***Curriculum vitae*: R. N. Johnston** (updated February, 2021)

**Education**

BSc: 1975, University of Victoria, Victoria, British Columbia, Canada

 Thesis: Studies on 45Ca2+ uptake by fertilized Urechis caupo oocytesSupervisor: M. Paul

PhD: 1980, Stanford University, Stanford, California, USA

 Thesis: Primary neuronal differentiationSupervisor: N. K. Wessells

**Positions held**

Research assistant: Summer, 1974, and 1975-1976, University of Victoria

Laboratory instructor: Developmental Biology, Spring, 1976, University of Victoria, and Introductory Biology, Spring, 1977 and 1978, Stanford University

Teaching assistant: Developmental Biology, Spring, 1978, Stanford University

Postdoctoral fellow: 1981 - 84, Stanford University. Supervisor: Dr. R.T. Schimke

Assistant Professor: 1984 - 91, Department of Biological Sciences, Univ. of Calgary

Associate Professor: 1991 - 99, Department of Biochemistry and Molecular Biology, Univ. of Calgary

Full Professor: 1999-2020, Depts. Biochemistry/Molecular Biology and Oncology, Univ. of Calgary

Sabbatical Leave: July-December, 1997, Department of Biochemistry, McMaster Univ., Hamilton, Ontario

Associate Director (Research): 1991 - 2000, Tom Baker Cancer Center

Chair, Cancer Biology Research Group: 1991-97

Director: 1991 - 2000, Southern Alberta Cancer Research Center

Associate Vice-President (Research), University of Calgary, 2000-2001

President & CEO, Genome Prairie, 2001-05

Interim President & CEO, Genome Alberta, 2005-06

**Awards and Honors**

Honorable Mention, Lieutenant Governor’s Student Award for Literature, British Columbia, 1970.

University Entrance Scholarships, S. Madill Ltd. & Royal Canadian Legion, Nanaimo, B.C., 1970.

Admission with highest standing, combined Honours program in Math and Physics, Univ. of Victoria, 1972-73; completion, Honours BSc in Biology with Best Undergraduate Thesis, in 1975.

Graduate Scholarship, Natural Sciences and Engineering Research Council of Canada, 1975-79.

Postdoctoral Fellowship, Natural Sciences and Engineering Research Council of Canada, 1980-81.

Establishment Award, Alberta Heritage Fund for Medical Research, 1985

Excellence in Teaching, awarded by Student's Union of the University of Calgary, 1985

Canadian Association for Biological Safety, Contributions to BioSafety, 1988

Distinguished Lecturer, DuPont Symposium, CSCB Meeting, 1989

Appointed Terry Fox Professor for Cancer Research: 1991 - 1996, renewed, 1996-2001

Excellence in Research, awarded by the Faculty of Medicine, 1992

Excellence in Teaching, awarded by the Medical Students’ Association, 1994, 1995, 1997, 1998

Terry Fox Foundation, Certificate of Appreciation, 1995, 1999

Excellence in Teaching, awarded by the Faculty of Medicine, 1996, BMB Dept, 2017

Alberta Cancer Foundation, Recognition of Contributions, 1998

National Cancer Institute of Canada, Contributions to Cancer Control, 2000

Outstanding Teaching Award, Department of Oncology, 2001

Canadian Breast Cancer Research Alliance, Contributions to Cancer Research, 2001

University of Calgary, Contributions to Research Leadership 2001

Genome Canada, Leadership in Genomics Research, 2006

Distinguished Lecturer, Microbiological Society of Korea, 2007

JH van de Sande Award for Academic Leadership and Service, 2011

Excellence in Education, Dept Biochem & Molec Biol, U Calgary, 2017

Peak Scholar in Entrepreneurship and Innovation, U Calgary, 2017

Professor Emeritus, Dept Biochem & Molec Biol, U Calgary, 2020-present

H-index: 43; Total citations over 6600; i10-index 93.

**Research Funding Support**

**Research Awards as Principal or Co-Investigator:**

Alberta Heritage Foundation for Medical Research, 1985, "Amplification and expression of oncogenes" ($59,000 pa for three years; nonrenewable Establishment Award)

National Cancer Institute of Canada, 1986, "Activation of oncogenes during oocyte maturation" (with L. Browder, Biology, U. of Calgary; $36,000 pa for three years), 1987-89, "Steroid hormones and oncogene expression" ($37,000 pa for two years), 1989-92 ($62,000 pa for three years) 1991, “Post-transcriptional regulatory mechanisms in development and oncogenesis” (with L. Browder; $35,000 for three years), and 1999, “Function of the ING1 candidate tumor suppressor in senescence and immortalization “ (with K. Riabowol; $96,840 pa for three years)

Natural Sciences and Engineering Research Council of Canada, 1987, "Gene amplification and trans-acting regulatory factors" ($31,700 pa for three years), 1990 ($39,220 pa for three years), 1993 ($32,000 pa for two years)

Alberta Cancer Board Pilot Projects, 1991, "Gene amplification and modulation of c-fos activity" ($20,000 for one year); 1992, "Reversion and deamplification of small cell lung carcinoma" ($20,000 for one year); 1993, “Is cyclin expression disrupted during c-*myc* induced apoptosis? ($20,000 for one year; A. Gibson and K. Riabowol, co-investigators); 1998 "The c-myc proto-oncogene and apoptotic control" ($25,000 for one year); 1999 “Matrix metalloproteinases in human gliomas” ($25,000 for one year with P. Forsyth, PI); 2002-03 “Resistance to Reoviral Oncolysis” ($25,000 for one year); 2006-07 “Stem cell therapy and reovirus as a purging agent” ($35,000 for one year nonrenewable with D. Rancourt, PI).

Alberta Cancer Board Research Initiative Program, 1987, "Regulation of oncogene expression" (with L. Browder and M. Bentley; $50,000 for one year); 1996-99, "Matrix metalloproteinases in gliomas: significance, regulation and potential as targets for new therapies" ($90,000 pa: together with Drs. Edwards (PI), Jin, Forsyth and Rewcastle; 2000-2003 “Reovirus as an oncolytic agent for lymphoma and leukemia” ($110,000 pa; with Drs. Kossakowska (PI), Urbanski and Lee); 2000-01 “C-Myc and ING1 as modulators of cancer cell behavior and chromatin structure” ($100,000 pa; with Drs. Riabowol, Young and Bazett-Jones). 2007-11 “Susceptibility and resistance to reoviral oncolysis; Johnston, PI ($72,892 total as supplemental to CIHR award).

Leukemia Research Fund, 1993, 1995, “The c-myc proto-oncogene and apoptosis” ($45,000 & $38,500, respectively); 1998, “Reovirus as an oncolytic agent in human non-Hodgkins lymphomas” $49,750, with Drs. Kossakowska [PI], Lee and Forsyth).

Cancer Research Society, 1993-95, 1995-97, “Regulation of c-*fos* proto-oncogene mRNA stability” ($50,000 & $48,000 pa for two years); “Tumor Suppressor Action and Viral Oncolysis” 2011-14 ($16,150 pa).

Canadian Breast Cancer Foundation, 2007-09, “Breast cancer susceptibility to reovirus” ($65,000 pa for two years, with K. Riabowol as Co-Investigator). “Novel oncolytic reovirus platforms with improved potency towards breast cancer” 2013-17 ($328,500 total; Johnston PI and Shmulevitz, Co-I).

Medical Research Council/Canadian Institutes of Health Research, 1995-98, "Construction of a Mammalian Artificial Chromosome" ($142,000 pa; Johnston, PI, together with Drs. Riabowol, Young, Rattner, Price and Zannis-Hadjopoulos); “Resistance to Reovirus Oncolysis” (Dr. RN Johnston, PI, $120,998 pa, 2002-05); Optimization of Reovirus for Cancer Therapy (POP award; Johnston, PI, $150,000 pa, 2006-07); Susceptibility and Resistance to Reoviral Oncolysis; Johnston, PI ($225,354 total, 2007-11).

OncoMetabolics, 2010-11, “Evaluation of a Novel Cancer Therapeutic Agent” (Johnston PI, $28,000).

Ross Family Fund, 2011-14, “Modulation of Viral Oncolysis” ($70,000; Forsyth, PI; Johnston Co-I).

CNA Diagnostics, 2016-17, "Detection of Disease-Specific Nucleic Acids" ($26,000; Johnston PI); 2018-19, “Rapid Amplification-free Detection of Specific DNA Sequences in Substrates” ($188,000 with C Sensen (PI), $94,000 for Johnston (Co-I).

