

## CURRICULUM VITAE

### CHRISTINE MARIE JANIS

Professor of Biology  
Department of Ecology and Evolutionary Biology  
Brown University  
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#### Personal Data:

Date of Birth: 18th. October 1950, London, England.  
Nationality: British (also US citizen).

#### Education

1979: Ph.D. in Biology (Vertebrate Paleontology), Harvard University, USA  
Thesis title: *Aspects of the Evolution of Herbivory in Ungulate*

#### *Mammals.*

1973: BA (Natural Sciences, Zoology) University of Cambridge, UK.

#### Research Interests:

1. Patterns of Tertiary fossil mammal evolution (with special emphasis on ungulates, or hoofed mammals), and the effects of environmental and climatic changes. I have an especial interest in the evolution of the North American Miocene savanna faunas.
2. Correlation of morphology in relation to behavior in living and fossil mammals (especially craniodental morphology in relation to diet in ungulates).
3. Systematics of ruminant artiodactyls.

#### Teaching Interests:

My main teaching is in vertebrate evolutionary morphology (comparative anatomy) and in vertebrate evolution and diversity. My primary teaching goal is to provide students with the tools to learn how to think and to perform their own logical deduction and analyses. One of the key features that I stress is the difference between evidence and inference in understanding how scientific “facts” are known. My experience of teaching these subjects at Brown is now evident in my contributions to the textbook *Vertebrate Life*.

#### Experience:

1999 - present: Professor of Biology, Brown University  
1989-1999: Associate Professor of Biology, Brown University  
1983-1989: Assistant Professor of Biology, Brown University.  
2001: Benjamin Meaker Fellowship (Visiting Professor),  
University of Bristol, UK  
1994-1995: Visiting Professor of Geophysical Sciences, University of Chicago  
1994-present: Research Associate in Geology, The Field Museum of Natural History,  
Chicago.  
1984-present: Research Associate, Harvard University  
1979-1983: Research Fellow, Newnham College, University of Cambridge,  
England (also a member of the Department of Zoology)

1977-1978: Instructor (Physiology): Dept. of Zoology, Oregon State University.

**Awards:**

1985: George Gaylord Simpson Prize for Paleontology (Yale University, USA)

**Professional Activities:**

Member of the following societies:

Society of Vertebrate Paleontology (USA)  
The Paleontological Society (USA)  
The Palaeontological Association (UK)  
The American Society of Mammalogists  
Society for Integrative and Comparative Biology

Editorial and Societal Positions:

Member of Committee for Honorary Membership, Society of Vertebrate Paleontology (1993 - 1998); Chairman of Committee [1998 - 2000].  
Member of Editorial Board for *Acta Palaeontologica Polonica* (2001)  
Associate Editor for *Palaeoclimates - Data and Modelling* (1994 - present))  
Member of editorial board for *Journal of Mammalian Evolution* (1991-present)  
Member of board of directors of the International Society of Cryptozoology (1992-present)

Articles Reviewed for the Following Journals:

*Acta Paleontologica Polonica*; *American Journal of Physical Anthropology*; *American Journal of Science*; *American Naturalist*; *Applied Animal Behaviour Science*; *Biological Reviews*; *British Journal of Veterinary Medicine*; *Bulletin of the American Museum of Natural History*; *Cryptozoology*; *Evolution*; *Evolutionary Theory*; *Historical Biology*; *Journal of Evolutionary Biology*; *Journal of Human Evolution*; *Journal of Mammalogy*; *Journal of Vertebrate Paleontology*; *Journal of Zoology, London*; *Lethaia*; *Nature*; *Palaeogeography, Palaeoclimatology, Palaeoecology*; *Palaentology*; *Palaios*; *Science*; *Trends in Ecology and Evolution*; *Zoological Journal of the Linnean Society*.

