

## CURRICULUM VITAE

### DAVID KELLER JACOBS

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University of California, Los Angeles  
Ecology & Evolutionary Biology  
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#### EDUCATION

- 1990 Ph.D. Virginia Polytechnic Institute and State University, Geological Sciences.  
Dissertation: *Hydrodynamic and Structural Constraints on Ammonite Shell Shape*
- 1985 M.S. The University of Chicago, Geophysical Sciences  
Thesis: *Sutural Pattern and Shell Stress in Baculites with Implications for Other Cephalopod Shell Morphologies*
- 1980 B.A. Cornell University, Biology

#### RESEARCH POSITIONS

- 2006- Professor, Department of Ecology & Evolutionary Biology, University of California, Los Angeles
- 2006- Professor, Department of Molecular, Cellular & Developmental Biology, University of California, Los Angeles.
- 2002- Member Molecular Biology Institute, University of California, Los Angeles.
- 2001- Research Associate, Los Angeles County Museum of Natural History.

#### *Prior Positions*

- 2001-2006 Associate Professor, Department of Ecology & Evolutionary Biology, University of California, Los Angeles.
- 2002-2006 Associate Professor, Department of Molecular, Cellular & Developmental Biology, University of California, Los Angeles.
- 1994-2001 Assistant Professor, Department of Biology, University of California, Los Angeles.
- 1993- 1994 Research Associate American Museum of Natural History, & Principal Investigator in a NASA funded study: *Developmental Genes and the Cambrian*

*Radiation.* Using comparative developmental genetics to investigate the rapid diversification of animal form that took place in the Cambrian.

- 1991-1993 Post-Doctoral Fellow, American Museum of Natural History, with N. H. Landman and J. A. Chamberlain in an NSF funded study: *Hydromechanical Constraints on the Ontogeny and Evolution of Scaphitid Ammonites.*
- 1990-1991 Post-Doctoral Fellow, University of California, Berkeley with J. W. Valentine in an NSF funded study: *Body Plan Variation and Pattern Formation Among Metazoans During Their Early Radiation.*
- 1989 Scientific Support Diver, with A. I. Miller for a NOAA sponsored study: *Spatial Resolution and Taphonomic Gradients, Salt River, St. Croix.* Sampled a transect just before and after Hurricane Hugo.
- 1988 Field Researcher with N. H. Landman on a National Geographic funded expedition to Wyoming and South Dakota. Collected Late Cretaceous ammonites for an ontogenetic and evolutionary study of the Scaphite clade.
- 1987 Assistant Curator at Virginia Polytechnic Institute and State University Geology Museum. Designed and installed *The Fossils of Virginia*, a comprehensive exhibit of the Cambrian to Pleistocene fossils.
- 1982-1984 Research Assistant with A. M. Ziegler, *Paleogeographic Atlas Project*, The University of Chicago. Researched the Mesozoic and Cenozoic stratigraphy and lithofacies of Africa and Madagascar.
- 1979 Research Assistant with D. E. Karig and R. W. Kay, *Marianas Project*, Cornell University.

## PUBLICATIONS

- 1 Jacobs, D. K. 1990. Selector genes and the Cambrian radiation of the Bilateria. *Proc. Nat. Acad. Sci. USA*, v. 87, pp. 4406-4410. (Refereed Research)
- 2 Jacobs, D. K. 1990. Sutural pattern and shell stress in *Baculites* with implications for other cephalopod shell morphologies. *Paleobiology*, v. 16, pp. 336-348. (Refereed Research)
- 3 Miller, A. I., G. Llewellyn, K. M. Parsons, H. Cummins, B. J. Greenstein, M. R. Boardman, & D. K. Jacobs. 1992. The effect of Hurricane Hugo on molluscan skeletal distributions, Salt River Bay, St. Croix, U. S. Virgin Islands. *Geology*, v. 20, pp. 23-26. (Refereed Research)
- 4 Jones, D. S., & D. K. Jacobs. 1992. Photosymbiosis in *Clinocardium nuttalli*: Implications for tests of photosymbiosis in fossil molluscs. *Palaios*, v. 7, pp. 86-95. (Refereed Research)

