

CURRICULUM VITAE

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Date of Birth: October 23, 1945; Denver, Colorado

Citizenship: United States

Education:

1963 Graduated from Milbank High School, Milbank, South Dakota
1967 B.S. in Bacteriology, South Dakota State University, Brookings, South Dakota
1967-1968 Attended Graduate School, Department of Microbiology, University of Minnesota, Minneapolis, Minnesota
1971 Ph.D. in Microbiology, Medical College of Virginia, Richmond, Virginia

Training and Fellowships

1965-1967 Research Assistant, Department of Microbiology, South Dakota State University, anaerobic actinomycete biology, *Dr. Gordon Robertstad*
1967 Commissioned Second Lieutenant, USAR-Medical Service Corps
1967-1968 Woodrow Wilson Fellow, University of Minnesota, streptomyces biology and DNA taxonomy, *Dr. S. G., Bradley*
1968-1969 National Science Foundation Traineeship, Medical College of Virginia, streptomyces biology and DNA taxonomy, *Dr. S.G. Bradley*
1971 National Science Foundation Postdoctoral Trainee, *Salmonella* phage P22 genetics, *Dr. R. Kolstad*
1971-1973 Postdoctoral Fellow, Department of Cell Biology, Roche Institute of Molecular Biology; Nutley, NJ, *E. coli* phage Lambda DNA replication, *Dr. Ann Skalka*
1973 Staff Fellow, Laboratory of Molecular Genetics, Head: Dr. Philip Leder, NICHD-NIH, Bethesda, Maryland, *E. coli* phage Lambda Genetics, site specific recombination, *Dr. R. Weisberg*
1973 Call to Active Duty, Public Health Service (LTCMDR USPHS)
1973-1977 Scientist, Microbial Genetics Section, Laboratory of Molecular Genetics, Head: Dr. Philip Leder, NICHD-NIH, Bethesda, Maryland, *E. coli* phage Lambda genetics, site specific recombination; recombinant DNA technology, *Dr. R. Weisberg*
1977-1981 Scientist, Virus Tumor Biology Section, Laboratory of Molecular Virology, VOP, Head: Dr. Robert Manaker, NCI-NIH, Bethesda, Maryland, Recombinant DNA technology, herpes simplex genetics, *Dr. G. Vande Woude*
1981-1984 Research Director, Animal health care, corn tissue culture, biotechnology. Molecular Genetics, Inc., 10320 Bren Road East, Minnetonka, Minnesota 55343.
1984-1990 Research Leader, Molecular Genetics, Viral Diseases Group; Herpesvirus membrane protein biology and genetics, E. I. du Pont de Nemours & Company, Experimental Station, Wilmington, Delaware 19880-0328
1991-1993 Senior Research Fellow, Molecular Genetics; Herpesvirus neurotropism, vectors and genetics; DuPont Merck Pharmaceutical Company, Wilmington, Delaware 19880
1993-2003 Professor, Department of Molecular Biology, Princeton University, Princeton NJ 08544
2003-2004 Professor and Associate Chair, Department of Molecular Biology, Princeton University, Princeton NJ 08544
2004-2007 Professor and Chair, Department of Molecular Biology, Princeton University, Princeton NJ 08544
2007-2013 Henry L. Hillman Professor and Chair, Department of Molecular Biology, Princeton University, Princeton NJ 08544
2013- Henry L. Hillman Professor, Department of Molecular Biology, Princeton University, Princeton New Jersey 08544

Societies:

American Society for Microbiology
American Association for the Advancement of Science
American Society for Virology
Society for Neuroscience

