

# Peter M. Clark

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## ACADEMIC APPOINTMENTS

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**Assistant Professor** 2016 – present  
Crump Institute for Molecular Imaging  
Department of Molecular and Medical Pharmacology  
University of California, Los Angeles

## EDUCATION

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**California Institute of Technology** *Pasadena, CA* 2004 – 2011  
Ph.D. Chemistry; *Specialty in chemical biology*

**Cornell University** *Ithaca, NY* 2000 – 2004  
B.A. Biology (Magna Cum Laude), Chemistry (Summa Cum Laude), College Scholar (Cum Laude),  
Economics, English, Mathematics (Cum Laude), Philosophy, Physics  
GPA 3.7

## RESEARCH EXPERIENCE

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**Postdoctoral Fellow, University of California, Los Angeles** 2011 – 2015  
*Advisor:* Prof. Owen Witte  
*Project:* Developing new positron emission tomography probes for *in vivo* metabolic imaging.

**Graduate Research, California Institute of Technology** 2004 – 2011  
*Advisor:* Prof. Linda Hsieh-Wilson  
*Project 1:* Determined the protein binding sites of chondroitin sulfate tetrasaccharides. Adapted existing and developed new computational methods to overcome the unique challenges of modeling chondroitin sulfate molecules. Discovered new binding motifs for these molecules.  
*Project 2:* Investigated the role of O-GlcNAc glycosylation in the brain. Developed new tools for studying O-GlcNAc glycosylation. Discovered new sites of O-GlcNAc glycosylation on the protein CREB. Analyzed how glycosylation affected CREB function.

**Undergraduate Research, Cornell University** 2003 – 2004  
*Advisor:* Prof. Charles Aquadro  
Studied the genome of species within the *Drosophila* lineage to evaluate the degree of positive selection on the protein CG18508. Performed maximum likelihood tests to determine sites of strong selection. Analyzed these sites using computational methods to predict their likely function.

**Undergraduate Research, Cornell University** 2001 – 2004  
*Advisor:* Prof. Stephen Lee  
Explored the principal energetic factors responsible for AB<sub>3</sub> binary transition metal compounds forming icosahedral, Frank–Kasper, or closest-packed structures. Mapped the limitations of Hückel theory in relation to binary metal compounds. Created computer programs to calculate chemical bond energies.

**Undergraduate Research, Rutgers University** 2001  
*Advisor:* Rene Schloss, Ph.D.

Investigated the mechanisms through which glutathione hinders the development of cardiovascular plaque. Studied biochemical pathways that cause cardiovascular plaques.

## TRAINING AWARDS

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California Institute for Regenerative Medicine Fellowship University of California, Los Angeles	2012 – 2015
Scholars in Oncologic Molecular Imaging Fellowship University of California, Los Angeles	2011 – 2012
NIH Neurobiology Training Grant California Institute of Technology	2006 – 2007

## PUBLICATIONS

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**Clark, P. M.**; Mai, W. X.; Cloughesy, T. F.; Nathanson D. A., "Emerging Approaches for Targeting Metabolic Vulnerabilities in Malignant Glioma." *Curr. Neurol. Neurosci. Rep.* 2016. **16**, (2), 17.

Faltermeier, C. M.; Drake, J. M.; **Clark, P. M.**; Smith, B. A.; Zong Y.; Volpe, C.; Mathis, C.; Morrissey, C.; Castor, B.; Huang, J.; Witte O. N., "Functional screen identifies kinases driving prostate cancer visceral and bone metastasis." *Proc. Natl. Acad. Sci. USA.* 2016. **113**, (2), E172-181.

**Clark, P. M.\***; Evdokimov, N. M.\*; Flores, G.; Chai, T.; Faull, K. F.; Phelps, M. E.; Witte, O. N.; Jung, M. E., "Development of 2-Deoxy-2-[(18)F]fluororibose for Positron Emission Tomography Imaging Liver Function in Vivo." *J. Med. Chem.* 2015, **58**, (14), 5538-47.

**Clark, P. M.**; Flores, G.; Evdokimov, N. M.; McCracken, M. N.; Chai, T.; Nair-Gill, E.; O'Mahony, F.; Beaven, S. W.; Faull, K. F.; Phelps, M. E.; Jung, M. E.; Witte, O. N., "Positron emission tomography probe demonstrates a striking concentration of ribose salvage in the liver." *Proc. Natl. Acad. Sci. USA.* 2014, **111**, (28), E2866-E2874.

Evdokimov, N. M.; Flores, G.; **Clark, P. M.**; Phelps, M. E.; Witte, O. N.; Jung, M. E., "5- (2-[18F]fluoroethyl)-4-methylthiazole probe for positron emission tomography of the central nervous system." *Chem. Heterocycl. Compd.* 2014, **50**, (2), 303-307.

**Clark, P. M.\***; Rexach, J. E.\*; Hsieh-Wilson, L. C., "Visualization of O-GlcNAc glycosylation stoichiometry and dynamics using resolvable poly(ethylene glycol) mass tags." *Curr. Protoc. Chem. Biol.* 2013, **5**, (4), 281-302.

Ramakrishnan, P.; **Clark, P. M.**; Mason, D. E.; Peters, E. C.; Hsieh-Wilson, L. C.; Baltimore, D., "Activation of the Transcriptional Function of the NF-kappaB Protein c-Rel by O-GlcNAc Glycosylation." *Sci. Signal.* 2013, **6**, (290), ra75.

Yi, W.; **Clark, P. M.**; Mason, D. E.; Peters, E. C.; Driggers, E. M.; Hsieh-Wilson, L. C., "Phosphofructokinase 1 Glycosylation Regulates Cell Growth and Metabolism." *Science.* 2012, **337**, (6097), 975-980.

