
CURRICULUM VITAE

NAME Charles Edward Rupprecht	POSITION TITLE Director, LYSSA LLC
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EDUCATION/TRAINING

INSTITUTION	DEGREE	YEAR	FIELD OF STUDY
Rutgers University	B.A.	1977	Ecology
University of Wisconsin	M.S.	1980	Zoology
University of Pennsylvania, School of Veterinary Medicine	V.M.D.	1985	Veterinary Medicine
University of Wisconsin	Ph.D.	1986	Biological Sciences

Professional Experience:

- 1977-1981: Graduate School Teaching and Research Assistantships, University of Wisconsin, USA (e.g., courses included animal biology, anatomy and physiology, ecology, parasitology, etc.), Drs. Charles Weise, Dorothy Morren, James Coggins, Merlin D. Tuttle, Supervisors.
- 1980: Field Coordinator, Neotropical Bat Program, Smithsonian Tropical Research Institute, Barro Colorado Island, Panama, Drs. Charles Handley, Al Gardner, Supervisors.
- 1981: Research Assistant, Institute of Environmental Medicine, University of Pennsylvania, Philadelphia, Pennsylvania, USA, Dr. Andrew Beck, Supervisor.
- 1982-92: Research Associate/Post-doctoral Student/Assistant/Associate Professor, The Wistar Institute, Philadelphia, Pennsylvania, USA, Drs. Tad Wiktor, Hilary Koprowski, Supervisors.
- 1992-93: Associate Professor, Thomas Jefferson University, Department of Microbiology and Immunology, Philadelphia, Pennsylvania, USA, Drs. Hilary Koprowski, Carlo Croce, Supervisors.
- 1993-2012: Chief, Rabies Program, Centers for Disease Control and Prevention (CDC), National Center for Emerging and Zoonotic Infectious Diseases (NCEZID), Division of High-Consequence Pathogens and Pathology (DHCPP), Atlanta, Georgia, USA, (multiple supervisors).
- 1993-2012: Director, World Health Organization (WHO) Collaborating Center for Rabies Reference and Research, CDC, Atlanta, Georgia, USA, Drs. Bernadette Abela-Ridder, Ottorino Cosovi, WHO Points of Contact.
- 2003-2012: Adjunct Professor, Population Biology, Ecology, & Evolution Training Program, Emory University, Atlanta, Georgia, USA. Dr. M. Zwick, Program Director.
- 2010-2012: Head, World Organization for Animal Health (OIE) International Reference Laboratory for Rabies, CDC, Atlanta, Georgia, USA, Dr. Bernard Vallat, OIE Paris Point of Contact.

2008-2012: Technical Services Cooperator, Zoonoses, Global Disease Detection (GDD) Program, CDC, Atlanta, Georgia, USA, Dr. Fred Angulo, GDD Program Point of Contact.

2012-14: Director of Research, Global Alliance for Rabies Control, Manhattan, Kansas, USA.

2013-14: Professor, Epidemiology & Public Health, Ross University School of Veterinary Medicine St. Kitts

2013-present: Adjunct Professor, Auburn University, Auburn, AL, USA.

2012-present: Professor (Adjunct), Wistar Institute for Anatomy & Biology, Philadelphia, PA, USA.

2012-present Director, LYSSA LLC.

Selected Career Highlights (1982-present):

- Development and first field release of a recombinant pox-rabies virus vaccine in North America.
- In vitro and in vivo proof of concept of monoclonal antibodies in rabies prophylaxis.
- Antigenic and genetic delineation of lyssavirus compartmentalization by taxa and geography.
- Design of a national rabies program focused on diagnostics, human prophylaxis and animal control.
- Generation of the concept of cryptic fatal human exposures associated with lyssaviruses of bats.
- Pathobiological determinants of rabies virus excretion in domestic ferrets for quarantine policy.
- Federal expert witness testimony in support of the Americans with Disability Act for service dogs.
- Design of licensed rabies virus vaccines for domestic animals and wildlife.
- Creation of World Rabies Day, reflective of renewed global advocacy and creative outreach.
- Dynamic international partnerships with the Global Alliance for Rabies Control.
- Demonstration of the role of infected organs in human rabies transplantation cases.
- Clinical evaluation of the first experimental human rabies survivors sans vaccination.
- Generation of evidence-based support of a reduced dose of rabies vaccine in human prophylaxis.
- Management of a national limitation of supply of human rabies biologics.
- Elimination of canine rabies-virus transmission by state and federal partners in the USA
- Association of the critical role of climate change in exacerbation of zoonotic diseases.
- Identification of the first bat lyssaviruses in Kenya.
- Founding of the North American Rabies Management Plan by Canada, Mexico, and the USA.
- Release of a Blueprint for Canine Rabies Prevention & Control via the Partners for Rabies Prevention.