Honors, Academic Service and Other Special Scientific Recognition

Phi Kappa Phi; National Honor Society
Sigma Xi; full member
Woodrow Wilson Fellow; 1967
Theobald Smith Society (ASM) Lecture; Hoffman-LaRoche, Dec. 1976. "The Use of Bacteriophage λ as an EK-2 Vector"
Editorial Board, Journal of Virology, 1979-1981, 1989-1991, 1992-1994, 2014-
Editor, Journal of Virology, 1994-2002
Editor in Chief, Journal of Virology, 2002-2012
Editorial Board, Virology, 1992-1995
Editorial Board, J. Neurovirology, 1995-
Instructor, Advanced Bacterial Genetics Course, Cold Spring Harbor Laboratory, Summers 1981, 1982, 1983, 1984, 1985
Convener, The Biochemistry of Integration and Excision, 82nd Annual American Society for Microbiology Meeting, Atlanta, Georgia, 1982
Scientific Advisory Committee, University of Minnesota Biotechnology Research Center, 1983
Research Affiliate, Pacific Biomedical Research Center, July 1983-August 1984, University of Hawaii at Manoa, Honolulu
Distinguished Alumnus, Department of Microbiology, South Dakota State University, Brookings, South Dakota, 1984
Distinguished Alumnus, School of Basic Sciences, Virginia Commonwealth University, Richmond, Virginia, 1984.
Convener, The Second Half of the Genetic Code: Is Molecular Genetics Ready for Protein Structure Technology?, American Society for Microbiology Meeting, Atlanta, Georgia 1987
Local Planning Committee 12th International Herpes Workshop, University of Pennsylvania July 1987
Member of the Advisory Board, Institute of Biotechnology, Virginia Commonwealth University, Richmond, VA, 1987-1995
Guest Lecturer, Department of Molecular Biology, Princeton University, 1986, 1987
Department Associate; Dept. of Molecular Biology, Princeton University, 1987 - 1993
Adjunct Associate Professor; Department of Microbiology, University of Pennsylvania, 1988-1996
Invited Lecturer, Distinguished Corporate Scientist Lecture Series, Center for Biotechnology, State University of New York at Stony Brook, January 26, 1988
NIH Study Section, Microbial Physiology and Genetics, Special Reviewer, 1983, 1984, Full Member 1985-86
NIH Study Section, Experimental Virology.
Ad hoc reviewer, 1987-88.
Full Member, 1988-91;
Chairman, 1990-92
University of Delaware Agricultural Biotechnology Center and Biocontainment Facility Planning Committee, 1991
Chair-elect of DNA Viruses, Division S, ASM, 1992
Chair of DNA Viruses, Division S, ASM, 1993
Panel member, Site Visit, In Depth Review of US National Animal Disease Center Virology Swine Research Unit 1993.
Fellow, American Academy of Microbiology, 1994
American Society of Virology Nominating Committee, 1995
Pfizer Animal Health Distinguished Speaker - University of Nebraska, 4/3/95
Commissioner, New Jersey State Commission on Cancer Research. 1996-1999. Appointed by Governor C. Whitman.
Council Delegate, Medical Sciences Section, AAAS - 1997-2000, elected.
Editorial Committee, Annual Reviews of Microbiology, 1997-2001
Committee on Election to Fellowship, American Academy of Microbiology, 1997- , elected.
Subak-Sharp Lecturer, International Herpesvirus Workshop, San Diego, 1997.
American Society for Microbiology Annual Meeting Colloquium Planning Committee, 1996-1998.
AAAS Fellow, elected 1998
Election to Fellowship Committee, American Academy of Microbiology, 1998-2002.
Councilor at Large, American Society for Microbiology, 2000-2002, elected.

