

Curriculum Vitae

Robert C. Berdan

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OBJECTIVE:

To explore and photograph Canada, teach photography and share my experiences by writing articles, blogs and books.

POSITIONS HELD:

Own and operate Science & Art Multimedia 1996 to date where I provide teaching, photography and web development
Web Sites: www.canadiannaturephotographer.com and www.scienceandart.org

Manager Educational Programs & Senior Scientist, Calgary Science Centre, 1991 - 1996.

Adjunct Assistant professor in Department of Anatomy & Cell Biology, University of Calgary, 1994 to current date.

Assistant professor in the Department of Physiology, Univ. of Alberta, Edmonton, 1988 to 1993 (AHFMR - Alberta Heritage Foundation for Medical Research Scholar).

Electron microscopist Univ. of Western Ontario, Zoology 1979

Historic Interpreter Ontario Gov. summer 1976, 1977, 1978

Photographer and printer for Midland Free Press summer 1972

EDUCATION:

Postdoctoral Studies in Neurobiology, University of Calgary, Dept. Medical Physiology, Calgary, Alberta, 1985 -1988

Ph.D. in Cell Biology, Baylor College of Medicine, Houston, Texas, U.S.A. 1985

M.Sc. Zoology, The University of Western Ontario, London, Ontario, 1981

Honors Bachelor of Science in Zoology, The University of Western Ontario, London, Ontario, 1979

ADDITIONAL TRAINING:

Adventure Film Makers Workshop, Banff Centre - 2010

XML programming SAIT - 2003

Unix and Javascript courses, SAIT - 1997, 2001

Advanced Multimedia Course - Banff Centre - 1999

VRML Programming Banff Center - 1998

Management Training for the Arts, Banff Centre - 1996

Radiation Safety Certification, Univ. Calgary - 1996

Video Production Course, Media One - 1996

Project Management SkillPath Seminars - 1995.

WHMIS - Train the Trainer, City of Calgary - 1995

Technical writing, Univ. Calgary -1988.

HONORS:

\$5,000 Ontario Graduate Scholarship, 1980
Detwiler Award, Best Masters Thesis, U. Western Ontario, 1981
\$52,000 NSERC Scholarship to study abroad Ph.D, 1981-1984
\$75,000 MRC and AHFMR Scholarship Univ. Calgary (85-87)
\$240,000 AHFMR, U of A, Medical Research Grant (88-92).
\$30,000 NSERC Equipment Grant with S. Harvey U of A, 1993
\$7,000 Nerve Regeneration a Molecular Approach, 1990
\$5,000 Identification of Neurite Promoting Proteins CRF, 1992
\$4,000 Developed multimedia program for Baxter Pharm. 1992
\$12,000 Clong EGF receptor in CNS with Dr. A. Bulloch, 1996
\$32,000 Photo contract Alberta Government, Bow Habitat, 2008

PHOTO CONTESTS:

OASIS international photo contest Italy - 1st Place Landscape
Canadian Geographic 1st place wildlife - March 2015
Nikon International PM Contest, Honorable mention - 82, 87, 09
Maria Luisa International Contest, 3 - Honorable mentions, 2010
Univ. Calgary Science (Zeiss) 2008 calendar contest - 1st place
Banff International Mountain Contest 2007 – 1st place wildlife
Banff International Mountain Contest 2004 - special mention
Banff International Mountain Contest 2003 - won 2 1st places
CPAWS Capture the Wild Contest - 1st/2nd from 2000 to 2008
Canadian Geographic Photo Contest - 2004 Honorable Mention
University of Western Ontario Contest - 2003 - 1st & 2nd Place
AHFMR Science photo contest, Alberta - 1989 - 1st Place
Olympus Biospheres photo-contest 2011

INVITED LECTURES:

Photoshop – Banff Digital Photography Jan 2015
Cochrane Camera Club – Wildlife and Night and Sky Photography – Jan 2015
Calgary Camera Club – Photographing the Aurora borealis Nov 2014
Digital Photo Expo Calgary - What's New in Photoshop CS5, Oct. 2010
Calgary Photographic Society - Becoming a Nature Photographer in the Digital Age, Nov. 2010
Olds Horticultural College, Olds, AB - Flower Photography, July 2010
University of Calgary, Faculty of Medicine - Presentation on Science & Art, Oct. 2005
Alberta Wilderness Association – Wildflowers and Wildlife Photography, May 2004
Myers Norris Penny - Business on the Internet - six times a year between 2000 to 2008
Calgary Photographic Society - Digital Imaging, May 2003
Chinese Culture Association of Calgary Photography club, Feb 2000.
Glencoe Business Club - E-commerce on the Internet, Feb. 1996 and 1997
University of Calgary Internet Conference - Web Browsers, Sept 1997
Macintosh Users Group - Digital Photography, July 1994 and 1996.
Alberta Library Association - Introduction to Surfing the Net, July 1996
Alberta Museums Association - chaired presentation "Museums on the Internet", Banff Oct. 1996
Calgary Multimedia Club - Digital Photography, July 1995.
Alberta College of Art - Guest lecture on Color Theory and Light, 1995 (for Dulcie Foo Fat)
Assoc. Science Technology Centers Conference, San Diego - E-commerce Oct 1995
Foothills Camera Club - Digital Photography, Oct 1995
Dept. of Biology, Brock University, Cell to Cell Communication, Jan 1993
Edmonton Camera Club - Science and Art, 1992
Symposia on Nerve Regeneration, University Toronto, March 1992
Dept. of Physiology, University of Ottawa, Cell to Cell Communication, Jan 1987
Dept. of Physiology, Sick Children's Hospital, Cell to Cell Communication, Toronto, April 1987

Dept. of Physiology, University of Texas, Cell to Cell Communication, Oct 1987
Dept. of Biology, University of Calgary, Cell to Cell Communication, March 1985
Dept. of Cell Biology, Banting and Best Institute, U.T., Cell to Cell Communication, Oct 1984
Dept. of Anatomy and Cell Biology, University of Kentucky, Cell to Cell Communication, May 1987

PHOTOGRAPHY EXHIBITIONS

- **Science & Art** - Solo exhibition at Calgary Science Centre Nov. 2004
- **Time to Look** - Solo exhibition Calgary Science Centre, sponsored by CIBC, May 1995
- **Beyond the Naked Eye** – A series of science images that traveled throughout Canada as part of a traveling exhibit for the Calgary Science Foundation 1988-1989

Curated photography exhibits at the Calgary Science between 1993-1996 including photographs by National Geographic, Thomas Mangelsen, and Keith Logan. Invited Joel Sartore from National Geographic to present at the Calgary Science Centre in 1995.

Started the Calgary Slide Shooters Camera Club in Calgary between 1993-1996 with monthly meetings at the Calgary Science Centre.

Supervised, Dept of Physiology darkroom, trained students and faculty in film development, printing and set up a digital film recorder for making slides from computers. U of A 1988 to 1993

Served on the board of Directors for the Edmonton Jazz Society in charge of marketing, promotions and photography - Edmonton, AB 1987-1989

Science Fair judge in Calgary, AB and Houston, TX

MISSION, VISION AND VALUES

My Mission

To inspire optimism and happiness in others
To make a difference in the world and help others reach their maximum potential
To develop a leading educational web site on nature photography
To promote photography through teaching, educational articles and books
To explore and photograph the Canadian landscape and its wildlife
To make documentary films on science and photography for presentation on the web and TV

Vision & Values

To remain responsive to change and have the courage to change course when needed.
To work efficiently, stay fit and live a healthy lifestyle.
To consider and put first the happiness of my family above all else.
To do more of the things I like and less of those that I dislike.

Interests: Photography, film making, hiking, kayaking, badminton, squash, art, jazz (played alto-sax), computer programming, 3D modeling, animation and graphic design.

RESEARCH PUBLICATIONS

THESES

1. **Berdan, R.C.** (1981) Gap junctions: An ultrastructural, electrophysiological and fluorescent tracer study. Master's Thesis Dept. Zoology, University of Western Ontario, London, Ontario.
2. **Berdan, R.C.** (1985) Crayfish hepatopancreas cell junctions: Ultrastructure, enrichment and biochemical analysis. Ph.D. Thesis, Baylor College of Medicine, Houston, Texas.