- Patents pending for novel biologics for extended lyssavirus vaccination and immuno-contraception.
- Recognition of the keystone role of bats in emerging pathogens, including *Bartonella*, Coronaviruses, Filoviruses, Influenzaviruses, Rhabdoviruses, Rotaviruses, etc.
- International Health Regulations investigation of multiple human rabies exposures from a rabid zebra in Kenya.
- Investigation of the first human rabies case exported from the USA.

International Experience:

On site collaborative research, epidemiologic investigations, outbreak response, teaching, technology transfer, and training have occurred in several localities, including Argentina, Australia, Austria, Bahamas, Bangladesh, Belgium, Bolivia, Brazil, Cambodia, Canada, Chile, China, Cuba, Czech Republic, Dominican Republic, Ecuador, Egypt, England, Estonia, Ethiopia, Finland, France, Germany, Georgia, Ghana, Grenada, Greece, Guatemala, Haiti, Ireland, Holland, Honduras, Indonesia, India, Israel, Italy, Japan, Kenya, Korea, Mexico, Mozambique, Nigeria, Panama, Peru, Philippines, Russia, South Africa, Sri Lanka, St. Kitts, Switzerland, Tanzania, Taiwan, Tchad, Thailand, Turkey, Ukraine, Uruguay, Venezuela, and Vietnam.

Academic and Mentoring Experience:

I provide approximately 15-20 professional presentations and lectures per year on biomedical topics to academic and professional groups and organizations. Since 1977, I have taught, or assisted in teaching, numerous undergraduate and graduate biomedical classes, including courses at Emory University on Current Topics in Wildlife Diseases and Emerging Diseases Associated With Bats, as well as Epidemiology and Public Health, and Introduction to Research Principles classes at Ross University School of Veterinary Medicine, St. Kitts. I have mentored more than 25 doctoral and post-doctoral students since 1985. In addition, from 1993-2012, I supervised an average of 3-6 veterinary and medical students on 4-6 week rotations in CDC's Epidemiology rotations per year, and 1-3 students per year for the CDC International Hubert Fellowships annually. Mentoring has also included 1-2 epidemiologists, physicians, and veterinarians per year in CDC's EIS Program. From 2000-2012, I organized the National Laboratory Training Course on Rabies.

Other Professional Experience, Service, and Scientific Memberships:

Expert Technical Advisor, Rabies, World Health Organization, 1990-present; Consultant, National Association of State Public Health Veterinarians, Inc., The Compendium of Animal Rabies Control Committee, 1993-present; Consultant, Rabies Consortium Advisory Board, 2014 – present; Member, National Working Group on Prevention and Control of Rabies in the USA, 1992-99; Member, CDC Xenotransplantation Working Group, 1995-2001; Member, CDC Zoonoses Working Group, 1997-2001; Member, Steering Committee, Annual International Conference on Rabies in the Americas, 1997-present (current President); Member, CDC Working Group on Emerging Nipah-, Hendra-, and Lyssaviruses of Chiroptera, 1999-2000; Member, Advisory Committee on Immunization Practices, Human Rabies Vaccine Working Group, 2005-2010; Member, National Working Group on Public Health Impacts from Environmental Release of a Recombinant Adenovirus Vaccine, 2011; Member, American Veterinary Medical Association, 1985-present; Member, Wildlife Disease Association, 1986-present; Member, American Society for Mammalogy, 1999-present; Member, Bat Conservation International Science Advisory Committee, 2010-present; Member, Partners for Rabies Prevention (PRP), 2008-present (Head of the Research Pillar); Current professional editorial duties: Journal of Wildlife Diseases; the Public Library of Science, Neglected Tropical Diseases; Grant reviewer, National Institutes of Health; Extra-ordinary Professor, University of Pretoria. Director, Center For Conservation Medicine & Ecosystem Health, Ross University School of Veterinary Medicine, St. Kitts, West Indies, 2013 - 14; Scientific Advisory Board, ASKLEPIOS, Erasmus Medical Centre, Rotterdam, the Netherlands, 2013 – present; Expert Technical Advisor, Task Force For Global Health, Atlanta, GA, 2013 – present. Editorial Board, EC-Microbiology, 2014-present.

