

Curriculum Vitae

Dr. Paul Joseph Watson

Adjunct Associate Professor

Evolutionary Behavioral Ecology & Evolutionary Psychology

Department of Biology, University of New Mexico,

Albuquerque, NM, USA, 1992–present

***Web Site:* drpjwatson.org *Instagram:* @drpjwatson *Cell:* 505-681-3391**

Education

BA, Zoology, High Honors, *University of Montana*, Missoula, MT - 1981

BA, Botany, High Honors, *University of Montana*, Missoula, MT - 1981

PhD, Biology, Section of Neurobiology & Behavior, *Cornell University*, Ithaca, NY – 1988

Major: Behavioral Biology; Drs. Stephen T. Emlen and Paul W. Sherman, co-chairs.

Minor 1: Ecological Genetics; Dr. Thomas Eisner.

Minor 2: Bioorganic Chemistry; Dr. Jerrold Meinwald.

Minor 3: Neurobiology; Dr. Ronald Harris-Warrick.

Doctoral Thesis: The Adaptive Functions of Sequential Polyandry in the Spider *Linyphia* (= *Neriene*) *litigiosa* (Linyphiidae).

Interests

The evolutionary ecology of social behavior and sexual strategies in animals and humans. The influence of pathogens and microbial communities (microbiomes) on the evolution of social and sexual strategies. The evolutionary origins and adaptive significance of religiosity. The adaptive functions of psychological pain, especially unipolar depression. Use of insights from evolutionary psychology, in conjunction with traditional introspective techniques to potentiate quests for self-understanding. In relation to this last and overarching interest, I seek interaction with students of diverse academic backgrounds.

Grants

Postdoctoral Awards

Postdoc #1 (NSF Environmental Biology Postdoc, 24 months) - Department of Biology, University of New Mexico, Albuquerque, NM, with **Dr. Randy Thornhill**; this postdoc also involved much work in the microbiology lab of **Dr. Oswald Baca** learning how to detect rickettsia-like bacteria, isolate them in cell

culture, including sierra dome spider immune system cells.

Postdoc #2 (NSF/NATO postdoc; 16 months) - Department of Zoology, University of Oxford, Oxford, UK, with **Dr. William D. Hamilton**. Again, this postdoc included diverse microbial training and research at Oxford's NERC Institute of Virology, investigating a rickettsial disease of the sierra dome spider thought to be relevant to the evolution of its sexual selection system.

Research Grants

(1) Courtship Energetics and the Heritability of Metabolic Competence (24 mos, from July 1994-96, ca. \$60,000 P.J. Watson sole-PI), *National Science Foundation*. Behavioral and respirometric research on the sierra dome spider *Linyphia litigiosa*. Funded 6-years of research on the energetics of intersexual copulatory courtship, and multi-modal male-male fighting strategies. Additionally, a \$5000 NSF-REU supplement to support undergraduate summer research relating rates of aging to sexual competitiveness in the sierra dome spider (6 mos.).

(2) Hypoxia and larval care in the bumble bee, *Bombus occidentalis* (12 mos, from May 1996), *Montana's NSF EPSCoR program*. Using real time CO₂ respirometry of a containerized but open free-ranging hive, we uncovered multiple context-specific respiratory modes in this bee species. With Drs. P. Kukuk and D.L. Kilgore.

(3) Dr. Jacek Radwan (Jagiellonian University, Krakow, Poland) was awarded a 9 month *Fullbright Fellowship* (9 mos, from September 2000) to collaborate with Dr. Randy Thornhill and myself in a study of sexual selection in acarid mites.

(4) Other research and training grants are listed on personal website (see above). Much of my research has been self- and privately funded.

Current Teaching

All my courses emphasize through understanding of modern Darwinism, including the second Darwinian revolution and the so-called extended evolutionary synthesis. I guide undergraduate and graduate students *from many disciplines*, not just biology and psychology, to become critical analysts of evolutionary ideas concerning social and reproductive behavior, as well as observers and analysts of their own intrapsychic functioning. I also emphasize productive, interactive discussion, practical collaboration skills, and clear analytical writing.

The Evolution of Religiosity and Human Coalitional Psychology. An upper division undergrad or graduate course cross-listed for 3-credit hours across four University of New Mexico majors or minors: Biology, Psychology, Religious Studies, and Peace Studies. Taught regularly at UNM since 1990; I finished teaching the 16th edition of this evolving course in the Spring semester of 2022.

Field Studies in the Evolution of Animal Behavior. After several years of preparation, I *resumed* teaching this intensive field course (4-week, 5-credit) in 2022 as part of the Flathead Lake Biological Station's summer teaching program. It will be offered again in 2023.

