

## BIOGRAPHICAL SKETCH

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NAME Antczak, Douglas F.	POSITION TITLE Dorothy Havemeyer McConville Professor of Equine Medicine		
eRA COMMONS USER NAME DOUGANTCZAK			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
Cornell University, Ithaca, NY	B.A.	1969	Biology
University of Pennsylvania, Philadelphia, PA	V.M.D.	1973	Veterinary Medicine
University of Cambridge, U.K.	Ph.D.	1978	Immunology

### A. Personal Statement

During my career I have conducted research primarily on immunological aspects of the fetal-maternal relationship in the horse, although my PhD training involved the use of inbred rodents in studies of Major Histocompatibility Complex (MHC) transplantation biology. We have taken advantage of unique aspects of equine pregnancy to undertake experiments on the antigenicity of trophoblast cells and regulation of maternal immune responses that cannot be conducted in any other species. My laboratory has been a leader in characterizing the MHC of the horse and the regulation of MHC genes in the equine placenta. Through our participation in international collaborative workshops, my group has produced a large number of monoclonal antibodies to equine immune system and trophoblast molecules that enable sophisticated analysis in a non-traditional animal model. Through our participation in the Horse Genome Project my group has become experienced in genome-level technologies, including expression microarrays, SNP chip analysis, and RNA sequencing. We also have skills in a wide array of immunological assays, including flow cytometry, immunohistochemistry, antibody and cell mediated cytotoxicity assays, ELISA, and also in diverse methods in cell and molecular biology. I have been the mentor of 12 graduate students and 7 post-doctoral fellows. Many of my former trainees now hold tenured faculty positions in the US and the UK, and they have been successful in securing research grants from the NIH, USDA, and the Wellcome Trust. My current laboratory group includes one post-graduate veterinarian who holds an individual NIH training grant (K-08 award) that dovetails with this application. For the past 30 years my laboratory has been supported by the NIH almost continuously for our studies of pregnancy immunology.

### B. Positions and Honors

#### Positions and Employment:

- 1978-present Assistant, Associate (1985), Full (1992) Professor of Immunology, James A. Baker Institute for Animal Health & Department of Microbiology and Immunology, College of Veterinary Medicine, Cornell University, Ithaca, New York.
- 1985-present Director, Cornell Equine Genetics Center, Cornell University.
- 1987-1988 Sabbatical leave in the Immunology Department, Agricultural and Food Research Council's Institute of Animal Physiology, Babraham, Cambridge, England.
- 1992-present Dorothy Havemeyer McConville Professor of Equine Medicine, Baker Institute for Animal Health, College of Veterinary Medicine, Cornell University.
- 1994-2009 Director, Baker Institute for Animal Health, Cornell University.

#### Other Experience and Professional Memberships:

- 1985-1999 Ad hoc reviewer to USDA Competitive Research Grant Program
- 1995-present Numerous NIH ad hoc Study Section assignments (several divisions)
- 1996-2005 American Assoc. of Immunologists, Vet. Immunology Committee, member; Chair 2001-2005
- 1999 Ad hoc NIH Study Section Member, Human Embryology & Development
- 1999-2003 NIH Study Section Member, Human Embryology & Dev.-1 (renamed Pregnancy & Neonatology)

Current Memberships: American Association of Immunologists; American Veterinary Medical Association

Recent Honors:

- 2000 Distinguished Veterinary Immunologist of the Year Award, Amer. Assoc. of Vet. Immunologists  
2001 State of the Art Speaker, American College of Veterinary Internal Medicine Forum;  
2001 R. O. Berry Memorial Lecturer, Texas A&M University.  
2003 Lucien E. D. Gaudreau Award for Professional Excellence  
2007 Col. John Hickman Memorial Lecturer, British Equine Veterinary Association Annual Meeting  
2007 Donald C. Johnson Memorial Lecture, University of Kansas Medical Center  
2008-13 Member, Scientific Advisory Board, Center for Trophoblast Research, University of Cambridge, UK  
2009 Special (Visiting) Professor, School of Veterinary Medicine, University of Nottingham, UK  
2009 Inducted into the University of Kentucky's Equine Research Hall of Fame  
2010 Distinguished Veterinary Immunologist Award, International Union of Immunological Societies  
2014 SUNY Chancellor's Award for Excellence in Scholarship and Creative Activities.