*Total value (1984-present): $9.6M*

**Conference, Infrastructure and other Group Awards:**

Conference Grant, Health and Welfare Canada, 1988, "Testing and applications of bioengineered organisms in the environment" (R. Johnston, Conference Chair; $5,000)

Conference Grant, Alberta Heritage Foundation for Medical Research, 1989, "CFBS Symposium: Molecular Regulation of the Cell Cycle" (R. Johnston, Symposium Chair; $2,450)

Infrastructure Award, Alberta Cancer Board Research Initiative Program, 1998-01, “SACRC Research Facilities” (Dr. R Johnston, PI, with Drs. Demetrick, Riabowol, Lafreniere and Rancourt, Co-I; $350-370,000 pa)

Infrastructure Award, Alberta Cancer Board Research Initiative Program, 1999-00, “TBCC Clinical Research Unit” (Dr. R Johnston, PI; $150,000 for one year)

Infrastructure Award, Partners in Health, 1997-00, “In vivo tumor modelling facility” (Dr. R. Johnston, PI, with Drs. W. Yong and P. Forsyth, Co-I; $100,000 pa)

Equipment Grants, Proteomics. Bioinformatics and Functional Genomics equipment; Alberta Cancer Foundation ($1.8M, 2000-01); ASRA and WED ($12M, 2000-01, shared with Universities of Alberta and Lethbridge); WED ($750K, for Canadian Bioinformatics Resource, Western Canada).

Proposal Development Award, Alberta Heritage Foundation for Medical Research; “Advanced Cancer Evaluation: Genomics, Metabolomics and Molecular Imaging” intended as $5M proposal; ($10,000 to R. Johnston (PI) and AE MacEwan).

Infrastructure Awards, Alberta Cancer Foundation; “Alberta Cancer Research Biorepository” $2,700,000; Damaraju PI and Johnston Co-I (2011-13); $2.42M Johnston PI (2013-14); $2.0M Johnston PI (2014-15); $1.75M Johnston PI (2015-16).

#### Total Value (1984-present): $18M

#### **Research Project funding generated through Genome Prairie/Alberta during my Presidency, 2001-2006: $165M**

**Publications**

1. **Johnston, R.N**. and Paul, M. (1977). Calcium influx following fertilization of *Urechis caupo* eggs. **Dev. Biol.** 57: 364-373.

2. Paul, M. and **Johnston, R.N.** (1978). Uptake of Ca2+ is one of the earliest responses to fertilization of sea urchin eggs. **J. Exp. Zool.** 203: 143-149.

3. Paul, M. and **Johnston, R.N.** (1978). Absence of a Ca response following ammonia activation of sea urchin eggs. **Dev. Biol.** 67: 330-335.

4. **Johnston, R.N.,** Atalar, A., Hildebrand, J., Rugar, D. and Quate, C.F. (1979). Acoustic microscopy: resolution of subcellular detail. **Proc. Natl. Acad. Sci. USA** 76: 3325-3329.

5. **Johnston, R.N.** and Wessells, N.K. (1980). Regulation of the elongating nerve fiber. **Curr. Topics Dev. Biol.** 16: 165-206.

6. Hildebrand, J.A., Rugar, D., **Johnston, R.N.** and Quate, C.F. (1981). Acoustic microscopy of living cells. **Proc. Natl. Acad. Sci. USA** 78: 1656-1660.

7. Tlsty, T., Brown, P.C., **Johnston, R.** and Schimke, R.T. (1982). Enhanced frequency of generation of methotrexate resistance and gene amplification in cultured mouse and hamster cell lines. In "**Gene Amplification**" (R.T. Schimke, ed.) Cold Spring Harbor Laboratory, New York. pp. 231-238.

8. Brown, P.C., **Johnston, R.N.** and Schimke, R.T. (1983). Approaches to the study of mechanisms of selective gene amplification in cultured mammalian cells. In "**Gene Structure and Regulation in Development**" (F. Kafatos, ed.) Alan R. Liss, Inc., New York. pp. 197-212.

9. **Johnston, R.N.,** Beverley, S.M. and Schimke, R.T. (1983). Rapid spontaneous dihydrofolate reductase gene amplification shown by fluorescence-activated cell sorting. **Proc. Natl. Acad. Sci. USA** 80: 3711-3715.

10. Schimke, R. T., Beverley, S., Brown, P., Cassin, R., Federspiel, N., Gasser, C., Hill, A., **Johnston, R**., Mariani, B., Mosse, E., Rath, H., Smouse, D., and Tlsty, T. (1983) Drug resistance and gene amplification in eukaryotic cells. In "**Mechanism of Drug Action**" (Singer and Ondarza, eds.) Academic Press, Inc., New York. pp. 107-117.

11. Schimke, R.T., Brown, P.C., **Johnston, R.N.,** Mariani, B. and Tlsty, T. (1983) Gene amplification and methotrexate resistance in cultured animal cells. In "**Genes and Proteins in Oncogenesis**" (Weinstein and Vogel, eds.) Academic Press, Inc., New York. pp. 269-283.

12. Schimke, R.T., Beverley, S., Brown, P., Cassin, R., Federspiel, N., Gasser, C., Hill, A., **Johnston, R**., Mariani, B., Mosse, E., Rath, H., Smouse, D., and Tlsty, T. (1984). Gene amplification and drug resistance in cultured animal cells. **Cancer Treat. Rev.** 11: 9-17.

13. Hamkalo, B.A., Farnham, P.J., **Johnston, R.,** and Schimke, R.T. (1985) Ultrastructural features of minute chromosomes in a methotrexate-resistant mouse 3T3 cell line. **Proc. Natl. Acad. Sci. USA** 82: 1126-1130.

14. Schimke, R.T., Hill, A., and **Johnston, R.N.** (1985) Methotrexate resistance and gene amplification: an experimental model for the generation of cellular heterogeneity. **Brit. J. Cancer** 51: 459-465.

15. Schimke, R.T., Sherwood, S.W. Hill, A.B., and **Johnston, R.N.** (1986) Overreplication and recombination of DNA in higher eukaryotes: potential consequences and biological implications. **Proc. Natl. Acad. Sci. USA** 83: 2157-2161.

16. **Johnston, R.N.,** Feder, J., Hill, A.B., Sherwood, S.W., and Schimke, R.T. (1986) Transient inhibition of DNA synthesis results in increased dihydrofolate reductase enzyme synthesis and subsequent increased DNA content per cell. **Molec. Cell. Biol.** 6: 3373-3381.

17. Dulson, J., Bewley, J.D., and **Johnston, R.N.** (1988) Abscisic acid as an endogenous inhibitor in the regulation of mannanase production by isolated lettuce (*Lactuca sativa* c.v. Grand Rapids) endosperms. **Plant. Physiol.** 87: 660-665.

18. Rempel, S.R., and **Johnston, R.N.** (1988) Steroid induced cell proliferation *in vivo* is associated with increased c-*myc* proto-oncogene transcript abundance. **Development** 104: 87-95.

19. **Johnston, R.N.,** and Kucey, B.L. (1988) Competitive inhibition of *hsp*70 gene expression causes thermosensitivity. **Science** 242: 1551-1554.

20. **Johnston, R.N.** (1989) Gene amplification and its consequences. **Genome** 31: 431-432.

21. Fu, L., Ye, R., Browder, L.W., and **Johnston, R.N.** (1991) Translational potentiation of mRNA with secondary structure during oogenesis and early development of *Xenopus*. **Science** 251: 807-810.

22. Pai, S.B., Pai, R.B., and **Johnston, R.N.** (1992) Overexpression of c-*myc* by amplification of negative promoter domain. **J. Biol. Chem**. 267: 12428-12431.

23. Gibson, A.W., Ye, R., **Johnston, R.N.,** and Browder, L.W. (1992) A possible role for c-Myc oncoproteins in post-transcriptional regulation of ribosomal RNA. **Oncogene** 7: 2363-2367.

24. **Johnston, R.N.,** Pai, S.B., and Pai, R.B. (1992) The origin of the cancer cell: oncogeny reverses phylogeny. **Bioch. Cell Biol.** 70: 831-834.

25. Gibson, A.W., Ye, R., **Johnston, R.N.,** and Browder, L.W. (1992) Multiple antigens recognized by anti-c-myc antibodies in human cells and *Xenopus* oocytes. **Bioch. Cell Biol.** 70: 998-1005.