The course is primarily designed to prepare students for successful graduate work in evolutionary behavioral ecology. It is offered in a way, however, that also makes it appropriate for diverse liberal arts and humanities majors wishing to gain an unvarnished understanding of the adaptation and natural selection process, the development and organization of the natural lives of animals, and the kind of minds built by natural selection, including their own. The course will provide any advanced student with (1) grad-prep practical experience collecting novel, professional quality data in the field and lab, and (2) a substantive understanding of the modern Darwinian theories and sub-theories that guide a sober yet rewarding adaptationist hypothesis testing approach to the study of behavior in any animal. I offer any student who takes the fundamental 4-week course the option to extend their research projects and conceptual training for two or four additional weeks, working full-time, earning independent study credits.

The Evolution of Depression. Fall 2015. An experimental upper division or graduate seminar / seminar course welcoming students from biology and other majors. We critically examines diverse evolutionary adaptationist and byproduct theories, via the best primary literature, attempting to explain the phenomenon of minor and major unipolar depression, including my own published “Social Navigation” or “Niche Change” hypothesis. I plan to build this into a large enrollment class taught biannually.

Academic talks, by invitation, about Darwinism and Human Affairs given to local groups such as OASIS and the New Mexico Center for Science and Reason; N = lost count. I have recently given 2.5 hour talks (most recently Spring 2022) about the evolutionary origins and potential adaptive significance of religiosity in Dr. Donna Ray’s and Lisa Gerber’s course, “Theories of Religion” (REL 452). Less locally, I had a 2-hour discussion on the potential adaptive function of unipolar depression on Dr. Joe Alcock’s prominent “evo med” podcast (see: <https://evolutionmedicine.com/podcasts/> ; podcasts # 27 & 28) and gave a poster and invited 15-minute talk on that theory at the 2018 ISEMPH International Society of Evolutionary Medicine and Public Health (ISEMPH) annual meeting. In 2020 I gave a series of 4 invited lectures (5-hours total) thoroughly explaining the sexual selection system of the sierra dome spider in Dr. Kelly Miller’s “Animal Sexual Strategies” at UNM. I have provided many talks at FLBS summer sessions about the mating system of the sierra dome spider and certain other arthropods living at the station, most recently in 2021.

Past Teaching

Upper division and graduate seminars (N > 22) on special topics concerning evolutionary behavioral ecology of animals and humans, since 1991, often team taught with Distinguished Professors Randy Thornhill and, occasionally, Steven Gangestad.

Field Studies in Animal Behavior. An 8-week intensive course for upper division undergraduates and beginning graduate students at the University of Montana Flathead Lake Biological Station. I taught this course or minor variants thereof (e.g., “Plant-Animal Interactions”) for approximately 8 summers. As described above, the course’s emphasis is on precise observation, project development and methodological troubleshooting, quantitative testing of alternative evolutionary hypotheses in the

field and lab. Scientific writing and note-taking skills are also practiced. Lectures and discussions provided necessary Darwinian background for mature students with diverse backgrounds. I have experience in many research projects involving species at and around FLBS other than the sierra dome as a consequence of this class.

Evolutionary Psychology and Spirituality. Decades of involvement outside the university environment in several contemplative traditions and groups, where practice and inquiry consisted, in part, in the use of evolutionary psychology as an “objectifying influence”; this includes long involvement in the Gurdjieff Foundation, especially in New York, London, and New Mexico.

The Evolution of Human Sexuality. A large-enrollment lecture course, which I successfully covered for Dr. Randy Thornhill while he was on leave (1992 or 1993).

Evolutionary Psychology and Psychotherapy workshops for mental health professionals – about 5 in all. Discuss principles of evolutionary psychology and implications for diverse psychotherapeutic approaches. Team taught with veteran Gestalt therapist John D. Wymore, including two sessions at the Esalen Institute, Big Sur, CA. I recently was featured on the iTunes-based podcast *Evo Med*, discussing depression (see: evolutionarymedicine.org., run by Dr. Joe Alcock.) I spoke by invitation, at the 4th annual meeting of the International Society for Evolution, Medicine and Public Health, Park City, UT. I’ll present the most evolved version of my adaptationist model of unipolar depression, first published in 2022.

Current Research

Ongoing field and lab research on all aspects of the sierra dome spider’s complex sexual selection system (since 1980), principally at The University of Montana’s Flathead Lake Biological Station. Emphasis currently is on (a) imperfectly-honest (optimally vague) manipulative signaling systems used by female sierra dome spiders to elicit more stringent male-male fights and acquisition of genetically superior mates; (b) copulatory courtship energetics based on precision real-time CO₂ respirometry; (c) effects of sexually antagonistic genes on the disease susceptibility, life history evolution, sexually dimorphic lifespans, and the facultative sequentially polyandrous mating behavior sierra dome spiders; (d) molecular biological, DNA-based approaches to documenting effects on the design of the sierra dome’s sexual selection system via coevolution with pathogens and, more broadly, the spider’s microbiome.