- 5 Jacobs, D. K. 1992. The support of hydrostatic load in cephalopod shells: A history of adaptive and ontogenetic explanations in morphology and evolution. *Evolutionary Biology*, v. 26, pp. 287-349. (Refereed Research)
- 6 Jacobs, D. K. 1992. Shape, drag and power, in ammonoid swimming. *Paleobiology*, v. 18, pp. 203-220. (Refereed Research)
- 7 Jacobs, D. K., & D. L. Sahagian. 1993. Climate-induced fluctuations in sea level during non-glacial times. *Nature*, v. 361, pp. 710-712. (Refereed Research)
- 8 Jacobs, D.K., & N. H. Landman. 1993. Is *Nautilus* a good model for the function and behavior of ammonoids? *Lethaia*, v. 26, pp. 101-110. (Refereed Research)
- 9 Sahagian, D. L., F. W. Schwartz & D. K. Jacobs. 1994 Direct anthropogenic contributions to 20th century sea level rise. *Nature*, v. 367, pp. 54-57. (Refereed Research)
- 10 Sahagian D. L., D. K. Jacobs & F. W. Schwartz. 1994. Sea-level rise - reply. *Nature*, v. 369, p.616. (Reply to Comment)
- 11 Sahagian, D. L., D. K. Jacobs & F. W. Schwartz. 1994. Man-made lakes and sea-level rise - reply. *Nature*, V. 370, p. 258. (Reply to Comment)
- 12 Jacobs D. K. & Landman N. H. 1994. *Nautilus* - model or muddle. *Lethaia*, v. 27, 95-96. (Reply to Comment)
- 13 Jacobs, D. K. 1994. Developmental genes and the origin and evolution of Metazoa. Pp. 537-549. In: *Molecular Ecology and Evolution: Approaches and Applications* (Schierwater, B., B. Streit, G. P. Wagner & R. DeSalle, eds.). (Invited Chapter)
- 14 Jacobs, D. K., N. H. Landman & J. A. Chamberlain, Jr. 1994. Ammonite shell shape varies with facies and hydrodynamics. *Geology*, v. 22, pp. 905-908. (Refereed Research)
- 15 Wray, C. G. D. K. Jacobs, R. Kostriken, A. Vogler, R. Baker, and R. DeSalle. 1995. Homologues of the *engrailed*- gene from five Molluscan Classes. *FEBS Letters*, v. 365, pp.71-74. (Refereed Research)
- 16 Jacobs, D. K., & D. L. Sahagian. 1995. Milankovitch fluctuations in sea level and recent trends in sea level change: Ice may not always be the answer. pp. 329-366 in *Sequence Stratigraphy and Sea-Level Change* (Haq, B. U. ed., Kluwar, Amsterdam). (Invited Research Chapter)
- 17 Jacobs, D. K. and J. A. Chamberlain, Jr. 1996. Hydrostatic and Hydrodynamic Issues in Ammonoid Functional Morphology. pp. 169-224 in: *Ammonoid Paleobiology* (Landman, N. H., K. Tanabe, & R. Davis eds., Plenum, New York). (Invited Research Chapter)
- 18 Jacobs, David K. 1996 Chambered, Cephalopod Shells, Buoyancy, Structure and Decoupling: History and Red Herrings. *Palaios*, v. 11, pp. 610-614. (Comment)

