

# CENTER FOR PHARMACEUTICAL BIOTECHNOLOGY



Mankin Lab

## FUNDING

The Center was successful in both obtaining and retaining funding from a variety of extramural sources. Some of our grants include:

Michael Federle — \$1,250,000 for "Mechanistic Dissection of Pheromone-Dependent Regulation of Group A Streptococcal Virulence" National Institutes of Health R01

Michael E. Johnson — up to \$13.8 million for the 5-year Department of Defense/Defense Threat Reduction Agency contract "Broad-spectrum Antibiotic Against Category A Agents"

Hyunwoo Lee — \$250,000 for his National Institutes of Health 1-year R56 grant "Peptide-based Quorum Sensing Controlling Virulence in *Bacillus anthracis*"

Brian T. Murphy — \$47,762 from the Department of Defense/Defense Threat Reduction Agency for "A co-culture based approach toward the induction and isolation of small molecule drug-leads active against Gram-negative HHS-Select Agents"



Dr. Hari Priya Ramu, Alexander Mankin, Advisor (pictured with Michael Federle)



Dr. Prahlad Rao, Qingbo Li, Advisor



Dr. Anuradha Mittal, Michael E. Johnson, Advisor



Dr. Monsheel Sodhi



Dr. Zain Paroo



Dr. Joanna Burdette

## OTHER NEWS

The Center gained three new faculty: Zain Paroo, Monsheel Sodhi and Joanna Burdette

Dr. Nora Vázquez-Laslop was promoted to Research Associate Professor

CPB hosted 29 Seminars

The Center-based group "Positive Thinking" hosted regular seminars uniting faculty from 3 colleges

Four students graduated with a PhD degree — congratulations to Drs. Jacqueline LaMarre, Anuradha Mittal, Hari Priya Ramu and Prahlad Rao!

The Center hosted 6 potluck-style luncheons, including one with a "Best Dish" Competition. Congrats to Priya Sothiselvam for her cauliflower dish!

The CPB is now on Twitter and Facebook! You can follow us on Twitter @UIC\_CPB or like us on Facebook [www.facebook.com/UICCPB](http://www.facebook.com/UICCPB)

## 2011 IN REVIEW

The Center for Pharmaceutical Biotechnology has enjoyed many successes this year. We now have 7 faculty members, 6 research faculty, over 20 graduate students, 9 postdocs and over 15 research and office staff.



Johnson Lab

## AWARDS

Chaitanya Aggarwal (Federle) and Pulkit Gupta (Mankin), pictured right, both received UIC's Chancellor's Graduate Research Award and the Chancellor's Student Service and Leadership Award

Chaitanya Aggarwal was also named a Chicago Biomedical Consortium Scholar, won 1st prize in the COP Research Day poster presentation and received a Charles Wesley Petranek Scholarship Award

Pulkit Gupta was also selected for membership in the Rho Chi Pharmacy Honors Society-Phi Chapter and was named a W.E. Van Doren Scholar

Maryam Elfeki (Murphy) received an Undergraduate Research Award from the American Society of Pharmacognosy

Hiten Gutka (Franzblau) won 3rd place for his image of "Crystals—Unraveling the Secrets of Life" in the COP Images of Research Competition

Tyvette Hilliard (Burdette) received the Endocrine Society Outstanding Abstract Award and the Abraham Lincoln Fellowship from the UIC Graduate College

Krishna Kannan (Mankin) won 1st prize at the COP Research Day poster presentation and also received a Charles Wesley Petranek Scholarship Award, College of Pharmacy, UIC

Breah LaSarre (Federle) was chosen to give a talk at the Midwest Microbial Pathogens Conference

Lauren Mashburn-Warren (Federle) was selected to give talks at the International Conference of Gram-Positive Bacteria in Montecatini, Italy, the ASM General Meeting in New Orleans, and the ASM Conference on Cell to Cell Communication in Miami

Brian Murphy received the D. John Faulkner Award from the American Society of Pharmacognosy

Suzanne Quartuccio (Burdette) was awarded a Graduate College Medical Research Fellowship and also won honorable mention for her image of "Damage" in the COP Images of Research Competition



Federle Lab



Dr. Nora Vázquez-Laslop

## PUBLICATIONS

A sample of the Center's many publications from 2011:

Abad-Zapatero, C., Oliete, R., Rodriguez, S., Pous, J., Martinelli, L., Johnson, M.E. and A. Guasch (2011) Humidity control can compensate the damage induced in protein crystals by alien solvents. *Acta Crystallographica* 67(10): 1300-1308.

Chang, J.C., B. LaSarre, J.C. Jimenez, C. Aggarwal, and M.J. Federle. Two Group A Streptococcal Peptide Pheromones Act Through Opposing Rgg Regulators to Control Biofilm Development. *PLoS Pathog.* 7(8): e1002190. doi:10.1371/journal.ppat.1002190. Highlighted in Faculty of 1000.

Chaudhuri, R., Tang, S., Zhao, G., Lu, H., Case, D.A. and M.E. Johnson (2011) Comparison of SARS and NL63 Papain-Like Protease Binding sites, and Binding Site Dynamics: Inhibitor Design Implications. *Journal of Molecular Biology* 414(2): 272-288.