Human lab-based research on possible adaptive function(s) of pan-cultural human religious inclinations or “religiosity.” Specifically the context-specific relative explanatory power of the “parasite stress hypothesis of human values and sociality” (see publications by my colleague Dr. Randy Thornhill and our former graduate student, Dr. Corey Fincher) versus my own, novel, “Informational Boundaries Hypothesis of Religiosity.” Currently I am analyzing data from a 537 subject experimental human lab study tandem-testing these hypotheses.

Evolutionary adaptationist explanation of the placebo effect. On a mechanistic level of analysis, the placebo effect is pretty well understood. However, ultimate, Darwinian, evolutionary psychological explanations are largely lacking. I am developing such an explanation based on evolutionary communication theory, more specifically, honest commitment and need signaling theory. I believe this explanation will stimulate discussion of more compassionate care practices in the medical professions

Other Major Professional Activities

(1) Since being granted a research / adjunct professorship by the UNM Biology Department in 1992, I have devoted a great deal of time to **mentoring graduate and undergraduate students**. I guess this counts as service, since I've never been paid for these activities, although I feel awkward using that term as I feel very fortunate to have had these opportunities, and I look forward to more. In most cases involving graduate student supervision I served as co-Chair alongside Dr. Randy Thornhill, although I have also been on committees of students chaired by Drs. Astrid Kodric-Brown, David Ligon, and Eric Charnov (N = 11). I am more recently beginning to co-mentor students in the Psychology Department interested in evolutionarily-informed research with Dr. David Witherington. Most of my formal work supervising UNM undergrads (N = 18+) was as professor of record for independent studies credits, or as extensively-trained research assistants, from UNM and many other schools (N=20+); some of the latter mentoring was done at Flathead Lake Biological Station.

As mentioned above, I also have been **consistently providing advanced topics seminars** once or twice a year, either with Dr. Randy Thornhill or solo, mostly without financial compensation. I am an active participant in an evolutionary psychology reading group involving faculty and graduate students from several academic departments.

(2) I am an **Associate Editor** for the open-access journal, "*Frontiers in Evolutionary Psychology and Neuroscience*" (see, <http://journal.frontiersin.org/journal/all/section/evolutionary-psychology-and-neuroscience#editorial-board>). I long have reviewed scientific papers for variety of other journals.

(3) In 2002 I co-authored with former graduate student Dr. Paul W. Andrews one of the first **adaptationist analyses of unipolar depression** that proposed a function that the great complexity of human social life. (Unbeknownst to us another researcher, and now colleague, Dr. Edward Hagen, independently was developing a similar hypothesis at the same time.) The paper is an important foundation for social navigation or bargaining family of hypotheses proposing that depression is not a pathology, but a social adaptation. Although the hypothesis has outstanding "face validity" amongst psychotherapists and the general public, as well as some evolutionary theorists, folks with a psychiatry background don't like or do not have a basis for understanding the hypothesis. So, the idea has been stuck in a rarified academic cul-de-sac for many years. In an attempt to remedy this, **I am currently writing a book aimed at more general audiences. The goal is to make the idea go viral enough so that NIH-funded researchers in the mental health community will basically be forced to rigorously TEST the hypothesis.** I take this as an important mission, because if the hypothesis is correct it has major treatment implications which could help to reverse the ongoing unipolar depression epidemic for one or more major sub-types of depression. In the Fall of 2015 I taught, recorded, and transcribed a seminar on the evolution of depression to accelerate accumulation of up-to-date and digestible material for incorporation into this book.

(4) **Member:** Animal Behaviour Society, Human Behavior and Evolution Society, AAAS.

Publications

I especially enjoy long-term, in-depth projects in evolutionary behavioral ecology; my ongoing studies of the sierra dome spider is the prime example. I was trained not to count papers, but to make papers count. Most of the papers below, I feel, reflect that approach and are published in the top journals in my field.

Since my last major empirical journal publication in 2010, I have been concentrating more than ever on new long-term research projects, teaching, more talks at professional meetings, and the development of both short and long-term bookish writing projects aimed at more general audiences. But, I still have many more specialized empirical journal papers to publish, some for which extensive data already have been collected.

Keil P.L., and Watson, P.J. 2010. Assessment of self, opponent, and resource assessment during male-male contests in the sierra dome spider, *Neriene litigiosa*: Linyphiidae. *Animal Behaviour* 80, 809-820.