Honors and Recognition:

University of Pennsylvania Martin Kaplan Keynote Address, 2014; UNAM Molecular Aspects of Virology Symposium, Keynote Speaker, 2014; Phi Zeta, The National Veterinary Honor Society, Alpha Zeta Chapter, Founding Member, 2014; Edward Addison Distinguished Service Award, The Wildlife Disease Association, 2013; Louis Pasteur Oration Award, APCRI Conference, Pune India 2013; University of Tennessee Outstanding Public Health Preceptor Award, 2013; CDC, NCEZID, Group Recognition Award for Global Investigation of Human Exposures to a Rabid Zebra, Kenya, 2012; CDC, DHCPP, "Can Do" Award, 2012; University of Pennsylvania, School of Veterinary Medicine, Distinguished Alumnus Award, 2011; University of North Carolina, Visiting Faculty Award in Emergency Medicine Award, 2011; United States Public Health Service Unit Commendation Award, 2010; CDC, NCEZID, Public Health Impact Working Group Award, 2010; CDC, NCZVED, William C. Watson Medal of Excellence Nominee, 2009; United States Department of Agriculture/APHIS, Wildlife Services National Rabies Management Team Award, 2009; Wildlife Disease Association Journal Recognition for Meritorious Editorial Service, 2008; University of Wisconsin, MAA Distinguished Alumnus Award, 2006; CDC, NCID, James H. Nakano Science Award Citation Nominee, 2006; CDC, NCID, Charles C. Shepard Science Award Nominee, 2006, 2009; CDC, NCID, Honor Award, Public Health Protection Research, 2005; Honorary Diplomate, American Veterinary Epidemiology Society, 2003; CDC EPMS/PMRS Outstanding Performance Awards, 2001-10, 1997, 1996, 1993 (federal service awards); USDA Award, Commitment to Rabies Prevention and Research, 2001; CDC Senior Biomedical Research Service Candidate Award, 1998; Scott Wright Award, Wildlife Disease Association, 1992; World Health Organization Veterinary Public Health Award, For Significant Contributions in Wildlife Rabies Research, 1990; Terry Amundson Presentation Award, Wildlife Disease Association, 1986; Phi Zeta Graduation Award, University of Pennsylvania, 1985; First Place Award for Outstanding Research, Phi Zeta, The National Veterinary Honor Society, University of Pennsylvania, 1984; NIH Summer Research Fellow, School of Veterinary Medicine, University of Pennsylvania, 1983; University Fellow/Dissertation Fellow, University of Wisconsin, 1978-82; Dean's List, Rutgers University, 1976.

Recent External Research Collaborations (selected over the past 5 years):

- Efficacy of a recombinant non-human primate adenovirus-rabies vaccine. Dr. H. Ertl, Wistar Institute, Philadelphia, Pennsylvania, USA.
- Design of dual biologics for rabies and contraception. Dr. X. Wu, CDC, Atlanta, GA, USA.
- Effectiveness of a recombinant human adenovirus-rabies vaccine in wildlife. Dr. R. Rosatte, Ontario Ministry of Natural Resources, Peterborough, Canada.
- Utility of recombinant canine adenovirus-rabies and recombinant rabies virus vaccines as expression vectors in animal models. Dr. B. Dietzschold, Thomas Jefferson University, Philadelphia, Pennsylvania, USA.
- Development of animal models for experimental treatment of rabies. Dr. Nigel Bourne, University of Texas Medical Branch, Galveston, Texas, USA.
- Investigation of murine monoclonal antibodies for postexposure prophylaxis of rabies. Dr. M. Kiény, World Health Organization, Geneva, Switzerland.
- Development of small molecular weight compounds for activity against rabies viruses. Dr. V. Lingappa, Prosetta, San Francisco, California, USA.
- Metabolic studies of human rabies cases. Dr. R. Willoughby, Children's Hospital, Milwaukee, Wisconsin, USA.