**Clark, P. M.\***; Rexach, J. E.\*; Mason D. E.; Neve, R. L.; Peters, E. C.; Hsieh-Wilson, L. C., "Dynamic O-GlcNAc modification regulates CREB-mediated gene expression and memory formation." *Nature Chem. Biol.* 2012, **8**, (3), 253-61.

**Clark, P. M.\***; Rogers, C. J.\*; Tully, S. E.; Abrol, R; Garcia, K. C.; Goddard, W. A., 3rd; Hsieh-Wilson, L. C., "Elucidating glycosaminoglycan-protein-protein interactions using carbohydrate microarray and computational approaches." *Proc. Natl. Acad. Sci. USA* 2011, **108**, (24), 9747-52.

**Clark, P. M.**; Dweck, J. F.; Mason D. E.; Hart C. R.; Buck S. B.; Peters E. C.; Agnew B. J.; Hsieh-Wilson L. C., "Direct in-gel fluorescence detection and cellular imaging of O-GlcNAc-modified proteins." *J. Am. Chem. Soc.* 2008, **130**, 11576-7.

**Clark, P. M.\*;** Rexach, J. E.\*; Hsieh-Wilson, L. C., "Chemical approaches to understanding O-GlcNAc glycosylation in the brain." *Nature Chem. Biol.* 2008, **4**, (2), 97-106.

Khidekel, N.; Ficarro, S. B.; **Clark, P. M.**; Bryan, M. C.; Swaney, D. L.; Rexach, J. E.; Sun, Y. E.; Coon, J. J.; Peters, E. C.; Hsieh-Wilson, L. C., "Probing the dynamics of O-GlcNAc glycosylation in the brain using quantitative proteomics." *Nature Chem. Biol.* 2007, **3**, (6), 339-48.

Gama, C. I.; Tully, S. E.; Sotogaku, N.; **Clark, P. M.**; Rawat, M.; Vaidehi, N.; Goddard, W. A., 3rd; Nishi, A.; Hsieh-Wilson, L. C., "Sulfation patterns of glycosaminoglycans encode molecular recognition and activity." *Nature Chem. Biol.* 2006, **2**, (9), 467-73.

**Clark, P. M.**; Lee, S.; Fredrickson, D. C., "Transition metal AB<sub>3</sub> intermetallics: Structure maps based on quantum mechanical stability." *J. Solid State Chem.* 2005, **178**, (4), 1269-1283.

\* Co-first author

## AWARDS AND ACADEMIC HONORS

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Best Oral Presentation – UCLA Pharmacology Departmental Retreat	2013
Herbert Newby McCoy Award in Chemistry	2011
Awarded by the California Institute of Technology to top chemistry graduates	
Marshall Scholarship Finalist	2004
Rhodes Scholarship Semi-finalist	2004
George C. Caldwell Prize in Chemistry	2004
Hypercube Scholar Award for Scholastic Excellence in Chemistry	2003
Barry H. Goldwater Scholar	2002
Benson Leister Scholarship for Excellence in the Study of Biology	2000

## INVITED TALKS

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"New Positron Emission Tomography probes for imaging liver failure and regeneration <i>in vivo</i> "	
Broad Stem Cell Research Center Tri-institutional Retreat	2014
"The ribose salvage pathway"	
UCLA Department of Molecular and Medical Pharmacology Triangle Group Meeting	2014
"Ribose salvage is dysregulated in metabolic syndrome"	
UCLA Department of Molecular and Medical Pharmacology Departmental Retreat	2013
"O-GlcNAc glycosylation regulates neuronal function by modification of the transcription factor CREB"	
California Institute of Technology	2011

## CONFERENCES ATTENDED

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World Molecular Imaging Congress	2016
UCLA Department of Molecular and Medical Pharmacology Departmental Retreat	2015
UCLA Department of Molecular and Medical Pharmacology Departmental Retreat	
– Poster Presentation	2014
Howard Hughes Medical Institute Science Meeting	2014
– Poster Presentation	
Broad Stem Cell Research Center Tri-institutional Retreat	2014
– Oral Presentation	
UCLA Department of Molecular and Medical Pharmacology Departmental Retreat	
– Oral Presentation	2013
World Molecular Imaging Congress – Poster Presentation	2013

California Institute for Regenerative Medicine Grantee Meeting – Poster Presentation	2013
UCLA Department of Molecular and Medical Pharmacology Retreat – Poster presentation	2012
Joint Center for Translational Medicine Retreat – Poster presentation	2012
Tau Consortium Investigators Meeting	2011
San Diego Glycobiology Symposium – Poster presentation	2010
Howard Hughes Medical Institute Science Meeting	2007

## PATENTS

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Witte, O. N., **Clark, P. M.**, Castillo, B. G., Evdokimov, N. M., Jung, M. E. (Assignee: The Regents of the University of California) “A Positron Emission Tomography Probe to Monitor Selected Sugar Metabolism *In Vivo*.” US Patent Application PCT/US2013/040425. Filed on May 9, 2013.

## TEACHING EXPERIENCE

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### University of California, Los Angeles

M291 Special Topics in Pharmacology	2016
M248 Introduction to Biological Imaging	2016
Biology for Imaging Scientists short course IEEE Nuclear Science Symposium and Medical Imaging conference	2015

### California Institute of Technology.

Bioorganic Chemistry of Proteins. Teaching assistant.	2007 – 2008
Organic Chemistry. Head teaching assistant.	2006
Fundamental Techniques of Experimental Chemistry. Teaching assistant.	2004 – 2005

### Cornell University.

Biochemistry. Teaching assistant.	2002 – 2004
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