Peer Reviews for Grant Agencies:

NSF: Systematic Biology, Ecology, Earth Sciences, Physiology.  
National Geographic Society, The Leakey Foundation  
The Leverhulme Trust (UK) , National Environmental Research Council (UK)

**Service to University:**

Brown University: Affirmative Action Monitoring Committee (1996 - 1999)  
Brown University: College Curriculum Committee (1989 - 1992)  
Brown University Freshman Advising Program (1984-present)  
Brown University Academic Advisor for Concentration in AB Biology (1997 - present)  
Brown University: Academic Advisor for Concentration in Human Biology (1989 - 1994)  
Brown University Fulbright Awards Committee (1984-1988)  
Brown University Search Committees: Pediatric Orthopedic Surgeon (1986);  
Temporary position for Evolutionary Biologist (1988); Senior Anatomist (1988);  
Junior Anatomist (1989)

**Teaching Experience:**

Comparative Vertebrate Biology: (upper level course 1983-present)  
Vertebrate Paleontology and Evolution: (taught at various levels, 1984 - present)  
Mammalian Diversity, Design and Adaptation: (taught at various levels, 1985 -1992)  
Mammalian Paleobiology (course for Masters students, University of Bristol, 2001).  
Macroecology (graduate seminar, 2001)  
Evolutionary Development (graduate seminar, 1998)  
Contribution of the Fossil Record to Evolutionary Theory: (graduate seminar, 1986)

**Postdoctoral Associates:**

Jessica Theodor (Anatomy Teaching Associate, 1997 – 2000).

**Graduate Students:**Primary advisor (Brown University):

Tracy Popowics (1989-1996).

Thesis: Dietarily Specialized Mustelids and Viverrids (Mammalia: Carnivora).

Patricia Brady Wilhelm. (1987-1993).

Thesis: Morphometric Analysis of Locomotor Correlates of the Postcranial Skeleton of Mammals.

Committee Membership:

Kevin Middleton (Dept. of Ecology and Evolutionary Biology, Brown: 1997-present)

Colleen Farmer (Department of Physiology, Brown University: 1995-1997)

Charles Musiba (Department of Anthropology, The University of Chicago: 1995)

Matthew Carrano (Department of Evolutionary Biology, Chicago: 1994-1998)

Ron Myers (Department of Ecology and Evolutionary Biology, Brown: 1988-1992)

Diane Angell (Department of Ecology and Evolutionary Biology, Brown: 1988-1993)

**Recent Undergraduate Thesis Sponsorship:**

Julia Keller (2000): Modes of ventilation in Paleozoic tetrapods

Robin Farkas (2000): Changes in latitudinal diversity in ungulate communities in the late Miocene.

Bethany Boisvert (1999): A quantitative study on the evolution of camelid foot structure

Chiniqua Milligan (1999): The diet of *Aepyamelus* (Mammalia: Artiodactyla: Camelidae).

Emily Constable (1993): The comparative masticatory behavior of horses and cows with possible implications in the study of differing jaw and tooth morphologies.

Damian Kurian (1992-1993): Allometric scaling of long limb bones in the smallest terrestrial Mammalia

Walter Sall (1992): Differential scaling of head size in reptiles and amphibians.

**Recent Invited Seminars:**

2002. Presentation on the origin of the savanna biome for the International Association for the Study of Human Paleontology Congress (Barcelona, Spain).

2002. "Munchers of the Miocene: what Mammalian Communities can tell us about Environmental Change." Department of Geology (Colloquium Speaker), Brown University.

