



<b>Instructor of Record – Carthage College</b> Genetics Lecture, Genetics Lab, Energetics and Strength, Senior Thesis, Biochemistry Lecture, Biochemistry Lab, General Chemistry Lecture, General Chemistry Lab.	<b>2010-2014</b>
<b>Undergraduate Research Advisor – Point Loma Nazarene University</b> Project: Modification of bacteriophage lambda procapsids for <i>in vivo</i> imaging and targeted drug delivery.	<b>2015-Present</b>
<b>Undergraduate Research Advisor – Carthage College</b> Project: Modification of cowpea mosaic virus and bacteriophage lambda for targeted drug delivery.  Project: Laser induced stability of pectate lyase and insulin under chemical or thermal insult.	<b>2012-2014</b>
<b>Instructor of Record – University of San Diego</b> DNA Science and Technology, Molecular Biology, General Chemistry.	<b>2008-2010</b>
<b>High School Outreach Instructor – The Scripps Research Institute</b> Continuing education Virology and Forensics Science classes for high school teachers and students.	<b>2005-2009</b>
<b>Undergraduate Research Advisor – Post-Doctoral</b> Project: Lysine-specific labeling of bacteriophage lambda procapsids and investigation of binding to mammalian cells.	<b>Summer 2009</b>
<b>High School Outreach Curriculum Coordinator – The Scripps Research Institute</b> Organization of classes taught by outreach programs for high school educators and high school students.	<b>2007-2008</b>
<b>Teaching Assistant – University of California – San Diego</b> Molecular Methods in Ecology and Evolution Lab.	<b>Winter 2008</b>

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**Research Experience**

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<b>Principle Investigator – PLNU/Carthage College</b> Projects: (I) Modification of non-mammalian viruses for use as adaptive drug delivery vehicles. (II) Mammalian specific uptake of non-host viruses.	<b>2010-Present</b>
<b>Research Consultant – Thermagen LLC</b> Goal: Provide undergraduates with research experiences externally supported by industry partners.	<b>2012-2014</b>

**Postdoctoral Researcher – University of California – San Diego** **2008-2010**

Principle Investigator: Marianne Manchester, Ph.D.

Projects: (I) Development of bacteriophage lambda procapsids for use as a novel nanoscaffold for biomedical applications. (II) Structural elucidation of the binding interface between cowpea mosaic virus and vimentin.

**Doctoral Candidate – The Scripps Research Institute** **2005-2008**

Advisor: Marianne Manchester, Ph.D.

Project: Identification and characterization of mammalian cell surface binding proteins for cowpea mosaic virus nanoparticles; applications for human vascular imaging agents, vaccine development, targeted drug delivery, and picornavirus evolution.

**Graduate Rotation – The Scripps Research Institute** **Fall 2004**

Advisor: Erica Ollmann Saphire, Ph.D.

Project: Work toward the crystallization and structural elucidation of dengue virus envelope protein, and nipah virus V and W proteins.

**Interim Biology Lab Manager – University of Wisconsin – River Falls** **Summer 2004**

Reagent preparation for laboratory classes, equipment maintenance, and management of 2-3 work-study students.

**Undergraduate Lab Researcher – University of Wisconsin – River Falls** **2003-2004**

Advisor: E. Katherine Miller, Ph.D.

Project: Hyperthermic cellular expression of heat shock proteins HSP70, HSC70, and GRP78 in murine brain and lung.

**Undergraduate Lab Researcher – University of Wisconsin – River Falls** **Spring 2001**

Advisor: Karl Peterson, Ph.D.

Project: Product separation of palladium-catalyzed stereospecific reactions.

