

THE UNIVERSITY OF BRITISH COLUMBIA
Curriculum Vitae for Faculty Members

Date:

Initials:

1. **SURNAME**: SHAW **FIRST NAME**: Christopher
MIDDLE NAME(S): Ariel
2. **DEPARTMENT**: Ophthalmology and Visual Sciences
3. **FACULTY**: Medicine
4. **PRESENT RANK**: Professor **SINCE**: December, 2004

5. **POST-SECONDARY EDUCATION**

University or Institution	Degree	Subject Area	Dates
University of California Irvine	B.Sc.	Biology	1971
Hebrew University of Jerusalem	M.Sc.	Physiology	1974
Hebrew University of Jerusalem	Ph.D	Neurobiology	1979

Title of Dissertation and Name of Supervisor

Electrophysiological Studies of After potentials in Invertebrate Photoreceptors

Supervisor: Prof. Peter Hillman

Special Professional Qualifications

Postdoctoral Fellow: 1979-1985

Research Associate 1986-1988

6. **EMPLOYMENT RECORD**

(a) *Prior to coming to UBC*

University, Company or Organization	Rank or Title	Dates
Dalhousie University	PDF	1979-1985
Dalhousie University	Research Associate	1986-1988

(b) *At UBC*

Rank or Title	Dates
Assistant Professor	1988
Associate Professor	1993
Professor	2004

(c) *Date of granting of tenure at U.B.C.: June/July, 1993*

7. LEAVES OF ABSENCE

University, Company or Organization at which Leave was taken	Type of Leave	Dates
University of British Columbia	Sabbatical	Jan. 1, 2005 - Dec. 31, 2005
University of British Columbia	Sabbatical	Sept. 1, 2013 - Aug. 31, 2014

8. TEACHING

(a) *Areas of special interest and accomplishments*

Special interests in teaching include:

Special Interests in Teaching	Institute	Role	Time
'Creativity' Study Group	Green College, UBC	Founder	1994
Application to the Peter Wall Institute of Advanced Studies to organize a workshop on the subject of the neurobiology of creativity	Peter Wall Institute of Advanced Studies	Co-PI (with A. Kindler)	2000
Thematic Lecture Series, "The Nature of Creativity: History, Biology, and Socio-Cultural Dimensions"	Green College, UBC	Co-PI (with S. Goble and A. Kindler)	2001-2002
Thematic Lecture Series: "The Olympic Games in Myth and Reality"	Green College, UBC		Fall 2009

(b) *Courses Taught at UBC*

Session	Course Number	Scheduled Hours	Class Size	Hours Taught			
				Lectures	Tutorials	Labs	Other
1990	Phys 510	30	30	30			
1991	Phys 510	30	30	30			
1991	Gross Anatomy	220	100			220	
1992	Phys 510	30	30	30			
1998	PBL	30	8		30		10
1999	PBL	30	8		30		10
2000	PBL	30	9		30		10
2001	PBL	30	8		30		10
2002	PBL	30	9		30		
2003	PBL	30	8		30		
2004	PBL	30	8		30		
2005	PBL	60	8		60		20
2006	PBL	60	8		60		20
2007	PBL	30	8		30		10

2008	PBL	30	8		30		10
2009	PBL	30	8		30		10
2010	PBL	30	8		30		10
2011	PBL	30	8		30		10
2012	PBL	30	8		30		
2013	PBL	30	8		30		
2014	PBL	20	8		20		
2015	Blood and Lymphatics;	2 weeks	8 students each				
2015	Endocrine	4 weeks	8 students each				
2015	PBL	30			30		
2016	PBL	25			25		
2017	CBL	25			25		
2018	CBL	25			25		
2019	CBL	25			25		
2020	CBL	20			20		
2021	MED 421A	4	8		8		8

(c) *Students Supervised (If Applicable)*

Student Name	Program Type	Year		Principal Supervisor	Co-Supervisor(s)
		Start	Finish		
Ningning Guo	M.Sc.	1990	1992	C. A. Shaw	
Allen J. Billy	PDF	1990	1992	C. A. Shaw	
Steven Bowsby	M.Sc.	1990	1992	C. A. Shaw	
Ruth Lanius	Ph.D.	1992	1996	C. A. Shaw	
Jaswinder S. Bains	PDF	1996	1999	C. A. Shaw	
Jason Wilson	M.Sc., Ph.D.	2001	2007	C. A. Shaw	
Margaret Wong	M.Sc.	2001	2005	C. A. Shaw	
Jeff Schulz	M.Sc.	2002	2005	C. A. Shaw	
Erin Hawkes	M.Sc.	2003	2005	C. A. Shaw	
Reyniel Cruz-Aguado	PDF	2003	TBD	C. A. Shaw	
Swaraj Singh	M.Sc.	2003	2005	C. A. Shaw	
Michael Petrik	M.Sc.	2004	2006	C. A. Shaw	
Grace Lee	Ph.D.	2005	2012	C. A. Shaw	
Philip Ly	M.Sc.	2005	2007	C. A. Shaw	
Rena Tabata	M.Sc.	2006	2008	C. A. Shaw	
Yemi Banjo	M.Sc.	2007	2009	C. A. Shaw	
Darryl Bannon	M.Sc.	2009	2015	C. A. Shaw	
Trisha Kostas	M.Sc.	2009	2011	C. A. Shaw	
Lucija Tomljenovic	PDF	2010	2017	C. A. Shaw	
Hongwu Liang	Visiting Scholar	2012	2013	C. A. Shaw	

Pierre Zwiegiers	M.Sc.	2012	2015	C. A. Shaw	
Sneha Sheth	M.Sc.	2012		C. A. Shaw	
	Ph.D.	2014		C. A. Shaw	Dr. Todd Woodward
Guillemette Crépeaux	PDF (Universite Paris-Est)	2013	2014	C. A. Shaw	Dr. Romain Gherardi (Universite Paris-Est)
Dan (Alice) Li	PDF	2013	2015	C. A. Shaw	
Jess Morrice	M.Sc.	2014	2017	C. A. Shaw	Dr. Cheryl Gregory-Evans
	Ph.D.	2017	2020	C. A. Shaw	
Housam Eidi	PDF	2016	2018	C. A. Shaw	
Jess Morrice	PDF	2021		C. A. Shaw	

Awards held by students and PDFs:

Student Name	Awards
Ruth Lanius	MRC Studentship
Bryce Pasqualotto	McLeod Studentship (Alberta Heritage Foundation)
Jill McEachern	Epilepsy Canada Studentship
	Pharmaceutical Manufacturers Council of Canada Studentship
	MITACS Centre of Excellence Studentship
Erin Hawkes	NSERC Studentship
	(also awarded Parkinson's Disease Foundation Scholarship, but unable to use it at specified time)
Jeff Schulz	Parkinson's Disease Foundation Scholarship
Jason Wilson	1st prize, VGH Research Awareness week poster competition: Graduate Student Division
	Travel award to CIHR national poster competition, 2003
	Award of Excellence, Gold category, CIHR national poster competition, 2003
Jason Wilson Margaret Wong	Best Science Presentation at the 18th annual UBC Ophthalmology Research and Alumni Day, May 2003
Jeff Schulz	Second Place Science Presentation at the 19th annual UBC Ophthalmology Research and Alumni Day, May 2003
Michael Petrik	Best Presentation at the 4th annual VGH Summer Student Symposium, 2003
	Honor Mention in the 2005 CIHR National Student Research Poster Competition
Reyniel Cruz-Aguado	Best oral presentation, travel award, International Society for Neurochemistry, 2004
Daniella Winkler	NSERC Undergraduate Summer Research Award, 2005
Jason Wilson	Gold Prize in the 2005 CIHR National Student Research Poster Competition
Philip Ly	Parkinson's Disease Foundation Summer Studentship, 2005
Benedict Wong	Parkinson's Disease Foundation Summer Studentship, 2006
Grace Lee	Student Award, Scottish Rite Charitable Foundation, 2007-2010
Lucija Tomljenovic	Phenomenal presentation at the International Conference and Exhibition on Pharmavigilance & Clinical Trials. Chicago-North Shore, USA. October 1-3, 2012
Curtis May	FOM Summer Student Research Program Award, 2013
Sneha Sheth	Faculty of Medicine Graduate Award #6442, 2014
	2014 Keele 11 Meeting Travel Bursary Award, 850 euros

Additional graduate students supervised, but not graduated (see note below):

Student Name	Program	Year	
		Start	Finish
Marianne McCashin	Neuroscience	1988	1990
Derrick March	Physiology	1990	1993
Bryce Pasqualotto	Physiology	1993	1998
Jill McEachern	Physiology	1993	2002

Concerning the above students who did not graduate, please note the following: With the exception of M. McCashin who changed to another laboratory before withdrawing from the program, the other three students produced numerous papers between them. D. March was an author on 2 peer-reviewed publications and on a number of abstracts; B. Pasqualotto wrote and co-wrote a number of papers (13 full length) and additional abstracts, even sharing with me an invited editorship in a special issue of Cellular and Molecular Life Science; J. McEachern was a co-author on 6 major reviews, a number of abstracts, and co-edited *Toward a Theory of Neuroplasticity* (2000). She had additional publications during her tenure in the laboratory with various UBC collaborators. While it is regrettable that these students did not complete their degrees due to outside issues, it is nevertheless clear that each of these students was highly productive while in my laboratory, and at least 2 of these students (Pasqualotto and McEachern) achieved international recognition for their work.

Medical resident co-supervised:

Student Name	Year		Principal Supervisor
	Start	Finish	
Dr. Michele Mezei	1994	1995	C. Krieger

The current status of the listed students/PDFs who have moved on is as follows:

Student Name	Current Status	Institute/Location
Dr. Ningning Guo	Research Associate	Cornell University School of Medicine, New York
Mr. Steven Bowsby	Science Writer	
Dr. Ruth Lanius	Assoc. Professor, Psychiatry	Western University, London, ON
Dr. Allen Billy	Lecturer	Langara Community College, Vancouver, BC
Dr. Jaswinder Bains	Practicing optometry	Vancouver, BC
Dr. Margaret Wong	Psychiatrist	
Dr. Jeff Schulz	Medical doctor	
Dr. Swaraj Singh	Resident in Neurology	University of Arkansas, Fayetteville, AR
Ms. Erin Hawkes	Writer	
Dr. Jason Wilson	Resident in radiology	
Dr. Reyniel Cruz-Aguado	Lecturer	Douglas College, Vancouver, BC
Dr. Michael Petrik	Optometry	

The following undergraduate students have gone onto achieve professional degrees:

Student Name	Professional Degree
Dr. Brian Scarth	Psychiatrist, West Vancouver

Dr. Lynn Huff	General Practice, Vancouver
Dr. John Bining	General Practice, Vancouver
Dr. Twyla Bergman	Graduated UBC Medical School
Dr. Michael Tjandrawijaja	Graduated Calgary Medical School
Dr. Joseph Cheung	Genomics, University of Toronto, Ph.D.
Ms. Mandeep Mahay	Graduated UBC Pharmacy
Arash Seyedalikhani	Graduate Univ. Calgary nursing school, Currently RCMP Officer

(d) *Continuing Education Activities*

Program	Role	Timeline
Green College, UBC	Associate Member	1994-1996, 2000-present
PBL Program	Tutor observer	1998-present
Faculty of Medicine, UBC	Academic Advisor ('Mentor')	Class of 2004
Undergraduate honours thesis projects	Supervisor	1988-present
Workstudy projects	Supervisor	1988-present
1st Job in Science and Technology (provincial program)	Supervisor	2000
Student Summer Works (provincial program)	Supervisor	1997-2000
Summer Career Placement Program, (Human Resources Canada)	Supervisor	2000
Dept. of Ophthalmology, UBC	Grand rounds	1989, 1994, 2009
Ophthalmology Research Day, UBC	Participant	1988-present (either I and/or members of my laboratory have presented at each Ophthalmology Research Day since 1988)

(e) *Visiting Lecturer (indicate university/organization and dates):* See attached(f) *Other*9. **RESEARCH OR EQUIVALENT GRANTS (indicate under COMP whether grants were obtained competitively (C) or non-competitively (NC))**

Granting Agency	Subject (Title)	COMP	\$ Per year	Year (fiscal)		Principal Investigator	Co-Investigator(s)
				Start	End		
BCHRF	Scholarship	C	37,000.00	1988	1992	C. A. Shaw	
BCHRF	Scholarship	C	10,000.00	1988	1989	C. A. Shaw	
MRC	Program Grant	C	112,500.00	1988	1990	M. Cynader	C. A. Shaw
BCHRF	The Role of Steroids on Receptor Regulation	C	40,000.00	1988	1990	C. A. Shaw	
BCHRF	Equipment Grant	C	210,000.00	1989	1992	C. A. Shaw	
BCMSF	Molecular Basis of Synaptic Alterations in Amblyopia	C	10,250.00	1990	1992	C. A. Shaw	
NSERC	Receptors, Second Messengers and Ion	C	24,500.00	1990	1993	C. A. Shaw	

