oxytricha fallax; Northwestern University (undergraduate honors research project)
1978-1979	Nucleosome organization of inactive and actively transcribing chromatin in Oxytricha fallax; Northwestern University (Master of Science degree thesis research)
1981	Calcium-dependent sodium transport in the small intestine of Amphiuma; Emory University School of Medicine (medical school research project)
1982-1983	Stimulatory Modulator-dependent protein kinase and phosphorylation of an endogenous substrate in K-562 and HL-60 leukemia cells; Emory University School of Medicine (medical school research elective)
1986-1988	Molecular biology of neuroblastoma; determination of N-*myc* oncogene copy number and expression; UCLA School of Medicine (post-doctoral fellowship research project)
1989-1990	Molecular biology of neuroblastoma; isolation of N-*myc* regulatory sequences; Children's Hospital of Los Angeles (post-doctoral fellowship research project)

1990- **Current Research:**

Molecular biology of neuroblastoma; characterization and mapping of N-*myc* promoter and retinoic acid/ γ-interferon/ vitamin D response elements; transcriptional mechanisms mediating N-*myc* cell type specific expression; identification of relevant DNA binding regulatory proteins; post-

transcriptional regulation of N-*myc* by phenylacetate; molecular detection of retinoic acid resistant tumor cells.

Regulation of oncogene expression and tumor invasiveness; determination of the invasive phenotype conferred on neuroblastoma cells by N-*myc* expression using an *in vitro* invasion assay; oncogene regulation of vascular endothelial growth factor expression (VEGF).

Combination differentiation therapy; development of phase I/II trial; Cancer Research Center of Hawaii, Kapiolani Health Research Institute, and Baylor College of Medicine (Texas Children's Hospital).

Incidence of alleles associated with HIV resistance; testing of donor umbilical cord blood units from ethnic minorities collected by the Hawaii Cord Blood Bank; testing of HIV patients and siblings in collaboration with the Hawaii AIDS Research Consortium.

GRANT SUPPORT

Present Support

Regulation of N-*myc* expression in human neuroblastoma
5RO1 NS34432, NIH (50% effort, Principal Investigator [PI])
09-01-95 to 06-30-01; $560,558 direct costs
Induced differentiation of human neuroblastoma
2RO1 CA43503, NIH (10% effort, Consortium Sub-Contract with Dr. Neil Sidell)
07-01-97 to 06-30-01; $377,536 direct costs ($58,772 for Dr. Wada)
Center of Clinical Research Excellence
1U54 RR14607, NIH (20% effort, Collaborator Project 2)
10-01-99 to 09-30-05; $5,262,288 direct costs ($145,309 for Dr. Wada)
Screening for Mutated HIV Co-receptors in Hawaii / Feasibility for Transplant as AIDS Therapy
Clinical Research Center Seed Grant (PI)
10-01-99 to 09-30-00; $15,000 direct costs
Achievement Rewards for College Scientists
Foundation Scholarship (mentor to Caron Hong)
07-01-99 to 06-30-01; $10,000 direct costs

Past Support

Combination differentiation therapy of human neuroblastoma
Concern II Foundation (PI)
09-01-97 to 08-31-99; $50,000 direct costs
Hawaii Cord Blood Bank: Minority based umbilical cord blood banking and research
Alana Dung Research Foundation (PI)
09-01-98 to 08-31-99; $10,000 direct costs

Gannett Foundation (PI)
11-15-98 to 11-14-99; $5,000 direct costs
Ronald McDonald House Charities (PI)
01-01-99 to 12-31-99; $15,500 direct costs

Mechanism of N-*myc* oncogene down regulation by vitamin D_3
1F32 CA68771, NIH (PI, National Research Service Award, mentor to Dr. T. Moore)
01-01-96 to 12-31-96; $32,300 direct costs

N-*myc* expression and invasion in neuroblastoma
Wendy Will Case Cancer Fund (PI, seed grant)
07-01-95 to 06-30-96; $17,500 direct costs

Cell type specific regulation of N-*myc* oncogene expression
Concern II Foundation (PI)
04-01-94 to 03-31-96; $100,000 direct costs

Mechanism of N-*myc* oncogene down regulation by vitamin D_3
Bank of America-Giannini Foundation (PI, mentor to Dr. T. Moore)
07-01-95 to 12-31-95; $12,500 direct costs

Cell type specific regulation of N-*myc* oncogene expression
Bank of America-Giannini Foundation (PI, mentor to Dr. T. Moore)
07-01-94 to 06-30-95; $25,000 direct costs