26. Gibson, A.W., Cheng, T., and **Johnston, R.N.** (1995) Apoptosis induced by c-Myc overexpression is dependent on growth condition. **Exp. Cell. Res**. 218: 351-358.

27. **Johnston, R.N.** (1996) Molecular genetics of colon cancer. In "**Trends in Inflammatory Bowel Disease Therapy 1996**" (R. McLeod, L. Sutherland, *et al*., eds.) Kluwer Academic Publishers, pp 243-254.

28. Cossons, N., Nielsen, T.O., Dini, C., Tomilin, N., Young, D.B., Riabowol, K.T., Rattner, J.B., **Johnston, R.N.,** Zannis-Hadjopoulos, M. and Price, G.B. (1997) Circular YAC vectors containing small mammalian origin sequences can associate with the nuclear matrix. **J. Cell. Biochem.** 67: 439-450

29. Lee, K.-Y., Helbing, C.C., Choi, K.-S., **Johnston, R.N.** and Wang, J.H. (1997) Neuronal Cdc2-Like Kinase (Nclk) Binds and Phosphorylates the Retinoblastoma Protein. **J. Biol. Chem** 272: 5622-5626.

30. Helbing, C.C., Veillette, C., Riabowol, K.T., **Johnston, R.N.** and Garkavtsev, I. (1997) A novel candidate tumor suppressor, ING1, is involved in the regulation of apoptosis. **Cancer Research** 57: 1255-1258.

31. Lee, K.-Y. and **Johnston, R.N.** (1997) Neurofilaments are part of the high molecular weight complex containing neuronal cdc2-like kinase (nclk). **Brain Res.** 773: 197-202

32. Edwards, D.R., Appelt, K., Groft, L.L., Muzik, H., Shi, Z.-Q., Wong, H., Dickinson-Laing, T., Lafleur, M., Rewcastle, N. B., Morris, D.G., Leco, K.J., Yong, V.W., Apte, S.S., Matouk, C.C., **Johnston, R.N.,** Brasher, P.M.A., Sutherland, G. and Forsyth, P.A. (1997) Matrix metalloproteinases and tissue inhibitors of metalloproteinases in brain cancer. In "**Development of Antimetastatic and Antiangiogenic Drugs**", International Symposium of Chungnam National University, Daejon, Korea, pp 86-95.

33. Forsyth, P.A., Laing, T.D., Gibson, A.W., Rewcastle, N.B., Brasher, P., Sutherland, G., **Johnston, R.N.** and Edwards, D.R. (1998) High levels of gelatinase-B and active gelatinase-A in metastatic glioblastoma. **J. Neurooncol.** 36: 21-29.

34. Helbing, C.C., Wellington, C.L., Gogela-Spehar, M., Cheng, T., Pinchbeck, G. and **Johnston, R.N.** (1998) Quiescence *versus* apoptosis: Myc abundance determines pathway of exit from the cell cycle. **Oncogene** 17: 1491-1501.

35. Forsyth, P.A., Wong, H., Laing, T.D., Rewcastle, N.B., Morris, D.G., Muzik, H., Leco, K.J., **Johnston, R.N**., Brasher, P.M.A., Sutherland, G., and Edwards, D.R. (1999) Gelatinase-A (MMP-2), Gelatinase-B (MMP-9) and membrane type matrix metalloproteinase-1 (MT1-MMP) are involved in different aspects of the pathophysiology of malignant gliomas**. Br. J. Cancer** 79: 1828-35.

36. Price, A., Shi, Q., Morris, D., Wilcox, M.E., Brasher, P.M.A., Rewcastle, N.B., Shalinsky, D., Zou, H., Appelt, K., **Johnston, R.N.,** Yong, V.W., Edwards, D. and Forsyth, P. (1999) Marked inhibition of tumor growth in a malignant glioma tumor model by a novel synthetic matrix metalloproteinase inhibitor AG3340. **Clin. Cancer Res.** 5: 845-54.

37. Lee, K.-Y., Clark, A.W., Rosales, J.L., Chapman, K., Fung, T. and **Johnston, R.N.** (1999) Neuronal cdc2-like kinase activity in the Alzheimer disease brain. **Neurosci. Res.** 34: 21-29.

38. Liu, S.L., Schryvers, A.B., Sanderson, K.E., and **Johnston, R.N.** (1999) Bacterial phylogenetic clusters revealed by genome structure. **J. Bacteriol.** 181: 6747-55.

39. Rosales, J.L., Nodwell, M.J., **Johnston, R.N.** and Lee, K.-Y. (2000) Cdk5/p25nck5a interaction with synaptic proteins in bovine brain. **J. Cell Biochem.** 78: 151-59.

40. Raithatha, S.A., Muzik, H., Rewcastle, N.B., **Johnston, R.N.,** Edwards, D.R., and Forsyth, P.A. (2000) Localization of gelatinase-A and gelatinase-B mRNA and protein in human gliomas. **Neuro-oncol.** 2: 145-150, 2000.

41. Timme, T.L., Goltsov, A., Tahir, S., Li, L., Wang, J., Ren, C., **Johnston, R.N.,** and Thompson, T.C. (2000) Caveolin-1 is regulated by c-*myc* and suppresses c-*myc*-induced apoptosis. **Oncogene** 19: 3256-65.

42. Jo**hnston, R.N.** and Coppes, M.J. (2000) A 20-year marathon**. Hem/Onc Today** 1: 5.

43. Groft, LL, Muzik, H, Rewcastle, NB, **Johnston, RN,** Knäuper, V, Lafleur, MA, Forsyth, P and Edwards, DR. (2001) Differential expression and localization of TIMP-1 and TIMP-4 in human gliomas. **Br. J. Cancer** 85: 55-63.

44. Scott M, Boisvert F-M, Vieyra D, **Johnston RN**, Bazett-Jones DP, Riabowol K (2001) UV induces nucleolar translocation of ING1 through two distinct nucleolar targeting sequences. **Nucl Acids Res** 29: 2052-2058.

45. Wilcox ME, Yang WQ, Senger D, Rewcastle NB, Morris DG, Brasher PMA, Shi ZQ, **Johnston RN,** Nishikawa S, Lee PWK, Forsyth PA (2001) Reovirus as an oncolytic agent against experimental human malignant gliomas. **J Natl Cancer Inst** 93: 903-912.

46. Wagner MJ, Gogela-Spehar M, Skirrow RC, **Johnston RN**, Riabowol K, Helbing CC (2001) Expression of novel ING variants is regulated by thyroid hormone in the Xenopus laevis tadpole. **J Biol Chem** 276:47013-47020.

47. Liu GR, Rahn A, Liu WQ, Sanderson KE, **Johnston RN**, Liu SL. (2002) The evolving genome of *Salmonella enterica* serovar Pullorum. **J Bacteriol.** 184: 2626-33.

48. Vieyra D, Toyama T, Hara Y, Boland D, **Johnston R,** Riabowol K. (2002) ING1 Isoforms Differentially Affect Apoptosis in a Cell Age-dependent Manner. **Cancer Res** 62: 4445-52.

49. Vieyra D, Loewith R, Scott M, Bonnefin P, Boisvert F-M, Cheema P, Pastyryeva S, Meijer M, **Johnston RN**, Bazett-Jones DP, McMahon S, Cole MD, Young D and Riabowol K. (2002) Human ING1 proteins differentially regulate histone acetylation. **J Biol Chem** 277: 29832-39.

50. Alain T, Hirasawa K, Pon KJ, Nishikawa SG, Urbanski SJ, Auer Y, Luider J, Martin A**, Johnston RN**, Janowska-Wieczorek A, Lee PWK, Kossakowska AE. (2002) Reovirus therapy of lymphoid malignancies. (2002) **Blood** 100: 4146-4153.

51. Liu SL, Liu GR, Li SX, Liu WQ, Zheng JF, Zhu WF, Gu HX, Guo XK, Sanderson KE, Zhou YG, **Johnston RN.** (2002) Bacterial genome structure: a molecular marker to reveal phylogenetic clusters. **J. Peking Univ. [Health Sci.].** 34(5): 457-463

52. Liu GR, Edwards K, Eisenstark A, Fu YM, Liu WQ, Sanderson KE, **Johnston RN**, Liu SL. (2003) Genomic diversification among archival strains of *Salmonella typhimurium* LT7.  **J. Bacteriol.** 185: 2131-42.