- 19 Agosti, D., D. K. Jacobs, and R. DeSalle. 1996. On combining protein and nucleic acid sequences in phylogenetic analysis: The homeobox protein case. *Cladistics* v, 12, pp. 65-82. (Refereed Research)
- 20 Jacobs, D. K. and D. R. Lindberg. 1998. Oxygen and evolutionary patterns in the sea: Onshore/offshore trends and recent recruitment of deep-sea faunas. *Proceedings of The National Academy of Sciences, USA*, v. 95, pp. 9372-9377. (Refereed Research)
- 21 Jacobs, D. K., S. E. Lee, M. N. Dawson, J. L. Staton and K. A. Raskoff. 1998. The History of Development Through the Evolution of Molecules: Gene Trees, Hearts, Eyes, and Dorsoventral Inversion, pp. 323-357, In *Molecular Approached to Ecology and Evolution* (DeSalle & B. Schierwater eds.), Birkhauser. (Refereed Research)
- 22 Dawson, M. N., K. R. Raskoff and D. K. Jacobs. 1998. Field Preservation of Marine Invertebrate Tissue for DNA Analysis. *Marine Biology and Biotechnology*, v. 7, pp. 145-152. (Refereed Research)
- 23 Lee, S. E. & D. K. Jacobs. 1999. Expression of *Distal-less* in molluscan eggs, embryos, and larvae. *Evolution and Development*, v. 1, pp. 172-179. (Refereed Research)
- 24 Seki, K., K. Tanabe, N. H. Landman, & D. K. Jacobs. 2000. Hydrodynamic analysis of some Late Cretaceous desmoceratine ammonites. *Revue de Paleobiologie, Geneve* Vol. Spec. 8, p. 172-179 (Refereed Research)
- 25 Jacobs, D. K., C. G. Wray, C. J. Wedeen, R. Kostriken, R. DeSalle, J. Staton, R. D. Gates, and D. L. Lindberg. 2000. Molluscan *engrailed* expression, serial organization and shell evolution *Evolution & Development*, v.2, pp. 340-347 (Refereed Research)
- 26 Schubert, M., L. Z. Holland, N. D. Holland & D. K. Jacobs. 2000. A Phylogenetic Tree of the *Wnt* Genes Based on All Available Full-Length Sequences, Including Five from the Cephalochordate *Amphioxus*. *Molecular Biology and Evolution*, v. 17, pp.1896-1903 (Refereed Research)
- 27 Alroy, J., C. R. Marshall, R. K. Bambach, K. Bezusko, D. Carlson, M. Foote, F. T. Fursich, T. A. Hansen, S. M. Holland, L. C. Ivany, D. Jablonski, D. K. Jacobs, M. A. Kosnick, S. Lidgard, S. Low, A. I. Miller, P. M. Novack Gottshall, T. Olszewski, M. E. Patzkowski, D. M. Raup, K. Roy, J. J. Sepkoski, Jr. M. G. Sommers, P. J. Wagner, III & A. Webber. 2001. The effects of sample standardization on estimates of Phanerozoic marine diversification. *Proc. Nat. Acad.Sci. USA.*, v. 98, pp. 6261-6266. (Refereed Research)
- 28 Jacobs, D. K. 2001. Buoyancy, Hydrodynamics and Structure in Chambered Cephalopods. Pp. 397-401, In *Paleobiology II* (D, E, G, Briggs & P. R. Crowthers eds., Blackwell Science, Oxford (Invited Chapter)
- 29 Dawson, M. N. & D. K. Jacobs. 2001. Molecular evidence for cryptic species of *Aurelia aurita* (Cnidaria , Scyphozoa) *Biol. Bull.*, v. 200, pp.92-96.

