BIOGRAPHICAL SKETCH

NAME	POSITION TITLE
Roy Duncan	Professor

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
University of Guelph	B.Sc.	1974-1978	Honours
			Microbiology
Queen's University	M.Sc.	1978-1980	Virology
University of Guelph	Ph.D.	1982-1987	Virology

A. Positions and Honors

1987-1991	Postdoctoral Fellow, University of Calgary, Supervisor: Dr. Patrick Lee
1991-1997	Assist. Professor, Department of Microbiology and Immunology, Dalhousie University
1997-2002	Assoc. Professor, Department of Microbiology and Immunology, Dalhousie University
2002-present	Professor, Department of Microbiology and Immunology, Dalhousie University
2005-present	Professor, Department of Pediatrics (cross-appointed), Dalhousie University
2010-present	Professor, Department of Biochemistry and Molecular Biology (cross-appointed),
	Dalhousie University
2000-2012	Founder and CEO, Fusogenix Inc., Halifax, Nova Scotia
2010-present	Scientific Advisory Board, Innovascreen Inc., Halifax, Nova Scotia
2018-present	Co-founder and Scientific Advisory Board, Entos Pharmaceuticals, Edmonton, AB

Selected Awards

2016-21	Killam Chair in Virology	Killam Foundation
2008	Max Forman Senior Research Prize	Dalhousie Medical Research Foundation
2000, 02, 16	Educator of the Year Award	Dept. Microbiology and Immunology
2000, 01	Mentor Professor	Dalhousie University
2000-05	CIHR New Investigator	Canadian Institutes of Health Research
1987	Outstanding Ph.D. Thesis of the Year	D.G. Ingram Award, Sigma XI Society
1987-91	A.H.F.M.R. Postdoctoral Fellowship	University of Calgary

Selected Professional Service

2017, 18, 19	Chair, CIHR	Foundation	Grant Stage 3	Review Panel
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- 2014-16 Vice-Chair, Institute Advisory Board, CIHR Institute of Infection and Immunity
- 2009-13 Institute Advisory Board, CIHR Institute of Infection and Immunity
- 2004-09 Associate Editor, Virology
- 2003-10 Executive Director, Dalhousie Infectious Disease Research Alliance (DIDRA)
- 2006-07 Scientific Advisory Board, National Collaborating Center for Infectious Diseases
- 2005-08 Chair, CIHR Virology and Viral Pathogenesis Grant Panel
- 2001-06 Chair, Orthoreovirus Study Group, Int'l Committee on Taxonomy of Viruses (ICTV)

Selected Invited External Seminars/Symposia

2018	Int'l dsRNA Virus Meeting	Fusogenic reoviruses and their FAST proteins
	(Invited Plenary Speaker)	•
2017	Amer. Soc. for Cell Biology	Convergent evolution of viral and cellular membrane fusion
	(Invited Symposium Speaker)	proteins
2017	Amer. Soc. for Virology	Nonenveloped virus membrane fusion proteins and virus
	(Invited Plenary Speaker)	transmission: lessons from the reovirus FAST proteins.
2016	University of Minnesota	Reovirus membrane fusion proteins: paradigms and

	(Invited Keynote Speaker)	paradoxes.
2016	Microbiology Society, London (Invited symposium speaker)	Syncytium formation and highly infectious enveloped viruses: FAST proteins and avian reovirus pathogenesis.
2015	Can. Soc. Mol. Biosci. (Invited symposium speaker)	Reovirus FAST proteins: small modular membrane fusion machines.
2015	Amer. Soc. for Virology (Invited State-of-the-Art Lecture)	Structure, function and evolution of virus-encoded cell-cell fusion proteins.
2014	Sun Yat-Sen University Guangzhou, China	Modular membrane fusion machines: the reovirus FAST proteins.
2014	Southern Medical School Guangzhou, China	Reovirus FAST proteins: exosome biogenesis, virus release and viral pathogenesis.
2014	Int'l Congress of Virology (Invited session leader)	Role of exosomes in reovirus-induced syncytium formation and pathogenesis.
2014	Keystone Conference (Invited oral presentation)	Reovirus FAST proteins usurp host exosome biogenesis to enhance cell-cell fusion and virus dissemination.
2013	University of Guelph (Distinguished Seminar Speaker)	Viral membrane fusion proteins in pathogenesis, cell biology and drug delivery.

B. Selected Peer Review Publications

 Le Boeuf, F., Gebremeskel, S., McMullen, N., He, H., Greenshields, A. L., Hoskin, D. W., Bell, J. C., Johnston, B., Pan, C., and Duncan, R. (2017). Reovirus FAST protein enhances vesicular stomatitis virus oncolytic virotherapy in primary and metastatic tumor models. Mol Ther Oncolytics 6: 80-89.
Parmar, H. and Duncan, R. (2016). A novel tribasic Golgi export signal directs cargo protein interaction with activated Rab11 and AP-1–dependent Golgi–plasma membrane trafficking. Mol. Biol. Cell, 27:1320-1331.

Read, J., Clancy, E.K., Sarker, M., de Antueno, R., Parmar, H., Langelaan, D., Shin, K., Rainey, J.K., and **Duncan, R.** (2015). Reovirus FAST proteins drive pore formation and syncytiogenesis using a novel helix-loop-helix fusion-inducing lipid packing sensor. **PLOS Pathogens**, 11: e1004962.
Key, T., Sarker, M., de Antueno, R., Rainey, J.K., and **Duncan, R.** (2015). The p10 FAST protein fusion peptide functions as a cystine noose to induce cholesterol-dependent liposome fusion without liposome tubulation. **BBA Biomembranes** 1848: 408-416.

