

CURRICULUM VITAE - (abbreviated)

Bruce R. Downey, Professor Emeritus
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EDUCATION

<u>Degrees</u>	<u>University</u>	<u>Discipline</u>	<u>Date</u>
D.V.M.	Toronto	Veterinary Medicine	1963
Ph.D.	McGill	Reproductive Physiology	1981

EXPERIENCE

2000-2008	Director (part-time), Bellairs Research Institute (McGill), Barbados
2004 (October)	Official Retirement
2000	Sabbatical Leave spent (in part) at the University of Zimbabwe, Harare
1991	Sabbatical Leave spent (in part) at INRA, Nouzilly, France
1990 (June)	Full Professor, Department of Animal Science.
1985-1995	Chairman, Department of Animal Science, Faculty of Agricultural and Environmental Sciences, McGill University.
1981-1990	Associate Professor, Department of Animal Science. Affiliate Member, McGill Centre for the Study of Reproduction, McGill University.
1976-1981	University Lecturer and half-time Ph.D student, Department of Animal Science, McGill University (Most of 1978 spent at Animal Diseases Research Institute, Ottawa, in laboratory of Dr. K. J. Betteridge).
1974-1976	Associate Professor, Department of Animal Science. Affiliated with Macdonald Embryo Transfer Unit, McGill University.
1970-74	Employed by Ayerst Research Laboratories in Animal Health Division, Chazy, New York.

Late research emphasis was on the use of prostaglandins and hypothalamic-

releasing factors as potential agents for ovulation control in domestic animals.

1966-69 Employed as Senior Scientist by Ayerst Research Laboratories in Department of Pharmacology, Montreal.

Participated in basic screening for potential antiparasitic, antibacterial, anti-inflammatory and cardiovascular drugs in addition to some research and development.

1965-66 Employed by Hamilton District Cattle Breeding Association, Hamilton, Ontario.

Duties included technical services related to bovine reproduction, infertility and semen production; also technician training.

1963-64 General veterinary practice in Smithville/Grimsby, Ontario.

INTERNATIONAL CONSULTING

People's Republic of China - for Canadian International Development Agency (CIDA - Nov. 29 to Dec. 20, 1982. The purpose of the mission was to make recommendations on programs that CIDA might support in furthering the development of the artificial insemination industry in Heilongjiang Province.

Egypt - for Canada-Egypt-McGill Agricultural Response Program - June 19-29, 1986. Artificial Insemination and Embryo Transfer Programs of the Ministry of Agriculture, Egypt, were reviewed, and recommendations were made for supportable small projects to be funded by the Program.

- Project Review in Egypt February 19-March 3, 1988.
- Project Review in Egypt June 16-26, 1989.
- Project Review and recommendations made for training centre initiative in Egypt, October 26-November 4, 1990
- Project Review in Egypt May 3-10, 1991.
- Oasis Research Centre and project review October 13-23, 1994.

Hungary - June 29 - July 9, 1986. Hungarian Integrated Livestock Industry Project. For the purposes of assisting in the development of a centralized milk recording program for Hungary, several animal breeding companies and farms were visited and reviewed (team of four).

- November 26 - December 2, 1988. Exchange visitor to University of Agricultural Sciences, Gödöllő, on the invitation of Professor Janos Dohy, Vice-Rector.

Zimbabwe - November 20 - 25, 1988. CIDA/ICDS-supported assistance to University of Zimbabwe. To advise and assist in the organization of the M.Sc. Program in Animal Science. Also acted as External Examiner for undergraduate final exams in Animal Science.

Jordan - June 6 - 16, 1989, October 22 - 28, 1991, October 24 - 28, 1994 and June 4-12, 1997. CIDA/ICDS-supported assistance to University of Jordan. Canadian Project Director for animal production component of project entitled "Application of Biotechnology to the Development of Agriculture in Jordan". Training and technology transfer in artificial insemination and embryo transfer in cattle, sheep and goats.