- 30 Dawson, M. N. J. Staton & D. K. Jacobs. 2001. Phylogeography of the Tidewater Goby, *Eucyclogobius newberryi* (Teleostei, Gobiidae), in Coastal California. *Evolution*, v. 55 pp. 1167 —1179. (Refereed Research)
- 31 Lee, S. E., R. D. Gates & D. K. Jacobs. 2001. The isolation of a *Distal-less* gene fragment from two molluscs. *Development Genes & Evolution*, v.211 pp. 506-508. (Refereed Research Note)
- 32 Gates, R.D., T. Hadrys, Arenas-Mena, C. & D. K. Jacobs. 2002. Determining spatial and temporal patterns of developmental gene expression in vertebrates and invertebrates using in situ hybridization techniques. In *Methods and Tools in Biosciences and Medicine: Techniques in Molecular Systematics and Evolution*. (ed. R. DeSalle) Birkhauser. pp. 365-399. (Invited Book Chapter)
- 33 Ramachandra, N. B., R. D. Gates, P. D. Ladurner, D. K. Jacobs & V. Hartenstein. 2002. Embryonic development in the primitive bilaterian *Neochildia fusca*: Normal morphogenesis and isolation of POU genes Brn-1 and Brn-3. *Developmental Genes & Evolution*, v. 212 pp. 55-69. (Refereed Research)
- 34 Dawson, M. N., K. D. Louie, M. Barlow, D. K. Jacobs & C. C. Swift. 2002. Comparative phylogeography of sympatric sister species *Clevelandia ios* & *Eucyclogobius newberryi* (Teleostei, Gobiidae), across the California Transition Zone. *Molecular Ecology*. v. 11pp. 1065-1075.
- 35 Holland, N. D., V. V., Tyamagondlu, L. Z. Holland, D. K. Jacobs, & R. Bodmer 2003. *AmphiNk2-tin*, an Amphioxus Homeobox Gene Expressed in Myocardial Progenitors: Insights into Evolution of the Vertebrate Heart. *Biol Bull.*,v.255 pp.128-137.
- 36 Lee, S. E., R. D. Gates & D. K. Jacobs. 2003. Gene Fishing the use of a simple invertebrate protocol to isolate multiple homeodomain classes from diverse invertebrate taxa. *J. Molecular Evolution* v. 56 pp. 509-516
- 37 Jacobs, D. K. & R. D. Gates. 2003. Developmental Genes and the Reconstruction of Metazoan Evolution – Implications of Evolutionary Loss, Limits on Inference of Ancestry and Type 2 Errors. *Integrative & Comparative Biology* v. 43 pp. 619-646.
- 38 Jacobs, D.K., T. A. Haney & K. D. Louie. 2004. Genes, Diversity and Geologic Process of the Pacific Coast. *Annual Review of Earth & Planetary Science* v. 32 pp. 601-652.
- 39 Bebenek, I. G., R. D Gates, J. Morris, V. Hartenstein, & D. K Jacobs. 2004. *sine oculis* in the Basal Metazoa. *Development, Genes & Evolution* v. 214 pp. 242-251.
- 40 Ahnelt, H., J. Goschl, M. N Dawson, & D. K. Jacobs. 2004. Geographical variation in cephalic lateral line canals of *Eucyclogobiues newberyi* (Teleostei, Gobiidae) and its comparison with molecular phylogeography. *Folia Zool.* v. 53 pp.385-398.

