

RAVINDER N. M. SEHGAL

Institutional Address:

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CITIZENSHIP: Sweden, USA, Lithuania

EDUCATION/ PROFESSIONAL EXPERIENCE:

- 2007-present Assistant Professor
 Dept. of Biology
 San Francisco State University, San Francisco, CA.
- 2003-2007 Adjunct Professor
 Dept. of Biology,
 San Francisco State University, San Francisco, CA.
- 2001-2004 Postdoctoral Fellow
 Research Advisors: Professor Thomas B. Smith, Ph.D. and Professor Lisa A. Tell, D.V.M.
 University of California, Davis, Davis, CA.
- 1999-2001 Postdoctoral Fellow
 Research Advisor: Professor Thomas B. Smith, Ph.D.
 Center for Tropical Research, San Francisco State University, San Francisco, CA.
- 1998-1999 Cell Biology Specialist
 Guava Technologies, Alameda, CA.
- 1998 Advances in Conservation Genetics Course
 Smithsonian Institution, Front Royal, VA.
- 1988-1997 Ph.D. in Cell Biology
 Thesis Advisor: Professor Louis F. Reichardt, Ph.D.
 Dept. of Biochemistry and Biophysics
 University of California, San Francisco, San Francisco, CA.
- 1992-1994 Graduate Research Project
 Advisor: Professor Håkan Persson, Ph.D.
 Karolinska Institute, Lab of Molecular Neurobiology, Stockholm, Sweden
- 1984-1988 B.A. in Biology and B. Music
 Oberlin College and Conservatory of Music, Oberlin, OH.

RESEARCH EXPERIENCE:

1. **Current Position: Assistant Professor at San Francisco State University**

Research on the effects of deforestation on the prevalence of blood-borne pathogens in African rainforest birds. Research on affects of pathogens on the migration of California raptors. Research on ecology and evolution of avian blood parasites.

2. **Adjunct Professor at San Francisco State University**

Research on the blood parasites of African rainforest birds.

3. **Postdoctoral Research: Center for Tropical Research, SFSU, and UC Davis**

Research on the host specificity and ecology of Trypanosoma, hemosporidia, microfilariae, and West Nile Virus in birds of Africa and California with a conservation perspective.

Advisors: Thomas B. Smith, Ph.D., Lisa A. Tell, D.V.M

4. **Ph.D. Research: UCSF and Karolinska Institute**

Thesis: Roles of α -catenin in the early development of *Xenopus laevis*.

Developed dominant negative mutations of α -catenin to elucidate roles of α -catenin in early gastrulation and the Wnt signaling pathway in Xenopus laevis. Cloned chicken BDNF, and trkC and developed polyclonal antibodies to study the role of neurotrophins in chick neurogenesis.

Advisors: Louis F. Reichardt, Ph.D., UCSF, Håkan Persson, Ph.D., Karolinska Institute, Carlos Ibáñez, Ph.D., Karolinska Institute, Barry Gumbiner, Ph.D., Memorial Sloan-Kettering Cancer Center.

5. **Biotechnology Research: Guava Technologies**

Aided in the development and characterization of a novel portable flow cytometer.

Advisor: Phillipe Goix, Ph.D., Founder of Guava Technologies, Hayward, CA.

GRANTS:

I have written 14 extramural grants for research funding during my affiliation with SFSU. Listed are the ones that were funded.

1. **NIH PAR-08-027, "Support of Competitive Research (SCORE) Pilot Project Award" (SC2).** "Malaria Erythrocyte Binding-Like Genes & Host Specificity in a Natural Population" Submitted January 2008- Priority score 211. Resubmitted: Sept. 25 2008.

2. **SFSU mini-grant, 2008.** "Avian malaria in migrating California hawks" \$5000.

3. **NIH-NSF Ecology of Infectious Diseases Program.** "Effects of deforestation on the prevalence of blood-borne pathogens in African rainforest birds."