	Channels in Neuroglia of the Mammalian Neocortex						
MRC	Role of Neurotransmitter Receptor Distribution and Function	C	10,875.00	1991	1992	C. A. Shaw	
MRC	Studentship	C	400.00	1991	1996	C. A. Shaw	Student: Ruth Lanius
BCHRF	Involvement of Protein Kinase C in ALS	C	83,554.00	1992	1994	C. Krieger	C. A. Shaw
BCHRF	Glutathione: The Genuculostriate Neurotransmitter?	C	15,000.00	1992	1993	C. A. Shaw	
Janssen-Ortho Inc.	Excitatory amino acid receptors in ALS	C	25,000.00	1993	1995	C. A. Shaw	
ALS (Canada)	Studies of Pathogenesis of ALS	C	46,250.00	1994	1996	C. Krieger	C. A. Shaw
NIH	GSH Receptor probes to study CNS development/dysfunction	C	31,770.00	1994	1998	C. A. Shaw	
AHFMR	Studentship	C	13,200.00	1995	1996	C. A. Shaw	
Calgary Foundation	Dynamic responses of cortical AMPA receptors to excitatory stimuli	C	3,300.00	1995	1996	C. A. Shaw	
ALSA (US)	Changes in the Glutathione Status of Cells in ALS	C	155,374.00	1995	1999	C. A. Shaw	
NSERC	Glutathione as an excitatory neurotransmitter in the CNS	C	94,600.00	1997	2001	C. A. Shaw	
Center for Neurologic Study	Stipend to supplement work on ALS grant	C	2,082.00	1997	1998	C. A. Shaw	
Scottish Rite Charitable Foundation	Examining the role of Novel Oxidative-/Excito-Toxins in the development of symptoms of neurological disease	C	35,000.00	1999	2002	C. A. Shaw	
MITACS	Studentship	C	17,500.00	1999	2002	C. A. Shaw	Student: Jill McEachern
ALSA (USA)	Mechanisms of action of a novel neurotoxin isolated from the seed of the cycad: Implications for ALS-PDC	C	72,109.00	2000	2001	C. A. Shaw	
ALSA (USA)	Cycad sterol glucoside toxicity and ALS-PDC: Implications for the etiology of ALS	C	135,875.00	2001	2003	C. A. Shaw	
NSERC	Genetic propensity for cycad neurotoxicity in a murine model of neurological disease	C	23,500.00	2001	2006	C. A. Shaw	
Green College	The nature of creativity: history, biology and socio-cultural dimensions		10,000.00	2001	2002	C. A. Shaw	A. Kindler S. Goble
Scottish Rite Charitable Foundation	Estrogen and apolipoprotein E as therapies for neurodegenerative disease	C	35,000.00	2002	2005	C. A. Shaw	

U.S. Department of Defense (Army Medical Research Acquisition Activity)	Implications of Cycad Neurotoxicity for ALS-PDC	C	1,128,253.00	2002	2007	C. A. Shaw	
Parkinson's Disease Foundation	Cycad and sterol glucoside neurotoxicity in vivo and in vitro models	C	3,950.00	2005	2007	C. A. Shaw	
ALSA (USA)	Roles of sterol glucoside neurotoxicity in ALS-PDC	C	286,014.00	2006	2009	C. A. Shaw	
NINDS (USA)	Time-lines of neural degeneration in ALS-PDC mouse model	C	1,352,555.00	2006	2011	C. A. Shaw	
Scottish Rite Charitable Foundation	Neurobiological basis of cycad toxicity in a mouse model of ALS-PDC	C	20,000.00	2007	2008	C. A. Shaw	
Scottish Rite Charitable Foundation	Neurobiological basis of cycad toxicity in a mouse model of ALS-PDC	C	20,000.00	2009	2010	C. A. Shaw	
NIH (USA) R03	Neurotoxicity of sterol glucosides: role in ALS-PDC	C	66,466.00	2007	2008	C. A. Shaw	
Pacific Alzheimer's Research Foundation	Role of progranulin in brain function and neuroprotection	C	344,846.00	2007	2009	C. A. Shaw	
ALS SC Bernice Ramsay Discovery Grant	Progranulin as a novel therapeutic for motor neuron rescue in an animal model of ALS	C	100,000.00	2010	2011	C. A. Shaw	
Lotus Foundation through the American foundation for UBC	The toxicity of polysorbate 80, sodium borate, and aluminum at clinically relevant concentrations in an in vivo animal model	NC	150,000.00	2011	2012	C. A. Shaw	
Dwoskin Foundation through the American Foundation for UBC	Aluminum vaccine adjuvants and neurodevelopment outcomes in an animal model of autism spectrum disorder	C	250,000.00	2011		C. A. Shaw	
Katlyn Fox Foundation	Neurotoxic impacts of aluminum in CNS	NC	17,000.00	2010	2011	C. A. Shaw	
Katlyn Fox Foundation	Neurotoxic impacts of aluminum in CNS	NC	6,000.00	2012		C. A. Shaw	
Dwoskin Foundation through the American Foundation for UBC	Aluminum vaccine adjuvants and neurodevelopment outcomes in an animal model of autism spectrum disorder	C	244,919.00	2012		C. A. Shaw	
Dwoskin Foundation through the	Aluminum vaccine adjuvants and neurodevelopment	C	364,239.00	2013		C. A. Shaw	

American Foundation for UBC	outcomes in an animal model of autism spectrum disorder						
Estate Grant (Luther Allyn Shourds Dean Bequest)	Impacts of environmental toxicity on children and across the lifespan	NC	862,280.14	2013		C. A. Shaw	
Katlyn Fox Foundation	Neurotoxic impacts of aluminum in CNS	NC	8,000.00	2014		C. A. Shaw	
Katlyn Fox Foundation	Neurotoxic impacts of aluminum in CNS	NC	5,000.00	2015		C. A. Shaw	
Estate Grant (Luther Allyn Shourds Dean Bequest)	Impacts of environmental toxicity on children and across the lifespan	NC	109,600.00	2015		C. A. Shaw	
Katlyn Fox Foundation	Neurotoxic impacts of aluminum in CNS	NC	14,000.00	2016		C. A. Shaw	
CMSRI (formerly Dvoskin Foundation)	Impact of neonatal vaccination on neurodevelopment and immune-inflammatory responses in wild type mice	C	260,251.78	2016	2017	C. A. Shaw	
Neuro-degenerative Disease Research, Inc.	Biomarkers for early stage ALS detection	C	150,119.66	2021	2022	C. A. Shaw	
Neuro-degenerative Disease Research, Inc.	Comparing levamisole with designated peptides and analogs in an in vitro PBMC preparation to evaluate the capacity to induce cytokine regulation	C	124,265.85	2021	2022	C. A. Shaw	

Total funds brought to UBC to date: \$7,142,398.43

Please note that I am a former member of the BC 'node' of the national Mathematics Centre of Excellence (MITACS), which provided a student scholarship to one of my graduate students (Jill McEachern).

10. SCHOLARLY AND PROFESSIONAL ACTIVITIES

(a) *Areas of special interest and accomplishments*

Edited/co-edited 3 books on topics in the neurosciences and related topics:

1. Receptor Dynamics in Neural Development, CRC Press, 1996. This book deals with the mechanisms and roles of receptor regulation in neural development and plasticity.
2. Glutathione in the Nervous System, Taylor and Francis, 1998. This book summarizes the various roles of GSH in the CNS and provides evidence supporting a major role of glutathione in various aspects of normal and abnormal synaptic activity.
3. Toward a Theory of Neuroplasticity (with J.C. McEachern), Taylor and Francis, 2000. This book represents the first synthesis of the vast and diverse realm of neuroplasticity studies and attempts to create a unified theory of the phenomenon.