- 41 Hughes, N.C & Jacobs, D.K. 2005. The end of everything: metazoan terminal addition. v. 7 pp. 497.
- 42 Jacobs, D.K., Hughes, N.C., Fitz-Gibbon, S. T., & Winchell, C. J. 2005. Terminal addition, the Cambrian radiation and the Phanerozoic evolution of bilaterian form. *Evolution and Development*. v. 7 pp. 498-514.
- 43 Morris, J., Ladurner, P., Rieger, R., De Miguel-Bonet, M. D., Jacobs, D. & Hartenstein, V. 2007. The *Macrostomum lignano* EST database as a molecular resource for studying platyhelminth development and phylogeny. *Development Genes & Evolution* v. 216 pp. 695-707.
- 44 Jacobs, D.K., Nakanishi, N., Yuan, D., Camara, A. Nichols, S.A. & Hartenstein, V. 2007. Evolution of sensory structures in Basal Metazoa. *Integrative and Comparative Biology* v. 47 pp. 712-723
- 45 Brown, D.M., Brenneman, R.A., Koepfli, K., Pollinger, J.P., Mila, B., Georgiadis, N. J. Louis, E. E., Grether, G. F., Jacobs D. K. & Wayne R. K. 2007. Extensive population genetic structure in the giraffe. *BMC Biology* v. 5:57 doi:10.1186/1741-7007-5-57
- 46 Nakanishi, N., Yuan, D., Jacobs, D. K., Hartenstein V. 2008. Early development, pattern and reorganization of the planula nervous system in Aurelia (Cnidaria, Scyphozoa). *Development Genes & Evolution* v. 218 pp. 511-524.
- 47 Yuan, D., Nakanishi, N., Jacobs, D. K., Hartenstein V. 2008. Embryonic development and metamorphosis of the scyphozoan Aurelia. *Development Genes & Evolution* v. 218 pp. 525-539.
- 48 Davis, G., Dietrich, M. Jacobs, D. 2009. "Homeotic Mutants and the Assimilation of Developmental Genetics into the Evolutionary Synthesis," pp. 133-154 in *Descended from Darwin: Insights into American Evolutionary Studies, 1925-1950*. Joe Cain and Michael Ruse, Eds., American Philosophical Society volume 99, part 1, 2009, pp. 133-154.
- 49 Nakanishi, N., Hartenstein, V., Jacobs, D.K. 2009. Development of the nervous system in medusa sensory structures: rhopalia in Aurelia sp.1 (Cnidaria, Scyphozoa). *Development Genes & Evolution* v. 219.
- 50 Marshall, C. R., Jacobs, D. K. 2009. Flourishing after the End-Permian mass extinction. *Science* v. 325, 1079-1080.
- 51 Schinske, J.N., Bernardi G., Jacobs D. K., Routman, E.J. 2009. Phylogeography of the diamond turbot (*Hypsopsetta guttulata*) and the role of adult movement in genetic differentiation across the Baja California Peninsula. *Marine Biology*.
- 52 Earl, D. A., K. D. Louie, C. Bardeleben, C.C. Swift, D.K. Jacobs. Rangewide microsatellite phylogeography of the endangered Tidewater Goby, *Eucyclogobius*

*newberryi* (Teleostei: Gobiidae), a genetically subdivided coastal fish with limited marine dispersal.

- 53 Swift C. C., Findley L. T., Ellingson, R. A. Flessa, K.W., Jacobs D. K. *Gillichthys detrusus*, the Colorado River Mudsucker, a Valid Species (Pisces: Gobionellidae) Endemic to the Mouth of the Colorado River, Upper Gulf of California, Mexico. in press *Copeia*

### **In Press**

Jacobs, D.K., Gold, D.A. Nakanishi, N., Yuan, D., Camara, A. Nichols, S.A. & Hartenstein, Basal evolution of metazoan sensory structures. Book Chapter

### **In Review**

Thomassen H.A., Freedman, A., Brown D.M., Buermann W. Jacobs, D.K. Differences in season of precipitation leads to reproductive isolation in East African giraffes. *BMC Biology* in review.

### **Abstracts**

- 1 Rowley, D. B., A. M. Ziegler, D. Sahagian, S-Y. Nie, A. L. Lottes, D. K. Jacobs, & M. Hulver. 1985. Geological and Geometrical Constraints on Reconstructions of Gondwana: Implications for Derivation of Gondwanan Fragments in Asia: *Geological Society of America Abstracts with Programs*, v. 17, p. 703.
- 2 Jacobs, D. K. 1985. Sutural Pattern and Shell Stress in Baculites with Implications for Other Cephalopod Shell Morphologies. *Geological Society of America Abstracts with Programs*, v. 17, p. 618.
- 3 Jacobs, D. K. 1986. Homeotic Complexes and Segment Specification in Arthropod Evolution. *Society for Study of Evolution, Annual Meeting, Program*, p. 20.
- 4 Jacobs, D. K. 1987. Homeotic Mutants & The Higher Metazoan Bauplan: Inferences in Phylogeny, Evolution & Paleontology. *Geological Society of America Abstracts with Programs*, v. 19, p. 714.

