

CURRICULUM VITAE

Pierre COMIZZOLI

EDUCATIONAL BACKGROUND

2000 Ph.D. in Life Science, University of Tours, France
1997 M.Sc. in Reproductive Physiology, University of Paris VI, France
1994 D.V.M., Veterinary College of Alfort, France

POSITIONS HELD

• Experience in higher education

2014-present Acting Director, Smithsonian Consortium for Understanding and Sustaining a Biodiverse Planet
2009-present Adjunct Faculty Member, Biomedical Sciences, Cornell University, Ithaca, NY
2009-present Adjunct Faculty Member, University of Maryland, College Park, MD
2008-present Project Director, Pan-Smithsonian Cryo-Initiative, Washington DC
2002-present Research Biologist, Smithsonian Conservation Biology Institute, Washington DC
2000-2001 Research Associate, Muséum National d'Histoire Naturelle, Paris, France
1995-1996 Research Veterinarian, Laboratoire de Recherches Vétérinaires et Zootechniques, Chad

• Other

1994-1995 Consultant in animal health (part-time), Alfortville, France
1992-1994 Research technician (part-time), Muséum National d'Histoire Naturelle, Paris, France
1991-1992 Veterinary assistant (part-time), small animal practice, Colombes, France

SPECIAL RECOGNITION AND PROFESSIONAL AWARDS

2008 On the Spot Award from the Smithsonian's National Zoological Park
2008 Smithsonian Secretary's Research prize
2011 Presidential Early Career Award for Scientists and Engineers (PECASE)
2011 Recognition Award (National Zoological Park Heroes)
2012 Recognition Award (National Zoological Park Heroes)
2012 Innovation Award from the National Research Council of Thailand
2012 Smithsonian Secretary's Research prize
2013 Smithsonian Secretary's Award of Excellence (collaborative spirit)

PUBLICATIONS

• Articles in refereed journals

Original articles:

1. Comizzoli P, Peinau J, Dutertre C, Planquette P, Aumaitre A. Digestive utilization of concentrated and fibrous diets by two peccary species (*Tayassu pecari*, *Tayassu tajacu*). Anim Feed Sci Technol 1997; 64, 215-226.
2. Comizzoli P, Marquant-Le Guienne B, Heyman Y, Renard JP. Onset of the first S-phase is determined by a paternal effect during the G1-phase in bovine zygotes. Biol Reprod 2000; 62, 1677-1684.
3. Comizzoli P, Mermillod P, Cognié Y, Chai N, Legendre X, Mauget R. Successful *in vitro* production of embryos in the red deer (*Cervus elaphus*) and the sika deer (*Cervus nippon*). Theriogenology 2001; 55, 649-659.
4. Comizzoli P, Mauget R, Mermillod P. Assessment of *in vitro* fertility of deer semen by heterologous *in vitro* fertilization with zona-free bovine oocytes. Theriogenology 2001; 56, 261-274.
5. Bourc'his D, Le Bourhis D, Patin D, Niveleau A, Comizzoli P, Renard JP, Viegas-Pequignot E. Delayed and incomplete reprogramming of chromosome methylation patterns in bovine cloned embryos. Curr Biol 2001; 11, 1542-1546.
6. Comizzoli P, Urner F, Sakkas D, Renard JP. Up-regulation of glucose metabolism during male pronucleus formation determines the early onset of the S-phase in bovine zygotes. Biol Reprod 2003; 68, 1934-1940.
7. Comizzoli P, Wildt DE, Pukazhenthil BS. Overcoming the poor nuclear maturation and developmental competence of domestic cat oocytes during the non-breeding season. Reproduction 2003; 126, 809-816.
8. Comizzoli P, Wildt DE, Pukazhenthil BS. Effect of 1,2-propanediol versus 1,2-ethanediol on subsequent oocyte maturation, spindle integrity, fertilization and embryo development *in vitro* in the domestic cat. Biol Reprod 2004; 71, 598-604.
9. Dubost G, Henry O, Comizzoli P. Seasonality of reproduction in the three largest terrestrial rodents of French Guiana forest. Mammal Biol 2005; 70, 93-110.
10. Comizzoli P, Wildt DE, Pukazhenthil BS. *In vitro* development of domestic cat embryos following intracytoplasmic sperm injection with testicular spermatozoa. Theriogenology Suppl 2006; 66, 1659-1663.
11. Comizzoli P, Wildt DE, Pukazhenthil BS. Poor centrosomal function of cat testicular spermatozoa impairs embryo development *in vitro* after intracytoplasmic sperm injection. Biol Reprod 2006, 75, 252-260.
12. Comizzoli P, Wildt DE, Pukazhenthil BS. Impact of anisotonic conditions on structural and functional integrity of cumulus-oocyte complexes at the germinal vesicle stage in the domestic cat. Mol Reprod Dev 2008; 75, 345-354.
13. Godard NM, Pukazhenthil BS, Wildt DE, Comizzoli P. Paracrine factors from cumulus-enclosed oocytes ensure the successful maturation and fertilization *in vitro* of denuded oocytes in the cat model. Fertil Steril 2009; 91, 2051-2060.