Principal Investigators: Thomas B. Smith and Ravinder Sehgal. Sept. 2004-Aug. 2008

Funded \$1,741,000. My budget is \$768,125. *This covers my salary, research budget at SFSU, travel, salary for one graduate student, and one student assistant.*

4. **NATO Cooperative Linkage Grant** "Epizootiology of avian hematozoa; linking genetic and traditional parasitology data".

Principal Investigators: Ravinder Sehgal and Gediminas Valkiūnas.

Funded \$22,000.

Established a collaborative research project with eminent avian parasitologist, Gediminas Valkiūnas of the Institute of Ecology, Vilnius, Lithuania. 2002-04.

5. Professors of the Future Postdoctoral Career Development Program Recipient.

“Using habitat structure and stability to predict the incidence of infectious diseases in African rainforest birds”. 2001-2004. *Included funds for salary, travel and research.*

6. Research in Minority Institutions (RIMI) Postdoctoral Award Recipient. 1999-2001.

Included funds for salary, travel and research.

TEACHING:

- BIOL 453 “General Parasitology” Spring 2008 and 2009 at SFSU
- BIOL 454 “Parasitology Laboratory” Spring 2009 at SFSU
- BIOL 871 “Colloquium in Microbiology and Molecular Biology” Spring 2009 at SFSU
- BIOL 425 “Emerging Infectious Diseases” Fall 2008 at SFSU
- BIOL 864 “Recent Developments in Microbiology” Fall 2007 at SFSU
- BIOL 318 “Our Endangered Planet” Fall 2007 at SFSU
- BIOL 478 “Ornithology” Spring 2006 at SFSU
- BIOL 380 “Comparative Embryology” Spring 2002 and Spring 2003 at SFSU
- Substitute High School Teacher, Stockholm, Sweden, 1997-1998. Subjects: English, German, and Music.
- Graduate Teaching Assistant at UCSF for Pharmacy Students, 1989.

RESEARCH STUDENTS while at SFSU:

Jenny Carlson	08-now	Master’s Student on Avian Trypanosomes at SFSU
Holly Archer	08-now	Master’s Student on Costa Rican avian diseases at SFSU
Mark Jasper	07-now	Master’s Student on California Raptors at SFSU
Dennis Anye Ndeh	08	Visiting Master’s student from Cameroon
Tony Chasar	06-now	Master’s Student on African bird diseases at SFSU
Heather Lannie	05-07	Master’s Student on California Raptors at SFSU
Diego Santiago	04-08	PhD Student, University of Missouri, St. Louis; thesis committee
Steve Lee	08-09	Undergraduate –SFSU Parasites in SF Zoo penguins
Anna Hutchinson	06-08	Undergraduate -SFSU Parasites in California owls
Charlene Pinto	07-now	Undergraduate –SFSU Parasites in African Chickens
Judy Makena	07	Undergraduate –SFSU Parasites in African birds
Maria Svensson	05-07	Undergraduate-UC Berkeley Parasites of Swainson’s Thush
Shiho Kawamura	04-06	Undergraduate -SFSU <i>Leucocytozoon</i> in Raptors
Dawn LoBaugh	04-05	Undergraduate -SFSU Technical support
Forest Soriano	03-04	Undergraduate -SFSU <i>Haemoproteus</i> in African birds
Allison Lee	04-04	Undergraduate -SFSU <i>Haemoproteus</i> in Raptors
Molly Sternberg	02-03	Undergraduate -SFSU <i>Plasmodium</i> in genus <i>Nectarinia</i>
Jacklyn Taal	02-03	Undergraduate -SFSU Technical support
F. Alex Richard	00-02	Undergraduate -SFSU PCR methodologies

ADMINISTRATION:

- Administration of funds for the Grant “Effects of Deforestation on the Prevalence of Blood-borne Pathogens in African Rainforest Birds” at SFSU through the Office of Research and Sponsored Programs. 2004-present
- Administration of funds for NATO Cooperative Linkage Grant, 2002-2004.
- Hiring, dismissing, and evaluating students and laboratory technical support.

