

CURRICULUM VITAE

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Degrees:

1966	B.Sc. (Biochemistry)	University of Toronto
1969	Ph.D. Biochemistry)	University of British Columbia with G.H. Dixon
1969-71	Postdoctoral Fellow	M.R.C. Laboratory of Molecular Biology, Cambridge, England, with F. Sanger.

Awards:

1962	Ontario Scholar
1965	Victoria University Alumni Scholarship in Life Sciences
1966-69	N.R.C. / M.R.C. of Canada Studentship
1969-71	M.R.C. of Canada Centennial Fellowship
1988	C. Chester Stock Award - Memorial Sloan-Kettering Cancer Center
1988	Cancer Research Award - The Milken Family Medical Foundation
1989	The F.C.C.P. (Ontario) Education Foundation 1989 Award of Merit
1990	Gairdner Foundation International Award
1991	Dr Josef Steiner Cancer Research Award
1991	Fellow of the Royal Society of Canada
1991	General Motors Research Foundation Kettering Prize
1992	Courvoisier Leadership Award
1993	American Association for Cancer Research/Bruce F. Cain Memorial Award
1993	University Professor, University of Toronto
1994	National Cancer Institute of Canada/Robert L. Noble Prize
1994	Melvin L. Samuels Lectureship Award
1994	The Society of Surgical Oncology Inc., Basic Science Lecturer Award
1995	Doctor of Science, <i>honoris causa</i> , Memorial University of Newfoundland
2000	BC Biotechnology Alliance Award for Innovation and Achievement
2000	Order of British Columbia
2001	Michael Smith Foundation for Health Research Distinguished Scholar Award
2002	UBC Alumni Association Research Award
2002	Doctor of Laws, <i>honoris causa</i> , Simon Fraser University, British Columbia
2003	Commemorative Medal for the Golden Jubilee of Her Majesty Queen Elizabeth II
2003	Roche Diagnostics Award
2006	Doctor of Science, <i>honoris causa</i> , Trinity Western University, British Columbia

2006 Doctor of Science, *honoris causa*, York University, Ontario
2006 Terry Fox Gold Medal, British Columbia Medical Association
2007 NCI Canada 60th Anniversary Diamond Jubilee Award
2008 Officer, Order of Canada

Present Positions:

2007-present President and Scientific Director, Terry Fox Research Institute (www.tfri.ca)
Senior Scientist, BC Cancer Agency (www.bccancer.bc.ca)
Professor, Department of Pathology & Laboratory Medicine, and
Department of Biochemistry and Molecular Biology, University of British Columbia
(www.ubc.ca)
Director, Interdisciplinary Oncology Program, University of British Columbia (www.iop.ca)

2009-present Member, Selection Board, Vanier Canada Graduate Scholarship

2007-present Associate Editor, Current Oncology

2005-present Member, Scientific Advisory Council, Alberta Heritage Foundation for Medical Research

1989-present Associate Editor, Journal of Cellular Physiology

1992-present Associate Editor, Journal of Molecular Pharmacology

Selected Past Positions:

1995-2007 Vice-President, Research, BC Cancer Agency
Assistant Dean Cancer Research, University of British Columbia
Professor, Department of Pathology & Laboratory Medicine,
Associate member (Professor) Biochemistry and Molecular Biology,
University of British Columbia