Hagen, E.H., Watson, P.J. and Hammerstein, P. 2008. Gestures of Despair and Hope: A View on Deliberate Self-harm From Economics and Evolutionary Biology. *Biological Theory* 3, 123-138.

Cline-Brown, K., and Watson, P.J. 2005. Investigating major depressive disorder from an evolutionary adaptationist perspective: fitness hindrances and the social navigation hypothesis. In: *Focus on Depression Research*. Devito, J.T., editor. Nova Science Publishers, Inc. Hauppauge, NY.

deCarvalho, T.N., and Watson, P. 2004. The evolution of ritualized fighting behavior. In: *Encyclopedia of Animal Behavior*. Mark Bekoff, editor. Greenwood Publishing Group, Incorporated.

deCarvalho, T.N., Watson, P.J., and Field, S. 2004. Costs increase as ritualized fighting progresses within and between phases in the sierra dome spider, *Neriene litigiosa*. *Animal Behaviour* 68: 473-482.

Radwan, J., Watson, P.J., Farslow, J., and Thornhill, R. 2003. Procrustean analysis of fluctuating asymmetry in the bulb mite, *Rhizoglyphus robini* Claparede (Astigmata: Acaridae). *Biological Journal of the Linnaean Society* 80: 499-505.

Watson, P.J. and Andrews, P.W. 2002. Toward a revised evolutionary adaptationist analysis of depression: The social navigation hypothesis. *Journal of Affective Disorders* 72: 1-14.

Watson, P.J., Arnqvist, G. and Stallman, R.R. 1998. Sexual conflict and the energetic costs of mating and mate choice in water striders. *American Naturalist* 151: 46-58.

Watson, P.J. 1998. Nonrandom multi-male mating by females increases offspring growth rates in the spider *Neriene litigiosa* (Linyphiidae). *Animal Behaviour* 55: 387-403.

Watson, P.J. 1995. Dancing in the dome. *Natural History* 104: 40-43.

Watson, P.J. and J.R.B. Lighton. 1994. Sexual selection and the energetics of copulatory courtship in the sierra dome spider, *Linyphia litigiosa*. *Animal Behaviour* 48: 615-626.

Watson, P.J. and Thornhill, R. 1994. Fluctuating asymmetry and sexual selection. *Trends in Ecology and Evolution* 9: 21-25.

Watson, P.J. 1993. Foraging advantage of polyandry for female sierra dome spiders (*Linyphia litigiosa*: Linyphiidae) and assessment of alternative direct benefit hypotheses. *American Naturalist* 141: 440-465.

Watson, P.J. 1991. Multiple paternity and first mate sperm precedence in the sierra dome spider, *Linyphia litigiosa*. *Animal Behaviour* 41: 135-148.

Watson, P.J. 1991. Multiple paternity as genetic bet-hedging in female sierra dome spiders (*Linyphia litigiosa*: Linyphiidae). *Animal Behaviour* 41: 343-360.

Watson, P.J. 1990. Female-enhanced male competition determines the first mate and principal sire in the spider *Linyphia litigiosa* (Linyphiidae). *Behavioral Ecology and Sociobiology* 26: 77-90.

Watson, P.J. 1986. Transmission of a female sex pheromone thwarted by males in the spider *Linyphia litigiosa* (Linyphiidae). *Science* 233: 219-221.

Watson, P.J. and Vasquez, M. 1981. Comparative ecology of *Woodsia scopulina* sporophytes and gametophytes. *American Fern Journal* 71: 3-9.

Recent Academic Promotion Talk Topics

Sierra Dome Spider Sexual Selection

Manipulative, “optimally vague” honest signaling behaviors by penultimate females in the mating system of sierra dome spiders.

The energetics of copulatory courtship in sierra dome spiders.

Sexually antagonistic selection for disease resistance in the mating system of the sierra dome spider.

The adaptive significance of the dual mate choice strategies and sequential polyandry for female sierra dome spiders, and the information content of male sexual displays.

The astonishingly combative quasi-lek mating system of the microlepidopteran fairy moth, *Adela septentrionella* (sp?) (Adelidae); are laws of physics being broken?

Many class-oriented research projects, especially at FLBS. The extended list is available at my web site (see above).

Evolution of Religiosity

The information boundaries hypothesis for the evolution of human instincts favoring religious diversity. An honest signaling-based evolutionary explanation of the placebo effect.

Evolution of Unipolar Depression

Unipolar depression as a social adaptation: the social navigation family of hypotheses with special emphasis on the potential “niche change” function.

Revised: 27 November 2023