REFEREED SCIENCE PAPERS

1. Caveney, S., **Berdan, R.C.**, and Mclean, S.S. (1980) Cell-to-cell ionic communication stimulated by ecdysterone occurs in the absence of protein synthesis and gap junction growth. J. Insect Physiology. 26:557-567.
2. **Berdan, R.C.** (1981) Cell communication via gap junctions in epidermal cells. Proc. Microsc. Soc. Canada. pp. 64-65.
3. **Berdan, R.C.** and Shivers, R.R. (1985) Filipin-cholesterol complexes in plasma membranes and cell junctions of *Tenebrio molitor* epidermis. Tiss. Cell 17:177-187.
4. **Berdan, R.C.** and Caveney, S. (1985) Gap junction ultrastructure in three states of conductance. Cell Tiss. Res. 239:111-122.
5. **Berdan, R.C.**, Lees-Miller, J.P. and Caveney, S. (1985) Lack of cell communication in an epithelium: Ultrastructure and electrophysiology of the midgut epithelium of the larval mealworm, *Tenebrio molitor*. J. Ultrastruct. Res. 90:55-70.
6. van Eldik, L.J., Hertzberg, E.L., **Berdan, R.C.**, and Gilula, N.B.G. (1985) Mammalian and arthropod junctional membrane proteins interact with calmodulin and other calcium binding proteins. Biochem. Biophys. Res. Comm. 126:825-832.
7. **Berdan, R.C.** and Gilula, N.B.G. (1988) The arthropod gap and pseudo-gap junction: Isolation and preliminary biochemical analysis. Cell Tiss. Res. 251:257-274.
8. **Berdan, R.C.**, Shivers, R.R. and Bulloch, A.G.M. (1987) Chemical synapses, gap junctions, pseudo-gap junctions and particle arrays in the buccal ganglion of *Helisoma*. Synapse1:304-323.
9. **Berdan, R.C.** and Bulloch, A.G.M. (1987) Tannic acid enhances staining of microtubule associated proteins but impairs neuronal physiology. Brain Res. 417:153-157.
10. Morrison, D.G., **Berdan, R.C.**, Pauly, D.R., Turner, D.S., Oborn, C.J., and Medina, D. (1988a) Selenium distribution in mammary epithelial cells reveals its possible mechanism of inhibition of cell growth. Anticancer Res. 8:51-64.
11. Morrison, D.G., Pauly, D.F., **Berdan, R.C.**, Dishart, M.K., Turner, D., Oborn, C.J., and Medina, D. (1988b) Mitochondrial inclusions and mitochondrial respiratory function in selenite treated mammary epithelial cell lines. Anticancer Res. 8:64-72.
12. **Berdan, R.C.**, Hauser, G. and Bulloch, A.G.M. (1989) Ultrastructure of an identified neuron *in situ* and *in vitro* following axotomy. J. Comp. Neurol. 296:437-446.

13. **Berdan, R.C.** and Bulloch, A.G.M (1990) Role of activity in the selection of new electrical synapses between adult *Helisoma* neurons. Brain Res. 537:241-250.
14. **Berdan, R.C.** and Ridgway, R.L. (1992) Release of neurite outgrowth promoting factors by *Helisoma* central ganglia depends on neural activity. Brain Res. 572:132-138.
15. **Berdan, R.C.** and Easaw, J. (1992) Modulation of sprouting in organ culture after axotomy of an identified molluscan neuron. J. Neurobiol. 23:433-450.
16. Bagnall, K.M, Sanders, E.J. and **Berdan, R.C.** (1992) Communication compartments in the axial mesoderm of the chick. J. Anat. Embryol. 186:195- 204.
17. **Berdan, R.C.**, Easaw, J. and Wang. R (1993) Alterations in membrane potential following axotomy at different distances from the soma of an identified neuron and the effect of depolarization on neurite outgrowth and calcium channel expression. J. Neurophysiol. 69: 151-164.
18. Wang, R., Pang, P.K.T., Wu, L., Karpinski, E., Harvey, S. and **Berdan, R.C.** (1993) Neural effects of parathyroid hormone: Modulation of the calcium channel current and metabolism of monoamines in identified *Helisoma* snail neurons. Can J. Physiol. Pharm. 71:582-591.
19. Wong, G., Bagnall, K, and **Berdan, R.C.** (1993) The immediate fate of cells in the epithelial somite of the chick embryo. Anat. Embryol. 188:441-447.
20. Bagnall, K.R. and **Berdan, R.C.** (1994) Increases in the number of cells in different areas of the epithelial somites related to changes in morphology and development. Anatomy and Embryology. 190:495-502.
21. Wang, R., Pang, P.K.T., Wu, L., Karpinski, E., , Shipley, A., Harvey, S. and **Berdan, R.C.** (1994) Modulation of intracellular calcium in an identified neuron by Parathyroid hormone. Cell Calcium 15:89-98.
22. Yui, J., Brown, A.J., **Berdan, R.C.**, Tertzak, P., Wegmann, T.G. and Guilbert, L.J. (1994) Purification of human cytotrophoblasts from term by column immuno-elimination. Placenta 15:231-246.
23. Bagnall, K.M., A.L. Liu and **Berdan R.C.** (1996) The fate of single cells in the segmental plate and the development of segments in the chick embryo. Acta Anat.