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**Scholarship of Teaching**

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2. **Author for Albert.io General Biology, Biochemistry, and Chemistry Sections.** Created rigorous, application-based questions with thorough solutions, and advanced instructor analytics. August 2016 – July 2018

1. **Created and Published Interactive Online Teaching Modules for the Text: Molecular Biology – Structure and Dynamics of Genomes and Proteomes.** ISBN: 9780815345046. August 2017

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**Service**

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<b>PLNU Program Assessment and Review Committee Member</b> Charge: Assess, evaluate, and provide constructive feedback on program performance and educational quality assurance.	<b>2018-Present</b>
<b>PLNU Faculty Mentor for New Faculty</b> Charge: Educate, advise, and regularly meet with new faculty member to aid in transition into tenure-track employment at PLNU.	<b>2018-Present</b>
<b>PLNU Biology Research Associates Representative</b> Charge: Act as a conduit between alumni organization Research Associates and the PLNU Biology department to aid in raising money and support of research, and help with organizational goals.	<b>2017-Present</b>
<b>Western Institutional Review Board Biosafety Committee Member</b> Charge: Review, investigate, evaluate, and provide feedback concerning compliance of companies and institutions to NIH Biosafety Guidelines.	<b>2017-Present</b>
<b>Biology Representative for the Student Success Collaborative (SSC)</b> Charge: Aid and train biology faculty members in the use of the SSC advising platform.	<b>2015-Present</b>
<b>Reviewer for Discipline Specific Journals and Conferences</b> Charge: Evaluate the scientific merit of publications and presentations for Biomacromolecules, ACS Applied Materials and Interfaces, Nanotheranostics, WIRE Nanomedicine, Archives of Virology, Molecular Pharmaceutics, NCUR Proceedings, and Posters on the Hill.	<b>2014-Present</b>
<b>West Coast Biological Sciences Undergraduate Research Conference</b> Charge: Organize students; and plan, judge, and help run the conference.	<b>2014-Present</b>
<b>PLNU Graduate and Extended Studies Committee</b> Charge: Review, assess, and make recommendations to the faculty concerning graduate and extended studies policies, and programs.	<b>2016-2017</b>
<b>PLNU Faculty Resource Committee</b> Charge: Evaluate and rank grant and sabbatical proposals.	<b>2015-2016</b>
<b>Bio-Chem Program Review Member</b> Charge: Evaluation of the Bio-Chem major's strengths and weakness, and investigation of possible future improvements.	<b>2015-2016</b>

<b>Leadership in higher education strategic planning group member</b> Charge: Articulate development plan to position Carthage as an innovative leader in higher education through leveraging the College's strengths, enhancing visibility, and developing signature programming.	<b>Spring 2014</b>
<b>Vice President of Carthage College Sigma Xi Chapter</b> Charge: Organization of chapter meetings and awards.	<b>2012-2014</b>
<b>Building liaison team member</b> Charge: Act as conduit of communication and compromise between administration, architects, and faculty for the planning, designing, and building of a new Natural Sciences Building at Carthage College.	<b>2011-2014</b>
<b>Faculty advisor for the student service organization Carthage World Relief</b> Charge: Guide and participate in group's mission to increase awareness of global health initiatives and actively partake in projects that increase healthcare for those in need due to disaster or poverty.	<b>2011-2014</b>
<b>Chemistry thesis archivist</b> Charge: Inventory and maintain senior theses from the chemistry department both electronically and in print.	<b>2010-2014</b>
<b>Nursing advisory committee member</b> Charge: Explore strengths, opportunities, and concerns for the possible addition of a nursing program at Carthage College.	<b>Fall 2013</b>
<b>Textbook reviewer</b> Charge: Evaluate, advise, and edit seven chapters for a new text publication entitled, "Modern Molecular Biology: Genomes to Proteomes" by Garland Science.	<b>Summer 2013</b>
<b>Chemistry search committee member</b> Charge: Evaluate, screen, and recruit a chemistry term faculty member.	<b>Spring 2013</b>

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**Honors and Professional Affiliations**

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<b>Member, Council on Undergraduate Research</b>	<b>2011-Present</b>
<b>Member, American Society for Virology</b>	<b>2006-Present</b>
<b>Member, Sigma Xi</b>	<b>2011-2014</b>
<b>The Joint USD-Scripps Training for Future Faculty Members (JUST) Post-Doctoral Fellowship</b>	<b>2008-2010</b>

**Member, American Academy of Nanomedicine** **2007-2010**

**ARCS Foundation Scholar** **2007-2008**

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### Research Articles

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5. **Koudelka KJ**, Ippoliti S\*, Medina E, Shriver LP, Trauger SA, Catalano CE, and Manchester M. Lysine addressability and mammalian cell interactions of bacteriophage lambda procapsids. *Biomacromolecules*. 2013 Dec 9; 14(12):4169-76. PMID: 24251756.