2004-2008 Member, Medical Advisory Committee, Gairdner International Foundation

2000-2006 Member, Governing Council, CIHR

1999-2006 Director of the Board, National Cancer Institute of Canada

2001-2005 Member, Premier's Technology Council of British Columbia

2000-2005 Member, Canadian Strategy for Cancer Control Committee

1999-2003 Member, Awards Assembly, General Motors Cancer Research Foundation

1997-2003 Member, Advisory Committee on Research, Alberta Cancer Board

- 1998-2002 Member, Awards Committee, Burroughs Wellcome Trust Fund
- 1997 -2002 Chair/Member, International Affairs Committee, American Association for Cancer Research
- 1989-1995 Head, Division of Molecular & Structural Biology, The Ontario Cancer Institute
Toronto, Ontario
- 1983-1995 Professor, Department of Medical Biophysics, University of Toronto
- 1992-1995 Member, Board of Directors, American Association for Cancer Research
- 1992-1995 Member, Board of Directors, Hospital for Sick Children Foundation
- 1990-1994 Board of Scientific Counselors, Division of Cancer Treatment, National Institutes of Health
- 1988-1992 MRC Scholarship Committee, Medical Research Council of Canada
- 1986-1990 Study Section Member, Experimental Therapeutics, National Institutes of Health, U.S.A.

Publications:

Refereed papers:

- 1 Ling, V, and R.A. Anwar. (1966) On the presence of two distinct proteolytic components in pancreatic crystalline elastase. *Biochim. Biophys. Res. Comm.* 24: 593-598
- 2 Ling, V., J.R. Trevithick and G.H. Dixon. (1969) The biosynthesis of protamine in trout testis. Intracellular site synthesis. *Can. J. Biochem.* 47: 51-60.
- 3 Marushige, K., V. Ling and G.H. Dixon. (1969) Phosphorylation of chromosomal basic proteins in maturing trout testis. *J. Biol. Chem.* 244: 5953-5958.
- 4 Ling V. and G.H. Dixon. (1971) The biosynthesis of protamine in trout testis. II. Polysome patterns and protein synthetic activities during testis maturation. *J. Biol. Chem.* 245: 3035-3042.
- 5 Ling, V., B. Jergil, and G.H. Dixon. (1971) The biosynthesis of protamine in trout testis. III. Synthesis of protamine components during testis development. *J. Biol. Chem.* 246: 1168-1170.
- 6 Ling, V. (1970). Sequence at the 5`-end of bacteriophage F2RNA. *Biochem. Biophys. Res. Comm.* 42: 82-88.
- 7 Ling, V.(1971) Partial digestion of 32p-fd DNA with T4 endonuclease IV. *FEBS Letters* 19: 50-54.
- 8 Ling, V. (1972) Pyrimidine sequences from the DNA of bacteriophages fd, fl and ϕ X174 *Proc. Nat. Acad. Sci. U.S.A.* 69: 742-746.