14. Comizzoli P, Wildt DE, Pukazhenth BS. *In vitro* compaction of germinal vesicle chromatin is beneficial to survival of vitrified cat oocytes. *Reprod Domest Anim* 2009; 44, 269-274.
15. Siriaroonrat B, Comizzoli P, Songsasen N, Monfort SL, Wildt DE, Pukazhenth BS. Oocyte quality and estradiol supplementation affect *in vitro* maturation success in the white-tailed deer (*Odocoileus virginianus*). *Theriogenology* 2010; 73, 112-119.
16. Crosier AE, Comizzoli P, Baker T, Davidson A, Munson L, Howard JG, Marker LL, Wildt DE. Increasing age influences uterine integrity, but not ovarian function or oocyte quality in the cheetah (*Acinonyx jubatus*). *Biol Reprod* 2011; 85, 243-253.
17. Comizzoli P, Pukazhenth BS, Wildt DE. The competence of germinal vesicle oocytes is unrelated to nuclear chromatin configuration and strictly depends on cytoplasmic quantity and quality in the cat model. *Hum Reprod* 2011; 26, 2165-2177.
18. Buarpung S, Tharasanit T, Comizzoli P, Techakumphu M. Effects of cold storage on plasma membrane, DNA integrity and fertilizing ability of feline testicular spermatozoa. *Anim Reprod Sci* 2012, 131, 219-227.
19. Hobbs RJ, Howard JG, Wildt DE, Comizzoli P. Absence of seasonal changes in FSHR gene expression in the cat cumulus-oocyte complex *in vivo* and *in vitro*. *Reproduction* 2012; 144, 111-122.
20. Tharasanit T, Buarpung S, Manee-In S, Thongkittidilok C, Tiptanavattana N, Comizzoli P, Techakumphu M. Birth of kittens after the transfer of frozen-thawed embryos produced by intracytoplasmic sperm injection with spermatozoa collected from cryopreserved testicular tissue. *Reprod Domest Anim* 2012; 47, 305-308.
21. Nestle E, Graves-Herring JE, Keefer CL, Comizzoli P. Source of protein supplementation during *in vitro* culture does not affect the quality of resulting blastocysts in the domestic cat. *Reprod Domest Anim* 2012; 47, 152-155.
22. Phillips TC, Wildt DE, Comizzoli P. Increase in methylation of histone H3 lysine 4 (K4) and lysine 79 (K79) in the cat germinal vesicle appears related to acquisition of meiotic and developmental competence during folliculogenesis. *Reprod Domest Anim* 2012; 47, 210-214.
23. Fujihara M, Comizzoli P, Wildt DE, Songsasen N. Cat and dog primordial follicles enclosed in ovarian cortex sustain viability after *in vitro* culture on agarose gel in a protein-free medium. *Reprod Domest Anim* 2012; 47, 102-108.
24. Hribal R, Jewgenow K, Braun B, Comizzoli P. Influence of culture medium composition on relative mRNA abundances in domestic cat embryos. *Reprod Domest Anim* 2013; 48, 245-251.
25. Buarpung S, Tharasanit T, Comizzoli P, Techakumphu M. Feline spermatozoa from fresh and cryopreserved testicular tissues have comparable ability to fertilize matured oocytes and sustain the embryo development after intracytoplasmic sperm injection. *Theriogenology* 2013; 79, 149-158.
26. Graves-Herring JE, Wildt DE, Comizzoli P. Retention of Structure and Function of the Cat Germinal Vesicle after Air-Drying and Storage at Supra-Zero Temperature. *Biol Reprod* 2013; 88, 1-7.
27. Fujihara M, Comizzoli P, Keefer CL, Wildt DE, Songsasen N. Epidermal Growth Factor sustains *in vitro* primordial follicle viability by enhancing stromal cell proliferation via MAPK and PI3K pathways in the prepubertal, but not adult cat ovary. *Biol Reprod* 2014; 90, 86.
28. Karakaya C, Guzeloglu Kayisli O, Hobbs RJ, Gerasimova T, Uyar A, Erdem M, Oktem M, Erdem A, Gumuslu S, Ercan D, Sakkas D, Comizzoli P, Seli E, Lalioti MD. Follicle stimulating hormone receptor

(FSHR) alternative skipping of exon 2 or 3 affect ovarian response to FSH. Mol Hum Reprod 2014; in press.

29. Buarpong S, Tharasanit T, Thongkittidilok C, Comizzoli P, Techakumphu M. Spermatozoa isolated from cat testes retain their structural integrity as well as a developmental potential after refrigeration for up to 7 days. Zygote 2014; in press.

Review articles:

1. Comizzoli P, Renard JP. Paternal effect on the quality of the early embryo development [French]. Reprod Hum Horm 2000; 13, 471-477.
2. Comizzoli P, Mermillod P, Mauget R. Reproductive biotechnologies for endangered mammalian species. Reprod Nutr Dev 2000; 40, 493-504.
3. Comizzoli P, Wildt DE, Pukazhenthil BS. Oocyte quality and *in vitro* culture in the domestic cat. ART & Science 2004; 4, 11-13.
4. Comizzoli P. Reproductive physiology of cervids [French]. Le Point Veterinaire 2005; 36, 124-128.
5. Comizzoli P, Pukazhenthil BS, Howard JG, Wildt DE. Collaborative science and its impact on management and conservation of felid species. AZA Communiqué, December 2005, 23-25.
6. Pukazhenthil BS, Comizzoli P, Travis AJ, Wildt DE. Applications of emerging technologies to the study and conservation of threatened and endangered species. Reprod Fertil Dev 2006; 18, 77-90.
7. Comizzoli P, Crosier AE, Songsasen N, Szykman M, Howard JG, Wildt DE. Advances in reproductive science for wild carnivore conservation. Reprod Domest Anim 2009; 44, 47-52.
8. Wildt DE, Comizzoli P, Pukazhenthil B, Songsasen N. Lessons from biodiversity - the value of nontraditional species to advance reproductive science, conservation, and human health. Mol Reprod Dev 2010; 77, 397-409.
9. Tompkins WG, Comizzoli P. The Smithsonian's collections of collections. ISBER News 2011; 11, 1-6.
10. Comizzoli P, Songsasen N, Hagedorn M, Wildt DE. Comparative cryobiological traits and requirements for gametes and gonadal tissues collected from wildlife species. Theriogenology 2012; 78, 1666-1681.
11. Songsasen N, Comizzoli P, Nagashima J, Fujihara M, Wildt DE. The domestic dog and cat as models for understanding the regulation of ovarian follicle development *in vitro*. Reprod Domest Anim 2012; 47, 13-18.
12. Comizzoli P, Wildt DE. On the horizon for fertility preservation in domestic and wild carnivores. Reprod Domest Anim 2012; 47, 261-265.
13. Comizzoli P, Wildt DE. Mammalian fertility preservation through cryobiology – Value of classical comparative studies and the need for new preservation options. Reprod Fertil Dev 2014; 26, 91-98.

• Book chapters

1. Songsasen N, Comizzoli P. A historical overview of preservation of oocytes and embryos in the world of *in vitro* fertilization and biotechnology. In: Borini, A. and Coticchio, G., Preservation of Human Oocytes. London: Informa Healthcare 2009, pp.1-11.

2. Comizzoli P, Songsasen N, Wildt DE. Protecting and extending fertility options for females of wild and endangered species. *Cancer Treatment Research* 2010; 156, 87-100.
3. Comizzoli P, Wildt DE. Centrosomal functions and dysfunctions in cat spermatozoa. In: Schatten H, *The Centrosome*. Humana Press 2012, pp.49-58.
4. Comizzoli P, Holt WV. Recent advances and prospects in germplasm preservation of rare and endangered species. In: Holt WV, Brown JL and Comizzoli P, *Reproductive Sciences in Animal Conservation – Progress and Prospects*. New York: Springer 2014, in press
5. Mastromonaco GF, Gonzalez L, Filice M, Comizzoli P. Somatic Cells, Stem Cells, and Induced Pluripotent Stem Cells: How do they now contribute to conservation? In: Holt WV, Brown JL and Comizzoli P, *Reproductive Sciences in Animal Conservation – Progress and Prospects*. New York: Springer 2014, in press
6. Comizzoli P, Wildt DE. Cryobanking biomaterials from wild species to conserve genes and biodiversity - Relevance to human biobanking and biomedical research. In: Hainaut P, Vaught J, Pasterk M, and Zatloukal K, *Biobanking of Human Biospecimens*. New York: Springer 2014, in press

• **Book edition**

1. Canine and Feline Reproduction VII: Reproductive Biology and Medicine of Domestic and Exotic Carnivores. Special Issue of *Reproduction in Domestic Animals*; Guest Editors: Gary England, Michelle Kutzler, Pierre Comizzoli and Patrick Concannon; Willey-Blackwell publisher, Vol. 47, December 2012, 412 pp.
2. *Reproductive Sciences in Animal Conservation – Progress and Prospects*. Editors: William V. Holt, Janine L. Brown and Pierre Comizzoli: Springer publisher 2014, in press

• **Published abstracts**

1. Comizzoli P, Heyman Y, Renard JP. Paternal influence on the S-phase of the pronuclei in the bovine embryo. *Theriogenology* 1998; 49: 269.
2. Mauget R, Legendre X, Comizzoli P, Mermillod P. Assisted reproductive technology in sika deer : a programme to preserve endangered deer subspecies. *Proceedings 4th International Deer Congress Biology*, Kaposvar 1998; 185-186.
3. Comizzoli P, Mermillod P, Legendre X, Mauget R. *In vitro* production of embryos in the red deer (*Cervus elaphus*) and the sika deer (*Cervus nippon*). *Theriogenology* 2000; 53: 327.
4. Comizzoli P, Wildt DE, Pukazhenthil BS. Enhanced *in vitro* nuclear maturation and developmental competence of domestic cat oocytes during the nonbreeding season. *Biol Reprod* 2003; 68: 215.
5. Siriaroonrat B, Comizzoli P, Songsasen N, Spindler RE, Monfort SL, Berg DK, Pukazhenthil BS. Effect of time of maturation and sheep serum on *in vitro* fertilization in the endangered Eld's deer (*Cervus Eldi Thamin*) oocytes. *Reprod Fertil Dev* 2004; 16: 228.
6. Comizzoli P, Wildt DE, Pukazhenthil BS. Impact of propylene glycol versus ethylene glycol on oocyte maturation, spindle integrity, fertilization and embryo development *in vitro* in the domestic cat. *Reprod Fertil Dev* 2004; 16: 167.