53. Vieyra D, Senger DL, Toyama T, Muzik H, Brasher PMA, **Johnston RN**, Riabowol K, Forsyth PF. (2003) Altered subcellular localization and low frequency of mutations of ING1 in human brain tumors. **Clin Canc Res** 9:5952-5961.

54. Yang WQ*,* Lun XQ, Palmer CA, Wilcox ME, Muzik H, Shi ZQ, Dyck R, Coffey M, Thompson B, Hamilton M, Nishikawa SG, Brasher PMA, Fonseca K, George D, Rewcastle NB, **Johnston RN**, Stewart D, Lee PWK, Senger DL, Forsyth PA. (2004) Efficacy and Safety Evaluation of Human Reovirus Type 3 in Immunocompetent Animals: Racine & Non-human Primates. **Clin Cancer Res** 10:8561-76.

55. Wu KY, Liu GR, Liu WQ, Wang AQ, Zhan S, Sanderson KE, **Johnston RN**, Liu SL. (2005) The Genome of *Salmonella enterica* Serovar Gallinarum: Distinct Insertions/Deletions and Rare Rearrangements. **J Bacteriol** 187: 4720-27.

56. Liu GR, **Johnston RN**, Liu WQ, Sanderson KE, Li SX, Liu SL. (2006) Genome plasticity and ori-ter rebalancing in Salmonella typhi. **Mol Biol Evol** 23: 365-71.

57. Pai SB, Pai RB, Lalitha RM, Kumaraswamy SV, Lalitha N, **Johnston RN,** Bhargava MK. (2006) Expression of oncofoetal marker carcinoembryonic antigen in oral cancers in South India-a pilot study. **Int J Oral Maxillofac Surg**. 35:746-9.

58. Lun XQ, Senger DL, Alain T, Oprea A, Parato K, Stojdl D, Lichty B, Power A, **Johnston RN,** Hamilton M, Parney I, Bell JC, Forsyth PA. (2006) Effects of intravenously administered recombinant Vesicular Stomatitis Virus (VSV∆M51) on multi-focal and invasive gliomas. **J Natl Cancer Inst** 98: 1546-57.

59. Alain T, Kim M, **Johnston RN**, Urbanski S, Kossakowska AE, Forsyth PA, Lee PWK. (2006) The oncolytic effect in vivo of reovirus on tumour cells that have survived reovirus cell killing in vitro. **Br. J Cancer** 95: 1020-27.

60. Kim M, Egan C, Alain T, Urbanski S, Lee PWK, Forsyth PA, **Johnston RN.** (2007) Acquired resistance to reoviral oncolysis in Ras-transformed fibrosarcoma cells. **Oncogene** 26: 4124-34.

61. Alain T, Wong JF, Urbanski SJ, Lee PW, Muruve DA, **Johnston RN**, Forsyth PA, Beck PL. (2007) Reovirus decreases azoxymethane-induced aberrant crypt foci and colon cancer in a rodent model. **Cancer Gene Therapy** 14:867-72.

62. Gong J, Liu W-Q, Liu G-R, Chen F, Li J-Q, Xu G-M, Wang L, **Johnston RN**, Eisenstark A, Liu S-L. (2007) Spontaneous conversion between *mutL* and 6 bp  *mutL* in *Salmonella typhimurium* LT7: association with genome diversification and possible roles in bacterial adaptation. **Genomics** 90:542-9.

63. Kim M, Chung YH, **Johnston RN**. (2007) Reovirus and tumor oncolysis. **J Microbiol** 45:187-92.

64. **Johnston RN**, Kim M. (2007) Oncolytic reovirus: susceptibility and resistance in cancer cells. In: **Proc Microbiol Soc Korea** pp. 46-8.

65. Liu WQ, Liu GR, Li JQ, Xu GM, Qi D, He XY, Deng J, Zhang FM, **Johnston RN**, Liu SL. (2007) Diverse genome structures of Salmonella paratyphi C. **BMC Genomics** 8:290-99.

66. Min HJ, Cho IR, Ratakorn S, Park EH, Cho DH, Ahn JH, Lee IS, **Johnston RN**, Oh S, Chung YH. (2008). Hexachlorophene suppresses β-catenin expression by up-regulation of Siah-1 in EBV-infected B lymphoma cells. **Cancer Letters** 276: 136-142.

67. Park EH, Koh SS, Srisuttee R, Cho IR, Min HJ, Jhun BH, Lee YS, Jang KL, Kim CH, **Johnston RN**, Chung YH. (2008) Expression of HBX, an oncoprotein of hepatitis B virus, blocks reoviral oncolysis of hepatocellular carcinoma cells. **Cancer Gene Therapy** 16:453-461.

68. Liu WQ, Feng Y, Wang Y, Zou QH, Chen F, Guo JT, Peng YH, Jin Y, Li YG, Hu SN, **Johnston RN**, Liu GR, Liu SL. (2009) *Salmonella paratyphi* C: genetic divergence from *Salmonella choleraesuis* and pathogenic convergence with *Salmonella typhi*. **PLoS ONE** 4: 1-8.

69. Chen F, Poppe, C, Liu GR, Li YG, Peng YH, Sanderson K, **Johnston RN**, Liu SL. (2009) A genome map of *Salmonella agona*: numerous insertions and deletions reflecting the evolutionary history of a human pathogen. **FEMS Microbio Lett** 293: 188-95.

70. Pai RB, Pai SB, Lalitha RM, Kumaraswamy SV, Lalitha N, Johnston RN, Bhargava MK. (2009) Overexpression of c-Myc oncoprotein in oral squamous cell carcinoma in the south Indian population. **eCancer** 3: 1-7 (DOI: 10.3332/ecancer.2008.128).

71. Min HJ, Koh SS, Cho IR, Srisuttee R, Park EH, Jhun BH, Kim YJ, Oh ST, Kwak JE, **Johnston RN**, Chung YH (2009). Inhibition of GSK-3ß enhances reovirus-induced apoptosis in colon cancer cells. **Int J Oncol** 35: 617-24.

72. Cho IR, Koh SS, Min HJ, Park EH, Ratakorn S, Jhun BH, Jeong SH, Yoo YH, Youn HD, **Johnston RN**, Chung YH (2010) Down-regulation of HIF-1a by oncolytic reovirus infection is independent of VHL and p53. **Cancer Gene Therapy** 17:365-72.

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78. Pai RB, Pai SB, Lalitha RM, Kumaraswamy SV, Lalitha N, **Johnston RN**, Bhargava MK. (2010) Identification of biomarkers in an oral malignant melanoma case with potential for therapeutic intervention. **Internet J Oncol** 7 (1; online publication April, 2010).

79. Chen F, Liu WQ, Eisenstark A, **Johnston RN**, Liu GR, Liu SL. (2010) Multiple Genetic Switches Spontaneously Modulating Bacterial Mutability. **BMC Evolutionary Biology** 10: 277-288.

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91. Feng Y, **Johnston RN**, Liu GR, Liu SL. 2013. Genomic comparison between *Salmonella gallinorum* and *pullorum*: differential pseudogene formation under common host restriction. **PLoS ONE** 8: Mar 15. e59427.

92. Wong H, Soh J, Gordon PMK, Yu T, Sensen CW, Parr E, **Johnston RN**. 2013. Genomic compartmentalization of gene families encoding core components of metazoan signaling systems. **Genome** 56: 215-225.

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96. Zhao EY, Bao HX, Zou QH, Liu WQ, Zhu DL, Chin J, Dong YY, Li YG, Cao FL, Poppe C, Sanderson KE, **Johnston RN**, Zhou D, Liu GR, Liu SL. 2013. Genomic comparison of *Salmonella typhimurium* DT104 with non-DT104 strains. **Mol Genet Genom** 288: 549-57.

97. Tang JL, Li Y, Deng Z, **Johnston RN**, Liu GR, Liu SL. 2013. Defining natural species of bacteria: clear-cut genomic boundaries revealed by a turning point in nucleotide sequence divergence. **BMC Genomics** 14: 489-99.

98. Pillon MC, Dubinsky M, **Johnston RN**, Liu SL, Guarné A. 2013. Characterization of the defects in the ATP lid of *E. coli* MutL that cause transient hypermutability. **DNA Repair** 12: 864-9.

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102. Malilas W, Koh SS, Lee S, Srisuttee R, Cho IR, Moon J, Kaowinn S, **Johnston RN**, Chung YH. 2014. Suppression of autophagic genes sensitizes CUG2-overexpressing A549 human lung cancer cells to oncolytic vesicular stomatitis virus-induced apoptosis. **Int J Oncol** 44: 1177-84.