2001. Session on "Evolution of Grass-Dominated Ecosystems during the Late Tertiary": North American Paleontological Convention (Berkeley, CA).
2001. Session on "Middle to Late Miocene Perturbations of the Earth Ocean and Climate Systems: An Integrated Approach": American Geophysical Union Spring Meeting (Boston, MA).
2001. "What can Ungulate Communities tell us about Miocene Environmental Change?" Department of Earth Sciences, University of Bristol (UK).
2001. "What can Ungulate Communities tell us about Miocene Environmental Change?" Department of Biology, The Open University (UK).
2001. "The Evolution of Locomotion in Camels: Phylogeny, Functional Morphology, and Palaeoecology." Department of Biology, University of Bristol (UK).
2000. "What can Ungulate Communities tell us about Climatic Change?" Department of Geophysical Sciences, Harvard University (Cambridge, MA).
2000. "Munchers of the Miocene: what the Diets of Ungulate Mammals can tell us about Past Environments." Department of Anatomy, Johns Hopkins University (Baltimore, MD).
2000. "High Atmospheric Carbon Dioxide Levels in the Early Miocene? Evidence from Mammalian Herbivore Communities." Department of Geology, University of Utah (Salt Lake City, UT).
- 1998: Workshop at the National Center for Ecological Synthesis and Analysis on "Climatic and Habitat Inferences from Features of Mammalian Communities."
- 1997: Workshop on "The Ruminant Artiodactyla Past, Present and Future" (Virginia, USA.)
1997. Session on "Vertebrate Evolution at Geological Boundaries." Vth. International Congress on Vertebrate Morphology, Bristol, UK
- 1997: "Coevolution of Predator/Prey Relationships in Mammals: Do Legs Support the "Arms Race?" Distinguished Lecturer Series, Indiana/Purdue University at Fort Wayne, Fort Wayne, Indiana.
- 1997: "Coevolution of Predator/Prey Relationships in Mammals: Do Legs Support the "Arms Race?" Department of Zoology, University of Helsinki (Helsinki, Finland);
- 1997: "Coevolution of Predator/Prey Relationships in Mammals: Do Legs Support the Arms Race?" Estonian Geological Institute (Tallinn, Estonia).
- 1996: Invited participant for session on "Origin and Evolution of Herbivory in Terrestrial Animals" VIth. North American Paleontological Convention, Washington, DC.
- 1994: "Design Constraints in Aquatic Tetrapods: Why Were There No Suspension-Feeding Marine Tetrapods?" Evolutionary Morphology Group, The University of Chicago (Chicago, IL).
- 1993: "The Use of Ungulate Mammals as Predictors of Paleoenvironments." Department of Geophysical Sciences, The University of Chicago (Chicago, IL).
- 1992: Session on: "The Meaning of Higher Taxa in Macroevolutionary Studies" Vth. North American Paleontological Convention, Chicago, IL.
- 1992: Session on "Evolution of Terrestrial Ecosystems" Vth. North American Paleontological Convention, Chicago, IL.

### **Refereed Publications**

- Janis, C. M. (2002) Tectonics, climatic change and atmospheric carbon dioxide in the evolution of mammalian ecosystems In *Evolution on Planet Earth: the Impact of the Physical Environment*, eds. L. J. Rothschild and A. Lister (in press).
- Janis, C. M., J. M. Theodor, and B. Boisvert (2002). Locomotor evolution in camels revisited: a quantitative analysis of pedal morphology and the acquisition of the pacing gait. *Journal of Vertebrate Paleontology* 22: 110-121.