- 5 Jacobs, D. K. 1988. Shape and Drag in Ammonite Shells. *Geological Society of America Abstracts with Programs*, v. 20, p. 49.
- 6 Jacobs, D. K. and D. S. Jones. 1989. Photosymbiosis in *Clinocardium nuttalli*: A Model for Isotopic "Vital Effects" With Implications for the Fossil Record of Photosymbiosis. *Geological Society of America Abstracts with Programs*, v. 21, 70.
- 7 Miller, A. I., G. Llewellyn, K. M. Parsons, H. Cummins, B. J. Greenstein, M. R. Boardman, and D. K. Jacobs. 1990. The Effect of Hurricane Hugo on Molluscan Skeletal Distributions, Salt River Bay, St. Croix, U. S. Virgin Islands. *Geological Society of America Abstracts with Programs*, v. 22, p. 330.
- 8 Jacobs, D. K. and J. W. Valentine. 1990. Vendian-Cambrian: Body-Plan Evolution. *Geological Society of America Abstracts with Programs*, v. 22, p. 128.
- 9 Jacobs, D. K. and A. Hubbard. 1991. What's Different about Arthropods? Intrinsic and Extrinsic Constraint on Body-Plan Evolution. Geological Society of America, *North Central Section Abstracts with Programs*, v. 23, p. 19.
- 10 Jacobs, D. K. 1991. Shape, Drag and Power in Ammonoid Swimming. *American Malacological Union Program and Abstracts 57th Annual Meeting*, p. 36.
- 11 Jacobs, D. K. and N. H. Landman. 1991. Is Nautilus a Good Model for the Function and Behavior of Ammonoids. *Geological Society of America Abstracts with Programs*, v. 23, 163.
- 12 Jacobs, D. K. and N. H. Landman. 1992. The Importance of a Phylogenetically Relevant Model for the Function and Behavior of Fossil Organisms: Ammonoids, Coleoids and Nautilus. 29th International Geologic Congress: *Cephalopod Biology and Paleobiology Programme with Abstracts*, p. 12.
- 13 Jacobs, D. K. 1992. Two Applications of Developmental Genetics to Paleontology: Segmentation Genes in Molluscs and Preoral Appendages in Taxa of Uncertain Affinity. *Fifth North American Paleontological Convention Abstracts and Program*, p. 145.
- 14 Jacobs, D. K., and D. L. Sahagian. 1992. Climate-Induced Variation in Lake Levels: A Mechanism for Short-Term Sea Level Change During Non-Glacial Times. *Geological Society of America Abstracts with Programs*, v. 24, p. 269.
- 15 Sahagian, D. L., F. W. Schwartz and D. K. Jacobs. 1993. Aquifer Pumping: An Anthropogenic Mechanism for Eustatic Sea Level Change. *American Geophysical Union-EOS*, v.74/supplement, p. 153.
- 16 Jacobs, D. K., and D. L. Sahagian. 1993. Lakes, Aquifers, and Sea Level. Stratigraphic Record of Global Change: Climate, Eustasy and Life, *SEPM Abstract Volume*, p. 32.