- 9 Till, J.E., R.M. Baker, D.M. Brunette, V.Ling, L.H. Thompson, and J.A. Wright (1973) Genetic regulation of membrane function in mammalian cells in culture. *Federation Proc.* 32: 29-33.
- 10 Ling, V. (1972). The fractionation and sequences of the large pyrimidine oligonucleotides from bacteriophage fd DNA. *J. Mol. Biol.* 64: 87-102.
- 11 Ling, V. and L.H. Thompson. (1974). Reduced permeability in CHO cells as a mechanism of resistance to colchicine. *J. Cell. Physiol.* 83: 103-116.
- 12 See, Y.P., S.A. Carlsen, J.E. Till, and V. Ling. (1974). Increased drug permeability in Chinese hamster ovary cells in the presence of cyanide. *Biochem, Biophys. Acta.* 373: 242-252.
- 13 Ling V. (1975). Drug resistance and membrane alterations in mutants of mammalian cells. *Can. J. genetics and Cytology.* 17: 503-515.
- 14 Aubin, J.E., S.A. Carlsen and V. Ling. (1975). Colchicine permeation is required for inhibition of concanavalin A capping in Chinese hamster ovary cells. *Proc. Natl. Acad. Sci. U.S.A.* 72: 4516-4520.
- 15 Bech-Hansen, N.T., J.E. Till and V. Ling. (1976). Pleiotropic phenotype of colchicine-resistant CHO cells: Cross-resistance and collateral sensitivity. *J. Cell. Physiol.* 88: 23-32.
- 16 Juliano, R., V. Ling and J. Graves. (1976). Drug-resistant mutants of Chinese hamster ovary cells possess an altered cell surface carbohydrate component. *J. Supermolec. Struct.* 4: 521-526.
- 17 Aubin, J.E., L. Subrahmanyam, V. Kalnins and V. Ling. (1976). Antisera against electrophoretically purified tubulin stimulate colchicine binding activity. *Proc. Natl. Acad. Sci. U.S.A.* 73: 1246-1249.
- 18 Juliano, R.L. and V. Ling. (1976). A surface glycoprotein modulating drug permeability in Chinese hamster ovary cell mutants. *Biochem. Biophys. Acta.* 455: 152-162.
- 19 Carlsen, S.A., J. E. Till and V. Ling. (1976). Modulation of membrane drug permeability in Chinese hamster ovary cell mutants. *Biochem. Biophys. Acta.* 455: 900-912.
- 20 Ling, V. (1977). A membrane altered mutant cold-sensitive for growth. *J. Cell. Physiol.* 91: 209-224.
- 21 Bech-Hansen, N. T., F. Sarangi, D.J.A. Sutherland and V. Ling. (1977). Rapid assays for evaluating the drug sensitivity of tumor cells. *J. Natl. Cancer Inst.* 59: 21-27.
- 22 Carlsen, S.A., J.E. Till, and V. Ling. (1977). Modulation of drug permeability in Chinese hamster ovary cells. Possible role for phosphorylation of surface glycoproteins. *Biochim. Biophys. Acta.* 467: 238-250.
- 23 Ling, V., and R.M. Baker. (1978). Dominance of colchicine resistance in hybrid CHO cells. *somatic Cell Genetics.* 4: 193-200.
- 24 Brockman, R.W., Y. Yagasawa, V. Ling, F.M. Schabel Jr., A. Di Marco, K. R. Harrap, and J.F. Holland. (1978). Modes of acquiring resistance to chemotherapeutic agents. *Current Chemotherapy.* 1: 97-102.