Councilor for Animal Virology, American Society for Virology, 2000-2003, elected.
Member, NIGMS Biomedical Research and Research Training subcommittee A, 2000-2004.
Co-chair/Chair, Viruses Gordon Conference: 2001/2003
President's Award for Teaching Excellence, 2001, Princeton University
8th Richard J. Klein Memorial Lecturer, NYU 2003
President-elect, American Society for Virology 2003-2004
President, American Society for Virology 2004-2005
Organizing and Scientific Advisory Committee, 2nd ESVV Veterinary Herpesvirus Symposium, 2005
Javitz Investigator Award, NIH; NINDS 2005-2011
Board of Directors, AAAS, 2005-2009; Elected
Member of the National Science Advisory Board for Biosecurity, 2005-2007
Frank N. Nelson distinguished Lecturer in Molecular Biology, Biotechnology & Medicine, Montana State University, 2005
Plenary Speaker, Glasgow Virology Workshop, Glasgow, Scotland, 2006
Keynote Speaker, 9th Southeastern Regional Virology Conference, Atlanta, Georgia, 2006
Keynote Lecture, 2nd Annual Institute for Molecular Virology Symposium, Minneapolis, Minnesota, 2006
Keynote Speaker, 4th International Workshop on the Molecular Pathogenesis of Marek's Disease, University Delaware, 2006
Keynote Lecturer, International Virology Conference, Wuhan China, 2007
Elected to the American Academy of Arts and Sciences, 2010
Founding editor in chief, Annual Reviews of Virology, 2012
Honorary Doctorate, University of Ghent, Brussels, Belgium, 2013
Keynote Speaker, 32nd Annual Meeting American Society for Virology Symposia, Pennsylvania State University, State College, Pennsylvania, 2013
President-elect, American Society for Microbiology, 2014
President, American Society for Microbiology, 2015
Joklik Lecture, Duke University, Durham, North Carolina, 2015
Philip J. Bassford Memorial Lecture, University of North Carolina at Chapel Hill, 2016
Distinguished Lecture, Department of Veterinary Microbiology and Pathology, Washington State University, Pullman, Washington, 2017
Session Chair, Gordon Research Conference: Viruses & Cells, Barga, Italy, 2017
Sidney E. Grossberg, M.D. Lectureship, Medical College of Wisconsin, Milwaukee, Wisconsin, 2018
Board of Governors of the American Academy of Microbiology, 2018, Elected
Invited member of the Morgridge Institute Scientific Advisory Board, University of Wisconsin, 2018

Research Interests:

The genetics and molecular biology of DNA viruses with a special emphasis on neurotropic herpes viruses; viral pathogenesis, structure and function of viral membrane glycoproteins; neurotropism of herpesviruses; viral tracers of neural circuitry; the assembly of viral envelopes.

Teaching:

Instructor, Medical Microbiology course, Uniformed Services University, Bethesda, Maryland, 1977.
Instructor, Advanced Bacterial Genetics course at Cold Spring Harbor Labs, 1981-1985.
Lecturer, Mol Biol 505, Princeton University, with T. Silhavy. 2-4 lectures per year on bacterial genetics from 1984 to 1994.
Instructor, MOL459; Viruses: Strategy and Tactics, Princeton University. Fall Semester, 1994 – present.
Lecturer, NEU501, Neuroscience: From Molecules to Systems to Behavior. Fall Semester, one lecture. 2009 – present.

Summer Undergraduate Thesis Research:

Gregory Yap, 1994
Gregory Barton, 1994
Joseph DeOrio, 1994
Emily Senecal, 1995
Tim Kuo, 1995
Vatinee Bunya, 1995
Karen Huang, 1996
Amy Hitchcock 1996
Igor Brodsky 1996
Soniya Gandhi, 1996
Christina Lee, 1996
Jason Baynes 1997
Ellen La 1997
Isabel Newton 1997

Thomas Jones, 1997
Ilya Iofin 1998
Helen Azzam 1998
Audrey Liu 1998
Monica Divakaruni, 1998
Katy Kuipers 1999
Heidi Werner, 1999
Wayland Hsaio 1999
Clinton Kemp, 2000
Nabarun DasGupta, 2000
Sachin Shah, 2000
SuAnn Chen, 2000
Scott Bratman, 2001
Carolo Peebles, 2001
Brian Miller, 2002
Laura Shackleton, 2002
Angela Giron, 2002
Ned Bartlett 2003
Ann Raldow 2004
Katherine Carson 2004
Suneel Bhat 2005
Robin Buerki 2005
Kristopher Kang 2005
Silvia Piccinotti 2005
Jacqueline Ziker 2005
Marie Beylin, 2006
Gabriel Cohen, 2006
Morgan Goheen, 2006
Stephanie Okonkwo, 2006

Postdocs Trained:

Roger Watson (Molecular Genetics)
Anamaris Colberg-Poley (NIH)
John Weis(Molecular Genetics)
Katherine Denniston (NIH)
Kenichi Umene NIH)
J. Patrick Ryan (DuPont)
Nels Pederson (DuPont)
Kimberly Solomon (DuPont)
Calvin Keeler (DuPont)
David Thompson (DuPont-Merck)
Gregory Gonye (DuPont-Merck)
Anita Knapp-Ryseck (Princeton)
Paul Husak (Princeton)
Bruce Banfield (Princeton)
Gregory Smith (Princeton)
Christoph Hengartner (Princeton)
Lisa Pomeranz (Princeton)
Christina Paulus (Princeton)
Alex Flood (Princeton)
Becket Feierbach (Princeton)
Tracy Parker (Princeton)
Ashley Reynolds (Princeton)
Matt Lyman (Princeton)
Moriah Szpara (Princeton)
Oren Kobiler (Princeton)
Matthew Taylor (Princeton)
Esteban Engel (Princeton)
Karen Lancaster (Princeton)
Jens Bosse (Princeton)
Ian Hogue (Princeton)
Julian Scherer (Princeton)
Orkide Koyuncu (current)
Kathlyn Laval (current)

Graduate Students:

Robert Townley (1995-1998)
Rebecca Sparks-Thissen (1995-2000)
Rebecca Sawyer (1996-1999)
Amy Brideau (1996-1999)
Mark Tomishima (1997-2001)
Tony DelRio (1998-2004)
Neela Ray (1999-2004)
LeighAnne Olsen (1999-2005)
Toh Hean Ch'ng (2000-2005)
Alana Lysholm (2001- transferred U. Michigan)
Beth Brittle (2001-2005)
Gwyneth Liesch (2001-2004)
Alla Brukman (2001-2006)
Pei Ting Chou (2002-2005)
Rob Moder (2005-2006)
Jennifer Griffin (2006-2007)
Dusica Curanovic (2005-2009)
Kelly McCarthy (2006-2011)
Tal Kramer (2008-2012)
Andrea Granstedt (2007-2013)
Anthony Ambrosini (2007-2014)
Ren Song (2010-2016)
Margaret MacGibeny (2014-2018)
Oliver Hao Huang (2013-)
Shree Tanneti (2014 -)
Andrew Esteves (2016 -)

Career Summary:

My career falls into four segments. The first segment is my initial training in microbiology. My BS and PhD training was in classical bacteriology and microbiology. As an undergraduate I was trained to work with aerobic and anaerobic actinomycetes, streptomycetes, nocardia and mycobacteria. I worked as a student-helper in the bacteriology department my entire undergraduate career. I cleaned microscopes, prepared media, TA'd a variety of bacteriology and mycology lab courses, bled animals (sheep, mice, rabbits, guinea pigs, geese), made various antisera, made complement, collected rumen samples and purified anaerobic actinomycetes from pathology samples of animal abscesses. My PhD brought me closer to molecular biology in that I worked on studying DNA homologies in the streptomycetes, nocardia and mycobacteria using the then brand new technique of DNA-DNA hybridization and G+C determination using the Model E centrifuge to determine DNA buoyant density in CsCl. A secondary project concerned the characterization of a pigment made during sporulation that bound to DNA. This problem directed my interest in developmental biology and I searched for a system where I could study gene regulation at the molecular level in a genetically facile organism.

The second segment of my career is my training in bacteriophage lambda biochemistry and genetics. My first postdoctoral training was in lambda DNA replication and recombination. I thrived on the competitive environment of lambdaology. The intellectual climate in the early 1970's surrounding lambda was very stimulating. For example, not only were my replication experiments going well, my first experiments in genetic engineering were done in 1972-73 with Ann Skalka and Pat Gage at The Roche Institute of Molecular Biology when we made exciting, but futile attempts to clone the *Bombyx mori* silk gene into Lambda (before restriction enzymes). My work directed to understanding the overlapping pathways of replication and recombination was well accepted. I could see the power of a combined biochemical/genetics approach, but I did not have any training in bacterial genetics so I did a second postdoc with Bob Weisberg at the NIH to learn lambda genetics. My interest in recombination lead me to take on the intricate problem of site-specific recombination. The NIH was an incredibly interactive environment and I rapidly honed my genetic skills as well as my intellect at the weekly "lambda lunches" where one's ideas and spirit were tested with vigor. I had the most productive period of my career in lambda when I was in Weisberg's lab.