Jamaica - May 13-16, 1996. To advise on the implementation of an artificial insemination program and general reproductive management in swine for Grace, Kennedy and Co., Jamaica, West Indies.

Barbados – November 1, 2000 through January, 2008. Appointed Director (part-time), Bellairs Research Institute of McGill University, St. James, Barbados. This facility has a staff of ~10 people and provides meals, laboratories and accommodation for ~30 visiting students and scientists. Research and teaching topics range from marine and terrestrial biology to geology, anthropology and sociology.

AREAS OF SPECIALIZATION

Research areas have included follicular development and ovulation in the gilt; bovine, caprine and porcine oocyte and embryo manipulation *in vivo* and *in vitro*; embryo transfer and artificial insemination; leptin and reproduction in pigs.

Teaching areas have included animal reproduction, principles of disease development and comparative anatomy at the undergraduate level and advanced reproductive physiology at the graduate level.

RECENT REFEREED PUBLICATIONS

Full Length

Koeman, J., C.L.Keefer, H.Baldassarre and B.R.**Downey**. 2003. Developmental competence of prepubertal and adult goat oocytes cultured in semi-defined media following laparoscopic recovery. *Theriogenology* 60:879-889.

Chian, R.C., J.T.Chung, K. Niwa, M.A.Sirard, B.R.**Downey** and S.J.Tan. 2003. Reversible changes in protein phosphorylation during germinal vesicle breakdown and pronuclear formation in bovine oocytes *in vitro*. *Zygote* 11:119-129.

Rodriguez, M, D. Petitclerc, J.F.Burchard, D.H.Nguyen, E. Block and B.R.**Downey**. 2003. Responses of the estrus cycle in dairy cows exposed to electric and magnetic fields (60Hz)

- during eight-hour photoperiods. *Anim Reprod Sci* 77:11-20.
- Pierson, J.T., H.Baldassarre, C.L.Keefer and B.R.**Downey**. 2003. Influence of GnRH administration on timing of the LH surge and ovulation. *Theriogenology* 60:397-406.
- Ruiz-Cortés, Z. Tatiana, Yan Martel-Kennes, Nicolas Y. Gévry, Bruce R. **Downey**, Marie-France Palin and Bruce D. Murphy. 2003. Biphasic effects of leptin in porcine granulosa cells. *Biol Reprod* 68:789-796.
- Chian, R-C., J-T. Chung, B.R.**Downey** and S.L.Tan. 2002. Maturation and developmental competence of immature oocytes retrieved from bovine ovaries at different phases of folliculogenesis. *Reproductive Biomedicine Online* 4:129-134.
- Chung, J-T., B.R.**Downey**, R.F.Casper and R-C. Cheng. 2001. Effect of centrifugation on early embryonic development and parthenogenetic activation of bovine oocytes matured in vitro. *Reprod. Fertil. Dev.* 13:383-388.
- Murphy B.D., N. Gévry, T. Ruiz-Cortés, F. Côté, B.R.**Downey** and J. Sirois. 2001. Formation and early development of the corpus luteum in pigs. *Reproduction* 58:47-63.
- Pierson, J.T., H.Baldassarre, C.L.Keefer and B.R.**Downey**. 2001. Seasonal variation in preovulatory events associated with synchronization of estrus in dwarf goats. *Theriogenology* 56:759-769.
- Keefer, C.L., H.Baldassarre, R.Keyston, B.Wang, B.Bhatia, A.S.Bilodeau, J.F.Zhou, M.Leduc, B.R.**Downey**, A.Lazaris and C.N.Karatzas. 2001. Generation of dwarf goat (*Capra hircus*) clones following nuclear transfer with transfected and non-transfected fetal fibroblasts and in vitro-matured oocytes. *Biol. Reprod.* 64:849-856.
- Ruiz-Cortés, Z.T., T-Y Men, M.F.Palin, B.R.**Downey**, D.A.Lacroix and B.D. Murphy. 2000. Porcine Leptin Receptor: Molecular structure and expression in the ovary. *Mol. Reprod. Dev.* 56:465-474.
- Chung, J-T., C.L.Keefer and B.R.**Downey**. 2000. Activation of bovine oocytes following intracytoplasmic sperm injection (ICSI). *Theriogenology* 53:1273-1284.
- Downey**, B.R. J.E.Mootoo and S.E.Doyle. 1998. A role for lipoxygenase metabolites of arachidonic acid in porcine ovulation. *Anim. Reprod. Sci.* 49:269-279.
- Lenhart, Judy A., Bruce R. **Downey** and Carol A. Bagnell. 1998. Connexin 43 gap junction protein expression during follicular development in the porcine ovary. *Biol. Reprod.* 58:583-590.
- Kwan, Ivy, Riaz Farookhi, Hung The Huynh, Bruce D. Murphy, Jeffrey D. Turner and Bruce R. **Downey**. 1996. Steroidogenic properties of a spontaneously established porcine granulosa cell line (PGC-2). *Mol. Reprod. Dev.* 45:299-307.

