

Kristopher J. Koudelka
Curriculum Vitae

Point Loma Nazarene University
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Education

- Ph.D.** The Scripps Research Institute, La Jolla, CA **2004-2008**
 Tracks: Biology and Chemical Biology
 Thesis Title: *Elucidation of Mammalian Binding and*
 Entry of Cowpea Mosaic Virus Via Surface Vimentin;
 Implications for Nanotechnology and Virus Evolution
- B.A.** University of Wisconsin-River Falls, River Falls, WI **1999-2003**
 Major: Biology; Minor: Chemistry

Academic Appointments

- Associate Professor** **2016-Present**
 Point Loma Nazarene University, San Diego, CA
 Department of Biology
- Assistant Professor** **2014-2016**
 Point Loma Nazarene University, San Diego, CA
 Department of Biology
- Assistant Professor** **2010-2014**
 Carthage College, Kenosha, WI
 Department of Biology and Department of Chemistry
- Visiting Assistant Professor** **2008-2010**
 University of San Diego, San Diego, CA
 Department of Chemistry and Biochemistry

Teaching and Mentoring Activities

- Instructor of Record – Point Loma Nazarene University** **2014-Present**
 Cell Biology and Biochemistry Lecture, Cell Biology and Biochemistry
 Lab, Molecular Biology Lecture, Molecular Biology Lab, Research
 Methodology, Biochemistry Lecture, Biochemistry Lab
- Instructor of Record – Carthage College** **2010-2014**
 Genetics Lecture, Genetics Lab, Energetics and Strength, Senior

Kristopher J. Koudelka: Curriculum Vitae

Thesis, Biochemistry Lecture, Biochemistry Lab, General Chemistry Lecture, General Chemistry Lab.

- Undergraduate Research Advisor – Nicole Rowley, Kyle Koshland, Breanna Perez, Justin Morin, Madyson Ziegler, Paulina Feghali, Sara Van Horne, and Kaitlyn Hatley** **2015-Present**
Project: Modification of bacteriophage lambda procapsids for *in vivo* imaging and targeted drug delivery.
- Undergraduate Research Advisor – Heidi Fenske, Maxwell Machurick, Darien Jefferson, and Laura Krings** **2012-2014**
Project: Modification of cowpea mosaic virus and bacteriophage lambda for targeted drug delivery.
- Undergraduate Research Advisor – Grant Seiler** **2012**
Industry Collaboration with Auxin Partners
Project: Laser induced stability of pectate lyase and insulin under chemical or thermal insult.
- Undergraduate Research Advisor – Rebecca Kent** **2011-2012**
Project: Standardization and optimization of fast protein liquid chromatography and ultra-violet spectroscopic characterization of cowpea mosaic virus.
- Instructor of Record – University of San Diego** **2008-2010**
DNA Science and Technology, Molecular Biology, General Chemistry.
- High School Outreach Instructor – The Scripps Research Institute** **2005-2009**
Continuing education Virology and Forensics Science classes for high school teachers and students.
- Undergraduate Research Advisor – Shannon Ippoliti** **Summer 2009**
Project: Lysine-specific labeling of bacteriophage lambda procapsids and investigation of binding to mammalian cells.
- High School Outreach Curriculum Coordinator – The Scripps Research Institute** **2007-2008**
Organization of classes taught by outreach programs for high school educators and high school students.
- Teaching Assistant – University of California – San Diego** **Winter 2008**
Molecular Methods in Ecology and Evolution Lab.
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Research Experience

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

Curriculum Development

25 Interactive Online Modules for Molecular Biology – Structure and Dynamics of Genomes and Proteomes. ISBN: 9780815345046. (To be Published December, 2016)

Service

- Biology Representative for the Student Success Collaborative (SSC)** **2015-Present**
Charge: Aid and train biology faculty members in the use of the new SSC advising platform.
- West Coast Biological Sciences Undergraduate Research Conference** **Springs 2015 and 2016**
Charge: Organize student volunteers, and help plan, judge, and run conference.
- PLNU Faculty Resource Committee** **2015-2016**
Charge: Evaluate and rank grant and sabbatical proposals.
- Bio-Chem Program Review Member** **2015**
Charge: Evaluation of the Bio-Chem major's strengths and weakness, and investigation of possible future improvements.
- Reviewer for Discipline Specific Journals and Conferences** **2014-2016**
Charge: Evaluate the scientific merit of publications and presentations for Biomacromolecules, ACS Applied Materials and Interfaces, NCUR Proceedings, and Posters on the Hill.
- Leadership in higher education strategic planning group member** **Spring 2014**
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.
- Vice President of Carthage College Sigma Xi Chapter** **2012-2014**
Charge: Organization of chapter meetings and awards.
- Building liaison team member** **2011-2014**
Charge: 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.
- Faculty advisor for the student service organization Carthage World Relief** **2011-2014**
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.

Chemistry thesis archivist Charge: Inventory and maintain senior theses from the chemistry department both electronically and in print.	2010-2014
Lincoln scholarship interviewer Charge: Interview prospective students in a yearly competition for full tuition and board scholarships to Carthage College.	2010-2014
Nursing advisory committee member Charge: Explore strengths, opportunities, and concerns for the possible addition of a nursing program at Carthage College.	Fall 2013
Textbook reviewer Charge: Evaluate, advise, and edit seven chapters for a new text publication entitled, "Modern Molecular Biology: Genomes to Proteomes" by Garland Science.	Summer 2013
Chemistry search committee member Charge: Evaluate, screen, and recruit a chemistry term faculty member.	Spring 2013

Honors and Professional Affiliations

Member, Council on Undergraduate Research	2011-Present
Member, American Society for Virology	2006-Present
Member, Sigma Xi	2011-2014
The Joint USD-Scripps Training for Future Faculty Members (JUST) Post-Doctoral Fellowship	2008-2010
Member, American Academy of Nanomedicine	2007-2010
ARCS Foundation Scholar	2007-2008

Research Articles

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

Reviews

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.

National Oral Presentations

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

Mentored Students' Presentations

17. Rowley N*, and **Koudelka KJ**. The Investigation of Cancer Cell Surface Proteins that Interact with Phage Procapsids. PLNU Senior 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. 41st 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. 41st West Coast Biological Sciences Undergraduate Research Conference, 2016, San Diego, CA. *Won 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. 28th 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. 27th 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 Nanoplatfoms 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

Grants

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