7. Comizzoli P, Wildt DE, Pukazhenth BS. *In vitro* development of domestic cat embryos following intracytoplasmic sperm injection with testicular spermatozoa. Proceedings of the 5th International Symposium on Canine and Feline Reproduction 2004, 114.
8. Comizzoli P, Pukazhenth BS, Howard JG, Wildt DE. Advances in cryopreserved germplasm and embryos for genetic management of endangered species. Proceedings of the international conference on Preservation of Genetic Resources, Tsitology 2004; 46: 757-758.
9. Comizzoli P, Selvaraj V, Wildt DE, Pukazhenth BS. Poor centrosome functionality is associated with compromised embryo development *in vitro* after ICSI with testicular sperm in the cat. Biol Reprod 2005, Special issue, Abstract 44.
10. Comizzoli P, Wildt DE, Pukazhenth BS. Poor embryo development after ICSI with domestic cat testicular sperm is overcome by centrosome and midpiece replacement. Reprod Fertil Dev 2006; 18: 224.
11. Comizzoli P, Wildt DE, Pukazhenth BS. The value of assisted reproductive techniques from 25 years experience at the Smithsonian's National Zoological Park. Proceedings of the 5th Annual Congress of European Veterinary Society for Small Animal Reproduction 2006: 90-92.
12. Comizzoli P, Wildt DE, Pukazhenth BS. Impact of osmotic stress on nuclear maturation and developmental competence of immature cat oocytes. Biol Reprod 2006, Special issue, Abstract 486.
13. Crosier AE, Comizzoli P, Baker T, Pukazhenth BS, Howard JG, Marker LL, Wildt DE. Oocyte fertilization and uterine morphology in aged female cheetahs (*Acinonyx jubatus*) are similar to younger counterparts. Biol Reprod 2007, Special issue, Abstract 20.
14. Comizzoli P, Godard-Glasnapp N, Keefer CL, Wildt DE, Pukazhenth BS. Impact of reconstruction by germinal vesicle transfer on nuclear maturation of domestic cat oocytes. Biol Reprod 2007, Special issue, Abstract 486.
15. Comizzoli P, Wildt DE, Pukazhenth BS. Removal of cumulus cells and pre-incubation in cytochalasin B improve survival of immature cat oocytes during vitrification. Reprod Fertil Dev 2008; 20: 115-116.
16. Crosier AE, Wildt DE, Baker T, Davidson A, Howard JG, Marker LL, Comizzoli P. Ovarian and follicular metrics are useful for predicting oocyte quality in the cheetah (*Acinonyx jubatus*). Biol Reprod 2008, Special issue, Abstract 473.
17. Pukazhenth B, Comizzoli P, Padilla L, Songsasen N, Favorretto S, Wildt DE. The rare Addra gazelle (*Nanger dama ruficollis*) produces viable spermic ejaculates that tolerate cryopreservation. J Androl 2009: 48.
18. Hobbs RJ, Howard JG, Fleischer RC, Wildt DE, Comizzoli P. Increased gene expression of follicle stimulating hormone receptor in cat cumulus-oocyte complexes during seasonal anestrus. Biol Reprod 2009; 81: 350.
19. Comizzoli P, Martinez-Madrid CB, Pukazhenth BS, Wildt DE. Vitrification of ovarian cortex from prepubertal and adult cats induces less damage to the primordial follicles than slow freezing. Biol Reprod 2009; 81: 187.
20. Hobbs RJ, Howard JG, Fleischer RC, Wildt DE, Comizzoli P. Seasonal changes in FSH-induced FSHR mRNA splice variant expression during *in vitro* maturation of cat oocytes. Biol Reprod 2010; 83: 382.

21. Comizzoli P, Pukazhenth BS, Wildt DE. Benefits of germinal vesicle transfer by intracytoplasmic injection versus membrane fusion on homoplasmy and maturational success of reconstructed cat oocytes. *Biol Reprod* 2010; 83: 6.
22. Pukazhenth BS, Comizzoli P, Hagedorn M. Fertility conservation in non-domestic species: successes, challenges and lessons for human medicine. *J Androl* 2011: 23.
23. Pukazhenth BS, Hagedorn M, Comizzoli P, Songsasen N, Wildt DE. 2011. Cryopreserving endangered species gametes, embryos and gonadal tissue: Challenges, successes and future directions. *Cryobiology* 2011, 63: 308-309.
24. Hobbs RJ, Comizzoli P, Howard JG, Wildt DE. Developmental, but not meiotic, competence of cat oocytes is affected by seasonal anestrus. *Biol Reprod* 2011; 85: 327.
25. Graves-Herring JE, Wildt DE, Comizzoli P. Protective effect of trehalose during desiccation and storage of oocytes: a novel approach to preserve the germinal vesicle using the cat model. *Biol Reprod* 2011; 85: 321.
26. Comizzoli P. Building bridges between wild species and human reproductive science through fertility preservation studies. *Biol Reprod* 2011; 85: 22.
27. Elliot GD, Van Vorst M, Graves-Herring JE, Wildt DE, Comizzoli P. Impact of microwave processing on dehydration and structural integrity of germinal vesicles from domestic cat oocytes. *Cryobiology* 2012; 65: 351.
28. Crosier AE, Koester DC, Wildt DE, Comizzoli P. The cheetah (*Acinonyx jubatus*) is uniquely sensitive to short-term progestin exposure. *Biol Reprod Suppl.* 2012.
29. Thongphakdee A, Berg DK, Tharasanit T, Thongtipsiridech S, Tipkantha W, Keawmai U, Noimoon S, Thongkittidilok C, Punkong C, Kamolnorrath S, Comizzoli P, Siriaroonrat B. Eld's deer embryos produced in vitro can develop to term after transfer into recipient females. *Reprod Domest Anim* 2012; 47: 454.
30. Buarpung S, Tharasanit T, Thongkittidilok C, Comizzoli P, Techakumphu T. In vitro development of feline embryos after intracytoplasmic sperm injection with 7-day refrigerated testicular sperm. *Reprod Domest Anim* 2012; 47: 516.
31. Comizzoli P. Relevance of research in wild species preservation to advance human fertility studies and vice versa. *Hum Reprod* 2013; 27: 35.
32. Comizzoli P. The value of non-traditional animal models for human IVF. *Hum Reprod* 2013; 27: 41.
33. Elliott GD, Van Vorst M, Paramore E, Graves-Herring JE, Wildt DE, Comizzoli P. Dry preservation of animal cells: State of the art in microwave processing. *CryoLetters* 2013; 34: 203-204.
34. Phillips TC, Wildt DE, Comizzoli P. Histone methylation in the cat germinal vesicle can be altered to induce nuclear and developmental competence at earlier stages of folliculogenesis. *Biol Reprod Suppl.* 2013
35. Mouttham LL, Fortune JE, Comizzoli P. Detrimental effects of cryoprotectant exposure can be naturally overcome in fetal bovine ovaries. *Biol Reprod Suppl.* 2013
36. Lee PC, Paramore E, Van Vorst M, Weng L, Wildt DE, Elliott GD, Comizzoli P. Optimal preservation of DNA Integrity in cat germinal vesicles after microwave-assisted dehydration and supra-zero temperature storage. *Cryobiology* 2013; 67: 422.