PUBLISHED SCIENTIFIC REVIEWS (BOOK CHAPTERS)

1. Caveney, S. and **Berdan, R.C.** (1981) Selectivity in junctional coupling between cells in insect tissues In Insect Ultrastructure (Vol. 2), (ed. H.Akai and R.C. King) Plenum Press, New York, pp. 434-465.
2. Caveney, S., **Berdan, R.C.**, Blennerhassett, M.G. and Sanfranyos, R.G.A.(1986) Cell-to-cell coupling via membrane junctions: Methods that show its regulation by a developmental hormone in an insect epidermis In Techniques in Cell Biology, (Vol. 2.) *In Vitro* Invertebrate Hormones and Genes (ed. E. Kurstak) Elsevier Scientific Publishers, New York, pp. 1-23.
3. **Berdan, R.C.** (1987) Intercellular communication in arthropods: Biophysical, ultrastructural and biochemical approaches In Cell-to-Cell Communication (ed. W.C. DeMello) Plenum Press, pp. 299-370.
4. **Berdan, R.C.**, Jones, P. and Bulloch, A.G.M (1988) Modulation of neurite outgrowth: ultrastructure and physiology In Cellular Basis of Neuronal Plasticity. (ed. A.G.M. Bulloch) Manchester University Press pp. 97-128.

ABSTRACTS PRESENTED AT SCIENCE CONFERENCES

1. **Berdan, R.C.** and Shivers, R.R. (1980) Localization of glycogen in the heart and hepatopancreas of the crayfish *Procambarus clarkii*. J. Cell Biol. 87:258a.
2. Caveney, S. and **Berdan, R.C.** (1980) Selectivity in junctional communication between cells of complex tissues *in vivo*. Can. Fed. Biol. Soc. 24:246a.
3. **Berdan, R.C.** and Caveney, S. (1982) Gap junction ultrastructure in three states of conductance. J. Cell Biol. 99a
4. **Berdan, R.C.** and Gilula, N.B.G. (1982) Isolation and preliminary biochemical analysis of an invertebrate gap junction. J. Cell Biol. 94a.
5. **Berdan, R.C.** (1985) Isolation and preliminary analysis of an arthropod gap junction. National Student Research Forum, Galveston, Texas. pp. 60.
6. **Berdan, R.C.** and Bulloch, A.G.M. (1986) Gap junction specificity in *Helisoma* ganglia. Soc. Neurosci. 12:146.2.
7. **Berdan, R.C.**, and Gilula, N.B.G. (1987) The arthropod gap and pseudo-gap junction: enrichment, ultrastructure, and biochemical analysis. International Gap Junction Conference, Asilomar, Pacific Grove, CA pp. 3.
8. **Berdan, R.C.**, Hauser, G. and Bulloch, A.G.M. (1987) Gap junctions and pseudo-gap junctions of neurons and glia of the Mollusc *Helisoma trivolvis*. International Gap Junction Conference, Asilomar, Pacific Grove, CA pp. 4.
9. **Berdan, R.C.**, Hauser, G. and Bulloch, A.G.M. (1987) Regeneration of an identified neuron in *Helisoma*. Conference on Nerve Regeneration, Asilomar, CA.
10. **Berdan, R.C.**, Hauser, G. and Bulloch, A.G.M. (1988) Neurite outgrowth of an identified neuron *in situ* and *in vitro*. Soc. Neurosci. 14:231.13
11. **Berdan, R.C.** and Bulloch, A.G.M. (1989) Suppression of neuronal activity does not affect specificity, stability or coupling resistance of new electrical synapses. Soc. Neurosci. 15:79.
12. **Berdan, R.C.** and Bagnall, K. (1990) Communication compartments along the anteroposterior axis of the chick embryo. AHFMR. Edmonton.
13. **Berdan, R.C.** and Ridgway, R.L. (1991) Release of neurite outgrowth promoting factors by *Helisoma* central ganglia depends on neural activity. IBRO Montreal. P4.22.
14. **Berdan, R.C.** Modulation of neurite outgrowth from injured axons of identified neurons 9 hours after axotomy. (1991) IBRO. Montreal, P4.21.
15. **Berdan, R.C.**, Easaw, J. and Wang, R. (1991) Putative electrical signals associated with axotomy. Soc. Neurosci. 17: 226.14.
16. Bagnall, K., Sanders, E. and **Berdan, R.C.** (1992) Communication compartments along the rostrocaudal axis in the chick embryo. Forum Dev. Biol. New Orleans.
17. Zhang, M.L., Liu, Q.Y. Zeng, Y. Karpinski, E., **Berdan, R.** and Pang, P.K. (1992) Serum affects the neuronal cell shape and channel expression. Soc. Neurosci. 18:21.15.
18. Yui, J., Brown, A., **Berdan, R.**, Tertzakian, P., and Wegmann, T. (1992) Purification of human term trophoblasts using anti-CD9. Placenta 13:A67.