- Janis, C.M., J. Damuth and J.M. Theodor (2002). The origins and evolution of the North American grassland biome: the story from the hoofed mammals. *Palaeogeography, Palaeoclimatology, Palaeoecology* 177: 183-198.
- Janis, C.M. and J.C. Keller (2001). Modes of ventilation in early tetrapods: costal ventilation as a key feature of amniotes. In *Acta Palaeontologica Polonica* 46(2), *Special Issue on Biomechanics and Palaeobiology*, ed. S.F. Viscaíño, R.A. Fariña and C.M. Janis. Pp. 137 – 170.
- Janis, C.M. (2001). The Tertiary Radiation of Mammals. In *Palaeobiology II*, ed. D. Briggs, Blackwell Science Publications. Pp 109-112.
- Viscaíño, S. F., R.A. Fariña and C.M. Janis (eds.) (2001). *Special Issue on Biomechanics and Palaeobiology. Acta Palaeontologica Polonica* 46(2).
- Pough, F.H., C.M. Janis, and J.B. Heiser (2001). *Vertebrate Life*, 6th ed. Prentice Hall, NJ.
- Janis, C.M., J. Damuth, and J.M. Theodor (2000). Miocene ungulates and terrestrial primary productivity: Where have all the browsers gone? *Proceedings of the National Academy of Sciences*. 97: 7899-7904.
- Janis, C.M. (2000). The radiation of the North American endemic ruminants. In *Antelopes, Deer, and Relatives: Fossil Record, Behavioral Ecology, Systematics, and Conservation*, ed. E.S. Vrba and G.B. Schaller, Yale University Press. Pp. 26-37.
- Janis, C.M. (2000). Patterns in the evolution of herbivory in large terrestrial mammals: the Paleogene of North America. In *Origin and Evolution of Herbivory in Terrestrial Vertebrates*, ed. H.-D. Sues and C. Labandiera. Pp. 168-221.
- Carrano, M.T., C.M. Janis, and J.J. Sepkoski, Jr. (1999). Hadrosaurs and ungulate parallels: lost lifestyles and deficient data. *Acta Palaeontologica Polonica* 44: 237-261.
- Janis, C.M. and C. Farmer (1999). Proposed habitats of early tetrapods: Gills, kidneys, and the water-land transition. *Zoological Journal of the Linnean Society*, 126: 117-126.
- Foote, M., J.P. Hunter, C.M. Janis, and J.J. Sepkoski, Jr. (1999). Evolutionary and preservational constraints on the origins of major biologic groups: limiting divergence times of eutherian mammals. *Science* 283: 1310-1314.
- Janis, C.M., K.M. Scott, and L.L. Jacobs (eds.) (1998). *Evolution of Tertiary Mammals of North America. Vol. 1: Terrestrial Carnivores and Ungulates*. Cambridge University Press, Cambridge, UK. 691 pp.
- Janis, C.M. and E. Manning (1998). Dromomerycidae. In C.M. Janis et al. (eds.), *Evolution of Tertiary Mammals of North America*, Cambridge University Press, Cambridge, UK. Pp. 477-490.
- Janis, C.M. and E. Manning (1998). Antilocapridae. In C.M. Janis et al. (eds.), *Evolution of Tertiary Mammals of North America*, Cambridge University Press, Cambridge, UK. Pp. 491-507.
- Janis, C.M., J.A. Baskin, A. Berta, J.J. Flynn, G.F. Gunnell, R.M. Hunt, Jr., L.D. Martin, and K.M. Munthe (1998). Carnivorous Mammals. In C.M. Janis et al. (eds.), *Evolution of Tertiary Mammals of North America*, Cambridge University Press, Cambridge, UK. Pp. 73-90.
- Janis, C.M., J.D. Archibald, R.L. Cifelli, S.G. Lucas, C.R. Schaff, R.M. Schoch, and T.E. Williamson (1998). Archaic Ungulates and Ungulatelike Mammals. In C.M. Janis et al. (eds.) *Evolution of Tertiary Mammals of North America*, Cambridge University Press, Cambridge, UK. Pp. 247-259.
- Janis, C.M., J.E. Effinger, J.A. Harrison, J.G. Honey, D.G. Kron, B. Lander, E. Manning, D.R. Prothero, M.S. Stevens, R.K. Stucky, S.D. Webb, and D.B. Wright (1998). Artiodactyla. In C.M. Janis et al. (eds.), *Evolution of Tertiary Mammals of North America*, Cambridge University Press, Cambridge, UK. Pp. 337-357.