(b) *Invited Presentations (Identify whether International/National/Local)*

International (32)

1. CMSRI HPV Vaccine Safety. AutismOne. Chicago, IL, USA. May 18-24, 2015.
2. Aluminium in the nervous system: A contributor to neurological diseases across the lifespan. AutismOne. Chicago, IL, USA. May 18-24, 2015.
3. Toxicity of aluminum adjuvants in humans and animal models. In 3rd International Symposium on Vaccines (March 26), 9th International Congress on Autoimmunity. Nice, France. March 25-30, 2014.
4. Administration of aluminium in vaccine-related exposures in neonatal mice is associated with long term adverse neurological outcomes. Platform 19, 10th Keele Meeting. Winchester, UK. February 22-28, 2013.
5. The neurotoxicity of aluminum: implications for aluminum adjuvanted vaccines. 8th International Congress for Autoimmunity. Granada, Spain. May 9-13, 2012.
6. Aluminum as a neurotoxin: the evidence from cell culture, in vivo, and human studies. Vaccine Safety Conference. University of West Indies, Montego Bay, Jamaica. January 3-8, 2011.
7. Neuropathology and neuroprotection of steryl glucosides: insights from ALS-PDC. 1st Neurodyn Corp meeting on neuronal degeneration. July, 2010.
8. Aluminium hydroxide and Gulf War ALS: An in vivo model of motor neuron death. In Session 6: Animal Models of Aluminium Toxicity, 8th Keele Meeting on Aluminium. Trest, Czech Republic, February 21-25, 2009.
9. An environmental model of neurological disease based on ALS-PDC of Guam. Dept of Agricultural Sciences, Oregon State University, OR, USA. 2007.
10. ALS-PDC of the Western Pacific: A novel, predictive animal model. Dept of Pathology, University of Washington, WA, USA. 2006.
11. Cycad-induced neurodegeneration in a mouse model of ALS-PDC: Is the culprit really BMAA or is a novel toxin to blame? Xalapa, Veracruz, Mexico. January, 2005.
12. ALS-PDC: New insights from an old mystery. University of Maryland, MD, USA. April, 2005.
13. Cycad toxicity studies. International Workshop on ALS-PDC. Guam. December, 2005.
14. Gene-environment interactions in neurological disease: prospects for prevention and early treatment. ALS Clinical Conference, ALSA regional meeting. Washington, DC, USA. May, 2003.
15. Susceptibility and environmental factors in ALS. NIEHS Brainstorming Session I Research Triangle Park. Durham, NC, USA. May, 2003.
16. Excitotoxins/ALS-PDC. ALSA regional meeting on environmental factors and susceptibility genes in ALS. Keystone, CO, USA. May, 2002.
17. Reverse engineering neurological diseases. International Conference on Complex Systems. Nashua, NH, USA. June, 2002.
18. Susceptibility and environmental factors in ALS. NIEHS Brainstorming Session II Research Triangle Park. Durham, NC, USA. November, 2002.

19. A murine model of ALS-PDC. University of San Diego, CA, USA. March, 2001.
20. Excitotoxicity and neurological disease. Dept of Defense conference on Parkinson's disease, Bethesda, MD, USA. 2001.
21. Mechanisms of cycad neurotoxicity: relation to ALS-PDC. 10th Pacific Science Inter-congress. Bodig-Lytico Research Group, University of Guam, Guam. June, 2001.
22. Glutathione and signal transduction in CNS. ISN conference. Buenos Aires, Argentina. July, 2001.
23. Combination of excitotoxicity and oxidative stress in the pathogenesis of neurological disease. Center for Neurologic Study, CA, USA. 1998.
24. Glutathione in neurological disease: a new model. Center for Neurologic Study, CA, USA. 1996.
25. Receptor binding: theory and methods (2 lectures). Trinity College, Hartford, CT, USA. 1990.
26. Receptor regulation and cortical plasticity. Dept of Psychobiology, University of California at Irvine, CA, USA. 1989.
27. Receptor regulation in cat visual cortex: development and plasticity. Neuroscience Group. University of Pittsburgh, PA, USA. 1989.
28. Alterations in receptor distribution and characteristics in postnatal development. Dept of Ophthalmology, University of Washington, WA, USA. 1988.
29. Mechanisms of acetylcholine receptor regulation in cortex. NATO conference on 'Receptors'. Santorini, Greece. 1988.
30. Mechanisms of receptor regulation. Neurobiology Program. Northeastern Ohio Universities College of Medicine, OH, USA. 1987.
31. Postnatal development of receptors in cat visual cortex: implications for neuroplasticity and the critical period. (1987). IBRO Symposium. Budapest.
32. Receptor modifications during postnatal development of cat visual cortex. Neurobiology Program. Northeastern Ohio Universities College of Medicine, OH, USA. 1986.

National (6)

1. The exposome and systems dynamics in ALS onset and progression. ALS Canada Research Forum. Toronto, ON, Canada. April 29-May 1, 2017.
2. Toxicity of aluminum in vitro and in vivo: relation to aluminum concentrations in humans. 9th Keele Meeting: "Aluminium and Life: Living in the Aluminium Age", Niagara-by-the-Lake. Hamilton, ON, Canada. February 19-23, 2011.
3. Steryls and steryl glucosides as causal factors in ALS and the interaction with genetic susceptibility. 4e Symposium sur la SLA de la Fondation André-Delambre. Montreal, Canada. September, 2008.
4. Timelines of behavioural, anatomical, and biochemical changes in the CNS of an animal model of ALS-PDC of Guam. 18th International Symposium on ALS/MND. Toronto, Canada. 2007.
5. Inflammation and neuronal cell death in an animal model of ALS-PDC of the Western Pacific. Quebec City, Canada. September, 2006.

6. Receptor regulation in cat visual cortex: development and plasticity. Neuroscience Group. McGill University, QC, Canada. 1989.

Local (8)

1. Does a forgotten disease on Guam hold the key to understanding all neurodegenerative disorders? (2009). *Green college Principal's Series January – April 2009, Thinking at the Edge of Reason: Interdisciplinarity in Action*. Green College, University of British Columbia, Vancouver.
2. Can your food give you Alzheimer's disease? Green College, University of British Columbia, Vancouver. November, 2001.
3. Cycad toxicity and ALS-PDC. Graduate Programme in Neuroscience discussion group, University of British Columbia, Vancouver. 2000.
4. ALS-PDC models. MITACS seminar, Dept of Mathematics, University of British Columbia, Vancouver. September, 2000.
5. Behavioral assessment of toxicity of a novel neurotoxin. Dept of Psychology, University of British Columbia, Vancouver. October, 2000.
6. Long-term potentiation: a new view (with J.C. McEachern). Dept of Psychology, University of British Columbia, Vancouver. 1997.
7. Glutathione in the CNS. Dept of Psychology, University of British Columbia, Vancouver. 1997.
8. Alterations in receptor properties in postnatal development. Dept of Pharmacology, University of British Columbia, Vancouver. 1994.

(c) *Other Presentations*

See list of abstracts for poster and slide presentations.

Also, please note that I (or members of my laboratory) have presented research talks at every "Ophthalmology In-House Research Day" from 1988-2010.

(d) *Other*

N/A

(e) *Conference Participation (Organizer, Keynote Speaker, etc.)*

1. Co-organizer. Living in the Aluminium Age. The 12th Keele Meeting on Aluminium. Vancouver, Canada. March 4-8, 2017.
2. Chair. Special Satellite Session. 3rd International Symposium on Vaccines and Autoimmunity, 9th International Autoimmunity Congress. Nice, France. March 25-30, 2014.
3. Chair. Special Satellite Session. 2nd International Symposium on Vaccines and Autoimmunity, 8th International Autoimmunity Congress. Granada, Spain. May 7-13, 2012.
4. Organizer and Speaker. Aluminum as a neurotoxin: the evidence from cell culture, in vivo, and human studies. Vaccine Safety Conference. Montego Bay, Jamaica, West Indies. January 3-8, 2011.
5. Speaker. Toxicity of aluminum in vitro and in vivo: relation to aluminum concentrations in humans. 9th Keele Meeting: "Aluminium and Life: Living in the Aluminium Age". Niagara-by-the-Lake, Hamilton, Ontario, Canada. February 19-23, 2011.