4. Shriver LP, **Koudelka KJ**, and Manchester M. Viral nanoparticles associate with regions of inflammation and blood brain barrier disruption during CNS infection. *J Neuroimmunol*. 2009 Jun 25; 211:66-72. PMID: 19394707.

3. **Koudelka KJ**, Destito G, Plummer EM, Trauger SA, Siuzdak G, and Manchester M. Endothelial targeting of cowpea mosaic virus (CPMV) via surface vimentin. *PLoS Pathog*. 2009 May; 5(5). PMID: 19412526.

2. Rae CS, **Koudelka KJ**, Destito G, Estrada MN, Gonzalez MJ, and Manchester M. Chemical addressability of ultraviolet-inactivated viral nanoparticles (VNPs). *PLoS ONE* 2008 Oct 2; 3(10). PMID: 18830402.

1. **Koudelka KJ**, Rae CS, Gonzalez MJ, and Manchester M. Interaction between a 54kD mammalian cell surface protein and cowpea mosaic virus. *J. Virol*. 2007 Feb; 81(4): 1632-40. PMID: 17121801.

\* = Mentored undergraduate author

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### Reviews

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3. **Koudelka KJ**, Pitek A, Manchester M, and Steinmetz N. Virus-based nanoparticles as versatile nanomachines. *Annu Rev Virol*. 2015 Nov; 2(1): 379-401. PMID: 26958921.

2. **Koudelka KJ**, and Manchester M. Chemically modified viruses: principles and applications. *Curr Opin Chem Biol*. 2010 Dec; 14(6): 810-7. PMID: 21036656.

1. **Koudelka KJ**, and Manchester M. Book Chapter: The Use of Viruses in Biomedical Nanotechnology. *Emerging Topics in Physical Virology*, Imperial College Press, 2010.

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### National Oral Presentations

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7. **Koudelka KJ**. Integration of a Virology-Based Research Agenda into a Mid-Majors Course at a Primarily Undergraduate Institution. *American Society for Virology Annual Meeting*, 2019, Minneapolis-St. Paul, Minnesota. *Undergraduate Teacher Travel Grant Awardee*

6. **Koudelka KJ**, Morin J\*, Ziegler M\*, Rowley N\*, and Koshland K\*. Dual Modified Bacteriophage Lambda Procapsids Designed for Targeted Cellular Delivery. American Society for Virology Annual Meeting, 2017, Madison, Wisconsin. *Undergraduate Teacher Travel Grant Awardee*

5. **Koudelka KJ**, Ippoliti S\*, Medina E, Shriver LP, Trauger SA, Kent R\*, Catalano CE, and Manchester M. Chemical addressability and mammalian interactions of bacteriophage lambda procapsids. American Society for Virology Annual Meeting, 2012, Madison, Wisconsin.

4. **Koudelka KJ**, Ippoliti S\*, Medina E, Shriver LP, Trauger SA, Siuzdak G, Catalano CE, and Manchester M. Bacteriophage lambda as a novel nanoparticle: chemical addressability of procapsids, and procapsid-mammalian cell interactions. American Society for Virology Annual Meeting, 2010, Bozeman, Montana.

3. **Koudelka KJ**, Plummer EM, Destito G, Trauger SA, Siuzdak G, and Manchester M. Vascular endothelial targeting of cowpea mosaic virus using cell surface vimentin. American Society for Virology Annual Meeting, 2009, Vancouver, Canada.