Philip Leder was the chief of the laboratory and his interest plus enthusiastic support for developing new tools for gene cloning led me into the third segment of my career which was directed at recombinant DNA technology. Nat Sternberg, David Tiemeier and I developed the WES series of lambda vectors and Nat and I developed a popular system of *in vitro* packaging. I was excited about this new technology and became a zealot, developing many new aspects of the technology and collaborating with several labs to teach them the new systems. I became involved in the politics of recombinant DNA taking part in many sessions of the Recombinant DNA Advisory Committee and participating in the certification of the first *E. coli* vector systems. During this period, my research plans broadened due to the power of recombinant DNA technology. My lab was adjacent to George Khoury's and he convinced me that I could transfer my knowledge and insight about bacterial viruses to problems in eukaryotic viruses. I accepted a staff position in George Vande Woude's lab in the NCI after a short stint on the faculty of The Uniformed Services University of the Health

Sciences. George's programs included both herpesvirus and retrovirus research and he had the required P4 containment lab needed to do recombinant DNA experiments with those viruses. George gave me my own lab and a chance to see what I could do with recombinant DNA. We were very successful in that we cloned both herpes simplex virus type 1 DNA fragments as well as integrated RNA tumor virus genomes. These were the world's first reported P4 recombinant DNA experiments with herpes and retroviruses. I learned a great deal about biocontainment in my hands-on experience in the P4 facilities at Fort Detrick and in the certification and operation of Vande Woude's P4 facility in Building 41 at the NIH.

Our success with herpesvirus cloning prompted me to redirect my research to problems in herpes biology. I was attracted to the glycoproteins because of the problems then emerging in understanding membrane protein export and virus assembly. This decision led to my fourth career segment. My lab's first experiments on herpes glycoproteins came at the time that Genentech was hitting the stock market and biology became a business possibility. I realized that herpes glycoproteins may well be valuable in vaccine technology. I had been approached by several start up genetic engineering companies and I decided to take the plunge and become the research director of Molecular Genetics, Inc. in Minnetonka, Minnesota with the charter to create new vaccines and genetically engineered plants for agricultural markets. I had a very exciting three years at Molecular Genetics. However, I realized that I was more enthusiastic about the research than I was about the business of science and the entrepreneurial life. With the encouragement of Philip Leder, a senior Du Pont consultant, I accepted a position of Research Leader in Du Pont's Central Research and Development department to continue my career in research. Du Pont gave me the opportunity to participate in many aspects of science management as well as the freedom to run a basic research laboratory to study herpesvirus assembly and envelope protein function.

On January 1, 1991, I resigned from Du Pont and joined a new joint venture between Merck and Du Pont called Du Pont Merck Pharmaceutical Company. Initially, I was one of three research managers in Viral Diseases Research with responsibility for herpesvirus research programs. My own laboratory worked on problems of identifying targets for antivirals in herpesvirus assembly. I was promoted to Senior Research Fellow with research responsibilities in using neurotropic herpesviruses in CNS research. Since 1989, I devoted my entire lab to the study of how neurotropic herpesviruses infect and travel in the mammalian brain. This line of research has been most exciting for me and has provided insight to understanding the functions of the complex glycoproteins of herpesviruses. We are beginning to understand that the CNS responds specifically to neurotropic viruses. In addition, neurotropic viruses show significant promise as tools to study the CNS. Capitalizing on the interaction of neurobiology and virology is now my primary focus.

On October 1, 1993, I accepted the position of Professor of Molecular Biology with tenure at Princeton University where I am studying the molecular mechanisms involved in the infection and spread of neurotropic herpesviruses in the mammalian nervous system.