- Hamudikuwanda, H., G. Gallo, E. Block and B.R. **Downey**. 1996. Adipose tissue progesterone concentrations in dairy cows during late pregnancy and early lactation. *Anim. Reprod. Sci.* 43:15-23.
- Fuku, E., L. Xia and B.R. **Downey**. 1995. Ultrastructural changes in bovine oocytes cryopreserved by vitrification. *Cryobiology* 32:139-156.
- Ramsoondar, J., W. Khalil and B.R. **Downey**. 1995. Partial purification and characterization of a protein in porcine follicular fluid which restricts sperm-egg interaction in vitro. *Can. J. Vet. Res.* 59:8-14.
- Fuku, E., J. Liu and B.R. **Downey**. 1995. In vitro viability and ultrastructural changes in bovine oocytes treated with a vitrification solution. *Mol. Reprod. Dev.* 40:177-185.

Abstracts - Scientific Meetings

- Lord, E., D. Beaudry, B.D.Murphy, B.R.Downey, J. Lajoie and M-F Palin. 2003. Modulation of peroxisome proliferation-activated receptor delta mRNA levels in the pig uterus during early gestation. *Biol. Reprod.* 68 (Suppl 1) Abstr. 397.
- Ruiz-Cortes, T., B.R.**Downey** and B.D.Murphy. 2001. Signaling pathways and local effects of leptin in the porcine ovary. *Biol. Reprod.* 64 (Suppl 1) Abstr. 64.
- Chian, R-C., J-T Chung, B.R.**Downey** and R.F.Casper. 2001. Maturation and developmental competence of immature oocytes retrieved from different stages of the ovarian cycle in cattle. *Biol. Reprod.* 64 (Suppl 1) Abstr. 77.
- Côté, F., J. Sirois, M.Doré and B.R.**Downey**. 2001. Induction of prostaglandin G/H synthase-2 in preovulatory follicles of eCG/hCG-treated prepubertal gilts. *Biol. Reprod.* 64 (Suppl 1) Abstr. 138.
- Chung, J-T., B.R.**Downey** and R-C Chian. 2001. Fertilization in vitro of mature and aging oocytes in cattle. *Biol. Reprod.* 64 (Suppl 1) Abstr. 500.
- Baldassarre, H., C.L.Keefer, M.Gauthier, B.Bhatia, I.Begin, J.Pierson, D.Laurin, T.Trigg, B.R.**Downey** and C.N.Karatzas. 2001. Laparoscopic ovum pickup and zygote recovery in goats treated with desorelin implants before superovulation. *Theriogenology* 55:510 (Abstr.)
- Keefer, C.L., B.Bhatia, N.Kafidi, D.Laurin and B.R.**Downey**. 2001. Haematological and biochemical profiles of neonatal and growing goat clones derived from adult somatic cells. *Theriogenology* 55:274 (Abstr.)
- Keefer, C.L., R.Keyston, B.Bhatia, A.Lazaris, I.Begin, N.Kafidi, A.Bilodeau, B.Wang, T.Tao,