2. **Koudelka KJ**, Destito G, Trauger SA, Siuzdak G, and Manchester M. Cell surface-exposed vimentin is a receptor for cowpea mosaic virus in mammalian cells. International Congress of Virology, 2008, Istanbul, Turkey.

1. **Koudelka KJ**, Rae CS, Gonzalez MJ, and Manchester M. Plant Virus-Based Nanoparticles Interact Specifically With a Mammalian Cell Surface Receptor. American Society for Virology Annual Meeting, 2006, Madison, WI.

\* = Mentored undergraduate author

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### Mentored Students' Presentations

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24. Culver, R\*, Julio A\*, and **Koudelka KJ**. *In Vitro* Assembly of Bacteriophage Lambda Procapsid to Enable Payload Encapsulation for Targeted Drug Delivery. PLNU Senior Honor's Thesis. 2019.

23. Salgado B\*, **Koudelka KJ**, and Shresta S. The Role of the Tumor Necrosis Factor Superfamily Members on Regulation of T Cell Response in Zika Virus. PLNU Senior Honor's Thesis. 2019.

22. Culver, R\*, Julio A\*, and **Koudelka KJ**. *In Vitro* Assembly of Bacteriophage Lambda Procapsid to Enable Payload Encapsulation for Targeted Drug Delivery. 44<sup>th</sup> West Coast Biological Sciences Undergraduate Research Conference, 2019, San Diego, CA.

21. Salgado B\*, **Koudelka KJ**, and Shresta S. Regulation of T Cell Responses to Zika Virus Infection Through the Tumor Necrosis Factor Superfamily Members OX40 and GITR. 44<sup>th</sup> West Coast Biological Sciences Undergraduate Research Conference, 2019, San Diego, CA.

20. Avila D\*, Banning G\*, Julio A\*, Roser T\*, and **Koudelka KJ**. Assembly and Surface Modification of Viral Nanoparticles. 44<sup>th</sup> West Coast Biological Sciences Undergraduate Research Conference, 2019, San Diego, CA.
19. Julio A\*, Roser T\*, Morin J\*, Ziegler M\*, and **Koudelka KJ**. Assembly and Surface Modification of Viral Nanoparticles for Chemotherapeutic Drug Delivery. 43<sup>rd</sup> West Coast Biological Sciences Undergraduate Research Conference, 2018, Moraga, CA.
18. Morin J\*, Ziegler M\*, Rowley N\*, Koshland K\*, and **Koudelka KJ**. Modification to Bacteriophage Lambda Procapsids to Create a Targeted Therapeutic Delivery System. 42<sup>nd</sup> West Coast Biological Sciences Undergraduate Research Conference, 2017, Santa Clara, CA. *Honorable Mention, Best Talk in Section.*
17. Rowley N\*, and **Koudelka KJ**. The Investigation of Cancer Cell Surface Proteins that Interact with Phage Procapsids. PLNU Senior Honor's Thesis. 2016.
16. Hatley K\*, Perez B\*, Van Horne S\*, Feghali P\*, and **Koudelka KJ**. Lambda Procapsids Have High Structural Stability, and Great Potential for Drug Delivery. 41<sup>st</sup> West Coast Biological Sciences Undergraduate Research Conference, 2016, San Diego, CA.
15. Rowley N\*, Koshland K\*, and **Koudelka KJ**. Modified Bacteriophage Lambda Procapsids for Use as a Drug Delivery Platform. 41<sup>st</sup> West Coast Biological Sciences Undergraduate Research Conference, 2016, San Diego, CA. *Best Talk in Section.*
14. Krings L\*, Fenske H\*, Jefferson D\*, Machurick M\*, and **Koudelka KJ**. Analysis of Bacteriophage Lambda Procapsids for Use as a Viral Nanoparticle for Early Cancer Detection and Targeted Delivery. Undergraduate Research Symposium in Biological Sciences and Psychology, 2014, Chicago, IL.
13. Fenske H\*, Jefferson D\*, Krings L\*, Machurick M\*, and **Koudelka KJ**. Visualization of Internalized Viral Nanoparticles (VNPs) for Imaging and Early Cancer Detection. 28<sup>th</sup> National Conference on Undergraduate Research (NCUR), 2014, Lexington, KY.
12. Fenske H\*, Jefferson D\*, Krings L\*, Machurick M\*, and **Koudelka KJ**. Visualization of Internalized Viral Nanoparticles (VNPs) for Imaging and Early Cancer Detection. Celebration of Scholars, 2014, Carthage College, Kenosha, WI.
11. Eschbach, J\*, Goetz M\*, Egner J\*, Kendal E\*, **Koudelka KJ**, and Martino P. The Effects of Whey Protein, Gatorade, and Creatine on Strength and Over-All Health. Celebration of Scholars, 2014, Carthage College, Kenosha, WI.
10. Fenske H\*, Jefferson D\*, and **Koudelka KJ**. Intracellular Visualization of Internalized Virus-Based Delivery Vehicles. Undergraduate Research Symposium in Biological Sciences and Psychology, 2013, St. Louis, MO.