N-*myc* oncogene regulation in human neuroblastoma
1R29 NS32128, NIH (PI, FIRST [First Independent Research Support and Transition] Award)
07-01-93 to 06-30-98; $337,200 direct costs. Grant terminated on 09-01-95, due to awarding of grant 5RO1 NS34432 (competitive conversion to RO1)

Effects of retinoic acid on human neuroblastoma cells
2RO1 CA43503, NIH (20% effort, Co-Investigator with Dr. Neil Sidell)
05-01-92 to 04-30-95; $291,767 direct costs ($76,119 for Dr. Wada as Co-PI)

Regulation of N-*myc* expression in human neuroblastoma by retinoic acid
UC Cancer Research Coordinating Committee (PI, seed grant)
07-01-92 to 06-30-93; $35,000 direct costs

Regulation of N-*myc* expression in neuroblastoma
Jonsson Cancer Center Foundation (PI, seed grant)
09-01-91 to 08-31-92; $30,000 direct costs

UCLA Academic Senate Research Grants (PI, seed grant)
07-01-91 to 06-30-92; $5,229
07-01-92 to 06-30-93; $3,800
07-01-93 to 06-30-94; $6,918
07-01-94 to 06-30-95; $3,795

BIBLIOGRAPHY

1. Wada RK, Spear BB. Nucleosome organization of macronuclear chromatin in Oxytricha fallax. Cell Differentiation 9:261-268, 1980.
2. Wada RK, Seeger RC, Brodeur GM, Slamon DJ, Rayner SA, Tomayko MM, Reynolds CP. Characterization of human neuroblastoma cell lines that lack N-*myc* gene amplification. Prog Clin Biol Res 271:57-69, 1988.

3. Seeger R, Wada R, Brodeur G, Moss T, Bjork R, Sousa L, Slamon D. Expression of N-*myc* by neuroblastomas with one or multiple copies of the oncogene. Prog Clin Biol Res 271:41-49, 1988.
4. Wada RK, Rayner SA. Modification of the *Omniblot Processing System* allowing its use in western blotting. BioTechniques 8:258-262, 1990.
5. Wada RK, Seeger RC, Reynolds CP, Alloggiamento T, Yamashiro JM, Ruland C, Black AC, Rosenblatt JD. Cell type specificity and retinoic acid response of the human N-*myc* promoter in neuroblastoma cells. Oncogene 7:711-717, 1992.
6. Wada RK, Seeger RC, Brodeur GM, Einhorn PA, Rayner SA, Tomayko MM, Reynolds CP. Human neuroblastoma cell lines that express N-*myc* without gene amplification. Cancer 72:3346-3354, 1993.
7. Wuarin L, Chang B, Wada R, Sidell N. Retinoic acid up regulates retinoic acid receptor α expression in human neuroblastoma. Int J Cancer 56:840-845, 1994.
8. Sidell N, Wada R, Han G, Chang B, Shack S, Moore T, Samid D. Phenylacetate synergizes with retinoic acid in inducing the differentiation of human neuroblastoma cells. Int J Cancer 60:507-514, 1995.
9. Woodruff KA, Rosenblatt JD, Moore TB, Medzoyan RH, Huang JI, Yamashiro JM, Wada RK. Cell type-specific activity of the N-*myc* promoter in human neuroblastoma cells is mediated by a downstream silencer. Oncogene 10:1335-1341, 1995.
10. Matsumoto K, Wada R, Yamashiro J, Kaplan DR, Carnahan J, Thiele CJ. Expression of brain-derived neurotrophic factor (BDNF) and $p145^{TrkB}$ affects survival, differentiation, and invasiveness of human neuroblastoma cells. Cancer Res 55:1798-1806, 1995.
11. Moore TB, Sidell N, Chow VJT, Medzoyan RH, Huang JI, Yamashiro JM, Wada RK. The differentiating effects of 1, 25, dihydroxycholecalciferol (D_3) on LA-N-5 human neuroblastoma cells, and its synergy with retinoic acid. Am J Ped Hem Onc 17:311-317, 1995.
12. Moore TB, Koeffler HP, Yamashiro JM, Wada RK. Vitamin D_3 analogs inhibit growth and induce differentiation in LA-N-5 human neuroblastoma cells. Clin Exp Metastasis 14:239-245, 1996.
13. Goodman LA, Liu BCS, Thiele CJ, Schmidt ML, Cohn SL, Yamashiro JM, Pai DSM, Ikegaki N, Wada RK. Modulation of N-*myc* expression alters the invasiveness of neuroblastoma. Clin Exp Metastasis 15:130-139, 1997.
14. Wada RK, Pai DSM, Huang J, Yamashiro JM, Sidell N. Interferon-γ and retinoic acid down regulate N-*myc* in neuroblastoma through complementary mechanisms of action. Cancer Lett 121:181-188, 1997.
15. Sidell N, Chang B, Yamashiro JM, Wada RK. Phenylacetate-induced upregulation of retinoic acid receptor β (RARβ) expression in human neuroblastoma cells. Exp Cell Res 239:169-174, 1998.
16. Sidell, N, Sawatsri S, Connor MJ, Barua AB, Olson JA, Wada RK. Pharmacokinetics of chronically administered all-trans-retinoyl-β-glucuronide in mice. Biochem et Biophys Acta, 2000, *in press*.
17. Fan L, Iyer J, Zhu S, Frick KK, Wada RK, Eskenazi AE, Berg PE, Ikegaki N, Kennett RH, Frantz CN. Inhibition of N-*myc* expression and induction of apoptosis by iron chelation in human neuroblastoma cells. Cancer Res, 2000, *submitted*.