- Janis, C.M., M.W. Colbert, M.C. Coombs, W.D. Lambert, B.J. MacFadden, B.J. Mader, D.R. Prothero, R.M. Schoch, J. Shoshani, and W.P. Wall (1998). Perissodactyla and Proboscidea. In C.M. Janis et al. (eds.), *Evolution of Tertiary Mammals of North America*, Cambridge University Press, Cambridge, UK. Pp. 511-524.
- Pough, F.H., C.M. Janis, and J.B. Heiser (1998). *Vertebrate Life*, 5th ed. Prentice Hall, NJ.
- Janis, C.M. (1997). Ungulate teeth, diets, and climatic changes at the Eocene/Oligocene boundary. *Zoology - Analysis of Complex Systems* 100: 203-220.
- Collin, R. and Janis, C.M. (1997). Morphological constraints on tetrapod feeding mechanisms. Why were there no suspension-feeding marine reptiles? In: J.M. Callaway and E.L. Nicholls, (eds), *Ancient Marine Reptiles*. Academic Press, New York. Pp. 451-466.
- Janis, C.M. (1995). Correlation between craniodental morphology and feeding behavior in ungulates: reciprocal illumination between living and fossil taxa. In: J.J. Thomason (ed.), *Functional Morphology in Vertebrate Paleontology*. Cambridge University Press, Cambridge, UK. Pp. 76-98.
- Janis, C.M., I. Gordon and A. Illius (1994). Modelling equid/ruminant competition in the fossil record. *Historical Biology*, 8:15-29.
- Janis, C.M. and P.B. Wilhelm (1993). Were there mammalian pursuit predators in the Tertiary? Dances with wolf avatars. *Journal of Mammalian Evolution*, 1: 103-126.
- Janis, C.M. (1993). Tertiary mammal evolution in the context of changing climates, vegetation, and tectonic events. *Annual Review of Ecology and Systematics*, 24: 467-500.
- Garland, T. Jr., and C.M. Janis (1993). Does metatarsal/femur ratio predict maximal running speed in cursorial mammals? *Journal of Zoology, London*, 229: 133-151.
- Van Valkenburgh, B. and C.M. Janis (1993). Historical diversity patterns in North American large herbivores and carnivores. In: R.E. Ricklefs and D. Schuller (eds.), *Species Diversity in Ecological Communities: Historical and Geographical Perspectives*. University of Chicago Press, Chicago. Pp. 330-340.
- Garland, T. Jr., A.W. Dickerman, C.M. Janis, and J.A. Jones (1993). Phylogenetic analysis of covariance by computer simulation. *Systematic Biology*, 42: 265-292.
- Scott, K.M. and C.M. Janis (1993). Relationships of the Ruminantia (Artiodactyla, Mammalia), and an analysis of the characters used in ruminant taxonomy. In: F.S. Szalay, M.J. Novacek and M.C. McKenna (eds.), *Mammal Phylogeny (Volume 2, Placentals)*. Springer Verlag, New York. Pp. 282-302.
- Janis, C.M. and M. Carrano (1992). Scaling of reproductive turnover in archosaurs and mammals: why are large terrestrial mammals so rare? *Annals Zoologici Fennici*, 28: 201-216.
- Janis, C.M. (1990). Why kangaroos (Macropodidae, Marsupialia) are not as hypsodont as ungulate mammals (Eutheria). *Australian Mammalogy*, 13: 49-53.
- Janis, C.M. (1990). Correlation of cranial and dental variables with dietary preferences: a comparison of macropodoid and ungulate mammals. *Memoirs of the Queensland Museum*, 28: 349-366.
- Janis, C.M. (1990). Correlation of reproductive and digestive strategies in the evolution of cranial appendages. In: G.A. Bubenik and A.B. Bubenik (eds.), *Horns, Pronghorns and Antlers. Evolution, Morphology and Social Significance*. Springer Verlag, New York. Pp. 114-133.
- Janis, C.M. and J. Damuth (1990). Mammals. In: K.J. McNamara (ed.) *Evolutionary Trends*. Belhaven Press, London. Pp. 301-345.
- Janis, C.M. (1990). The correlation between diet and dental wear in herbivorous mammals, and its relationship to the determination of diets of extinct species. Section in: *Evolutionary Paleobiology of Behavior and Coevolution*, A.J. Boucot (editor and primary author). Elsevier Press, New York. Pp. 241-259.