**C. Selected Peer-Reviewed Publications** (from a total of 146 available through PubMed)

- Cooper, K.L., K.E. Sears, A. Uygur, J. Maier, K.S. Baczkowski, M. Brosnahan, **D. Antczak**, J.A. Skidmore, and C.J. Tabin. (2014) Patterning and post-patterning modes of evolutionary digit loss in mammals. *Nature* 511:41-45.
- Cabrera-Sharp, V., Read, J. E., Richardson, S., Kowalski, A. A., **Antczak, D. F.**, Cartwright, J. E., Mukherjee, A., and de Mestre, A. M. (2014) SMAD1/5 signaling in the early equine placenta regulates trophoblast differentiation and chorionic gonadotropin secretion. *Endocrinology* 155:3054-3064.
- Kydd, J. H., Case, R., Minke, J., Audonnet, J. C., Wagner, B., and **Antczak, D. F.** (2014) The immediate early protein of equine herpesvirus-1 (EHV-1) as a target for cytotoxic T lymphocytes in the Thoroughbred horse. *J. Gen. Virol* 95:1783-1789.
- Azab, W., Harman, R., Miller, D., Tallmadge, R., Frampton, A. R., **Antczak, D. F.**, and Osterrieder, N. (2014) Equine herpesvirus type 4 (EHV-4) uses a restricted set of equine major histocompatibility complex class I proteins as entry receptors *J. Gen. Virol.* 95:1554-1563.
- Schnabel, L. V., Pezzanite, L. M., **Antczak, D. F.**, Felipe, M. J., and Fortier, L. A. (2014) Equine bone marrow-derived mesenchymal stromal cells are heterogeneous in MHC class II expression and capable of inciting an immune response in vitro. *Stem cell research & therapy*, 5:13.
- Orlando, L., A. Ginolhac, G. Zhang, D. Froese, A. Albrechtsen, M. Stiller, M. Schubert, E. Cappellini, B. Petersen, I. Moltke, P.L. Johnson, M. Fumagalli, J.T. Vilstrup, M. Raghavan, T. Korneliusson, A.S. Malaspinas, J. Vogt, D. Szklarczyk, C.D. Kelstrup, J. Vinther, A. Dolocan, J. Stenderup, A.M. Velazquez, J. Cahill, M. Rasmussen, X. Wang, J. Min, G.D. Zazula, A. Seguin-Orlando, C. Mortensen, K. Magnussen, J.F. Thompson, J. Weinstock, K. Gregersen, K.H. Roed, V. Eisenmann, C.J. Rubin, D.C. Miller, **D.F. Antczak**, M.F. Bertelsen, S. Brunak, K.A. Al-Rasheid, O. Ryder, L. Andersson, J. Mundy, A. Krogh, M.T. Gilbert, K. Kjaer, T. Sicheritz-Ponten, L.J. Jensen, J.V. Olsen, M. Hofreiter, R. Nielsen, B. Shapiro, J. Wang, and E. Willerslev. (2013). Recalibrating Equus evolution using the genome sequence of an early Middle Pleistocene horse. *Nature* 499:74-78. PMID: 23803765
- Wang, X., D.C. Miller, R. Harman, **D.F. Antczak**, and A.G. Clark. (2013). Paternally expressed genes predominate in the placenta. *Proc Natl Acad Sci U S A* 110:10705-10710. PMCID: PMC3696791
- Antczak, D.F.**, de Mestre, A. M., Wilsher, S., Allen, W. R. (2013) The Equine Endometrial Cup Reaction: A Fetomaternal Signal of Significance. *Annu. Rev. Anim. Biosci.* 1:419-442. doi 10.1146/annurev-animal-031412-103703. First posted online 13 December 2012.
- Wang, X., Miller, D. C., Clark, A. G., and **Antczak, D. F.** (2012) Random X inactivation in the horse and mule placenta. *Genome Research* 22:1855-1863. PMCID: PMC3460181.
- Antczak, D. F.** (2012) T-cell Tolerance to the Developing Equine Conceptus. *Reproduction in Domestic Animals* 47 Suppl. 4:376-383. PMID: 22827395
- Noronha, L. E. and **Antczak, D. F.** (2012) Modulation of T-cell Reactivity During Equine Pregnancy is Antigen-Independent. *Am J Reprod Immunol* 68:107-115. PMID: 22587222