- 25 Ling, V., J.E. Aubin, A. Chase, and F. Sarangi. (1979). Mutants of Chinese hamster ovary (CHO) cells with altered colcemid-binding affinity. *Cell* 18: 423-430.
- 26 Riordan, J.R., and V. Ling. (1979). Purification of P-glycoprotein from plasma membrane vesicles of Chinese hamster ovary cell mutants with reduced colchicine permeability. *J. Biol. Chem.* 254: 12701-12705.
- 27 Aubin, J.E., N. Tolson, and V. Ling. (1980). The redistribution of fluoresceinated concanavalin A in Chinese hamster ovary cells and in their colcemid-resistant mutants. *Exptl. Cell. Res.* 126: 75-85.
- 28 Connolly, J.A., V.I. Kalnins, and V. Ling. (1981). Microtubules in colcemid resistant mutants of CHO cells. *Exptl. Cell. Res.* 132: 147-156.
- 29 Lalande, M.E., V. Ling, and R.G. Miller. (1981). Hoechst 33342 dye uptake as a probe of membrane permeability changes in mammalian cells. *Proc. Natl. Acad. Sci. U.S.A.* 78: 363-367.
- 30 Elliott, E.M., and V. Ling. (1981). Selection and characterization of Chinese hamster ovary cell mutants resistant to melphalan. *Cancer Res.* 41:393-400
- 31 Chambers, A.F., R.P. Hill, and V. Ling. (1981). Tumor heterogeneity and stability of the metastatic phenotype. *Cancer Res.* 41: 1368-1372
- 32 Keates, R.A.B., F. Sarangi, and V. Ling. (1981). Structural and functional alterations in microtubule protein from Chinese hamster ovary cell mutants. *Proc. Natl. Acad. Sci.* 78: 5638-5642.
- 33 Debenham, P.G., N. Kartner, L. Siminovitch, J.R. Riordan and V. Ling. (1982). DNA-mediated transfer of multiple drug resistance and plasma membrane glycoprotein expression. *Molec. Cell. Biol.* 2: 881-889.
- 34 Chambers, A.F., R. Shafir, and V. Ling. (1982). A model system for studying metastasis using the embryonic chick. *Cancer Res.* 42: 4018-4025.
- 35 Harris, J.F., A.F. Chambers, R.P. Hill, and V. Ling (1982). Metastatic variants are generated spontaneously at a high rate in mouse KHT tumor. *Proc. Natl. Acad. Sci. U.S.A.* 79: 5547-5551.
- 36 Kartner, N., J.R. Riordan, and V. Ling. (1983). Cell surface P-glycoprotein is associated with multidrug resistance in mammalian cells. *Science.* 221: 1285-1288.
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- 38 Ling, V., N. Kartner, T. Sudo, L. Siminovitch, and J.R. Riordan. (1983). The multidrug resistance phenotype in Chinese hamster ovary cells. *Cancer Treat. Rep.* 67: 869-874.
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- 42 Hill, R.P., A.F. Chambers, V. Ling, and J.F. Harris. (1984). Dynamic heterogeneity: Rapid generation of metastatic variants in mouse B16 melanoma cells. *Science* 224: 998-1001.
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- 45 Elliot, E.M., F. Sarangi, G. Henderson and V. Ling. (1985). Cloning of eleven alpha tubulin gene sequences from the genome of Chinese hamster ovary cells. *Can. J. Biochem. Cell Biol.* 63: 511-518.
- 46 Bell, D.R., J.H. Gerlach, N. Kartner, R.N. Buick, and V. Ling (1985). Detection of P-glycoprotein in ovarian cancer: a molecular marker associated with multidrug resistance. *J. Clin. Oncology* 3: 311-315.
- 47 Elliott, E.M., H. Okayama, F. Sarangi, G. Henderson, and V. Ling. (1985). Differential expression of three alpha tubulin genes in Chinese hamster ovary cells. *Molec. Cell. Biol.* 5: 236-241.
- 48 Kartner, N., D. Everden-Porelle, G. Bradley, and V. Ling. (1985). Detection of P-glycoprotein in multidrug-resistant cell lines by monoclonal antibodies. *Nature* 316: 820-823.
- 49 Riordan, J.R., K. Deuchars, N. Kartner, N. Alon, J. Trent, and V. Ling. (1985). Amplification of P-glycoprotein genes in multidrug-resistant mammalian cell lines. *Nature* 316: 817-819.
- 50 Elliot, E.M., G. Henderson, F. Sarangi, and V. Ling (1986). Complete sequence of three α -tubulin isoprotein. *Mol. Cell Biol.* 6: 906-913
- 51 Chamberlain, J.W., G.Henderson, M.W.M. Chang, T. Lam, D. Dignard, V. Ling, G. B. Price and C.P. Stanners. (1986). The structure of HSAG-1, a middle repetitive genetic element which determines a leukemia-related cellular surface antigen. *Nuc. Acids Res.* 14: 3409-3423.
- 52 Van der Blik, A.M., T. Van der Velde-Koerts, V. Ling and P. Borst. (1986) The over-expression and amplification of five genes in a multidrug-resistant Chinese hamster ovary cell line. *Mol. Cell. Biol.* 6: 1671-1678.
- 53 Gerlach, J., J. Endicott, P. Juranka, G. Henderson, F. Sarangi, K. Deuchars, and V. Ling (1986). Homology between P-glycoprotein and a bacterial hemolysin transport protein suggests a model for multidrug resistance. *Nature* 324: 485-489.