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104. Bao HX, Tang L, Yu L, Wang XY, Li Y, Deng X, Li YG, Li A, Zhu DL, **Johnston RN**, Liu GR, Feng Y, Liu SL. Differential efficiency in exogenous DNA acquisition among closely related Salmonella strains: implications in bacterial speciation. 2014. **BMC Microbiol** 14: 157-167.

105. Tang L, Liu WQ, Fang X, Sun Q, Zhu SL, Wang CX, Li YG, Zhu DL, Sanderson K, **Johnston RN**, Liu GR, Liu SL. 2014. CTAG-containing cleavage site profiling to delineate Salmonella into natural clusters. **PLOS One** 9: e103388.

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107. Albert M, Bartlett J, **Johnston RN**, Schacter B, Watson P. 2014. Biobank bootstrapping: is biobank sustainability possible through cost recovery? **Biopreserv Biobank** 12: 374-80.

108. Hamano S, Mori Y, Kataoka H, Tanaka M, Ebi M, Kubota E, Mizoshita T, Tanida S, **Johnston RN**, Asai K, Joh T. 2015. Oncolytic reovirus combined with trastuzumab enhances antitumor efficacy through TRAIL signaling in human HER2-positive gastric cancer cells. **Cancer Lett** 356: 846-54.

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111. Mohamed A, Johnston RN, Shmulevitz M. 2016. Potential for improving potency and specificity of reovirus oncolysis with next-generation reovirus variants. **Viruses** 7: 6251-6278.

112. Bourhill T, Narendran A, Johnston RN. 2017. Enzastaurin: a lesson in drug development. **Crit Rev Oncology/Hematology** 112: 72-79.

113. Kaowinn S, Jun SW, Kim CS, Moon J, Cho IR, Heo W, Bae JH, Park EJ, Lee S, Koh SS, Johnston RN, Chung YH. 2017. Cancer upregulated gene 2 (CUG2), a novel oncogene, induces cancer stem cell-like phenotypes via the NPM1-TGF-ß signaling axis. **Oncotarget** submitted.

114. Tang L, Zhu SL, Mastriani E, Fang X, Zhou YJ, Li YG, **Johnston RN**, Guo Z, Liu GR, Liu SL. 2017. Conserved intergenic sequences revealed by CTAG-profiling in Salmonella: thermodynamic modeling for function prediction. **Scientific Reports** 7: 43565-77.

115. Kaowinn S, Jun SW, Kim CS, Shin DM, Hwang YH, Kim K, Shin B, Kaewpiboon C, Jeong HH, Koh SS, Kramer AH, **Johnston RN**, Chung YH. 2017. Increased EGFR expression induced by a novel oncogene, CUG2, confers resistance to doxorubicin through Stat1-HDAC4 signaling. **Cellular Oncology** 40: 549-561.

116. Eaton, H, Kobayashi T, Dermody T, **Johnston RN**, Jais P, Shmulevitz. 2017. African swine fever virus NP868R capping enzyme promotes reovirus protein expression, virion assembly and RNA incorporation into infectious virions. **J Virol** 91: 1-21.

117. Liu H, Liu J, Wang S, Zeng Z, Li T, Liu Y, Mastriani E, Li QH, Bao HX, Zhou YJ, Wang X, Hu S, Gao S, Qi Y, Shen Z, Wang H, Yu M, Gao T, **Johnston RN**, Liu SL. 2017. Enterolactone has stronger effects than enterodiol on ovarian cancer. **J Ovarian Res** 10: 49-58.

118. Tang L, Mastriani E, Zhou YJ, Zhu S, Fang X, Liu YP, Liu WQ, Li YG, **Johnston RN**, Guo Z, Liu GR, Liu L. 2017. Differential degeneration of the ACTAGT sequence among Salmonella: a reflection of distinct nucleotide amelioration patterns during bacterial divergence. **Sci Reports** 7: 10985-92.

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120. Kubota E, Yinagaki J, Mori Y, Mine AO, Kataoka H, **Johnston RN**, Joh T. 2017. Anti-tumor efficacy of oncolytic reovirus against gastrointestinal stromal tumor cells. **Oncotarget** 8: 115632-46.

121. Bourhill T, Mori Y, Rancourt DE, Shmulevitz M, **Johnston RN**. 2018. Going (Reo)viral: Factors promoting successful reoviral oncolytic infection. **Viruses** 10: 421-47.

122. Tang L, Zhu SL, Fang X, Li YG, Poppe C, **Johnston RN**, Liu GR, Liu SL. 2019. Distinct evolutionary origins of common multi-drug resistance phenotypes in Salmonella typhimurium DT104: a convergent process for adaptation under stress. **Mol Gen Genomics** 294: 597-605.

123. Wang X, Zhu S, Zhao JH, Bao HX, Liu H, Ding TM, Liu GR, Li YG, **Johnston RN**, Cao FL, Tang L, Liu SL. 2019. Genetic boundaries delineate the potential human pathogen *Salmonella bongori* into discrete lineages: divergence and speciation. **BMC Genomics** 20: 930-42.

124. Liu H, Zeng Z, Afsharpad M, Lin C, Wang S, Yang H, Liu SH, Kelemen LE, Xu W, Ma W, Xiang Q, Mastriani E, Wang P, Wang J, Liu SL, **Johnston RN**, Koebel M. 2020. Overexpression of IGF2BP3 as a potential oncogene in Ovarian Clear Cell Carcinoma. **Front Oncol** 9: 1570-85.

125. Tang L, Zhou YJ, Zhu S, Liang GD, Zhuang H, Zhao MF, Chang XY, Li HN, Liu Z, Guo ZR, Liu WQ, Wang CX, Zhao DD, Li JJ, Mu XQ, Yao BQ, Li X, Li YG, Duo LB, Wang L, **Johnston RN**, Zhou J, Zhao JB, Liu GR, Liu SL. 2020. *E. coli* diversity: low in colorectal cancer. **BMC Med Genomics** 13: 59-76.

126. Wang PF, Wang X, Liu M, Zeng Z, Lin C, Xu W, Ma W, Wang J, Xiang Q, **Johnston RN,** Liu H, Liu SL. 2020. The oncogenic functions of insulin-like growth factor 2 mRNA-binding protein 3 in human carcinomas. **Curr Pharm Des** 26: 3939-54.

**Patent Issued:**

Methods of modulating apoptosis. Helbing, C.C., Riabowol, K., Johnston, R.N. and Garkavtsev, I. US patent 6,143,522 issued Nov. 7, 2000

**Patents Filed or Assigned:**

Attenuated Reovirus. Kim, M and Johnston, RN. USPTO Provisional filed August 1, 2005; PCT conversion August 2006; assigned to Jeil Pharma, then to ViroCure.

Inhibition of Viral Replication. Johnston RN, Kim M, Hollenberg MK and Hansen KK. USPTO Provisional filed March 10, 2007; assigned to Jeil Pharma, then to ViroCure.

Attenuated Reoviruses for Selection of Cell Populations. Kim M, Rancourt DE, Zur Nieden N and Johnston RN. USPTO Provisional filed March 10, 2007; assigned to Jeil Pharma, then to ViroCure.

Tumor Suppressor-Based Susceptibility of Hyperproliferative Cells to Oncolytic Viral Therapy. Kim M and Johnston RN. USPTO Provisional filed May 23, 2008; assigned to Jeil Pharma, then to ViroCure.

Dichloroacetate Esters Useful for the Treatment of Cancer. Matheson RC, Johnston RN and Bauce LG. USPTO Provisional filed April 15, 2009

Attenuated Coxsackievirus as an Oncolytic Agent. Johnston RN, Nam JH, Mori Y, Kim M, Prudhomme J. Disclosure filed April, 2009

**Abstracts:** Over 250 from 1975 to present

**Invited lectures and Conference presentations (1984-present)**

"Spontaneous amplification of the dihydrofolate reductase gene", Gordon Conference on Genome Structure and Variability, Andover, New Hampshire, August, 1984.

"Spontaneous *vs*. induced gene amplification", Biology, University of Saskatchewan, Saskatoon, Saskatchewan, October, 1985.

"Gene amplification and genomic variability", Metastasis Research Group, University of Calgary, Calgary, Alberta, October, 1986.