- Comparative testing on the diagnostic use of monoclonal antibodies in a direct rapid immunohistochemical test. OIE Rabies Reference Laboratories (located in Canada, England, France, Germany, South Africa).
- Improvements to rabies virus stability as a vaccine candidate for remote delivery. Dr. V. Bronstein, Universal Stabilization Technologies, San Diego, California, USA.
- Use of deep sequencing methodology in the identification of emerging bat pathogens. Dr. W. I. Lipkin, Columbia University, New York, New York, USA.
- Drivers of vampire bat rabies outbreaks. Dr. S. Altizer, University of Georgia, Athens, Georgia, USA.
- Ecological influences on the occurrence of rabies in bats. Dr. G. McCracken, University of Tennessee, Knoxville, Tennessee, USA.
- Use of alternative poxvirus-based recombinant vaccines for rabies. Dr. L. Nel, University of Pretoria, Pretoria, South Africa.

Grants-in-aid-of research (selected examples, 2001-to date)

U.S. Department of Agriculture, Wildlife Services. Support for development of a rapid immunohistochemistry diagnostic test for rabies. 2014, \$45,000. (C. Rupprecht, G. Ertl, Co-P.I, RUSVM, The Wistar Institute).

Crucell Holland. Development of human monoclonal antibodies for rabies prophylaxis. 2014, \$180,000. (C. Rupprecht, P.I., RUSVM, LYSSA LLC).

Bill & Melinda Gates Foundation. Health economics of canine rabies elimination. 2012-13, \$100,000. (C. Rupprecht, P.I., Global Alliance For Rabies Control).

U.S. Department of Agriculture, Wildlife Services. Support for field investigations of the national wildlife rabies vaccination program. 2013, \$140,000. (C. Rupprecht, P.I., Global Alliance For Rabies Control).

U.S. Agency for International Development, Predict, detect, respond: Emerging infections in African bats. 2010-2012, \$200,000.00 (C. Rupprecht, P.I., CDC).

U.S. National Science Foundation-National Institutes of Health, Ecology of Infectious Disease Program, 2010, Demographic and behavioral responses to resource shifts and the transmission of rabies in vampire bats. \$579,908.00 (#1020966, S. Altizer, P.I., University of Georgia, C. Rupprecht, key collaborator, CDC).

U.S. National Science Foundation-National Institutes of Health, Ecology of Infectious Disease Program, 2004, Ecological influences on rabies virus infections in bats. \$1,520,000.00 (#0430418, G. McCracken, P.I., University of Tennessee, C. Rupprecht, key collaborator, CDC).

U.S. National Institutes of Health, 2004-2007, Phylogeography and spatial population dynamics of rabies. \$996,106.00 (#R01-AI047498, L. Real, P.I., Emory University, C. Rupprecht, collaborator, CDC).

U.S. Department of Health & Human Services, Global Disease Detection Program, Technical Support Corps Funds, 2005-2012, Global lyssavirus detection, diagnosis, prevention and control. \$600,000.00 (C. Rupprecht, P.I., CDC).

U.S. Department of Agriculture, Wildlife Services, 2001-2012, Technical cooperation in the national disease surveillance, diagnosis, and oral vaccination of wildlife against rabies. \$100,000.00 (#IAAV102, C. Rupprecht P.I., CDC).

U.S. National Science Foundation, Ecology of Infectious Disease Program, 2000, Ecology of virus transmission in commensal bat colonies. \$2,163,479.00 (#0094959, R. Bowen, P.I., Colorado State University, C. Rupprecht, key collaborator, CDC).

References:

Provided upon request.

Selected Citations From Last ~ Seven Years From > 350 Career Peer-reviewed Publications:

Shwiff SA, Hatch B, Anderson A, Nel LH, Leroux K, Stewart D, de Scally M, Govender P, **Rupprecht CE**. Towards canine rabies elimination in KwaZulu-Natal, South Africa: assessment of health economic data. *Transbound Emerg Dis*. 2014 Nov 21. doi: 10.1111/tbed.12283. [Epub ahead of print]

Coetzer A, Sabeta CT, Markotter W, **Rupprecht CE**, Nel LH. Comparison of biotinylated monoclonal and polyclonal antibodies in an evaluation of a direct rapid immunohistochemical test for the routine diagnosis of rabies in southern Africa. *PLoS Negl Trop Dis*. 2014 Sep 25;8(9):e3189.