PUBLICATIONS:

1. Bonneaud, C., I. Sepil, B. Mila, W. Buermann, J. Pollinger, **R. Sehgal**, G. Valkiūnas, T. Iezhova, S. Saatchi and T. B. Smith. 2009. The prevalence of avian *Plasmodium* is higher in undisturbed tropical forests of Cameroon. Journal of Tropical Ecology. 25: 439-447.
2. G. Valkiūnas, T. A. Iezhova, C. Loiseau, T. B. Smith and **R. Sehgal**. 2009. New species of haemosporidian parasites (Haemosporida) from African rainforest birds, with remarks on their classification. Parasitology Research. 104:1061-1077.
3. G. Valkiūnas, T. A. Iezhova, C. Loiseau*, A. Chasar*, T. B. Smith and **R. Sehgal**. 2008. New species of haemosporidian parasites (Haemosporida) from African rainforest birds, with remarks on their classification. Parasitology Research. 103(5): 1213-28.
4. G. Valkiūnas, T. A. Iezhova, A. Krizanauskiene, V. Palinauskas, **R. Sehgal**, S. Bensch. 2008. A comparative analysis of microscopy and pcr-based detection methods for blood parasites. Journal of Parasitology. Mar. 20:1
5. H. D. Ishak*, J. P. Dumbacher, N. L. Anderson, J. J. Keane, G. Valkiūnas, S. M. Haig, L. A. Tell and **R. Sehgal**. 2008. Blood parasites in owls with conservation implications for the Spotted Owl (*Strix occidentalis*). PLoS One. 3(5): e2304.
6. G. Valkiūnas, C. T. Atkinson, S. Bensch, **R. Sehgal** and R. E. Ricklefs. 2008. Parasite misidentifications in GenBank: how to minimize their number? Trends in Parasitology. 24(6): 247-248.
7. L. M. E. Svensson*, K. C. Ruegg, C. H. Sekercioglu, and **R. Sehgal**. 2007. Widespread and structured distributions of blood parasite haplotypes across a migratory divide of the Swainson's thrush (*Catharus ustulatus*). Journal of Parasitology. 93(6): 1488-1495.
8. **R. Sehgal**, G. Valkiūnas, T. A. Iezhova and T. B. Smith. 2006. Blood parasites of chickens in Uganda and Cameroon with molecular descriptions of *Leucocytozoon schoutedeni* and *Trypanosoma gallinarum*. Journal of Parasitology. 92(6): 1336-1343.
9. J. Masello, R. Gustavo Choconi, **R. Sehgal**, L. A. Tell and P Quillfeldt. 2006. Blood and intestinal parasites in wild Psittaciformes: A case study of Burrowing parrots (*Cyanoliseus patagonus*). Ornología Neotropical. 17: 515-529.