"Gene amplification and the acquisition of chemotherapeutic drug resistance", Canadian Federation of Biological Sciences, Winnipeg, Manitoba, June, 1987

"Gene amplification and the acquisition of chemotherapeutic drug resistance", Department of Pharmacology, University of Western Ontario, London, Ontario, June, 1987

"Control of HSP70 gene expression by amplification of its promoter sequence", American Society for Cell Biology, St. Louis, Missouri, November, 1987

"Amplification and the control of eukaryotic gene expression", Alberta Heritage Invited Lecture, Department of Genetics, University of Alberta, Edmonton, Alberta, February, 1988.

"BioTechnology and BioSafety in Canada", Annual Meeting of Canadian Association for Biological Safety, Calgary, June, 1988. Chairman of Conference on "Testing and Applications of BioEngineered Organisms in the Environment".

"Regulation of proto-oncogene expression during cell proliferation", International Congress for Cell Biology, Montreal, Quebec, August, 1988. Chairman, Symposium on "Oncogene and Growth Control".

"Altered regulation of genes following gene amplification", International Congress of Genetics, Toronto, Ontario, August, 1988. Chairman, Symposium on "Gene amplification and its consequences".

"Gene amplification and the regulation of gene expresssion", Ludwig Institute for Cancer Research, McGill University, Montreal, Quebec, November, 1988

"The role of oncogene activity in the control of mitosis", Friday Harbor Laboratories, Friday Harbor, Washington, April, 1989

"Protooncogene regulation and mitotic activity", Canadian Federation of Biological Sciences Annual Meeting, Calgary, Alberta, June, 1989. Chairman, DuPont Symposium on Molecular Regulation of the Cell Cycle.

"Regulation of proto-oncogene expression", Canadian Society for Cell Biology WinterNational meeting on Oncogenes and Growth Control, February, 1991.

"Amplification and regulation of oncogene expression", Annual Heritage Days Conference, Chairman, Symposium on "Molecular Biology of Cancer", Calgary, Alberta, November 1991.

"Amplification and regulation of oncogene expression", Invited Lecture, Department of Biochemistry, University of British Columbia, Vancouver, March, 1992

"Translational control in oncogenesis and development", Banff Molecular Oncology; Chairman of conference, Banff, Alberta, June, 1992

"Annual Research Meeting", Alberta Cancer Board; Chairman of conference, Banff, Alberta, November, 1992, and Chairman of conference, Calgary, Alberta, November, 1994

"Regulation of amplified proto-oncogenes", Invited Lecture, McGill Cancer Centre, Montreal PQ, January, 1994

"Strategy for the construction of a mammalian artificial chromosome", Invited seminar, AltaGenetics, Calgary, Alberta, January, 1994

"Amplification of cellular proto-oncogenes", Invited Speaker, Special AACR conference on genomic instability and oncogenesis, Banff, Alberta, February, 1994

"Annual Oncology Research Day", Department of Oncology, Co-Chair, Calgary, Alberta, April, 1994

"Is Malignancy Reversible?", International Meeting on Anti-mutagenesis, Session Co-Chair, Banff, Alberta, Spetember, 1994

"Targeted Amplification of the Myc proto-oncogene", Meeting on DNA Replication, McGill University, October, 1994

"Regulation of amplified proto-oncogenes", Invited Lecture, University of Manitoba, November, 1994

"Annual Alberta Cancer Board Research Meeting", Conference Chair, Calgary, Alberta, November 1994

"Amplification and regulation of proto-oncogene expression", Invited Lecture, University of Saskatchewan, June, 1995

"Apoptosis in development and oncogenesis", Invited Presentation, Annual ACB Research Meeting, Edmonton, Alberta, November, 1995

"Strategies for the construction and test of a mammalian artificial chromosome", MRC-CGAT Second Annual Meeting, Ottawa, June, 1996 and McGill Conference on DNA Replication, Montreal, October, 1996

"Molecular biology of colon cancer", IBD International conference, Ottawa, June, 1996

"Tetracycline-controlled native c-myc overexpression affects cyclin-dependent kinase activity during apoptosis in rodent fibroblasts", Alberta Cancer Board Annual Meeting, Calgary, November, 1996

"Cyclin-dependent kinase activity increases during myc-induced apoptosis in a tetracycline-based expression system", CFBS Annual Meeting, London, ON, June, 1996.

"Gene amplification: consequences and paradoxes", Stanford Legacies, Asilomar, California, March, 1997

"Construction of Artificial Chromosomes", Banff Meeting on Agricultural Biotechnology, May, 1997

"Cell cycle control and apoptosis in normal and abnormal development", Annual Meeting of the Canadian Society of Geneticists, London, ON, June, 1997

"Regulation by c-myc of apoptosis and cell cycle control", Invited Lecture, University of Western Ontario, London, ON, October, 1997

"C-Myc control of cellular differentiation, proliferation and apoptosis", Invited Lecture, McMaster University, Hamilton, ON, November, 1997

"Genetics of Colorectal malignancy", Invited Lecture, Alberta Society of Gastroenterologists, Kananaskis, Alberta, September, 1998

"Metal binding proteins in mutation and cancer", Symposium Chair, Banff, Alberta, October, 1998

"Quiescence versus apoptosis: Myc abundance determines pathway of exit from the cell cycle", Alberta Cancer Board Annual Research Meeting, November, 1998

"Modulation of cell division and apoptotic potential by c-Myc", Invited Departmental Lecture, University of Calgary, January, 1999

“Mechanisms of Oncogenesis: Backwards and Forwards”, Invited Lecture, London Regional Cancer Centre, London, Ontario, December, 1999

“Modulation of Cancer Cell Behavior” Invited Lectures, Universities of Ottawa and Manitoba, May, 2000

“To be or not to be: the cellular balance between proliferation and apoptosis” Invited Lecture, Pediatric Oncology Group, Alberta Children’s Hospital, Calgary AB, September, 2000

“Genomics, Economics and Society” Invited Lectures and Conference Presentations (approx 25), Universities of Calgary, Alberta, Saskatchewan, Calgary Futurists Society, Kananaskis GELS meeting, Regina Science Centre, CARC Ottawa and others, Sept 2001-Jan 2007

“Reoviral Oncolysis” Invited Lectures, Korea University, Pusan University, Nagoya Medical University and Peking University, May, 2007.

“Viral Oncolysis as a Cancer Therapeutic Strategy” Invited Lecture, U de Montréal, November, 2008

“Enabling Technologies for Proteomics” Symposium Chair, May, 2011

“Mechanisms of Viral Oncolysis” and “Novel Aspects of Cancer Genetics” Invited Lectures, Harbin Medical University, May, 2011

“Novel Oncolytic Viral Therapies” Invited Lecture, Cancer Care Alberta, and Research Session Chair, June, 2011

“Personalized Medicine” Session Chair, CIHR, Ottawa, June 2011

“Genes and Genomes Revisited” Stanford Legacy Lectures, Stanford, California, August 2012

“Exploring Human Genome Plasticity” National Academy of Science, Washington DC, October 2012

“Enhancing Impact” Alberta Cancer Foundation Annual Meeting Conference Chair, Banff November 2012

“Alberta Cancer Research Biorepository” Alberta Cancer Foundation Annual Meeting, Banff October, 2013

“Enhancing Viral Oncolysis”, Genomics Symposium, Harbin Medical University, Harbin, China, May 2014

“Modelling Genomic Instability” Genomics Symposium, Harbin Medical University, Harbin China, May 2014

“Models for Genomic Instability in Bacteria and Cancer” Epigenetics Consortium, Banff, Alberta, May 2015.

“Signalling Pathways in Development, Disease and Aging” IUBMB Congress, Iguacu, Brazil, August, 2015

“Enhancing Viral Oncolysis” U Lethbridge, Alberta, November 2015

“Usage of Cancer Biospecimens” Canadian Cancer Research Conference, Montreal, November, 2015

"Apoptosis in Viral Oncolysis" IUBMB Conference, Vancouver, August, 2016

Conference Chair, IUBMB Conference on Signaling Pathways in Development, Disease and Aging, August, 2016

**Teaching responsibilities, 2006-19**

Cell Biology of Cancer (Medical Science 683.01). Co-Lecturer 2006-10

Biochemistry & Molecular Biology (Medical Science 721). Coordinator and Lecturer 2007-10

Cancer Biology (CMMB 561). Co-Lecturer 1999-2017

Biomedical Technology – Cellular, Molecular and Microbial Biology (MDSC 674.02). Coordinator and Lecturer 2010-19

Biomedical Technology Projects (MDSC 678). Coordinator and Lecturer 2012-18.