Hevener, K.E., Mehboob, S., Su, P.-C., Truong, K., Boci, T., Deng, J., Ghassemi, M., Cook, J.L. and M.E. Johnson (2011) Discovery of a novel and potent class of *F. tularensis* enoyl-reductase (FabI) inhibitors by molecular shape and electrostatic matching. *Journal of Medicinal Chemistry*, DOI: 10.1021/jm201168g (page numbers not yet available).

Hilliard, T.S., Gaisina, I., Muehlbauer, A., Gallick, F., Gaisin, A. and J.E. Burdette (2011) Glycogen synthase kinase 3 beta induce apoptosis in ovarian cancer cells and inhibit in vivo tumor growth. *Anticancer Drugs* (Epub Aug 29, 2011).

Kannan, K. and A.S. Mankin (2011) Macrolide antibiotics in the ribosome exit tunnel: species-specific binding and action. *Ann NY Acad Sci* 1241: 33-47.

King, S.M., Quartuccio, S., Hilliard, T.S., Inoue, K. and J.E. Burdette (2011) Alginate hydrogels for three-dimensional culture of ovaries and oviducts. *Journal of Visualized Experiments* Jun 20;(52).pii: 2804.

King, S.M., Hilliard, T.S., Wu, L., Jaffe, R.C., Fazleabas, A.T. and J.E. Burdette (2011) Impact of ovulation on fallopian tube cells: evaluating three major hypothesis connecting ovulation and serous ovarian cancer. *Endocrine-Related Cancer* (Epub Aug 3, 2011).

King, S.M., and J.E. Burdette (2011) Invited Review: Evaluating the Progenitor Cells of Ovarian Cancer: Analysis of Current Animal Models. *BMB Reports* 44 (7): 435-45.

LaMarre, J.M., Howden, B.P. and A.S. Mankin (2011) Inactivation of the indigenous methyltransferase RlmN in *Staphylococcus aureus* increases linezolid resistance. *Antimicrob Agents Chemother* 55: 2989-2991.

LaMarre, J.M., Locke, J.B., Shaw, K.J. and A.S. Mankin (2011) Low Fitness Cost of the Multidrug Resistance Gene *cfi*. *Antimicrob Agents Chemother* 55: 3714-3719.

LaSarre, B. and M.J. Federle (2011) Regulation and Consequence of Serine Catabolism in *Streptococcus pyogenes*. *Journal of Bacteriology* 193(8): 2002-2012.

Ramu, H., Vázquez-Laslop, N., Klepacki, D., Dai, Q., Piccirilli, J., Micura, R. and A.S. Mankin (2011) Nascent peptide in the ribosome exit tunnel affects functional properties of the A-site of the peptidyl transferase center. *Mol Cell* 41:321-330.

Sodhi, M.S., Simmons, M., McCullumsmith, R., Haroutunian, V. and J.H. Meador-Woodruff (2011) Glutamatergic Gene Expression Is Specifically Reduced in Thalamocortical Projecting Relay Neurons in Schizophrenia. *Biological Psychiatry*, 70(7): 646-654.

Sukerkar, P., MacRenaris, K., Meade, T.J.\* and J.E. Burdette\* (2011) A Steroid-Conjugated Magnetic Resonance Probe Enhances Contrast in Progesterone Receptor Expressing Organs and Tumors In Vivo. *Molecular Pharmaceutics* 8 (4): 1390-400.

Sukerkar, P., MacRenaris, K., Townsend, T., Ahmed, R., Burdette, J.E.\* and T.J. Meade\* (2011) Click chemistry synthesis and biological evaluation of water-soluble progesterone-conjugated probes for magnetic resonance imaging of hormone related cancers. *Bioconjugate Chemistry* (in press). \*equal contribution as corresponding author.

Tuntland, M.L., Johnson, M.E., Fung, L.W.-M. and B.D. Santarsiero (2011) Structure of N5-carboxyaminoimidazole ribonucleotide synthase (PurK) from *Bacillus anthracis*. *Acta Crystallographica Section D*, D67(Pt 10), 870-874.

Vázquez-Laslop, N. and A.S. Mankin (2011) Picky nascent peptides do not talk to foreign ribosomes. *Proc Natl Acad Sci USA* 108: 5931-5932.

Vázquez-Laslop, N., Klepacki, D., Mulhearn, D.C., Ramu, H., Krasnykh, O., Franzblau, S. and A.S. Mankin (2011) Role of antibiotic ligand in nascent peptide-dependent ribosome stalling. *Proc Natl Acad Sci USA* 108: 10496-10501.

Vázquez-Laslop, N., Ramu, H. and A.S. Mankin (2011) Nascent peptide-mediated ribosome stalling promoted by antibiotics. *Ribosomes Structure Function and Dynamics* 1: 377-392.

Ye, X., Huang, N., Liu, Y., Paroo, Z., Huerta, C., Li, P., Chen, S., Liu, Q. and H. Zhang (2011) Structure of C3PO and mechanism of human RISC activation. *Nat Struct Mol Biol.* 18: 650-7.



Drs. Federle and Murphy celebrating their victory in the bags tournament at the Department of Medicinal Chemistry and Pharmacognosy's Annual Picnic

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