Mähl P, Cliquet F, Guiot AL, Niin E, Fournials E, Saint-Jean N, Aubert M, **Rupprecht CE**, Gueguen S. Twenty year experience of the oral rabies vaccine SAG2 in wildlife: a global review. *Vet Res*. 2014 Aug 10;45(1):77.

Ellison JA, Gilbert AT, Recuenco S, Moran D, Alvarez DA, Kuzmina N, Garcia DL, Peruski LF, Mendonça MT, Lindblade KA, **Rupprecht CE**. Bat rabies in Guatemala. *PLoS Negl Trop Dis*. 2014 Jul 31;8(7):e3070.

Fitzpatrick JL, Dyer JL, Blanton JD, Kuzmin IV, **Rupprecht CE**. Rabies in rodents and lagomorphs in the United States, 1995-2010. *J Am Vet Med Assoc*. 2014 Aug 1;245(3):333-7.

Dato VM, Campagnolo ER, Shah DU, Bellush MJ, **Rupprecht CE**. Recurrent Temporary Paralysis Reported After Human Rabies Post-Exposure Prophylaxis. *Zoonoses Public Health*. 2014 Jul 4. doi: 10.1111/zph.12143.

Conrardy C, Tao Y, Kuzmin IV, Niezgodna M, Agwanda B, Breiman RF, Anderson LJ, **Rupprecht CE**, Tong S. Molecular detection of adenoviruses, rhabdoviruses, and paramyxoviruses in bats from Kenya. *Am J Trop Med Hyg*. 2014 Aug;91(2):258-66.

Lankau EW, Cox SW, Ferguson SC, Blanton JD, Tack DM, Petersen BW, **Rupprecht CE**. Community Survey of Rabies Knowledge and Exposure to Bats in Homes - Sumter County, South Carolina, USA. *Zoonoses Public Health*. 2014 May 10. doi: 10.1111/zph.12135.

Slate D, Chipman RB, Algeo TP, Mills SA, Nelson KM, Croson CK, Dubovi EJ, Vercauteren K, Renshaw RW, Atwood T, Johnson S, **Rupprecht CE**. Safety and immunogenicity of ontario rabies vaccine bait (ONRAB) in the first us field trial in raccoons (*Procyon lotor*). *J Wildl Dis*. 2014 Jul;50(3):582-9.

Fooks AR, Koraka P, de Swart RL, **Rupprecht CE**, Osterhaus AD. Development of a multivalent paediatric human vaccine for rabies virus in combination with Measles-Mumps-Rubella (MMR). *Vaccine*. 2014 Apr 11;32(18):2020-1.

Xiang ZQ, Greenberg L, Ertl HC, **Rupprecht CE**. Protection of non-human primates

against rabies with an adenovirus recombinant vaccine. *Virology*. 2014 Feb;450-451:243-9.

Horton DL, Banyard AC, Marston DA, Wise E, Selden D, Nunez A, Hicks D, Lembo T, Cleaveland S, Peel AJ, Kuzmin IV, **Rupprecht** CE, Fooks AR. Antigenic and genetic characterization of a divergent African virus, Ikoma lyssavirus. *J Gen Virol*. 2014 May;95(Pt 5):1025-32.

O'Shea TJ, Bowen RA, Stanley TR, Shankar V, **Rupprecht** CE. Variability in seroprevalence of rabies virus neutralizing antibodies and associated factors in a Colorado population of big brown bats (*Eptesicus fuscus*). *PLoS One*. 2014 Jan 22;9(1):e86261.

Kuzmina NA, Lemey P, Kuzmin IV, Mayes BC, Ellison JA, Orciari LA, Hightower D, Taylor ST, **Rupprecht** CE. The phylogeography and spatiotemporal spread of south-central skunk rabies virus. *PLoS One*. 2013 Dec 3;8(12):e82348.

Chipman RB, Cozzens TW, Shwiff SA, Biswas R, Plumley J, O'Quin J, Algeo TP, **Rupprecht** CE, Slate D. Costs of raccoon rabies incidents in cattle herds in Hampshire County, West Virginia, and Guernsey County, Ohio. *J Am Vet Med Assoc*. 2013 Dec 1;243(11):1561-7.