- Janis, C.M. (1990) Correlation of cranial and dental variables with body size in ungulates and macropodoids. In: J. Damuth and B.J. MacFadden (eds.), *Body Size in Mammalian Paleobiology: Estimation and Biological Implications*. Cambridge University Press, Cambridge, UK. Pp. 255-300.
- Janis, C.M. (1989) A climatic explanation for patterns of evolutionary diversity in ungulate mammals. *Palaeontology*, 32: 463-481.
- Janis, C.M. (1988). New ideas in ungulate phylogeny and evolution. *Trends in Ecology and Evolution*, 3(11): 291-297.
- Janis, C.M. (1988). An estimation of tooth volume and hypsodonty indices in ungulate mammals, and the correlation of these factors with dietary preferences. In: D.E. Russell, J.-P. Santoro and D. Sigogneau-Russell (eds.), *Teeth Revisited: Proceedings of the VIIIth International Symposium on Dental Morphology, Paris 1986. Mémoires de Musée d'Histoire naturelle, Paris (serie C), 53: 367-387*.
- Janis, C.M. and D. Ehrhardt (1988). Correlation of relative muzzle width and relative incisor width with dietary preference in ungulates. *Zoological Journal of the Linnean Society*, 92: 267-284.
- Janis, C.M. and M. Fortelius (1988). On the means whereby mammals achieve increased functional durability of their dentitions, with special reference to limiting factors. *Biological Reviews*, 63: 197-230.
- Janis, C.M. and K.M. Scott (1988). The phylogeny of the Ruminantia (Artiodactyla, Mammalia). In: M.J. Benton (ed.), *The Phylogeny and Classification of Tetrapods. Systematics Association Special Publication, No. 35B*. Clarendon Press, Oxford, UK. Pp. 273-282.
- Janis, C.M. (1987). Grades and clades in hornless ruminant evolution: the reality of the Gelocidae and the systematic position of *Lophiomeryx* and *Bachitherium*. *Journal of Vertebrate Paleontology*, 7: 200-216.
- Janis, C.M. and K.M. Scott (1987). The interrelationships of higher ruminant families, with special emphasis on the members of the Cervoidea. *American Museum Novitates*, 2893:1-85.
- Scott, K.M. and C.M. Janis (1987). The phylogenetic position of the Cervidae. In: C.M. Wemmer (ed.), *Biology and Management of the Cervidae*. Research Symposia of the National Zoological Park, Smithsonian Institution Press, Washington, DC. Pp. 3-20.
- Janis, C.M. and A. Lister (1985). The use of the morphology of the lower fourth premolar as a taxonomic character in the Ruminantia (Mammalia; Artiodactyla), and the systematic position of *Triceromeryx*. *Journal of Paleontology*, 59: 405-410.
- Janis, C.M. (1984). Prediction of primate diets from molar wear patterns. In: D.J. Chivers, B.A. Wood and A. Bilsborough (eds.), *Food Acquisition and Processing in Primates*. Plenum Press, New York and London. Pp. 331-340.
- Janis, C.M. (1984). The significance of fossil ungulate communities as indicators of vegetation structure and climate. In: P.J. Brenchley (ed.), *Fossils and Climate*. John Wiley and Sons, New York. pp. 85-104.
- Janis, C.M. (1984). "Tapirs" and "Tragulids." In: N. Eldredge and S. Stanley (eds.), *Living Fossils*. Springer Verlag, New York. Pp. 80-86, 87-94.
- Janis, C.M. (1983). Muscles of the masticatory apparatus in two genera of hyraces (*Procapra* and *Heterohyrax*). *Journal of Morphology*, 176: 61-87
- Boucot, A.J. and C.M. Janis (1983). The environment of early Paleozoic vertebrates. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 41: 251-287.
- Janis, C.M. (1982). Evolution of horns in ungulates: ecology and paleoecology. *Biological Reviews*, 57: 261-318. (Awarded the Simpson Prize, 1985).

Janis, C.M. (1979). Mastication in the hyrax and its relevance to ungulate evolution. *Paleobiology*, 5: 50-59.

Janis, C.M. (1976). The evolutionary strategy of the Equidae and the origins of rumen and cecal digestion. *Evolution*, 30: 757-774.