9. Fenske H\*, Machurick M\*, and **Koudelka KJ**. Dye Modified Virus-Based Nanoplatforms for Cancer Imaging. 27<sup>th</sup> National Conference on Undergraduate Research (NCUR), 2013, La Crosse, WI.
8. Fenske H\*, Machurick M\*, and **Koudelka KJ**. Modified Viral Nanoparticles as Cancer Detecting Imaging Devices. Celebration of Scholars, 2013, Carthage College, Kenosha, WI.
7. Machurick M\*, Fenske H\*, and **Koudelka KJ**. Dye Modified Virus-Based Nanoplatforms for Cancer Imaging and Advanced Therapeutics. Celebration of Scholars, 2013, Carthage College, Kenosha, WI.
6. Seiler GS\*, Weber M, and **Koudelka KJ**. Exploring Issues In Protein Quantitation by Visible Spectroscopic Techniques. Celebration of Scholars, 2013, Carthage College, Kenosha, WI.
5. Kendl E\*, **Koudelka KJ**, and Martino P. Workout Supplementation and Their Effects on Strength and Body Gains. Celebration of Scholars, 2013, Carthage College, Kenosha, WI.
4. Fenske H\*, Machurick M\*, and **Koudelka KJ**. Chemical Modification of Cowpea Mosaic Virus (CPMV) to Create Advanced Cancer Therapeutics. Undergraduate Research Symposium in Biological Sciences and Psychology, 2012, Chicago, IL.
3. Kent R\*, and **Koudelka KJ**. Characterization and Chemical Modification of Cowpea Mosaic Virus (CPMV). Celebrations of Scholars, 2012, Carthage College, Kenosha, WI.
2. Egner J\*, **Koudelka KJ**, and Martin P. Evaluating the Effect of Carbohydrate-Electrolyte, Whey Protein, and Creatine Monohydrate Supplementation with Resistance Training. Celebration of Scholars, 2012, Carthage College, Kenosha, WI.
1. Ippoliti S\*, and **Koudelka KJ**. Bacteriophage Lambda: Amine Specific Labeling and Evaluation of Mammalian Cell Interactions. Creative Collaborations, 2011, University of San Diego, San Diego, CA.

\* = Mentored undergraduate author

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### Invited Panelist

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3. Biomolecular Visualization Workshop, University of San Diego, 2018.
2. Academic Career Roundtable, The Scripps Research Institute, 2016.
1. Graduate Program Alumni Symposium, The Scripps Research Institute, 2015.

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### Attended Conferences without Major Presentation

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1. Intercampus Symposium on Gene Editing: Dialogue at the Intersection of Science, Ethics, and Faith, Azusa Pacific University, 2018

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## Grants

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1. Auxin Partners Grant. Laser induced stability of proteins under chemical or thermal insult. Net budget was \$13,407, and acquisition of new prototype instrument. **Funded June 2012.**