6. Invited discussion panelist. Biomarkers in Multiple Sclerosis. NINDS conference. Washington DC. April, 2004.
7. Invited discussion panelist. ALS Society of Canada Research Forum. ALS Society of Canada. October, 2004.
8. Speaker. Understanding the Rules of ALS. 3rd Annual ALS BC Dinner. November, 2004.
9. Invited discussion panelist. Susceptibility and Environmental Factors in ALS. NIEHS Brainstorming Session 2. Durham NC. May, 2003.
10. Organizer. Workshop on Neurobiology of Creativity in Art and Science. Peter Wall Institute of Advanced Studies. 2002.
11. Invited discussion panelist. Susceptibility and Environmental Factors in ALS. NIEHS Brainstorming Session 1. Durham NC. November, 2002.
12. Co-Organizer. Green College Thematic Lecture series, The Nature of Creativity: History, Biology, and Socio-Cultural Dimensions. Green College, UBC. Canada. 2001/2002.
13. Keynote Speaker. Mechanisms of cycad neurotoxicity: relation to ALS-PD. 10th Pacific Science Inter-Congress. Guam. 2001.
14. Keynote Speaker. Glutathione and signal transduction in CNS. ISN meeting. Buenos Aires. 2001.
15. Keynote Speaker. The effects of early diet on synaptic function and behaviour: pitfalls and potentials. Dobbing Conference. Phoenix. 1997.
16. Keynote Speaker. Trinity College. Hartford. 1990.
17. Keynote Speaker. IBRO. Budapest. 1987.

11. **SERVICE TO THE UNIVERSITY**

(a) *Memberships on committees, including offices held and dates*

Role	Committee	Date
Appointed Associate Member	Department of Pathology and Laboratory Medicine. Term of appointment:	July 1, 2014-June 30, 2018
Letter of Appointment from Dr. Gavin C.E. Stuart, Dean, UBC FOM		Jan. 05, 2015
Supervisor	Experimental Medicine Program, students (D. Bannon, S. Sheth, P. Zwieggers)	2014
Committee Examiner	Comprehensive Exam (D. Bannon)	2014
Judge	UBC Medicine Undergraduate Research Forum	2012
Tutor training	Faculty Development for the undergraduate Medical/Dental Curriculum	2001-2003, 2010-2012 school years
Ad hoc committee on Gender Equality		
Chair	Thesis defense committees (listed below)	Various
University Examiner	UBC	
Admissions Committee	Graduate Programme in Neurosciences	1990-1993
Judging panel committee	Ophthalmology Research Day	2002

(b) *Other service, including dates*

Role	Committee	Date
Contributor	Core component of Faculty Development for the Undergraduate Medical/Dental curriculum by performing PBL tutorial observation	Fall Session 2012-13
Adjudicator	Killam Scholarship Award, Killam Program, UBC	2013
Adjudicator	Killam Graduate Teaching Assistants Awards, Faculty of Medicine, Dean's Office, Research	2012
Contributor	Core component of Faculty Development for the Undergraduate Medical/Dental curriculum by performing PBL tutorial observation	Winter Session 2008-09, 2010-11
Participant; Current Chair of the Risk Factors subcommittee and member of NHCC scientific advisory board	Workshop: Developing a Population-based Research Study of Neurological Conditions in Canada, Hosted by the Public Health Agency of Canada, Canadian Institutes of Health Research, Health Canada, and Neurological Health Charities Canada. Toronto	2008 to present
Participant	Internal Review Process, CIHR New Investigator Award Competition, Office of the Vice president of Research and the Health Research Resource Office (HeRRO)	Sept. 2008
Member	Green College: Lectures and Thematic Lecture Series (2)	1994-1996, 2000-present
Tutor Observer	Faculty of Medicine PBL Program	1998-present
Academic Advisor	Faculty of Medicine	Class of 2004, 2005
Promotion and tenure committees	Dept. of Ophthalmology	1988-present
Member of Judging panel	Ophthalmology Research and Alumni Day	May 2002
Participant	Dept. of Ophthalmology retreats	

12. SERVICE TO THE COMMUNITY(a) *Memberships on scholarly societies, including offices held and dates*

Society for Neuroscience, 1979-present

(b) *Memberships on scholarly committees, including offices held and dates*

Role	Committee	Organization	Time
Member	Editorial Board	Journal of Controversies in Biomedical Research	2016-present
Member	Research Committee	ALS Society of Canada	
Member	Scientific Advisory Board	Neurological Health Charities Canada	
Chair	Risk Factor Committee of the Scientific Advisory Board	Neurological Health Charities Canada	

Member	Research Grants committee member	BC Health Research Foundation	1997-2000
Review Panel	ALS Association		2001, 2004, 2008
AIBS Review Panel	Department of Defense grants on ALS		2003 to present
Review Panel	NINDS Udall Centers (Parkinson's Disease) Reviews		Dec. 2003-Mar. 2004
Special Panel on Oxidative Stress and Neurological Disease	NINDS		2005
Chair	Risk Factor subgroup	Neurological Health Charities Canada	2009-present
Member	NHCC Scientific Advisory Board		2011

(c) *Memberships on other committees, including offices held and dates*

UBC Faculty of Medicine Gender Issues Committee, committee member, 1993.

(d) *Editorships (list journal and dates)*

1. Shaw, CA. *Frontiers in Aluminum Toxicity and Human Disease*. EPFL Innovation Park, Lausanne, Switzerland. (2016).
2. Shaw, CA., and Pasqualotto, BA. Introduction: tuning up the signal: regulation of postsynaptic receptor properties. *Cellular and Molecular Life Sciences, Special Edition*, Basel, Switzerland. 57(11), 1495-1498. (2000).
3. Shaw, CA., and McEachern, JC. *Toward a Theory of Neuroplasticity*. Taylor & Francis, Psychology Press, Hove, UK. (2000).
4. Shaw, CA. *Glutathione in the Nervous System*. Taylor & Francis, Washington, DC. (1997).
5. Shaw, CA. *Receptor Dynamics in Neural Development*. CRC Press, Boca Raton, FL. (1996).