10. **R. Sehgal**, A. C. Hull, N. Anderson, G. Valkiūnas, M. J. Markovets, S. Kawamura* and L. A. Tell. 2006. Evidence for cryptic speciation of *Leucocytozoon* spp. (Haemosporida, Leucocytozoidae) in diurnal raptors. Journal of Parasitology. 92(2): 375-379.
11. **R. Sehgal**, H. I. Jones, and T. B. Smith. 2005. Molecular evidence for host-specificity of parasitic nematode microfilariae in some African rainforest birds. Molecular Ecology. 14:3977-3988.
12. G. Valkiūnas, **R. Sehgal**, T. A. Iezhova, and T. B. Smith. 2005. Further observations on the blood parasites of birds in Uganda. Journal of Wildlife Diseases. 41(3): 580-587.
13. **R. Sehgal**, H. I. Jones, and T. B. Smith. 2005. Blood parasites of some West African birds. Journal of Veterinary Medical Sciences. 67(3): 295-301.
14. H. I. Jones, **R. Sehgal** and T. B. Smith. 2005. *Leucocytozoon* (Apicomplexa: Leucocytozoidae) from West African birds, with descriptions of two species. Journal of Parasitology. 91(2): 397-401.
15. **R. Sehgal** and I. J. Lovette. 2003. Molecular evolution of three avian neurotrophin genes: implications for proregion functional constraints. Journal of Molecular Evolution. 57: 335-342.
16. F. A. Richard*, **R. Sehgal**, H. I. Jones, and T. B. Smith. 2002. A comparative analysis of PCR-based detection methods for avian malaria. Journal of Parasitology. 88(4): 819-822.
17. **R. Sehgal**, H. I. Jones, and T. B. Smith. 2001. Host Specificity and incidence of *Trypanosoma* in some African rainforest birds: a molecular approach. Molecular Ecology. 10(9): 2319-2328.
18. **R. Sehgal**, B. Gumbiner, and L. F. Reichardt. 1997. Antagonism of cell adhesion by a mutant of alpha-catenin, and antagonism of the Wnt-Signaling Pathway by alpha-catenin in *Xenopus* embryos. Journal of Cell Biology. 139(4): 1033-1046.
19. T. Svensson, M. Rydén, F. H. Schilling, C. Dominici, **R. Sehgal**, C. F. Ibáñez, and P. Kogner. 1997. Coexpression of mRNA for the full-length neurotrophin receptor trk-C and trk-A in favourable neuroblastoma. European Journal of Cancer. 33(12): 2058-2063.
20. M. Rydén, **R. Sehgal**, C. Dominici, F. H. Schilling, C. F. Ibáñez, and P. Kogner. 1996. Expression of mRNA for the neurotrophin receptor trk-C in neuroblastomas with favourable tumour stage and good prognosis. British Journal of Cancer. 74(5): 773-779.

21. Y. Choi, **R. Sehgal**, P. McCrea, and B. Gumbiner. 1990. A cadherin-like protein in eggs and cleaving embryos of *Xenopus laevis* is expressed in oocytes in response to progesterone. Journal of Cell Biology. 110: 1575-1582.

MANUSCRIPTS UNDER REVIEW:

1. H. (Lannie) Ishak, A. C. Hull, and **R. Sehgal**. Under review. Prevalence of blood parasites in migrating California hawks. *Journal of Raptor Research*.
2. C. Loiseau*, G. Valkiūnas, A. Chasar*, A. Hutchinson*, T. Iezhova and **R. Sehgal**. Rainfall as a predictor of prevalence and host specificity of hemosporidians in two African rainforest birds.

MANUSCRIPTS IN PREPARATION:

1. **R. Sehgal**, C. Loiseau*, A. Chasar*, G. Valkiūnas, T. Iezhova, C. Bonneaud, I Sepil, S. Saatchi, T. B. Smith, and W. Buermann. A predictive map of avian malaria in West Africa.
2. A. Chasar*, G. Valkiūnas, W. Buermann, T. B. Smith, **R. Sehgal**. Comparison of avian malaria prevalence and diversity between anthropogenic altered and forested sites in Cameroon

* denotes student under my direct supervision.

ORAL PRESENTATIONS SINCE 2001:

Invited presentations

- Invited delegate to *Survival in a Changing World* Symposium, Awaji Island, Japan, Aug. 2009.
- Plenary Speaker at World Avian Malaria Meeting, Badajoz Spain, Nov. 2008.
- Vilnius University's Institute of Ecology, Vilnius, Lithuania, Oct. 2007
- Oklahoma State University, Stillwater, OK. Feb. 2007.
- Golden Gate Audubon Society, Berkeley, CA. Feb. 2006.
- University of Missouri, St. Louis, Dept. of Ecology and Evolution, St. Louis, MO. March. 2005
- Stanford University, Dept. of Biology, Ecology and Evolution, Stanford, CA. Feb. 2005
- UC Davis, Dept. of Nematology, Davis, CA, Jan. 2005
- San Francisco State University, Dept. of Biology, San Francisco, CA, Jan. 2005
- Vilnius University, Institute of Ecology, Vilnius, Lithuania, June, 2004
- Cornell University, Lab of Ornithology, April 2004
- UC Berkeley, Museum of Vertebrate Evolution, Berkeley, CA, Oct. 2003
- Vilnius University, Institute of Ecology, Vilnius, Lithuania, May 2003
- Lund University, Dept. of Ecology, Lund, Sweden, May 2003

Presentations at meetings

- American Society of Parasitologists annual meeting, Arlington, TX, June 2008.
- Avian Diseases and Conservation Conference, Pomona, CA, May 2008.