PUBLISHED ABSTRACTS

1. Wada R, Seeger R, Brodeur G, Slamon D, Rayner S, Tomayko M, Reynolds CP. Neuroblastoma cell lines that express one copy of the N-*myc* oncogene. Proc Am Assoc Cancer Res 28:2111, 1987. *Subsequently published as citation #6.*
2. Wada R, Alloggiamento T, Yamashiro J, Quan E, Black A, Seeger R, Reynolds CP, Rosenblatt JD. Functional studies of the human N-*myc* promoter in neuroblastoma. Proc Am Assoc Cancer Res 32:25449, 1991. *Subsequently published as citation # 5.*
3. Woodruff K, Goodman L, Yamashiro J, Noland J, Wada R. Cell type-specific N-*myc* promoter activity is mediated by a downstream silencer. Proc Am Assoc Cancer Res 34:3166, 1993. *Subsequently published as citation # 9.*
4. Moore T, Noland J, Thiele C, Cohn S, Schmidt ML, Salwin H, Ikegaki N, Yamashiro J, Wada R. Modulation of N-*myc* expression alters neuroblastoma cell invasiveness in an *in vitro* assay. Proc Am Assoc Cancer Res 35:347, 1994. *Subsequently published as citation #13.*
5. Wada R, Han G, Moore T, Samid D, Sidell N. Effects of phenylacetate and its interaction with retinoic acid on human neuroblastoma differentiation. Proc Am Assoc Cancer Res 35:2501, 1994. *Subsequently published as citation # 8.*
6. Thiele CJ, Matsumoto K, Kaplan DR, Yamashiro J, Wada R. Activation of BDNF-TrkB signal transduction pathway stimulates neuroblastoma cell invasion. Proc Am Assoc Cancer Res 36:468, 1995. *Subsequently published as citation # 10.*
7. Moore T, Koeffler HP, Yamashiro J, Wada RK. Vitamin D_3 analogs inhibit growth and induce maturation in LA-N-5 human neuroblastoma cells. Proc Am Assoc Cancer Res 36:2312, 1995. *Subsequently published as citation #12.*
8. Thiele CJ, Matsumoto K, Lucarelli E, Kaplan DK, Yamashiro J, Wada R. Brain derived neurotrophic factor (BDNF) stimulates MYCN transcription in human neuroblastoma. Proc Am Assoc Cancer Res 36:3331, 1995.
9. Wada RK, Biswas A, Huang JI, Moore T, Yamashiro JM. Retinoic acid induced downregulation of N-*myc* in neuroblastoma is mediated by a unique regulatory element. Proc Am Assoc Cancer Res 37:3602, 1996. *Subsequently published as citation #14.*
10. Wada RK, Huang J, Yamashiro J, Sidell N. Combination therapy with retinoic acid and phenylacetate induces differentiation and N-*myc* downregulation in a resistant neuroblastoma cell line. Proc Am Assoc Cancer Res 38:581, 1997.
11. Hong M, Sidell N, Tuthill MC, Wada RK. Identification of retinoic acid (RA) response elements in N-myc and correlation of promoter mutation with RA-resistance of neuroblastoma. Proc Am Assoc Cancer Res 41:70, 2000.
12. Sidell N, Han SW, Wada RK. Detection and functional activity of PPARγ in human neuroblastoma cells. Proc Am Assoc Cancer Res 41:3919, 2000.