(e) *Reviewer (journal, agency, etc. including dates)*

Agencies:

Agency	Year
ALS Association	2005-2008
ALS Canada, Research Committee	2008-present
ALSA Review Panel	Oct. 2001
BC Health Research Foundation	1988-1997
CIHR (former Medical Research Council of Canada)	1988-present
Fond de Reserche Clinique du Quebec	1995
Jewish General Hospital Foundation, Louisville, Kentucky	1988
National Institutes of HealthUSA	1998-present
National Science FoundationUSA	1988-present
Natural Science and Engineering Research CouncilCanada	1988-present
Neuroscience Charities Canada, Chair "Risk Factor" Subcommittee	2008-present
NINDS, Panel on oxidative stress and neurological disease	2005

NINDS-Udall Center Parkinson's Research Program, Grants Review Panel	Dec-03
Telthon Combatti La Distrofia MuscolareItaly	1998-2000
US Department of Defense, AIBS Review Panel	Nov. 2003, 2004, 2008
Wellcome Trust	Nov. 2003
Whitehall Foundation	2000

Journals: (All 1988-present)

Annals of Medicine
Allergy, Asthma and Clinical Immunology
BMC Medicine
BMC Neuroscience
Brain Research
Case Reports in Rheumatology
Cell Biology and Toxicology
Chemosphere
Developmental Brain Research
Entropy
Environmental Research
Environmental Science and Pollution Research
European Journal of Neuroscience
Free Radical Biology and Medicine
Hippocampus
Journal of Comparative Neurology
Journal of Developmental Disabilities
Journal of Inorganic Biochemistry
Journal of Medical Case Reports
Journal of Neural Transmission
Journal of Neurochemistry
Journal of Neurophysiology
Journal of Neuroscience Research
Journal of Neuroscience and Behavioural Health
Molecular Brain Research
Neurobiology of Aging
Neuroscience
Pharmacology, Biochemistry and Behavior
PLOS1
Proceedings of the National Academy of Science (USA)
Trends in Pharmacological Sciences
Trends in Neuroscience
Vaccine; March 2015, Awarded Recognized Reviewer Status

(f) *External examiner (indicate universities and dates)*

Role	Session	Student	Supervisor	Department	Year
Chair	Defense	Soojin Li	Dr. M. McKeown	Medicine, UBC	2020
Chair	Defense	Jessie Fu	Dr. V. Sossi	Medicine, UBC	2020
University examiner	Defense	Joyce Lam	Dr. D. Doudet	Medicine, UBC	2019
University examiner	Defense	Elissa Strome	Dr. D. Doudet	UBC	2006
Chair	Doctoral Oral Examination	Robert Gerl		Dept. of Medicine, Experimental Medicine Program, UBC	2003

University examiner	Defense	Rachael Heisel	Dr. S. Kim	Dept. of Medicine, UBC	2002
University examiner	Defense	Magdalena Luca	Dr. L. Kesler	Dept. of Mathematics, UBC	2001
University examiner	Defense	Lisa Kalynchuk	Dr. J. P. J. Pinel	Dept. of Psychology, UBC	1999

(g) *Consultant (indicate organization and dates)*

Organization	Duration
Covalent Associates	1993-1998
IGT Pharma	1997-2000
MITACS (Mathematics Centre of Excellence)	1998-2003
Shaw Neural Dynamics (Founder, President, and CSO)	2001-2005
Thomas Paine Institute (Director)	2004-2008
Neurodyn Corp.	2005-present

(h) *Other service to the community*

Service	Duration
Member of the Army Reserve (Officer) <i>(Please note that in this role I have been involved in public education projects concerning the Ottawa Accord)</i>	1991-2010
Supervisor for Science Summer Program, University Hill Secondary School	2000
Candidate for Parliament, Vancouver Quadra	Nov. 2000
Candidate for Vancouver City Council	2008, 2011
Lecture to community organizations (Scottish Rite Charitable Foundation of Canada)	Nov. 2001 and Sept. 2002

13. AWARDS AND DISTINCTIONS(a) *Awards and nominations for Teaching awards (indicate name of award, awarding organizations, date)*

Awards received by graduate students or postdoctoral fellows under your supervision may be included in a separate section.

(b) *Awards for Scholarship (indicate name of award, awarding organizations, date)*

Award	Date
Friends of the Hebrew University Scholarship	1971-1973
Hebrew University Graduate Scholarship	1974-1976, 1978-1979
Killam Postdoctoral Fellowship	1979-1981
NIH Postdoctoral Fellowship	1981-1983
BC Heath Research Scholarship	1988-1992
William Evans Visiting Fellowship, Otago University, Dunedin, NZ	2005

(c) *Awards for Service (indicate name of award, awarding organizations, date)*

Award for Service	Date
39 Brigade Commander's Commendation	1999
Militia Staff College	2003
Canada Decoration	2004
Queen's Jubilee Medal	2004

(d) *Other Awards***14. OTHER RELEVANT INFORMATION (Maximum One Page)**

My research has focused on two key areas, neuroplasticity and neuropathology, and studies of these areas are the basis for the publications highlighted in the attached list of publications.

When I first arrived at UBC, most of my work was directed at understanding the mechanisms underlying receptor regulation. These studies resulted in numerous research publications and reviews (e.g., Lanius et al., 1993; Shaw et al., 1994; Shaw, 1996; Pasqualotto and Shaw, 1996, 2000). The outcome of these studies laid the groundwork for a reevaluation of current theories of 'neuroplastic' phenomenon such as long-term potentiation (see McEachern and Shaw, 1996, 1999, 2000), and the role that abnormal receptor regulation may play in some neurodegenerative disorders (Bains and Shaw, 1997; Shaw and Bains, 2000). This focus also led to an evaluation of the various complex roles played in normal and abnormal synaptic function by the antioxidant molecule glutathione (see Janáky et al., 1999; Shaw et al., 1996; Shaw, 1996). Such studies were also seminal to our recent attempt to provide a unified theory to encompass the vast and diverse subject termed "neuroplasticity" (Shaw and McEachern, 2000).

My current research focus is on ALS-parkinsonism dementia complex (ALS-PDC), a complex neurological disorder of the Western Pacific. The ongoing studies in my laboratory are devoted to an animal model of the disease and include the following subjects: isolation and mechanism of action of the putative environmental toxin, a detailed time course of the behavioural, morphological, and biochemical events that occur from initial insult to neural cell death, interactions with genetic susceptibility factors, and the roles of age and gender (see Shaw and Wilson, 2003).

My laboratory now hosts 3 graduate students, 2 research technicians, and various undergraduate honours/work study students. Our studies on the ALS-PDC model involve numerous past and current UBC collaborators as well as international collaborators.

15. NOTE ON PUBLICATIONS**1. Impact Factor**

The following section contains my list of publications. Note that the journals chosen span a number of areas within the neurosciences and include pharmacology and experimental medicine. These journals were assessed on the basis of journal impact assessment rating of 461 journals (Journal Citation Reports, 1998, CD ROM, IRC, UBC). While this is a highly artificial rating, it does provide a basis for comparison of the various journals. Note also that many other factors determined my choice of journal for particular articles. (For example, I was encouraged to support Canadian neuroscience by sending an article to the Canadian Journal of Physiology and Pharmacology even though this journal does not score within the upper 25% based on impact assessment. Similarly, articles such as that published in Medical Hypotheses were aimed at a specific target audience irrespective of impact factor.

Overall, based on the Journal Citation Report, 71% of my research articles up to 2004 (date of promotion to full professor) scored in the upper 25% of journals rated by impact factor. For primarily review articles, 67% were in the upper 25% by impact factor.

2. Citation Index

From 1993 (date of last promotion) through 2004, various of my papers were cited approx. 610 times (based on a comprehensive search of the ISI Web of Science website).

3. Policy on Authorship

My policy on authorship is the following: Each author should have made a material contribution to either the basic research and/or the analysis and interpretation of the data. A contribution to writing and/or editing resulting manuscripts is also essential. Order of authors is based on two factors: (i) the amount of contribution of each author and (ii) the stage of professional development and hence the relative 'need' for more or less recognition in cases where contributions have been equivalent (note that many journals now allow authors to be listed as 'equal co-authors'). For the latter, I give the example of the manuscript by Janáky et al. 1999 (listed as # 46 in the following list of publications) on which I am listed as the senior author. In this case, the original idea for the review was mine, I wrote the vast bulk of the manuscript, did all the revisions, formatted and reformatted all figures, etc. However, the three primary authors (me, Dr. R. Janáky, and Dr. K. Ogita) each contributed approximately equal amounts of primary data. In this circumstance it was viewed as best to advance the career development of Dr. Janáky who was then in the promotion process. This principle has applied to virtually all review papers and chapters submitted from my laboratory since arriving at UBC.