INVITED LECTURES AND PROFESSIONAL PRESENTATIONS

1. Reproductive biotechnologies for endangered mammalian species, Annual Meeting of the European Association of Embryo Transfer 2000, Santander, Spain.
2. Paternal effect on the quality of the early embryo development, 5^{ème} journées de la Fédération Française pour l'Etude de la Reproduction 2000, Paris, France.
3. Overcoming poor *in vitro* maturation of cat oocytes during the non-breeding season. Felid TAG Mid-Year Meeting 2003, Dallas, TX.
4. *In vitro* development of domestic cat embryos following intra-cytoplasmic sperm injection with testicular spermatozoa. 5th International Symposium on Canine and Feline Reproduction 2004, Sao Paulo, Brazil.
5. Advances in cryopreserved germplasm and embryos for genetic management of endangered species. International Conference on Preservation of Genetic Resources 2004, St-Petersburg, Russia.
6. Poor centrosome functionality is associated with compromised embryo development *in vitro* after ICSI with testicular sperm in the cat. 38th Annual Meeting of the Society for the Study of Reproduction 2005, Quebec City, Canada.
7. Poor embryo development after ICSI with domestic cat testicular sperm is overcome by centrosome and midpiece replacement. Annual Conference of the International Embryo Transfer Society 2006, Orlando, FL.
8. The value of assisted reproductive techniques from 25 years experience at the Smithsonian's National Zoological Park. 5th Annual Congress of European Veterinary Society for Small Animal Reproduction 2006, Budapest, Hungary.
9. Genome Resource Banking for wild species. 1st BIODIVA conference 2006, Hanoi, Vietnam.
10. Flagship species in Vietnam / Wildlife survey in Algeria / Eld's deer conservation *in situ*. Ungulate Taxon Advisory Group 2007, Dallas, TX.
11. Wildlife without borders: Conserving the Sahelo-Saharan antelopes of North Africa. Seminar of the Convention on Migratory Species at the Smithsonian Institution 2007, Washington DC.
12. Impact of reconstruction by germinal vesicle transfer on nuclear maturation of domestic cat oocytes. 40th Annual Meeting of the Society for the Study of Reproduction 2007, San Antonio, TX.
13. Assisted reproductive techniques in deer species / reproductive biotechnologies in the domestic cat as a model for rare and endangered felids / gamete rescue and genome resource banking for wild species. 2nd BIODIVA conference 2007, Hanoi, Vietnam
14. Diversity of endangered species reproduction as studied worldwide. 1st World Congress on Reproductive Biology 2008, Kona, HI.
15. *In vitro* compaction of germinal vesicle chromatin is beneficial to survival of vitrified cat oocytes. 6th International Symposium for Canine and Feline Reproduction 2008, Vienna, Austria.
16. Advances in reproductive sciences for wild carnivore conservation. 6th International Symposium for Canine and Feline Reproduction 2008, Vienna, Austria.