I believe the cycle is now completed: I've done research in academia - government - biotech- large company-pharmaceutical company and now back to my roots in academia.

Business and Management Experience

Molecular Genetics, Inc. Responsibility: Research Director and member of the management team that ran the company. I was involved in setting up the company in its very early days; I was the first Research Director. At its peak, I was responsible for approximately 80 people, 22 PhDs and the remainder technical or support personnel. Many technologies had to be established including oligonucleotide synthesis, peptide and protein chemistry, immunology, computer analysis, service and support systems, indoor plant growth rooms, animal facilities etc. Our research programs included animal virus vaccine projects and corn tissue culture projects. I assisted in setting up cost accounting systems, data organization systems, biosafety and safety procedures, laboratory design and planning, interactions with the local community (biotechnology was somewhat controversial in 1981), and helped develop and implement a system of titles, performance rating and salary administration. The general business duties included project management, contract compliance, dealing with stock holders, managing a research budget that approached 13 million per year at the peak and dealing with general issues of a small entrepreneurial company. I participated in two public stock offerings, an R&D limited partnership and several multi-million dollar contracts with large international companies including American Cyanamid and Martin Marietta. We participated in a unique joint program with Chiron and Native Plants directed by Martin Marietta. I supervised two postdocs and directed a program on herpesvirus glycoproteins/subunit vaccines.

Du Pont and DuPont-Merck Pharmaceutical Company: In 1984, I was appointed as a Research Leader in Molecular Biology, DuPont Central Research and Development (CR&D), Experimental Station. I was on the senior staff of the Molecular Biology group with Du Pont CR&D. I established the Molecular Genetics group that ultimately had 6 principle investigators and a size of 25 people. I ran my own research program consisting of two Scientists and two postdoctoral fellows. In January 1, 1991, I became one of three managers on the senior staff of the Viral Diseases Research group, DuPont Merck Pharmaceuticals. I had line management responsibility for seven Principal Investigators (PhD level) and their staff. An administrative assistant and a lab manager also reported to me. We functioned as a small department with each PhD running a small group with his/her own projects. In total I was responsible for about 25 people and a budget of more than 3 million dollars. My own research group consisted of two professional research technicians and two postdoctoral fellows. In addition to running my laboratory and administering the Molecular Virology group, I also was the Program Coordinator for the Du Pont Merck Postdoctoral Fellowship Program. I shared responsibility for conceiving and implementing the program. When I left, the Company supported 71 postdocs with this program. My responsibilities in the program included managing more than 3 million dollars in funds, supervising an administrative assistant and a clerical worker. In September 1991, I was given the title of Senior Research Fellow which enabled me

(theoretically) to devote most of my time to research. I reduced some of my management duties except for running the Postdoc Program and devoted most of my time to running a research effort in developing neurotropic viruses as tools and therapeutic agents for CNS diseases.

I was active in internal administration as a scientific advisor to the senior management. This gave me contact and experience with the broad technology base in DuPont Merck Pharmaceuticals. Before the joint venture, I had been active in consulting activities with the Medical Products department including participating in their extensive strategic planning process in 1984 and 1988-89 where I was member of the Infectious Disease team. The Viral Diseases Research group was created in 1989 and I participated in extensive strategic planning sessions for planning of the business and research plan of the group. I have been on the scientific advisory board of a joint venture between Applied Biotechnology Inc., Cambridge, Massachusetts and DuPont Medical Products (Oncogenetics Partners). I have planned and participated in the building of over 6,000 square feet of molecular biology laboratories during establishment of my group. This included a virology containment suite for biosafety level three experiments. I have been on a team that planned a transgenic and virus-infected animal facility for the Viral Diseases Group. I have been chairman of the Experimental Station Site Biosafety Committee and chairman of the 1989 annual DuPont Life Sciences retreat. I was the liaison person for five years in DuPont CR&D for the Corporate Sponsor Program at Cold Spring Harbor Laboratories. I have participated in many company sponsored programs, retreats, conferences and courses for career and professional advancement. I have maintained an active professional life outside DuPont with appointments at local universities, service on NIH study sections, professional meeting planning committees, session chairman and advisory panels.