- 17 Sahagian, D. L., D. K. Jacobs, and F. W. Schwartz. 1993. Groundwater mining and other anthropogenic causes of 20th century sea level rise. *Geological Society of America Abstracts with Programs*, v. 25, p. 440.
- 18 DeSalle, R & D. K. Jacobs. 1993. Developmental plasticity of arthropod cephalar features: a developmental genetic explanation for disparate anterior structures in Cambrian arthropods. *Geological Society of America Abstracts with Programs*, v. 25, p. 103.
- 19 Jacobs, D. K., N. H. Landman, and J. A. Chamberlain. 1993. Intraspecific variation in shell shape, hydrodynamics, and facies relationships in *Scaphites whitfieldi*, an Upper Cretaceous ammonoid from the Carlisle Shale. *Geological Society of America Abstracts with Programs*, v. 25, p. 51.
- 20 Jacobs, D. K., and R. DeSalle. 1994. The evolution of developmental genes and the evolution of Metazoa. *Fifth Exobiology Symposium and Mars Workshop Abstracts*, p. 58.
- 21 Jacobs, D. K., J. B. Bennington & D. S. Jones. 1994. Allometric analysis and isotopic variation in the shell indicates that *Mercenaria tridacnoides* from the Yorktown were epifaunal and suggests photosymbiosis. *Geological Society of America Abstracts with Programs*, v.26. p. 375.
- 22 Jacobs, D. K., R. DeSalle, and C. Wedeen. 1994. Engrailed: Homology of metameric units, molluscan phylogeny and relationship to other homeodomains. *Developmental Biology*, v. 163, p. 536.
- 23 Wray, C. G. & D. K. Jacobs. 1994. Relationship of molluscan classes based on nuclear small-subunit r DNA and engrailed gene sequences. *Geological Society of America Abstracts with Programs*, v. 26, p. 53.
- 24 Wray, C. G. and D. K. Jacobs. 1995. engrailed sequence and expression in the Mollusca: A developmental and phylogenetic synthesis. *Journal of Cellular Biochemistry* supplement (19B), p. 345.
- 25 Jacobs, D. K. and C. G. Wray. 1995. Developmental Gene Trees and Phylogenies that Include Developmental Gene Sequences: Phylogeny, Character Tracing, and Functional Evolution. *Developmental Biology*, v.170, p.743.
- 26 Jacobs D. K. & D. R. Lindberg. 1995. Episodic Anoxic Events in the Mesozoic, Onshore-Offshore Patterns, and Deep-Sea Refugia. *Geological Society of America Abstracts with Programs*, v. 27.
- 27 Jacobs, D. K. & C. G. Wray. 1995. Developmental Gene Trees and Phylogenies that Include Developmental Gene Sequences: Phylogeny, Character Tracing and Functional Evolution. *Developmental Biology*, v. 170, p. 743.

- 28 Lindberg, D. R., R. Guralnick, C. Hedegaard, and D. Jacobs. 1996. Patellogastropod Molluscs Support Multiple Invasions of Deep Sea Habitats. *Sixth North American Paleontological Congress, Abstracts of Papers*, p. 240.
- 29 Jacobs, D. K. 1996. Chambered Cephalopod Shells, Buoyancy, Structure, and Decoupling: History and Red Herring. *Sixth North American Paleontological Congress, Abstracts of Papers*, p. 192.
- 30 Jacobs, D. K. 1996. Functional Interpretation of the Chambered Shells of Cephalopods: A Historical Perspective. *American Malacological Union, 62nd Program with Abstracts*, p 40.
- 31 Jacobs, D. K., C. G. Wray and J. Staton. 1997. How The Molluscs Lost Their Stripes: Engrailed Gene Expression And Evolutionary Versus Developmental Interpretations of Developmental Genetic Data. *LXIIInd Cold Spring Harbor Symposium: Pattern Formation During Development*.
- 32 Jacobs, D. K., C. G. Wray, J. L. Staton, and S. E. Lee. 1997. Engrailed Gene Expression in Chitons, Clams, and Snails: Plus Homeodomain Gene Trees. *13th International Congress of Developmental Biology, Abstracts Supplement* p. 37.
- 33 Jacobs, D. K. and D. R. Lindberg. 1997. Anoxia and Evolutionary Patterns in the Sea: Onshore/Offshore Trends and the Recent Recruitment of the Deep-Sea and Hydrothermal Vent Faunas. *Sixth Symposium on the Chemical Evolution and the Origin and Evolution of Life, NASA Ames, Abstracts* p. 43.
- 34 Jacobs, D. K. and S. E. Lee. 1998. Distal-less expression in molluscan gills: are gills and limbs homologous? Presented at: *Developmental Evolution. West Coast Regional Developmental Biology Conference, Bodega Marime. Lab*.
- 35 Hubbard, A. E. and D. K. Jacobs. 1998. A Hierarchical Analysis of the Influence of Diversity on Origination in the Fossil Record. *Geological Society of America, Cordilleran Section, Abstracts With Programs*, v. 30, p. 21.
- 36 Jacobs, D. K., K. Campbell, and A. Hubbard. 1998. Onshore Offshore Patterns and Anoxia: Late Cretaceous Transition from Low Oxygen Faunas. *Geological Society of America, Cordilleran Section, Abstracts With Programs*, v. 30, p. 22.
- 37 Lee, S. E. and D. K. Jacobs. 1998. Developmental Genes and the Evolution of Body Plans in Mollusca and Arthropods, *engrailed* Gene Expression Suggests homology of Serial Organization and Distal-less Gene Expression Suggests Homology of Gills and Limbs. *Geological Society of America, Cordilleran Section, Abstracts With Programs*, v. 30, p. 50.
- 38 Lindberg, D. R., W. F. Ponder and D. K. Jacobs. 1998. Origins and Persistence of Dysoxiphilic Gastropods. *Geological Society of America, Cordilleran Section, Abstracts With Programs*, v. 30, p. 51.