17. Wildlife without borders – conserving Sahelo-Saharan wildlife. American University, Seminar Series 2009, Washington, DC.
18. Assisted reproductive techniques for the conservation of rare and endangered species. University of Maryland, Seminar Series 2009, College Park, MD.
19. Vitrification of ovarian cortex from prepubertal and adult cats induces less damage to the primordial follicles than slow freezing. 42nd Annual Meeting of the Society for the Study of Reproduction 2009, Pittsburgh, PA.
20. Genome Resource Banking at the Smithsonian Institution – Study and preservation of gametes and gonadal tissues. National Institute for Child and Human Development, Seminar Series 2009, Bethesda, MD.
21. Paternal effect on the quality of the embryo development. SISMeR Forum 2009, Bologna, Italy.
22. Value of animal models for human assisted reproduction. Columbia Fertility Associates, Seminar Series 2009, Washington DC.
23. Recent advances in micromanipulation and *in vitro* culture of gonadal tissues and gametes in non-traditional species. 1st Wildlife ART Workshop 2010, Khao Khew Zoo, Chomburi, Thailand.
24. Fertility preservation in males and females from wild and endangered mammals. 11th Royal Golden Jubilee – Ph.D. Conference 2010, Pattaya, Thailand.
25. Domestic and wild carnivores to advance human fertility studies. 7th Annual Congress of European Veterinary Society for Small Animal Reproduction 2010, Louvain La Neuve, Belgium.
26. Cutting edge techniques for preserving the fertility in rare and endangered species. Institute for Zoo and Wildlife Research 2010, Berlin, Germany.
27. Assisted reproductive techniques for the conservation of rare and endangered species. University of Maryland, Seminar Series 2010, College Park, MD.
28. Benefits of germinal vesicle transfer by intracytoplasmic injection versus membrane fusion on homoplasmy and maturational success of reconstructed cat oocytes. 43rd Annual Meeting of the Society for the Study of Reproduction 2010, Milwaukee, WI.
29. Cellular and molecular studies to preserve the fertility of rare and endangered animal species. University of Maryland, Seminar Series 2010, College Park, MD.
30. Non-traditional animal models for advancing human fertility studies. 36th NCAB American Association for Laboratory Animal Science 2010, Washington DC.
31. Vitrification – a story behind a cold room door. Post-Graduate Course of the American Society for Reproductive Medicine 2010, Denver, CO.
32. Vitrification of oocytes and gonadal tissue. Post-Graduate Course of the American Society for Reproductive Medicine 2010, Denver, CO.
33. Reproductive sciences for the conservation of rare and endangered species. University of Maryland, Seminar Series 2010, College Park, MD.
34. Recent advances in fertility preservation for rare and endangered species. 2nd Wildlife ART Workshop

2011, Khao Khew Zoo, Chomburi, Thailand.

35. Cutting-edge approaches to preserve the fertility of rare and endangered species. Cornell University Seminar Series 2011, Ithaca, NY.
36. Cutting-edge approaches to preserve the fertility of rare and endangered species. St-Hyacinthe University Seminar Series 2011, Canada.
37. Sex and wildlife: assisted reproductive techniques for species conservation. 9th Annual Meeting of the New England Fertility Society 2011, Westbrook, CT.
38. Building bridges between wild species and human reproductive science through fertility preservation studies. 44th Annual Meeting of the Society for the Study of Reproduction 2011, Portland, OR.
39. Reproductive sciences for the conservation of rare and endangered species. University of Maryland, Seminar Series 2011, College Park, MD.
40. Non-traditional animal models for advancing fertility preservation studies in human. 2nd World Congress on Fertility Preservation 2011, Miami Beach, FL.
41. Reproductive sciences for the conservation of rare and endangered species – Potential translations to human fertility studies. Walter Reed National Army Navy Medical Center, Seminar Series 2012, Washington, DC.
42. Fertility preservation in animals and human. 3rd Wildlife ART Workshop 2012, Khao Khew Zoo, Chomburi, Thailand.
43. Embryological research in animal conservation. University of Maryland, Seminar Series 2012, College Park, MD.
44. Separating good plastic from bad plastic in conservation biology. The Age of Plastic Symposium 2012, Smithsonian Institution, Washington DC.
45. Relevance of research in wild species preservation to advance human fertility studies and vice versa. 28th Annual Meeting of the European Society for Human Reproduction and Embryology 2012, Istanbul, Turkey.
46. Value of non-traditional animal species for human IVF. 28th Annual Meeting of the European Society for Human Reproduction and Embryology 2012, Istanbul, Turkey.
47. On the horizon of fertility preservation in domestic and wild carnivores. 7th International Symposium for Canine and Feline Reproduction 2012, Whistler, Canada.
48. Infertility cases in giant pandas, cheetahs and elephants: relevance to human reproductive medicine. 2nd Zoobiquity Conference 2012, Los Angeles, CA.
49. Fertility preservation – New horizons for domestic and wild species. University of Maryland, Seminar Series 2012, College Park, MD.
50. Cutting-edge approaches to preserve the fertility of rare and endangered species. University of California, Berkeley Seminar Series 2012, Berkeley, CA.
51. Fertility preservation strategies for the conservation of rare and endangered animal species. Smithsonian Congress of Scholars, Seminar Series 2012, Washington, DC.