4. Note on Key Publications

Single asterisks below indicate those publications that I consider to be my most significant contributions to the literature. Those publications preceded by double asterisks have their abstracts appended to this document. These three documents are reviews that illustrate the range of my contributions to three key areas in the neurosciences: neurodegenerative disease, neuroplasticity, and glutathione in the CNS.

THE UNIVERSITY OF BRITISH COLUMBIA *Publications Record*

If Applicable – not required in the Educational Leadership Stream

SURNAME: SHAW

FIRST NAME: Christopher

Initials:

MIDDLE NAME(S): Ariel

Date:

1. REFEREED PUBLICATIONS

(a) Journals

1. Bairwa, SC., Shaw, CA., Kuo, M., Yoo, J., Tomljenovic, L., & Eidi, H. (2021). Cytokines profile in neonatal and adult wild-type mice post-injection of U. S. pediatric vaccination schedule. *Brain, behavior, & immunity - health*, 15, 100267. <https://doi.org/10.1016/j.bbih.2021.100267>
2. Morrice, JR., Smith, M., Shan, X., Libbrecht, M., Hancock, REW., Gregory-Evans, CY., and Shaw, CA. (2021). Enhancer regulatory elements are novel risk factors for sporadic ALS. *Human Molecular Genetics*(Under Review).
3. Shaw, CA. (2020). Weaponizing the Peer Review System. *International Journal of Vaccine Theory, Practice, Research*, 1(1), 11-26.

4. Oller, J., and Shaw, CA. (2020). Brave new world: omens and opportunities in the age of COVID-19. *International Journal of Vaccine Theory, Practice, Research*, 1(1), 1-10.
5. Morrice, JR., Gregory-Evans, CY., and Shaw, CA. (2020). Investigating microglia during motor neuron degeneration using a zebrafish model. *Micron*, 133, 102852. doi:<https://doi.org/10.1016/j.micron.2020.102852>
6. Marler, TE., and Shaw, CA. (2020). Fresh and Dry Weight Relations Are Predictors of *Cycas micronesica* Seed Age. *Horticulturae*, 6(2), 29. doi:[doi:10.3390/horticulturae6020029](https://doi.org/10.3390/horticulturae6020029)
7. Eidi, H., Yoo, J., Bairwa, S. C., Kuo, M., Sayre, E. C., Tomljenovic, L., & Shaw, C. A. (2020). Early postnatal injections of whole vaccines compared to placebo controls: Differential behavioural outcomes in mice. *Journal of inorganic biochemistry*, 212, 111200. <https://doi.org/10.1016/j.jinorgbio.2020.111200>
8. Oller, JW, Jr., and Shaw, CA. (2019). From superficial damage to invasion of the nucleosome: ranking of morbidities by the biosemiotic depth hypothesis. *International Journal of Sciences*, 8(06), 51-73. doi:[10.18483/ijSci.2069](https://doi.org/10.18483/ijSci.2069).
9. Kuo, MTH., Beckman, JS., & Shaw, CA. (2019). Neuroprotective effect of CuATSM on neurotoxin-induced motor neuron loss in an ALS mouse model. *Neurobiology of disease*, 130, 104495. doi:[10.1016/j.nbd.2019.104495](https://doi.org/10.1016/j.nbd.2019.104495)
10. Sheth, SKS., Li, Y., and Shaw, CA. (2018). Is exposure to aluminium adjuvants associated with social impairments in mice? A pilot study. *J Inorg Biochem*, 181, 96-103. doi:[10.1016/j.jinorgbio.2017.11.012](https://doi.org/10.1016/j.jinorgbio.2017.11.012)
11. Morrice, JR., Gregory-Evans, CY., and Shaw, CA. (2018). Animal models of amyotrophic lateral sclerosis: A comparison of model validity. *Neural Regen Res*, 13(12), 2050-2054. doi:[10.4103/1673-5374.241445](https://doi.org/10.4103/1673-5374.241445)
12. Morrice, JR., Gregory-Evans, CY., and Shaw, CA. (2018). Modeling Environmentally-Induced Motor Neuron Degeneration in Zebrafish. *Scientific Reports*, 8(1), 4890. doi:[10.1038/s41598-018-23018-w](https://doi.org/10.1038/s41598-018-23018-w)
13. Sheth, S., Li, Y., and Shaw, CA. (2017). Does exposure to aluminium adjuvants lead to social impairments in mice? A pilot study. *Journal of Inorganic Biochemistry*.
14. Inbar, R., Weiss, R., Tomljenovic, L., Arango-Lievano, M., Deri, Y., and Shaw, CA. (2017). Behavioral abnormalities in female mice following administration of aluminum adjuvants and the human papillomavirus (HPV) vaccine Gardasil. *Immunologic Research*, 65(1), 136-149. Retrieved from <https://link.springer.com/content/pdf/10.1007%2Fs12026-016-8826-6.pdf>
15. Crépeaux, G., Eidi, H., David, M-O., Baba-Amer, Y., Tzavara, E., Giros, B., Authier, F-J., Exley, C., Shaw, CA., Cadusseau, J., and Gherardi, RK. (2017). Non-linear dose-response of aluminium hydroxide adjuvant particles: selective low dose neurotoxicity. *Toxicology*, 375(Supplement C), 48-57. doi:<https://doi.org/10.1016/j.tox.2016.11.018>
16. Zwieggers, P., and Shaw, CA. (2015). Disparity of outcomes: the limits of modeling amyotrophic lateral sclerosis in murine models and translating results clinically. *Journal of Controversies in Biomedical Research*, 1(1), 4-22. doi:<http://dx.doi.org/10.15586/jcbmr.2015.3>
17. Van Kampen, JM., Baranowski, DC., Robertson, HA., Shaw, CA., and Kay, DG. (2015). The progressive BSSG rat model of Parkinson's: recapitulating multiple key features of the human disease. *PLoS One*, 10(10), e0139694. doi:[10.1371/journal.pone.0139694](https://doi.org/10.1371/journal.pone.0139694)
18. Crépeaux, G., Eidi, H., David, MO., Tzavara, E., Giros, B., Exley, C., Curmi, PA., Shaw, CA., Gherardi, RK., and Cadusseau, J. (2015). Highly delayed systemic translocation of aluminum-