5. Ciechonska, M. and **Duncan, R.** (2014). Lysophosphatidylcholine arrests fusion pore expansion following reovirus FAST protein- and influenza virus hemagglutinin-induced cell-cell membrane fusion. **J. Virol.** 88: 6528-6531.

6. Ciechonska, M., Key, T., and **Duncan, R.** (2014). Efficient reovirus- and measles virus-mediated pore expansion during syncytium formation is dependent on annexin A1 and intracellular calcium. **J. Virol.** 88: 6137-6147.

7. Key, T. and **Duncan, R.** (2014). A compact, multifunctional fusion module directs cholesteroldependent homomultimerization and syncytiogenic efficiency of reovirus p10 FAST proteins. **PLOS Pathogens** 10: e1004023.

8. Parmar, H., Barry, C., Kai, F., and **Duncan, R.** (2014). Golgi complex-plasma membrane trafficking directed by an autonomous, tri-basic Golgi export signal. **Mol. Biol. Cell** 25: 866-878.

9. Nibert, M. L., and **Duncan, R.** (2013). Bioinformatics of recent aqua- and orthoreovirus isolates from fish: evolutionary gain or loss of FAST and fiber proteins and taxonomic implications. **PLoS One** 8: e68607.

10. Key, T., Read, J. A., Nibert, M. L., and **Duncan, R.** (2013). Piscine reovirus encodes apparent homologs of orthoreovirus outer-clamp and fiber proteins and a novel non-fusogenic cytotoxic integral membrane protein. **J. Gen. Virol**. 94: 1039-1050.

11. Top, D, Read, J., Dawe, S., Syvitski, R., and **Duncan, R.** (2012). Cell-cell membrane fusion induced by the p15 FAST protein requires a novel fusion peptide motif containing a myristoylated polyproline type II helix. **J. Biol. Chem.** 287: 3403-3414.

12. Clancy, E.K. and **Duncan**, **R**.⁺ (2011). Helix-destabilizing, β -branched and polar residues in the baboon reovirus p15 transmembrane domain influence the modularity of the FAST proteins. **J. Virol.** 85: 4707-4719.

13. Barry, C.*, Key, T.*, Haddad, R.*, and **Duncan, R.**⁺ (2010). Features of a spatially constrained cystine loop in the p10 FAST protein ectodomain define a new class of viral fusion peptides. **J. Biol. Chem.** 285: 16424-16433.

14. Barry, C.* and **Duncan, R.**⁺ (2009). Multifaceted sequence-dependent and -independent roles for the reovirus FAST protein cytoplasmic tails in fusion pore formation and syncytiogenesis. **J. Virol.** 83: 12185-12195.

15. Top, D.*, Barry, C.*, Racine, T.*, Ellis, C.*, and **Duncan, R.**⁺ (2009). Enhanced fusion pore expansion mediated by the trans-acting endodomain of the reovirus FAST proteins. **PLOS Pathogens** 5: e1000331.

16. Brown, C. W., Stephenson, K., Hanson, S., Kucharcyk, M., **Duncan, R.**, Bell, J., Lichty, B. D. (2009) The p14 FAST protein of reptilian reovirus increases vesicular stomatitis virus neuropathogenesis. **J. Virol.** 83: 552-561. *Spotlighted by JVI as significant interest and selected for cover image.*

17. Clancy, E. K.* and **Duncan**, **R.**⁺ (2009). Reovirus FAST protein transmembrane domains function in a modular, primary sequence-independent manner to mediate cell-cell membrane fusion. **J. Virol.** 83: 2941-2950.

18. Salsman, J.*, Top, D.*, Barry, C.* and **Duncan, R.**⁺ (2008). A virus-encoded cell-cell fusion machine dependent on surrogate adhesins. **PLOS Pathogens 4:** e1000016.

Pat

ents:

- 1. Novel Reovirus-Derived Proteins, Nucleic Acids Encoding Same, and Use Thereof (priority date, November 7, 1997)
- 2. Membrane Fusion Proteins Derived from Reovirus (priority date, December 1, 2000)
- 3. Recombinant polypeptides for membrane fusion and uses thereof (priority date September 29, 2010) Application number: PCT/CA2011/001088; United States Patent Application No. 13/877,101
- 4. Recombinant oncolytic viruses for treatment of metastatic cancers (priority date, June 23, 2017)

C. Research Support

2015-22	CIHR Foundation grant	\$350,862/yr
Viral membrane fusior implications.	n machines: evolution, applications, mechanism of	action and pathogenic
2014-19	NSERC operating grant	\$54,500/yr

Role of a novel Golgi export signal in intracellular trafficking of the reovirus p14 protein.

2014-17NSERC accelerator grant\$40,000/yrRole of a novel Golgi export signal in intracellular trafficking of the reovirus p14 protein.\$40,000/yr

2016-18 Breast Cancer Society of Canada (co-applicant with B. Johnston) \$30,000/yr Breast cancer immunotherapy using oncolytic virus expressing a FAST protein

2016-21Killam Chair in Virology\$50,000/yr