- Noronha, L. E., Huggler, K. E., de Mestre, A. M., Miller, D. C. and **Antczak, D. F.** (2012) Molecular evidence for natural killer-like cells in equine endometrial cups. *Placenta* 33:379-386. PMID: PMC3319276.
- Brosnahan, M. M., Miller, D. C., Adams, M., and **Antczak, D. F.** (2012) Interleukin 22 is expressed by the invasive trophoblast of the equine (*E. caballus*) chorionic girdle. *J Immunol.* 188: 4181-4187. PMID: 22490443.
- de Mestre, A.M., Hanlon, D., Adams, A.P., Runcan, E., Leadbeater, J.C., Erb, H.N., Costa, C.C., Miller, D., Allen, W.R., and **Antczak, D.F.** (2011) Functions of ectopically transplanted invasive horse trophoblast. *Reproduction* 141:849-856. *Faculty of 1000 selection.* PMID: 21389079.
- Noronha, L. E. and **Antczak, D. F.** (2010) Maternal Immune Responses to Trophoblast: The Contribution of the Horse to Pregnancy Immunology. *Am. J. Reprod. Immun.* 64:231-244. PMID: 20618178.
- de Mestre, A.M., Noronha, L., Wagner, B. and **Antczak, D.F.** (2010) Split immunological tolerance to trophoblast. *Int. J. Dev. Biol.* 54:445-455. PMID: PMC2879498.
- Tallmadge, R.L., Campbell, J.A., Miller, D.C., and **Antczak, D.F.** (2010) Analysis of MHC class I genes across horse MHC haplotypes. *Immunogenetics* 62:159-172. PMID: PMC2872545.
- de Mestre, A.M., Miller, D., Roberson, M.S., Liford, J., Chizmar, L.C., McLaughlin, K.E. and **Antczak, D.F.** (2009) Glial cells missing homologue1 is induced in differentiating equine chorionic girdle trophoblast cells. *Biol. Reprod.* 80:227-234. PMID: PMC2804814.
- Wade, C.M., Giulotto, E., Sigurdsson, S., Zoli, M., Gnerre, S., Imsland, F., Lear, T.L., Adelson, D.L., Bailey, E., Bellone, R.R., Blöcker, H., Distl, O., Edgar, R.C., Garber, M., Leeb, T., Mauceli, E., MacLeod, J.N., Penedo, M.C.T., Raison, J.M., Sharpe, T., Vogel, J., Andersson, L., **Antczak, D.F.**, Biagi, T., Binns, M.M., Chowdhary, B.P., Coleman, S.J., Della Valle, G., Fryc, S., Guérin, G., Hasegawa, T., Hill, E.W., Jurka, J., Kjalainen, A., Lindgren, G., Liu, J., Magnani, E., Mickelson, J.R., Murray, J., Nergadze, S.G., Onofrio, R., Pedroni, S., Piras, M.F., Raudsepp, T., Rocchi, M., Røed, K.H., Ryder, O.A., Searle, S., Skow, L., Swinburne, J.E., Syvänen, A.C., Tozaki, T., Valberg, S.J., Vaudin, M., White, J.R., Zody, M.C., Broad Institute Genome Sequencing Platform, Broad Institute Whole Genome Assembly Team, Lander, E.S., and Lindblad-Toh, K. (2009) Genome sequence, comparative analysis and population genetics of the domestic horse (*Equus caballus*). *Science* 326:865-867. PMID: 19892987.
- de Mestre, A. M., Bacon, S. J., Costa, C. C., Leadbeater, J. C., Noronha, L. E., Stewart, F., and **Antczak, D. F.** (2008) Modeling trophoblast differentiation using equine chorionic girdle vesicles. *Placenta.* 29:158-169. PMID:18054076.