- 39 Jacobs, D. K., M. N. Dawson, J. L. Staton and D. Holland. 1998. Coastal Processes and the Phylogeography of the Endangered Californian Tidewater Goby, *Eucyclogobius newberryi* *Southern California Academy of Science, 1998 Annual Meeting Program and Abstracts* p. 66.
- 40 Jacobs, D. K. 1998. Gene Trees, Gene Duplication and the Evolution of Complex Multicellularity. *Life from Local Origins to Global Persistence, Abstracts (NASA Exobiology)*, p. 41-44.
- 41 Jacobs, D. K., M. N. Dawson and S. E. Lee. 1998. HOX, NK2, and Paired-Like Gene Trees in Metazoan Evolution. *SDB Meeting Abstracts-Developmental Biology* v. 198, p. 198.
- 42 Lee, S. E. & D. K. Jacobs. 1998. Expression of *Distal-less* in Molluscan Gills: An Evolutionary Relationship Between Limbs and Gills. *SDB Meeting Abstracts-Developmental Biology* v. 198, p. 202.
- 43 Louie, K. D., A. Y. Han & D. K. Jacobs. 1999. An investigation of the subspecies of the staghorn sculpin, *Leptocottus armatus* (Scorpaeniformes; cottidae). *Southern California Academy of Science, 1999 Annual Meeting Program and Abstracts* p. 58.
- 44 M. N Dawson & D. K. Jacobs. 1999. Phylogeography and coastal zoogeography in the eastern North Pacific. *Southern California Academy of Science, 1999 Annual Meeting Program and Abstracts* p. 37.
- 45 Lee, S. E. & D. K. Jacobs. 1999. PCR isolation of homeobox genes from copy and genomic DNA of non-model taxa reveals variation in introns between taxa. *West Coast Regional Developmental Biology Conference-Lake Arrowhead May 6-9*.
- 46 Gates, R. D., C. Kashefi, V. A. Palchevskiy, C. DellaCorte, S. E. Lee, & D. K. Jacobs. 1999. The evolution of gravity sensing organs in the Metazoa: An exploration of developmental genes responsible for georeception in non-model taxa. *SDB Meeting Abstracts-Developmental Biology*, v.210, p. 193.
- 47 Jacobs, D. K., S. E. Lee, R. D. Gates, V. A. Palchevskiy and C. Dellacorte. 1999. Muscles Brains and How the Onychophora lost Their Stripes: Developmental Genetics Paleontology and the Metazoan Radiation. *Geological Society of America Annual Meeting Abstracts with Programs*, v. 36, p. A-363.
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