Biomedical Technology Case Studies (MDSC 672). Coordinator and Lecturer 2013-18.

**Major course development activities, 1984-present**

Biology 301/331: Major restructuring and modernization of Intro to Cell and Molecular Biology in 1985; enrolment of 270-390 students; sole instructor from 1985-91.

Biology 519: Major restructuring and modernization of Advanced Cell and Molecular Biology in 1985; enrolment of 20-25 students; sole instructor from 1985-91

Biology 708: Developed new course for entering graduate students in Approaches to Cell and Molecular Biology in 1989; enrolment of 5-8 students; Coordinator and Lecturer from 1989-91

Cell, Molecular and Microbial Biology 561: Developed new course for senior undergraduates in Cancer Biology in 1995; enrolment of 20-25 students; Lecturer and Coordinator from 1995-2000

Biochemistry & Molecular Biology 721: Developed new course for entering graduate students in 2006; enrolment of 16; Lecturer and Coordinator from 2006-2010

Biomedical Technology 674: Restructured a course for students in the MBT program, focused on microbial, cellular and molecular biology and immunology; major lecturer and coordinator from 2010-present.

Master in Biomedical Technology Graduate Program: Graduate Program Director 2012-18. Restructuring business course offerings so that they are available in a modular format.

**Students and fellows supervised**

**Visiting Scientist:** Dr. S. Urbanski (1989)

**Research Associate** Dr. A. W. Gibson (1993-1995)

 Dr. K.-Y. Lee (1997-1999)

 Dr. S.-L. Liu (1998-2009)

 Dr. Eva Ujack (2007)

 Dr. H. Wong (2007-2010)

**Postdoctoral:** Dr. S. B. Pai (1988 - 1992)

 Dr. R. B. Pai (1988 - 1992)

 Dr. A. W. Gibson (1991 - 1993)

 Dr. C. Helbing (1993 - 1998)

 Dr. C. Wellington (1993 - 1996)

 Dr. K.-Y. Lee (1995 - 1997)

 Dr. S.-L. Liu (1996 – 1998)

 Dr. C. Egan (2000-04)

 Dr. M. Kim (2005-07)

 Dr. Y. Mori (2008-2010)

 Dr. D.-S. Kim (2010-2012)

 Dr. E. Kubota (2010-2012)

**PhD:** J. Dulson (1988)

 B. Bahlsen (deceased)

 S. Rempel (1990)

 H. Wong (1993)

 G. Pinchbeck (1999)

 J.-M. Yu (1998-9 exchange student with Harbin Medical Univ.)

 M. Kim (2000-05)

 T. Bourhill (2015-present)

 H. Lui (2016-17 exchange student with Harbin Medical Univ.)

Supervisory or external committee member for 39 students

**MSc:** T. Cheng (1991)

 S. Dutler (1989)

 L. Lintott (1993)

 W. Xu (1994 )

 D. Kim (withdrawn)

 A. Fratiloiu (2009-2012)

 M. Clarkson (2010-14)

 SY Yin (2014-16 exchange student with Harbin Medical Univ.)

Supervisory or external committee member for 36 students

**Master in Biomedical Technology (MBT) Graduate Students supervised:**

2012-13 - H Blumenthal, A Clapp, N Dehar, E Dickin, S El-Shahat, M Fadayomi, S Giffin, A Mahal, M Malhi, D Mo, Y Na, A Nesterova, A Noel, W Ocampo, K Ogilvie, S Osman, J Patel, M Rassam, D Rodrigo, W Sattar, A Shahed

2013-14 - H Bleeker, A Chiu, B Congdon, E Cusano, E de Haas, R El Borai, A Hamour, J Hu, L Kerr, J Lee, J May, T Ngo, K Pannu, M Pelkey, S Qureshi, M Rajagopal, I Varathan, D Williams, P Wu

2014-15 - A Amir Ali, A Khan, K Boughton, C Buffel, A Cheung, H Ghuttora, P Hemakumara, N Kerrigan, G Lalli, H Luu, A Mititelu, K Parker, P Patel, S Pattr, J Paul, J Randev, M Sethi, R Sharma, M Siarkowski, S Sudan

2015-16 - J Alas, M Ali, C Chalifoux, S Dhalla, A Donnelly, C Eom, T Grenier, A Jetha, D Koo, A Ludwar, H Malik, B Nguyen, A Nwigwe, C Rogers, K Singh, F Visram, I Yasmeen

2016-17 - R Adhikari, A Beruar, C Chiu, N Gee, J Gill, V Goetz, R Khadour, N Lamont, A Mitchell, V Moore, G Naicker, K Nieves, M Saunders, T Skara, R Swansburg, R Vafaei

2017-18 – C Chan, R Chang, R Chen, T Chudiak, A Collins, G Hashemi, B Hofmann, A Iadarola, N Kaur, D Kelly, R Klopp, I McKibbin, O Mushisha, B Newton, L Whalen-Browne, C Yang

**UG:** S. Moore, C. Dunn, B. Tompkins, B. Bamber, L. Ruo, E. Purnell, E. Parr, J. Tucker, C. Newman, P. Donais, M. Enarson, V. Sims, D. Doll, M. Gogela-Spehar, A. Petrie, J. Prudhomme, L. Daisley, A. McManus, H. Singh; G. Narendran

**Major Administrative Responsibilities**

**Departmental**

Biological Sciences Seminar Committee chairman, 1987-91

Biological Sciences Radiation Safety Officer, 1986-91

Biological Sciences Safety Committee member, 1989-91

Biological Sciences Biotechnology Committee member, 1989-91

Biological Sciences Core Curriculum Review Committee member, 1990-91

Biological Sciences Microcomputer Committee member, 1990-91

Medical Biochemistry Graduate Education Committee, 1996 – 97

Biochemistry and Molecular Biology Graduate Education Committee, 2005-2012

Biochemistry and Molecular Biology Seminar Series and Annual Retreat, Chair, 2009-2010

Biochemistry and Molecular Biology Executive Committee, 2011-present

Departmental Representative, U Calgary Faculty Association, 2011-2013

## Tom Baker Cancer Centre

Member, Facilities Committee, 1991-2001

Chair, Research Sub-Committee, 1991-2001

Member, Policy, Planning and Priorities Committee, 1991-1996

Member, Education Committee, 1992-2000

Member, Urooncology Research Interest Group, 1992-94

Member, Neuro-oncology Research Interest Group, 1994-2001

Member, Information Systems Steering Committee, 1991-1999

Member, Oncology Research Day Program Committee, 1994-2001

Member, Operations Committee, 1998-2000

Member, Budget Committee, 1998-2000

Associate Director (Research), 1991-2001

Chair, SACRI Committee on Research and Mentorship, 2006-2012

Member, SACRI Executive Committee, 2006-2012

Member, Lung Tumor Research Group, 2008-present

Chair, ACF Cancer Conference Organizing Committee, 2011-12

**Faculty or University**

Faculty of Science representative on the Physical Education Faculty Council, 1988-91

Member, Dean’s Recruitment Priorities Committee, Faculty of Medicine, 1991 - 1996

Chair, Cancer Biology Research Group, Faculty of Medicine, 1991 - 1997

Member, Faculty of Medicine Educational Outreach Committee, 1993 - 1996

Member, Graduate Awards Committee, Faculty of Graduate Studies, 1993-95

Chair, University of Calgary BioSafety Committee, 1987-1990

Member, President's Committee on Animal Care, 1992

Representative of the Faculty of Medicine on the University Senate, 1996-2000

Representative of the Faculty of Medicine on the General Faculty Council, 1996 - 2000

Elected Representative on the University's General Promotions Committee, 1997-2000

Member, Nominating Committee, Faculty of Medicine, 1999-2000

Chair, Basic Science Committee, Faculty of Medicine Accreditation 2000, 1999-2000

Member, University Coordination of Planning Committee, 2000-2001

Member, University Research & Development Priorities Committee, 2000-2001

Member, Dean’s Council, 2000-2001

Member, President’s Executive Advisory Committee, 2000-2001

Member, Spy Hill Animal Facility Planning Committee, 2000-2001

Member, Campus Community Planning Committee, 2000-2001

Member, UPC Subcommittee on Resource Allocation, 2000-2001

Member, Think Tank on Future of the University, 2000-2001

Member, Planning Group, BioMedical Engineering Program, 2008-09

Chair, Task Force on Graduate Education Programs, Faculty of Medicine, 2008-10

Member, Gairdner Award Planning Committee, 2008-2012

Member, General Faculties Council, 2008-16

Member, ICMH Genomics Planning Group, 2009-12

Member, Faculty of Medicine Institute Review Taskforce, 2010-2012

Member, Faculty of Medicine Review Panel, Emerging Team Grants, 2011-14

Director, Master in Biomedical Technology Graduate Program, 2012-18

Member, UC SUPPORT program for major grant review, 2012-18

Member, UC Graduate Scholarship Review Panel, 2016-18

Member, Faculty of Graduate Studies Council, 2012-18

**Provincial or National Committees**

Member, AHFMR Graduate Scholarship Selection Committee, 1990-94

Member, Grant Review Panel, National Cancer Institute of Canada, 1987-92.