- Northern California Parasitologists meeting, Marshall, CA. March 2008.
- Bay Area Conservation Biology Meeting, Davis, CA, February, 2008.
- Ecology of Infectious Diseases-PI Network Meeting, Albuquerque, Dec. 2007
- Ecology and Evolution of Infectious Diseases, Ithaca, NY, May 2007
- Northern California Parasitologists meeting, Marshall, CA, March 2007
- Ecology of Infectious Diseases-PI Network Meeting, Atlanta, Nov. 2006
- North American Ornithological Conference, Veracruz, Mexico, Oct. 2006
- Society for Conservation Biology, San Jose, CA, June 2006
- Bay Area Conservation Biology Meeting, San Francisco, February, 2006
- Scandinavian-Baltic Society for Parasitology Symposium, Vilnius, Lithuania, May 2005
- Raptor Research Foundation annual meeting, Bakersfield, CA, Nov. 2004
- Cooper Ornithological Society annual meeting, La Crosse, WI, May 2004
- Conservation Genetics meeting, American Genetics Association, Front Royal, VA, Sept. 2003
- Bay Area Conservation Biology meetings, 2002, 2003
- Society for Conservation Biology annual meeting, Canterbury, England, July, 2002
- Ecosystem Health, Washington DC, June 2002
- Society for Conservation Biology annual meeting, Hilo, HI, July 2001

STUDENT PRESENTATIONS 2007-2008

Anthony Chasar: Master's Student

- Oral presentation at Bay Area Conservation Biology Symposium, Jan. 2008, UC Davis.
- Oral presentation at Northern California Parasitologists Annual Meeting, March 2008. Winner of the Walter Carr award for the presentation "Comparison of avian malaria prevalence and sequence data at eight paired sites in Cameroon". Because of this award, Anthony received the Marc Dresden travel grant to the 2008 Annual Society of Parasitologists meeting in Arlington Texas.

Mark Jasper: Master's Student

- Poster presentation at Bay Area Conservation Biology Symposium, Jan. 2008, UC Davis.
- Oral presentation at Northern California Parasitologists Annual Meeting, March 2008.

PhD: Postdoctoral Fellow

- Oral presentation at the 10th European Multicolloquium of Parasitology, August. 2008, Paris, France. "Host and habitat specificities of hemosporidian parasites in two African bird species".

PROFESSIONAL and CIVIC ACTIVITIES:

2008-present	President Northern California Parasitologists.
2008-present	Member of the Editorial Board of <u>The Open Ecology Journal</u> .
2007-present	Member of the Scientific Board: Island Endemics Foundation.
2005-present	Member of the Editorial Board of the journal <u>Ekologija</u> .

HONORS/AWARDS:

2009 Outstanding teacher award, Dept. of Biology, SFSU.
2001-2004 Professors of the Future Training Program Awardee (<http://prof.ucdavis.edu/>)
1999-2001 Research in Minority Institutions, NIH Postdoctoral Training Program Awardee
1998 Full Scholarship to attend NOAHS course: Advances in Conservation Genetics
1988 Graduated Pi Kappa Lambda, Oberlin Conservatory

LANGUAGES:

Fluent in Swedish, German and Lithuanian; Reading ability in French and Spanish

OTHER INTERESTS:

- Tenured Bassoonist with the Berkeley Symphony, under the direction of Kent Nagano
- Pianist with several chamber music groups in San Francisco
- Fitness Plus swim team at San Francisco State University