PATENTS

1. U.S. Patent No. 4,673,641. Co-aggregate Purification of Proteins. H. T. George, R. A. Kryzyk, **L. W. Enquist** and R. J. Watson.
2. U.S. Patent No. 4,818,694. Production of Herpes Simplex Viral Protein. R. J. Watson, J. W. Weis and **L. W. Enquist**.
3. U. S. Patent No. 5,004,693. Pseudorabies Virus Recombinants and Their Use in the Production of Proteins, **A. L. W. Enquist**, A. K. Robbins and M. E. Whealy.
4. U.S. Patent No. 5,037,742. Pseudorabies Virus Recombinants and Their Use in the Production of Proteins, **B. L. W. Enquist**, A. K. Robbins and M. E. Whealy.

BIBLIOGRAPHY: Author or co-author on 290 papers and books

Recent Publications 2013 - Present:

1. Koyuncu OO, Perlman DH, **Enquist, LW**. Efficient Retrograde Transport of Pseudorabies Virus within Neurons Requires Local Protein Synthesis in Axons. *Cell Host & Microbe*, Volume 13, Issue 1, 54-66, 16 January 2013.
2. Kramer T, **Enquist, LW**. Directional Spread of Alpha herpesviruses in the Nervous System. *Viruses* 2013, 5, 678-707.
3. Kratchmarov R, Taylor MP, **Enquist, LW**. (2013) Role of Us9 Phosphorylation in Axonal Sorting and Anterograde Transport of Pseudorabies Virus. *PLoS One*.2013;8(3):e58776. Epub 2013 Mar 19.
4. Koyuncu OO, Hogue IB, **Enquist, LW**. Virus infections in the nervous system. *Cell Host Microbe*. 2013 Apr 17;13(4):379-93.
5. Granstedt AE, Brunton BW, **Enquist, LW**. Imaging the Transport Dynamics of Single Alpha herpesvirus Particles in Intact Peripheral Nervous System Explants from Infected Mice. *MBio*. 2013 June 4;4(3).
6. Kratchmarov R, Kramer T, Greco TM, Taylor MP, Ch'ng TH, Cristea IM, **Enquist, LW**. Glycoproteins gE and gI are required for efficient KIF1A-dependent anterograde axonal transport of alpha herpesvirus particles in neurons. *J Virol*. 2013 Jun 26.
7. Sun XR, Badura A, Pacheco DA, Lynch LA, Schneider ER, Taylor MP, Hogue IB, **Enquist, LW**, Murthy M, Wang SS. Fast GCaMPs for improved tracking of neuronal activity. *Nat Commun*. 2013 Jul 17;4:2170.
8. Taylor MP, Kratchmarov R, **Enquist, LW**. Live Cell Imaging of Alpha herpes Virus Anterograde Transport and Spread. *J. Vis. Exp.* (78), e50723, doi:10.3791/50723 (2013).
9. Szpara ML, Gatherer D, Ochoa A, Greenbaum B, Dolan A, Bowden RJ, **Enquist, LW**, Legendre M, Davison AJ. Evolution and diversity in human herpes simplex virus genomes. *J Virol*. 2014 Jan;88(2):1209-27. Epub 2013 Nov 13.
10. Card, J. P. and **Enquist, L. W**. 2014. Transneuronal Circuit Analysis with Pseudorabies Viruses. *Curr. Protoc. Neurosci*. 68:1.5:1.5.1–1.5.39.
11. Oyibo HK, Znamenskiy P, Oviedo HV, **Enquist, L. W**, Zador AM. Long-term Cre-mediated Retrograde Tagging of Neurons Using a Novel Recombinant Pseudorabies Virus. *Front. Neuroanat*. 2014 Sep 3;8:86.
12. Bosse JB, Viriding S, Thiberge SY, Scherer J, Wodrich H, Ruzsics Z, Koszinowski UH, **Enquist, L. W**. Nuclear herpesvirus capsid motility is not dependent on F-actin. *MBio*. 2014 Oct 7;5(5). pii: e01909-14.