- based adjuvant in CD1 mice following intramuscular injections. *Journal of Inorganic Biochemistry*, 152, 199-205. doi:10.1016/j.jinorgbio.2015.07.004
19. Zwieggers, P., Lee, G., and Shaw, CA. (2014). Reduction in hSOD1 copy number significantly impacts ALS phenotype presentation in G37R (line 29) mice: implications for the assessment of putative therapeutic agents. *Journal of Negative Results in BioMedicine*, 13, 14. doi:10.1186/1477-5751-13-14
 20. Van Kampen, JM., Baranowski, DB., Shaw, CA., and Kay, DG. (2014). Panax ginseng is neuroprotective in a novel progressive model of Parkinson's disease. *Experimental Gerontology*, 50, 95-105. doi:10.1016/j.exger.2013.11.012
 21. Shaw, CA., Sheth, S., Li, D., and Tomljenovic, L. (2014). Etiology of autism spectrum disorders: genes, environment, or both? *OA Autism*, 10(2), 11.
 22. Shaw, CA., Seneff, S., Kette, SD., Tomljenovic, L., Oller, JW, Jr., and Davidson, RM. (2014). Aluminum-induced entropy in biological systems: implications for neurological disease. *Journal of Toxicology*, 2014, 491316. doi:10.1155/2014/491316
 23. Shaw, CA., Li, D., and Tomljenovic, L. (2014). Are there negative CNS impacts of aluminum adjuvants used in vaccines and immunotherapy? *Immunotherapy*, 6(10), 1055-1071. doi:10.2217/imt.14.81
 24. Tomljenovic, L., Wilyman, J., Vanamee, E., Bark, T., and Shaw, CA. (2013). HPV vaccines and cancer prevention, science versus activism. *Infectious Agents and Cancer*, 8(1), 6. doi:10.1186/1750-9378-8-6
 25. Tomljenovic, L., Spinosa, JP., and Shaw, CA. (2013). Human papillomavirus (HPV) vaccines as an option for preventing cervical malignancies: (how) effective and safe? *Current Pharmaceutical Design*, 19(8), 1466-1487. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/23016780>
 26. Tomljenovic, L., and Shaw, CA. (2013). Human papillomavirus (HPV) vaccine policy and evidence-based medicine: are they at odds? *Annals of Medicine*, 45(2), 182-193. doi:10.3109/07853890.2011.645353
 27. Shaw, CA., and Tomljenovic, L. (2013). Aluminum in the central nervous system (CNS): toxicity in humans and animals, vaccine adjuvants, and autoimmunity. *Immunologic Research*, 56(2-3), 304-316. doi:10.1007/s12026-013-8403-1
 28. Shaw, CA., and Marler, TE. (2013). Aluminum and the human diet revisited. *Communicative and Integrative Biology*, 6(6), e26369. doi:10.4161/cib.26369
 29. Shaw, CA., Li, Y., and Tomljenovic, L. (2013). Administration of aluminium to neonatal mice in vaccine-relevant amounts is associated with adverse long term neurological outcomes. *Journal of Inorganic Biochemistry*, 128, 237-244. doi:10.1016/j.jinorgbio.2013.07.022
 30. Shaw, CA., Kette, SD., Davidson, RM., and Seneff, S. (2013). Aluminum's role in CNS-immune system interactions leading to neurological disorders. *Immunome Research*, 9(1).
 31. Tomljenovic, L., and Shaw, CA. (2012). "One-size fits all"? *Vaccine*, 30(12), 2040. doi:10.1016/j.vaccine.2011.11.053
 32. Tomljenovic, L., and Shaw, CA. (2012). Mandatory HPV vaccination. *JAMA*, 307(3), 254; author reply 254-255. doi:10.1001/jama.2011.2020
 33. Tomljenovic, L., and Shaw, CA. (2012). No autoimmune safety signal after vaccination with quadrivalent HPV vaccine Gardasil? *Journal of Internal Medicine*, 272(5), 514-515; author reply 516. doi:10.1111/j.1365-2796.2012.02551.x

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35. Tomljenovic, L., and Shaw, CA. (2012). Mechanisms of aluminum adjuvant toxicity and autoimmunity in pediatric populations. *Lupus*, 21(2), 223-230. doi:10.1177/0961203311430221
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37. Tomljenovic, L., and Shaw, CA. (2012). Too fast or not too fast: the FDA's approval of Merck's HPV vaccine Gardasil. *The Journal of Law, Medicine & Ethics*, 40(3), 673-681. doi:10.1111/j.1748-720X.2012.00698.x
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41. Tomljenovic, L., and Shaw, CA. (2011). Aluminum vaccine adjuvants: are they safe? *Current Medicinal Chemistry*, 18(17), 2630-2637. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/21568886>
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43. Tasker, RA., Adams-Marriott, AL., and Shaw, CA. (2010). New animal models of progressive neurodegeneration: tools for identifying targets in predictive diagnostics and presymptomatic treatment. *EPMA Journal*, 1(2), 217-227. doi:10.1007/s13167-010-0019-0
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45. Panov, A., Kubalik, N., Brooks, BR., and Shaw, CA. (2010). In vitro effects of cholesterol beta-D-glucoside, cholesterol and cycad phytosterol glucosides on respiration and reactive oxygen species generation in brain mitochondria. *The Journal of Membrane Biology*, 237(2-3), 71-77. doi:10.1007/s00232-010-9307-9
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47. Marler, TE., and Shaw, CA. (2010). Distribution of free and glycosylated sterols within *Cycas micronesica* plants. *Scientia Horticulturae*, 123(4), 537. doi:10.1016/j.scienta.2009.11.009

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- (b) *Conference Proceedings*
- (c) *Other*
- (d) *Reviews*
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- (e) *Preprints*
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- 2. NON-REFEREED PUBLICATIONS**
- (a) *Journals*
1. Shaw, CA., and Pasqualotto, BA. (2000). Introduction: tuning up the signal: regulation of postsynaptic receptor properties. *Cellular and Molecular Life Sciences*, 57(11), 1495-1498.
 2. Shaw, CA. (1994). Receptors grow up (book review). *Trends in Pharmacological Sciences*, 15, 351-352.

3. Shaw, CA., Lanius, RA., and Wilkinson, M. (1992). The 'living' brain slice technique: utility in radioligand receptor characterization and regulation studies. *DuPont Biotechnical Update*, 7, 165-170.

(b) *Conference Proceedings*

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3. ABSTRACTS

1. Morrice, JR., Gregory-Evans, CY., and Shaw, CA. Modeling gene-toxicant interactions in ALS using enhancer regulatory elements as novel risk factors. Macquarie University. Sydney, Australia. December 13, 2019.
2. Morrice, JR., Gregory-Evans, CY., and Shaw, CA. Modeling gene-toxicant interactions in amyotrophic lateral sclerosis (ALS) using enhancer elements as novel risk factors. International Symposium on ALS/MND. Perth, Australia. December 4-6, 2019.
3. Morrice, JR., Gregory-Evans, CY., and Shaw, CA. Characterizing the microenvironment surrounding a degenerating motor neuron and glia in a zebrafish model of amyotrophic lateral sclerosis (ALS). Microscopical Society of Canada. Vancouver, BC, Canada. May 21-24, 2019.
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5. **SPECIAL COPYRIGHTS**

1. Honeymoon 1-10 (original screenplay)

2. Digoxin Lullaby (short novel)
3. The 'neural net' (cover design for Toward a Theory of Neuroplasticity)
4. Five Ring Circus: Myths and Realities of the Olympic Games, New Society Publishers, 2008.
5. Numerous *political essays/articles*

6. PATENTS

1. Mosquito attractor (US patent, 1979).
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7. CONTRIBUTING AUTHOR IN OTHER ARTICLES

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2. *The Tyee*. 2007 to 2010.
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