Member, Special Advisory Panel to Environment Canada on Biotechnology Guidelines, 1988

Member, Corporate Research Advisory Committee, Alberta Cancer Board, 1991 - 2001

Member, Research Funding Committee, Alberta Cancer Board, 1991 - 2001

Member, Grant Review Panel, Medical Research Council of Canada, 1993 - 1994

Chair, Biochemistry and Molecular Biology (B) Panel, Medical Research Council of Canada, 1994-97

Member at Large, Canadian Federation of Biological Societies, 1995-1998

Member, Provincial Accreditation Committee, Alberta Cancer Board, 1996-1997 and 1999-2000

Member, Management Committee, Canadian Breast Cancer Research Initiative, 1997-01

Chair, Panel B on Metastasis and Tumour Biology, National Cancer Institute of Canada, 1999-01

Member, Cell Biology Panel, US Army Breast Cancer Research Agency, 1995-97 and 1999-2008

Chair, Research Committee, Kids Cancer Care Foundation, 2000-06

Member, CIHR Interdisciplinary Health Research Team Review Committee, 2000

Member, Noujaim Institute for Pharmaceutical Oncology Research, 1997-2001

Member, Board of Directors, Alberta Network for Proteomics Innovation, 2000-2001

Member, Board of Directors, Genome Prairie, 2000-02

Member, Institute of the National Cancer Institute of Canada, 1998-2000

Member, Steve Fonyo Foundation Budget Committee, 1996-2000

Member, Research Funding Committee, Alberta Cancer Board, 1991-2001

Member, Canadian Bioinformatics Resource, 2000-2001

Chair, CIHR Discoveries and Inventions Review Committee, 2002-2010

Chair, CIHR Team Grant “A” Panel, 2005-2009

Member, Alberta Tumor Tissue Bank User Committee, 2006-present

Member, Planning and Priorities Committee, CIHR Institute of Genetics IAB, 2008-2010

Chair, Sanofi-Aventis Challenge presentation evaluation, 2010

Member, CIHR working group to evaluate novel technologies, 2010-12

Co-Director, Alberta Cancer Research Biorepository, 2011-12; Director 2012-16

General Secretary, Canadian Society for Molecular Biosciences, 2010-17

Member, Science Advisory Committee, Enabling Technologies for Proteomics, 2006-present

Member, Board of Directors, Calgary-Korea Scholarship Foundation, 2011-present

Member, CFI College of Reviewers, 2010-present

Member, CIHR Postdoctoral Review Panel, 2015-present

Member, CBCF Review Panel, 2015-16

**Faculty Search Committees**

Department of Biological Sciences, Stanford University (Graduate Student Representative), 1979-80

Metastasis Research Group, Faculty of Medicine, 1987-1989

Scholarships and Fellowships Committee, Department of Biological Sciences, 1988-91

Virology Search Committee, Microbiology and Infectious Diseases, Faculty of Medicine, 1990-92

Cancer Biology Research Group Search Committee, Chair, 1991-1997

Medical Genetics Research Group Search Committee, Member, 1996

Zoology Search Committee, Department of Biological Sciences, 1992

TBCC Department of Radiation Oncology, Headship Selection Committee, 1997

TBCC Department of Medical Physics, Staff Physicist Selection Committee, 1997-2000

TBCC Department of Pediatric Oncology, Staff Oncologist Selection Committee, 1997

Bioinformatics Search Committee, 2011-16

**Fund Raising**

Initiated Bettina Bahlsen Memorial Graduate Scholarship (current endowment: $350,000; supports one graduate student scholarship in the biomedical sciences annually)

Canadian Cancer Society Presentations: 1988: Medicine Hat, Alberta; 1989, Calgary and Red Deer, AB; 1990, Calgary, AB; 1992, Red Deer, AB; 1993, Calgary, Lethbridge, Vermilion, Peace River, AB; 1994 Grand Praire and Lethbridge, AB; 1996, Forestburg, Calgary, AB; 1997, Brooks, AB; 2000 Jail & Bail, Calgary; 2006 Strathmore AB

Terry Fox Run Presentations: Calgary, Alberta, 1991, Luncheon Speech; Calgary, Alberta, 1993, Special Evening Presentation and two separate talks to Runners in September; 1994 Presentation to TF volunteers; 1995, 1996, 1998, 1999, 2000 Terry Fox Corporate Run Organizer on behalf of Cancer Research Team at The University of Calgary

Partners-in-Health Campaign: Participant on behalf of Cancer Research component of a Faculty of Medicine & Calgary Regional Health Authority campaign to raise $52M; 1994-97 (Cancer component of $3.5M)

Alberta Cancer Foundation: Participant on behalf of Calgary Cancer Research Programs; target of $30M, 1997-2000; recipient of $1.8M funding deriving from Calgary Foundation in support of Proteomics equipment

Genome Prairie & Alberta: We raised a total of $165M in funding for our two corporate offices and projects. Half this amount derives from Genome Canada, while the other half was raised from 2001-06 through the corporate office and funding partners. Genome Alberta was created as a new corporation spun-off from Genome Prairie in 2005.

Kids Cancer Care Foundation: Assisted in raising funds for $6M Chair in Pediatric Oncology; subsequently helped raise funds ($6M) for dedicated research space for Pediatric Oncology Program

**Membership in Professional Societies**

Canadian Society for Molecular Biosciences; Member (1987-present); General Secretary, 2010-17

International Society for Differentiation, Ontogeny and Neoplasia; Member, 1988-98

American Association for Cancer Research; Member 1988-2016

Canadian Federation of Biological Societies; Elected Member of Executive Council, 1995-2000

**Manuscript Review (1985-present)**

Experimental Cell Research

Science

Journal of Biological Chemistry

Proceedings of the National Academy of Sciences of the USA

Developmental Genetics

Endocrinology

Biochemistry and Cell Biology

Journal of Investigative Dermatology

Molecular and Cellular Biology

Cancer Research

Chromosoma

Cellular Biochemistry and Biophysics

Molecular Carcinogenesis

International Journal of Cancer

Journal of Surgical Oncology

many others....

**External Grant Review**

Natural Sciences and Engineering Research Council of Canada

Medical Research Council of Canada/Canadian Institutes of Health Research

BC Health Research Foundation

Alberta Children’s Hospital Foundation

Canadian Liver Foundation

US Army Breast Cancer Research Program

Ontario Research Excellence Fund

Canada Research Chairs

Canada Foundation for Innovation

**External Tenure/Promotion Review**

University of Victoria (twice)

University of Toronto

Dalhousie University

University of California, Davis (twice)

University of British Columbia

University of Manitoba (twice)

University of Alberta (twice)

**Membership on Boards**

Member, Board of Directors, Noujaim Institute for Pharmaceutical Oncology Research, 1995 - 2001

Editorial Advisory Board, Foothills Magazine/Health Savvy, 1996 - 1997

Chair, Scientific Advisory Board, Kinetek Pharmaceuticals Inc., 1996 – 2000

Member, Scientific Advisory Board, Replicor Inc., 1999-2001

Member, Board of Directors, Kid’s Cancer Care Foundation, 2000-06

Member, Board of Directors, Genome Prairie, 2000-2002 (subsequently President and CEO)

Member, Interim Board of Directors, Alberta Network for Proteomics Innovation, 2000-01

Chair, Science Advisory Board, Oncometabolics Inc., 2009-14

Member, Board of Directors, Calgary Korean Scholarship Foundation, 2011-present

Member, Bertech Pharma Science Advisory Board, 2012-present

Chair, Crawford Education Trust, 2011-present

**For further information, please contact me at:**

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Dept. Biochem & Molec Biol Lab: (403) 220-8661

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