- 54 Ueda, K., M.M. Gottesman, I. Pastan, I.B. Roninson, V. Ling and J.R. Riordan. (1986). The *mdr 1* gene responsible for multidrug-resistance, codes for P-glycoprotein. *Biochem. Biophys. Res. Comm.* 141: 956-962.
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- 56 Bell, D.R., J.M. Trent, H.F. Willard, J.R. Riordan, and V. Ling. (1987). Chromosomal location of human P-glycoprotein gene sequences. *Cancer Genet. Cytogen.* 25: 141-148.
- 57 Cillo, C., J.E. Dick, V. Ling and R.P. Hill (1987). Generation of drug resistant variants in metastatic B16 mouse melanoma cell lines. *Cancer Res.* 47: 2604-2608.
- 58 Deuchars, K., R.P. Du, M. Naik, D. Everden-Porelle, N. Kartner, A. Van der Bliet and V. Ling (1987). Expression of hamster P-glycoprotein and multidrug resistance in DNA-mediated transformants of mouse LTA cells. *Mol. Cell. Biol.* 7: 718-724.
- 59 Endicott, J.A., P.F. Juranka, F. Sarangi, J.H. Gerlach, K. L. Deuchars, and V. Ling. (1987). Simultaneous expression of two P-glycoprotein genes in drug sensitive Chinese hamster ovary cells. *Mol. Cell. Biol.* 7: 4075-4081.
- 60 Rice, G.C., V. Ling and R.T. Schnimke (1987). Frequencies of independent and simultaneous selection of Chinese hamster cells for methotrexate and doxorubicin (adriamycin) resistance. *Proc. Natl. Acad. Sci. U.S.A.* 84: 9261-9264.
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- 62 Goldberg, H., V. Ling, P.Y. Wong and K. Skorecki (1988). Reduced cyclosporin accumulation in multidrug-resistant cells. *Biochem. Biophys. Res. Comm.* 152: 552-558.
- 63 Bradley, G., P.F. Juranka, and V. Ling (1988) Mechanism of multidrug resistance. *Biochim. Biophys. Acta.* 948: 87-128.
- 64 Greenberger, L.M., W.S. Scott, E. Georges, V. Ling and S.B. Horwitz (1988). Electrophoretic analysis of P-glycoprotein made by mouse J774.2 and Chinese hamster ovary multidrug-resistant cells. *J. Natl. Cancer Inst.* 80: 506-510.
- 65 Woods, G., L.A. Lund, M. Naik, V. Ling, and A. Ochi. (1988). Resistance of multidrug-resistant lines to natural killer-like-cell-mediated cytotoxicity. *The FASEB Journal* 2: 2791-2796.
- 66 Cillo C., V. Ling, and R.P.Hill (1989). Drug resistance in KHT fibrosarcoma cell lines with different metastatic ability. *Int. J. Cancer* 43: 107-111
- 67 Bradley, G., M. Naik and V. Ling (1989). P-glycoprotein expression in multidrug-resistant human ovarian carcinoma cell lines. *Cancer Res.* 49: 2790-2796

- 68 Chan, H.S.L., G. Bradley, P. Thorner, G. Haddad, B.L. Gallie and V. Ling (1988). A sensitive method for immunocytochemical detection of P-glycoprotein in multidrug-resistant human ovarian carcinoma cell lines. *Lab Investigation* 59: 870-875.
- 69 Endicott, J.A., and V. Ling (1989). The biochemistry of P-glycoprotein-mediated multidrug resistance. *Annual Reviews in Biochem.* 58: 137-171
- 70 Ng, W.F., F. Sarangi, R.L. Zastawny, L. Veinot-Drebot, and V. Ling (1989). Identification of members of the P-glycoprotein multigene family. *Mol. Cell. Biol.* 9: 1224-1232
- 71 Foxwell, B.M.J., A. Mackie, V. Ling and B. Ryffel (1989). Identification of the multidrug resistance related P-glycoprotein as a cyclosporin binding protein. *Molecular Pharmacology* 36: 543-546
- 72 Ling, V. (1989). Does P-glycoprotein predict response to chemotherapy? *J. Natl. Cancer Inst.* 81: 84-85
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- 75 Chan, H.S.L., P. Thorner, G. Haddad, and V. Ling (1990). Immunohistochemical detection of P-glycoprotein: prognostic correlation in soft tissue sarcoma of childhood. *J. Clin. Oncol.* 8: 689-704
- 76 Georges, E., G. Bradley, J. Gariépy and V. Ling (1990). Detection of P-glycoprotein isoforms by gene specific monoclonal antibodies. *Proc.Natl.Acad.Sci.* 87: 152-156
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