19. Phong Nguyen-Ho and **Berdan R.** (1992) Effect of increased neural activity on neurite outgrowth and protein secretion. National Student Research Forum, Galveston, TX.
20. Bagnall, K., Wong, G. and **Berdan, R.** (1993) Cell lineage studies in the epithelial ball and somitocoel of the chick embryo. British Soc. Dev. Biol., East Anglia, England.
21. Bagnall, K., Wong, G. and **Berdan, R.** (1993) The immediate fate of cells in the epithelial somite of the chick embryo. Amer. Assoc. Anat. San Deigo, California.
22. Spady, M. and **Berdan, R.C.** (1993) Macrophages from molluscs migrate rapidly toward sites of axon injury. Soc. Neurosci. 19:451

GRADUATE STUDENTS SUPERVISED

I supervised 8 Graduate students on Ph.D. and M.Sc. research projects and 4 summer students. Two of my summer students Jay Easaw and Phong Nguyen-Ho - won first place awards from the AHFMR for their research projects carried out in my laboratory.

Dr. Easaw is currently an MD., PhD at the University of Calgary at the Tom Baker Cancer Center
Dr. Nguyen-Ho is currently a cardiac surgeon in Houston, Texas.

DEVELOPED FIRST INTERNET TRAINING COURSE IN CALGARY

Berdan, R.C. (1995 and 1996, 1997) Surf the Web, Calgary Science Centre. Sold about 2,000 copies in Calgary.

SELECTED MAGAZINE ARTICLES AND PUBLISHED PHOTOS

UpHere Now Magazine from NT - Photographing in the Barrens (in press 2011)
BRAGG about the Creek - quarterly magazine in AB, I write a photography column 2010-2011
Outdoor Photography Canada - How to Photograph Fireworks\Fall 2008 - Cover and article
PhotoLife - The Joy of Winter Photography - January 2006 - Cover and article
Wild Lands Advocate - Cover shot and article photos on wolves Oct. 2007
PhotoLife - Nature Mini Portfolio 3 pages - May 2003
BC Outdoors - Sport Fishing Cover and pictures in main article, Jan\Feb 2008
The Canadian Fly Fisher - Photos for article by F. Wood, The Elk river in Winter, Feb 2007
Alberta Views - Burnt Trees in the Snow CPAWS winning photo, 2006
PhotoEidolo (Greek) - Composition and Visual Elements of Design - 2006 , also translated into Italian (2010) by Cultor College - www.cultorweb.com/Comp/C.html
Canadian Geographic - Experience Canada Ad - March\April - Brebeuf lighthouse - 2003
IMPACT magazine - Winning Photo - Nov\Dec 2002
IMPACT magazine - Winning Photo - July\Aug 2001
Design Synectics - Nicholas Roukes(1988) photomicrograph showing visual order - page 70
Brain and Behaviour (2009) B. Garrett, SAGE, Scanning Electron Micrograph - page 96
Natural Hazards (2006) Keller et al, Ten Peaks Moraine Lake - page 111
Money, Money, Money (2004) - book, photographed security features for Maple Tree Press

ONLINE PHOTOGRAPHY ARTICLES 2010 to 2016

articles can be viewed at: www.canadiannaturephotographer.com

Published over 150 online articles on photography

Have published numerous articles in Magazines e.g. Photo Life, Outdoor photographer, Bragg About the Creek with photo credits in National Geographic, Canadian Geographic and wide variety of text books, magazines and web sites.

Courses I developed and taught: SAIT: Introduction to the Internet, Web page Design, HTML, Javascript, Dreamweaver, Photoshop, Advanced Photoshop, Flash, Advanced Flash and Actionscript, PHP and XML programming, Marketing on the Internet, E-commerce, Wildlife Photography, Sports Photography, Adobe Photoshop.

Univ. Alberta Human Physiology, Advanced Electrophysiology, Advanced Cell Biology.

Red Deer College: Photoshop, Dreamweaver, CSS and Flash - these are 2 week courses in their multimedia program (70 hrs). Developed a new photography program in 2016

Alberta Business and Educational Services: HTML, Web design, Photoshop, Flash

PERSONAL REFERENCES

Dr. Wayne Lynch

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www.waynelynch.ca

Dr. Wayne Lynch is Canada's best known wildlife photographer having published over 60 books and he has also taken my Photoshop course and can evaluate the quality of my photography.

George Webber

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George is an award winning documentary photographer and teacher at SAIT and ACAD and he has also taken my Photoshop course.