Tong S, Zhu X, Li Y, Shi M, Zhang J, Bourgeois M, Yang H, Chen X, Recuenco S, Gomez J, Chen LM, Johnson A, Tao Y, Dreyfus C, Yu W, McBride R, Carney PJ, Gilbert AT, Chang J, Guo Z, Davis CT, Paulson JC, Stevens J, **Rupprecht** CE, Holmes EC, Wilson IA, Donis RO. New world bats harbor diverse influenza A viruses. *PLoS Pathog*. 2013 Oct;9(10):e1003657.

Boland TA, McGuone D, Jindal J, Rocha M, Cumming M, **Rupprecht** CE, Barbosa TF, de Novaes Oliveira R, Chu CJ, Cole AJ, Kotait I, Kuzmina NA, Yager PA, Kuzmin IV, Hedley-Whyte ET, Brown CM, Rosenthal ES. Phylogenetic and epidemiologic evidence of multi-year incubation in human rabies. *Ann Neurol*. 2013 Aug 29.

Kading RC, Gilbert AT, Mossel EC, Crabtree MB, Kuzmin IV, Niezgodna M, Agwanda B, Markotter W, Weil MR, Montgomery JM, **Rupprecht** CE, Miller BR. Isolation and molecular characterization of Fikirini rhabdovirus, a novel virus from a Kenya bat. *J Gen Virol*. 2013 Aug 12. [Epub ahead of print]

Gilbert AT, Fooks AR, Hayman DT, Horton DL, Müller T, Plowright R, Peel AJ, Bowen R, Wood JL, Mills J, Cunningham AA, **Rupprecht** CE. Deciphering Serology to Understand the Ecology of Infectious Diseases in Wildlife. *Ecohealth*. 2013 Aug 6. [Epub ahead of print]

Vargas-Pino F, Gutiérrez-Cedillo V, Canales-Vargas EJ, Gress-Ortega LR, Miller LA, **Rupprecht** CE, Bender SC, García-Reyna P, Ocampo-López J, Slate D. Concomitant administration of GonaCon™ and rabies vaccine in female dogs (*Canis familiaris*) in Mexico. *Vaccine*. 2013 Sep 13;31(40):4442-7.

Franka R, Smith TG, Dyer JL, Wu X, Niezgodna M, **Rupprecht** CE. Current and future tools for global canine rabies elimination. *Antiviral Res*. 2013 Jul 18;100(1):220-225.

Lankau EW, Cohen NJ, Jentes ES, Adams LE, Bell TR, Blanton JD, Buttke D, Galland GG, Maxted AM, Tack DM, Waterman SH, **Rupprecht** CE, Marano N. Prevention

and Control of Rabies in an Age of Global Travel: A Review of Travel- and Trade-Associated Rabies Events - United States, 1986-2012. *Zoonoses Public Health*. 2013 Jul 22. [Epub ahead of print]

Wright N, Jackson FR, Niezgodka M, Ellison JA, **Rupprecht** CE, Nel LH. High prevalence of antibodies against canine adenovirus (CAV) type 2 in domestic dog populations in South Africa precludes the use of CAV-based recombinant rabies vaccines. *Vaccine*. 2013 Aug 28;31(38):4177-82.

Venkatesan A, Tunkel AR, Bloch KC, Lauring AS, Sejvar J, Bitnun A, Stahl JP, Mailles A, Drebot M, **Rupprecht** CE, Yoder J, Cope JR, Wilson MR, Whitley RJ, Sullivan J, Granerod J, Jones C, Eastwood K, Ward KN, Durrheim DN, Solbrig MV, Guo-Dong L, Glaser CA; International Encephalitis Consortium. Case definitions, diagnostic algorithms, and priorities in encephalitis: consensus statement of the international encephalitis consortium. *Clin Infect Dis*. 2013 Oct;57(8):1114-28.

Roebeling AD, Johnson D, Blanton JD, Levin M, Slate D, Fenwick G, **Rupprecht** CE. Rabies Prevention and Management of Cats in the Context of Trap-Neuter-Vaccinate-Release Programmes. *Zoonoses Public Health*. 2013 Jul 17.