13. Wu BW, Engel EA, **Enquist, L. W.** Characterization of a replication-incompetent pseudorabies virus mutant lacking the sole immediate early gene IE180. *MBio*. 2014 Nov 11;5(6).
14. Szpara ML, Tafuri YR, Parsons L, Shreve JT, Engel EA, **Enquist, L. W.** Genome Sequence of the Anterograde-Spread-Defective Herpes Simplex Virus 1 Strain MacIntyre. *Genome Announc*. 2014 Nov 13;2(6). pii: e01161-14.
15. Hogue IB, Bosse JB, Hu J-R, Thiberge SY, **Enquist, L. W.** Cellular Mechanisms of Alpha Herpesvirus Egress: Live Cell Fluorescence Microscopy of Pseudorabies Virus Exocytosis. *PLoS Pathog*. 2014 Dec 4;10(12).
16. Taylor MP, **Enquist, L. W.** Axonal spread of neuroinvasive viral infections. *Trends Microbiol*. 2015 Jan 29. pii: S0966-842X(15)00003-7. [Epub ahead of print]
17. Engel EA, Song R, Koyuncu OO, **Enquist, L. W.** Investigating the biology of alpha herpesviruses with mass spectrometry-based proteomics. *Proteomics*. 2015 Mar 11. [Epub ahead of print]
18. Koyuncu OO, Song R, Greco TM, Cristea IM, **Enquist, L. W.** 2015. The number of alphaherpesvirus particles infecting axons and the axonal protein repertoire determines the outcome of neuronal infection. *MBio*. 2015 Mar 24;6(2). pii: e00276-15.
19. Parsons LR, Tafuri YR, Shreve JT, Bowen CD, Shipley MM, **Enquist, L. W.**, Szpara ML. 2015. Rapid genome assembly and comparison decode intrastrain variation in human alphaherpesviruses. *MBio*. 2015 Mar 31;6(2). pii: e02213-14.
20. Kratchmarov R, **Enquist, L. W.**, Taylor MP. Axonal sorting and transport of the pseudorabies virus glycoprotein gM independent of Us9. *J Virol*. 2015 Jun 15;89(12):6511-6514. Epub 2015 Apr 1.
21. Bosse JB, Tanneti NS, Hogue IB, **Enquist LW.** Open LED Illuminator: A Simple and Inexpensive LED Illuminator for Fast Multicolor Particle Tracking in Neurons. *PLoS One*. 2015;10(11):e0143547.
22. Ambrosini AE, **Enquist, L. W.** 2015. Cell-fusion events induced by α -herpesviruses. *Future Virology*. Vol. 10, No. 2, pages 185-200.
23. Wojaczynski GJ, Engel EA, Steren KE, **Enquist, L. W.**, Patrick Card J. The neuroinvasive profiles of H129 (herpes simplex virus type 1) recombinants with putative anterograde-only transneuronal spread properties. *Brain Struct Funct*. 2015 May;220(3):1395-1420. Epub 2014 Mar 2.
24. Johnson BN, Lancaster KZ, Zhen G, He J, Gupta MK, Kong YL, Engel EA, Krick KD, Ju A, Meng F, **Enquist, L. W.**, Jia X, McAlpine MC. 3D Printed Anatomical Nerve Regeneration Pathways. *Adv. Funct. Mater*. 2015 DOI: 10.1002/adfm.201501760.
25. **Enquist, L. W.** The Big ASM Tent: How to Represent the Microbial Sciences? *MBio*. 2015 Oct 13;6(5). pii: e01573-15.
26. Bosse JB, Hogue IB, Feric M, Thiberge SY, Sodeik B, Brangwynne CP, **Enquist, L. W.** Remodeling nuclear architecture allows efficient transport of herpesvirus capsids by diffusion. *Proc Natl Acad Sci U S A*. 2015 Oct 20;112(42):E5725-33. Epub 2015 Oct 5.
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