52. Innovative approaches in fertility preservation using the domestic cat as a model. National Institutes of Health, Office of Research Infrastructure Programs, Seminar Series 2013, Bethesda, MD.
53. Comparative and translational cryobiology of gametes and gonadal tissue from rare and endangered species. 3rd International Congress on Controversies in Cryopreservation of Reproductive cells, Tissue and Organs (CRYO) 2013, Berlin, Germany.
54. The role of reproductive sciences in wildlife conservation. 14th Royal Golden Jubilee – Ph.D. Conference 2013, Pattaya, Thailand.
55. Frozen biomaterial collections at the Smithsonian Institution - A way to understand and sustain biodiversity. National Institutes of Health Biospecimens Interest Group, Seminar Series 2013, Bethesda, MD.
56. Conservation of rare and endangered wild species through Genome Resource Banking - The experience of the Smithsonian Conservation Biology Institute. SVF Foundation, Lecture Series 2013, Newport, RI
57. Understanding and controlling the reproduction of non-traditional animal species - Progress and prospect. Keynote lecture of the CANDES Symposium, 40th Annual Conference of the International Embryo Transfer Society 2014, Reno, NV.
58. Mammalian fertility preservation through cryobiology – Value of classical comparative studies and the need for new preservation options. 40th Annual Conference of the International Embryo Transfer Society 2014, Reno, NV.
59. Endocrinology and assisted reproduction in the clouded leopard. Symposium on Reproductive Biology of the Clouded Leopard 2014. Khao Khew Zoo, Chomburi, Thailand.
60. Assisted reproductive techniques in amphibians. Distance Learning Class 2014, Colorado State University, CO
61. Saving species through cryobiology – Filling the gap between technology and ecology. Keynote lecture of the Joint Meeting of the Society for In Vitro Biology and the Society for Cryobiology 2014, Savannah, GA
62. Comparative cryobiology of germplasm from rare and endangered species. Joint Meeting of the Society for In Vitro Biology and the Society for Cryobiology 2014, Savannah, GA
63. The Pan-Smithsonian Cryo-Initiative – Freezing for the future. Joint Meeting of the Society for In Vitro Biology and the Society for Cryobiology 2014, Savannah, GA

INSTRUCTION AND SUPERVISION

• Major advisor or co-advisor of graduate students

- 2002-2005** Ph.D. thesis co-advisor of Boripat Siriaronrat, George Mason University, VA
- 2004-2006** M.Sc. thesis advisor of Natasha Godard, American University, Washington DC
- 2010-2012** M.Sc. thesis advisor of Emily Nestle, University of Maryland, MD
- 2009-2013** Ph.D. thesis co-advisor of Sirirak Buarpong (D.V.M.), Chulalongkorn University, Thailand
- 2009-present** Ph.D. thesis advisor of Gina Della Togna (M.Sc.), University of Maryland, MD
- 2010-present** Ph.D. thesis advisor of Lara Mouttham (M.Sc.), Cornell University, NY
- 2012-present** Ph.D. thesis advisor of Tricia Rowilson (M.Sc.), University of Maryland, MD
- 2012-present** Ph.D. thesis co-advisor of Jennifer Patrick, University of North Carolina, NC
- 2012-present** Ph.D. thesis co-advisor of Nae Tanpradit (D.V.M.), Chulalongkorn University, Thailand
- 2012-present** Ph.D. thesis co-advisor of Wanlaya Tipkhanta (D.V.M.), Chulalongkorn University, Thailand

• Major supervisor or co-supervisor of post-doctoral fellows

- 2009-2011** Post-doctoral advisor of Jennifer Graves-Herring (Ph.D.)
- 2008-2012** Post-doctoral advisor of Rebecca Hobbs (Ph.D.)
- 2011-present** Post-doctoral co-advisor of Mayako Fujihara (Ph.D.)
- 2013-present** Post-doctoral co-advisor of Paweena Thuwanut (D.V.M., Ph.D.)

• Host for visiting scientists and interns (3-6 month periods) at the Smithsonian

- 2005** Dr. Vimal Selvaraj (Ph.D., Cornell University, NY)
- 2008** Dr. Belen Martinez (D.V.M., Ph.D., University of Madrid, Spain)
- 2009** Monica Fernandez (B.Sc., University of Maryland, College Park, MD)
- 2009** Herman Fennel (M.Sc, Howard University, Washington DC)
- 2010** Dr. Romy Hribal-Waurich (Ph.D., Zoo and Wildlife Research, Berlin, Germany)
- 2012** Stephanie Paultre (B.Sc., University of Maryland, College Park, MD)
- 2012-2013** Han Chia (B.Sc, University of Maryland, College Park, MD)
- 2012-2013** Dana Perez (B.Sc, Lafayette College, Easton, PA)

2013 Dr. William Holt (Sheffield University, UK)

• **Supervisor of employees and contractors**

2000-2002 Regis Rabier (B.Sc.), Biotechnician

2009-2010 Mary Crauderueff (Master in Library Science), Contractor

2010-2011 Jessica van Opstal (Master in Information Science), Contractor

2011-2012 Jenny Santiestevan (B.Sc.), Biotechnician

2011-2012 Ginger Anderson, Animal Keeper

2011-present Piper Frost Mullins (Master in Information Science), Project Coordinator

2011-present Cathi Morrison, Animal Keeper

2011-present Tameka Phillips (Ph.D.), Research Specialist

2012-present Pei-Chih Lee (Ph.D.), Research Specialist

2013-present Tricia Rowlison (Ph.D. candidate), Biological Technician

• **Lectures and seminars provided to students since 2005 (at least once per year)**

American University
George Mason University
University of Columbia-Missouri
University of Montreal
University of Maryland
Cornell University
University of North Carolina
Zoological Society of London

• **Professional training provided since 2005**

Organization of annual workshops and training courses on assisted reproductive techniques, cryobiology and Genome Resource Banks in Panama, Vietnam and Thailand

Training courses on wildlife and habitat surveys in North Africa (field missions)

SMITHSONIAN INSTITUTION COMMITTEE PARTICIPATION

2003-present Chair of annual review panels for the Office of Fellowships and Internships, Office of Under-Secretary for Science, and the Biodiversity Consortium