- D.Laurin, F.J.Zhou, B.R.**Downey**, H.Baldassarre and C.N.Karatzas. 2000. Efficient production of viable goat offspring following nuclear transfer using adult somatic cells. *Biol. Reprod.* 62 (Suppl 1) Abstr. 218
- Koeman, J.K., C.L.Keefer, H.Baldassarre, M.Lane, D.K.Gardner and B.R.**Downey**. 2000. Developmental competence of prepubertal and adult goat oocytes cultivated in semi-defined media. *Theriogenology* 53:297 (Abstr.)
- Pierson, J.T., H.Baldassarre, C.L.Keefer and B.R.**Downey**. 1999. Timing of the LH surge and ovulation following GnRH administration in Pygmy goats. *Biol. Reprod.* 60 (Suppl.) Abstr. 73.
- Murphy, B.D., Z.T.Ruiz-Cortes, J-H.Song, N.Pescador and B.R.**Downey**. 1998. Leptin receptor expression in pig granulosa and luteal cells. *Biol. Reprod.* 58 (Suppl 1) Abstr. 337.
- Watt, H.L., D.W.Silversides and B.R.**Downey**. 1998. Sex diagnosis of day 4 porcine embryos using single copy genes. Annual Meeting of the Canadian Society of Animal Science, Vancouver. Abstr. 98T-13.
- Chung, J.T., C.L.Keefer and B.R.**Downey**. 1998. Activation of bovine oocytes following intracytoplasmic sperm injection (ICSI). Annual Meeting of the Canadian Society of Animal Science, Vancouver. Abstr. 98P-10.
- Watt, H.L., D.W.Silversides, R.Behdjani and B.R.**Downey**. 1997. Sex determination of preimplantation porcine embryos through amplification of the Sry gene. *Biol. Reprod.* 56 (Suppl 1) Abstr. 497.
- Keefer, C.L., C.N. Karatzas, A. Lazaris-Karatzas, I. Gagnon, S. Poulin and B.R. **Downey**. 1996. Isolation and maintenance of putative embryonic stem (ES) cells derived from Nigerian dwarf goat embryos. *Biol. Reprod.* 54 (Suppl 1) Abstr. 461.

RECENT GRADUATE STUDENTS COMPLETED

- Rodriguez, M. A. PhD. 2003. Physiological responses to 60 Hz electric and magnetic fields in dairy cows under short photoperiod conditions.
- Coté, Fabienne. MSc. 2001. Induction of prostaglandin endoperoxidase synthase-2 in the follicles of equine chorionic/human chorionic-treated prepubertal gilts.
- Koeman, J.K. MSc. 2000. Developmental competence of prepubertal and adult goat oocytes cultured in semi-defined media.
- Pierson, J.T. MSc. 2000. The influence of season on preovulatory events associated with estrus synchronization in dwarf goats raised in Quebec.

- Chung, Jin-Tae. MSc. 1999. Activation of bovine oocytes following intracytoplasmic sperm injection.
- Watt, H. M.Sc. 1998. PCR amplification of Sry gene for sex determination of porcine preimplantation embryos.
- Cassidy, C. M.Sc. 1998. Further evidence that $\text{PGF}_2\alpha$ is the obligatory eicosanoid in porcine ovulation.
- Douglas, D. Ph.D. 1997. Luteotrophic effects of prolactin on the mink (*Mustela vison*) ovary during embryonic diapause and early post-implantation gestation. (Co-advisor with Dr. B.D.Murphy, Université de Montréal).
- Hojabri, A. M.Sc.(Applied). 1996. The use of artificial insemination in the Quebec swine industry.
- Hamudikuwanda, H. Ph.D. 1995. Endocrine and metabolic mediators of dietary energy status and reproduction in dairy cows.
- Mootoo, J. M.Sc. 1995. Lipoxygenase metabolites of arachidonic acid in the porcine ovulatory process.
- Fuku, E. Ph.D. 1994. Studies on the cryopreservation of immature and *in vitro* matured oocytes.