Kuzmina NA, Kuzmin IV, Ellison JA, Taylor ST, Bergman DL, Dew B, **Rupprecht** CE. A reassessment of the evolutionary timescale of bat rabies viruses based upon glycoprotein gene sequences. *Virus Genes*. 2013 Oct;47(2):305-10.

Smith TG, Ellison JA, Ma X, Kuzmina N, Carson WC, **Rupprecht** CE. An electrochemiluminescence assay for analysis of rabies virus glycoprotein content in rabies vaccines. *Vaccine*. 2013 Jul 18;31(33):3333-8.

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Tack DM, Blanton JD, Holman RC, Longenberger AH, Petersen BW, **Rupprecht** CE. Evaluation of knowledge, attitudes, and practices of deer owners following identification of a cluster of captive deer with rabies in Pennsylvania in July 2010. *J Am Vet Med Assoc*. 2013 May 1;242(9):1279-85.

Streicker DG, Franka R, Jackson FR, **Rupprecht** CE. Anthropogenic roost switching and rabies virus dynamics in house-roosting big brown bats. *Vector Borne Zoonotic Dis*. 2013 Jul;13(7):498-504.

Jentes ES, Blanton JD, Johnson KJ, Petersen BW, Lamias MJ, Robertson K, Franka R, Briggs D, Costa P, Lai I, Quarry D, **Rupprecht** CE, Marano N, Brunette GW. The global availability of rabies immune globulin and rabies vaccine in clinics providing direct care to travelers. *J Travel Med*. 2013 May-Jun;20(3):148-58.

Bowen RA, O'Shea TJ, Shankar V, Neubaum MA, Neubaum DJ, **Rupprecht** CE. Prevalence of neutralizing antibodies to rabies virus in serum of seven species of insectivorous bats from Colorado and New Mexico, United States. *J Wildl Dis*.

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Dyer JL, Niezgodna M, Orciari LA, Yager PA, Ellison JA, **Rupprecht CE**. Evaluation of an indirect rapid immunohistochemistry test for the differentiation of rabies virus variants. *J Virol Methods*. 2013 Jun;190(1-2):29-33.

Kim BI, Blanton JD, Gilbert A, Castrodale L, Hueffer K, Slate D, **Rupprecht CE**. A Conceptual Model for the Impact of Climate Change on Fox Rabies in Alaska, 1980-2010. *Zoonoses Public Health*. 2013 Mar 4. [Epub ahead of print]

Lingappa UF, Wu X, Macieik A, Yu SF, Atuegbu A, Corpuz M, Francis J, Nichols C, Calayag A, Shi H, Ellison JA, Harrell EK, Asundi V, Lingappa JR, Prasad MD, Lipkin WI, Dey D, Hurt CR, Lingappa VR, Hansen WJ, **Rupprecht CE**. Host-rabies virus protein-protein interactions as druggable antiviral targets. *Proc Natl Acad Sci U S A*. 2013 Mar 5;110(10):E861-8.

Luis AD, Hayman DT, O'Shea TJ, Cryan PM, Gilbert AT, Pulliam JR, Mills JN, Timonin ME, Willis CK, Cunningham AA, Fooks AR, **Rupprecht CE**, Wood JL, Webb CT. A comparison of bats and rodents as reservoirs of zoonotic viruses: are bats special? *Proc Biol Sci*. 2013 Feb 1;280(1756):20122753.

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Marston DA, Ellis RJ, Horton DL, Kuzmin IV, Wise EL, McElhinney LM, Banyard AC, Ngeleja C, Keyyu J, Cleaveland S, Lembo T, **Rupprecht CE**, Fooks AR. Complete genome sequence of Ikoma lyssavirus. *J Virol*. 2012 Sep;86(18):10242-3.

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L, Gairola S, Kamphuis E, **Rupprecht** CE, Wunderli P, McElhinney L, De Mattia F, Gamoh K, Hill R, Reed D, Doelling V, Johnson N, Allen D, Rinckel L, Jones B. Report on the international workshop on alternative methods for human and veterinary rabies vaccine testing: State of the science and planning the way forward. *Biologicals*. 2012 Sep;40(5):369-81.

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Career Interests:

Pre-clinical, clinical, and research and development focus on biomedical aspects of infectious diseases.

Diagnosis, epidemiology, ecology, pathobiology, prevention, treatment, and control of zoonoses.

Global academic opportunities in veterinary medicine by application of a One Health context.