2005-present Appointee to the Animal Care and Use Committee of the National Zoological Park

2010-present Member of the Steering Committee of the SI Data Management Project

2010-present Member of the Steering Committee of the SI Collection Space Initiative

- 2011-present** Member of the Advisory Committee of the Biodiversity Consortium
- 2012-present** Member of the Steering Committee for the Scientific Equipment Maintenance
- 2012-present** Member of the Executive Committee of the Integrated Biodiversity Genomics at SI

EXTERNAL SERVICES

- **Peer reviewing, editorships**

Editorial board member / Associate Editor

Animal Reproduction Science
 Theriogenology
 Journal of Assisted Reproduction and Genetics
 Open Journal for Reproductive Science
 Molecular Reproduction and Development

Ad hoc reviewer for the following journals (~2 manuscripts per year since 2000 for each journal)

Biology of Reproduction
 Human Reproduction
 Molecular Human Reproduction
 Reproduction Fertility and Development
 Reproductive Biology and Endocrinology
 Reproduction
 Journal of Andrology
 Zoo biology
 Journal of Mammalogy
 African Journal of Biotechnology
 Journal of Applied Biotechnologies
 Human Fertility

- **Involvement in cross-institutional and international projects**

- 2003-present** Grant reviewer for the National Institutes of Health (Office of the Director / Comparative Medicine study section; K01, T32, T35, R01, R24, and R40 proposals)
- 2003-present** Ad hoc grant reviewer for the Morris Animal Foundation
- 2009-present** Participation in the initiative 'Linking Animal Model to Human Disease' from the National Institutes of Health
- 2009-present** SI Coordinator of the Smithsonian-Cornell Joint Graduate Program on Wildlife and Conservation Sciences
- 2012-present** Co-Chair of the Large Scale Infrastructure for Science Working Group, US-France Joint Commission Meeting (Department of State)
- 2013-present** Co-Chair of the Conservation Science Working Group, US-Vietnam Joint Commission Meeting (Department of State)

- **Professional organizations (membership and scientific advisory)**

- 2000-present** Member of the Association Européenne de Transfer Embryonnaire (AETE)

- 2000-present** Member of the International Embryo Transfer Society (IETS)
Coordination of abstract review for the annual conference
- 2002-present** Member of the Society for the Study of Reproduction (SSR)
Coordination of abstract reviews for the annual meeting
Participation as a mentor in the trainee/mentor luncheon
Session chair at the annual meeting
Program committee member from 2010 to 2014
- 2002-present** Member of the Association for Zoos and Aquariums (AZA)
- 2004-present** Member and scientific advisor of the Sahelo-Saharan Interest Group (SSIG)
- 2009-present** Chair of the Conservation & Science Committee of the Sahara Conservation Fund (SCF)
Organization and facilitation of annual meetings
Coordination of committee activities (assistance to delegates from range countries, diffusion of knowledge, proposal reviewing)
- 2009-present** Scientific advisor of the Saola Working Group (IUCN/SSC Asian Wild Cattle group)
- 2010-present** Member of the American Society for Reproductive Medicine (ASRM)
Organization of Post-Graduate Courses
Coordination of abstract reviews for the annual meeting
- 2012-present** Member of the International Society for Biological and Environmental Repositories (ISBER)
- 2012** Co-Chair of the Program Committee for the International Symposium for Canine and Feline Reproduction (ISCFR)
- 2013** Member of the Program Committee for the North-American Society for Comparative Endocrinology (NASCE)

• **Educational outreach**

- 2002-present** Participation in annual public events promoting science:
Zoo Morning (children and adults)
Science tent at the Smithsonian Folklife Festival (children and adults)
Zoofari (adults)
Autumn Conservation Festival (children and adults)
Science Fair for High-School Students
Meet the Scientist
Maryland Day (children and adults)
- 2004-present** Annual Adult Class for the Friends of the National Zoo (coordinator and speaker)
- 2010-present** The Washington Youth Summit on the Environment (coordinator and speaker)
- 2011-present** Tours for private donors (Giant Panda Facility; Front Royal campus of SCBI)
- 2013-present** Lecture at Woo at the Zoo (adult audience)

- **Journal, radio, and television interviews (selected examples)**

Washington Post (giant panda artificial insemination, 2007-2013)
Smithsonian Magazine (saola conservation, 2008)
Science Magazine (saola conservation, 2009)
Northern Virginia Daily (SI-Cornell joint graduate program, 2011)
The Scientist (animal conservation, 2011)
Radio France International (giant panda artificial insemination, 2011)
Central China TV (giant panda artificial insemination, 2012)
China Radio International (giant panda artificial insemination, 2012)
Smithson Connection (fertility preservation, 2012)
Nature Medicine (wild species as models for human health, 2012)
Washington Post (giant panda, 2012)
Channel 4, Channel 7, Metronews (giant panda, 2012)
The Hill (giant panda, 2012)
PBS Newshour (giant panda, 2012)
Quebec Science (cryobiology in zoos, 2013)
Wildlife Magazine (cryobiology in zoos, 2013)
The New Yorker (panda artificial insemination, 2013)
PBS Newshour (giant panda, 2013)
Smithsonian Magazine (giant panda, 2013)
Voice of America (assisted reproduction in wild species, 2014)
France 2 Television (giant panda, 2014)