

DEPARTMENT OVERVIEW/MISSION

Chemistry at Louisville continues to build on its strong traditions. The members of our faculty are accomplished teacher-scholars who maintain exciting research programs in the myriad arenas that comprise the modern chemical sciences. Our department offers Ph.D. and M.S. degrees plus a variety of degree options for undergraduate students.

This profile will introduce you to our faculty, our facilities, the opportunities we offer, as well as interdepartmental resources centered in this department, IMD3 and CREAM (Center for Regulatory and Environmental Analytical Metabolomics).



The department occupies the three-story Chemistry Building, which houses faculty offices, modern research laboratories equipped with state of the art instrumentation and undergraduate teaching laboratories. Recent growth in the department has led us to locate several research laboratories in the new Schumaker Research Building. We have extensive

research interactions with the Brown Cancer Center, in structural biology and metabolomics, and with the Speed Scientific School (engineering), in renewable energy related research.



Our degree programs emphasize a combination of laboratory and course work in all areas of contemporary chemistry. Students can earn, BA, BS, MS and Ph.D. degrees. The B.A. and B.S degrees have options to specialize in biochemistry or business or gain a degree accredited by the American Chemical Society. Most undergraduates participate in research or earn cooperative credits as employees in local chemical companies. Students also have the opportunity to serve as undergraduate teaching assistants where they earn a stipend and refine their understanding of chemistry by teaching others. Undergraduates enjoy close academic and research relations with faculty and have consistently been successful in securing employment or acceptance to high quality professional and graduate schools. Graduate program offers research opportunities in organic and inorganic synthesis, theoretical and computational chemistry, analytical chemistry including the



development of micro- and nanoscale sensors, chemical catalysis, natural products research for drug discovery and delivery, metabolomics, informatics, biochemistry, chemical biology, structural biology and chemical physics. Graduate students are supported by scholarships and teaching or research assistantships.





Major research facilities for the chemistry department are extensive and support all areas of contemporary chemistry. The x-ray, mass spectrometry and NMR labs are staffed by Ph.D.-level experts who oversee and train users. To enhance the breadth of student's educational experience, all major instruments are available for hands-on use by undergraduate and graduate students.

The [X-ray lab](#) has two diffractometers with area detectors and low temperature capability for small-molecule structure determination. There is also an image plate system with a high intensity rotating anode x-ray source for macromolecular structure determination. Samples can be submitted to the staff crystallographer students can work directly with the crystallographer to learn the methods of X-ray structure determination as part of their thesis work.



or



The [CREAM](#) Mass Spectrometry (MS) facility maintains an array of instruments for structural characterization, metabolomics and proteomics. Instruments include FT-ICR-MS, ICP-MS and GC-MS and an ultra-high performance LC-TOF will be added in the coming year. Also maintained within the department are MALDI-TOF-MS and routine GC-MS instruments.

Extensive NMR instrumentation is both within the chemistry department and shared with the Brown Cancer Center (BCC) on the Health Sciences Campus. In the chemistry building are a multinuclear 400 MHz system with a robotic sample changer that is reserved for walkup use, a three-channel 500 MHz system with ^{19}F capability, a 500 MHz system devoted to solid state NMR and a four-channel 700 MHz instrument with a triple resonance cryoprobe. An 800 MHz instrument for biomolecular studies and a 400 MHz imaging system are located at BCC and available to members of the chemistry department.

Within the chemistry department is a shared lab for purification and expression. The lab contains centrifuges, and FPLC system, cold room, spectrophotometer, autoclave, shakers and a French press.



Chemistry students fabricate Microelectromechanical devices (MEMS) at the University of Louisville [Nanotechnology Center](#) conveniently located in the Shumaker Research Building and large scale computing is supported by the [Cardinal Research Cluster](#) that houses a 5052 core IBM supercomputer. Software used by chemists is maintained by staff at the center.

[Nuclear magnetic resonance \(NMR\)](#) instrumentation includes multichannel 400 MHz, 500 MHz and 700 MHz solution spectrometers, a 500 MHz spectrometer for solids and a shared facility with the Brown Cancer Center that houses an 800 MHz instrument for biomolecular NMR and a 400 MHz imaging system.

Programs Offered Masters (non-thesis) Masters (thesis) Doctoral

Number of graduate students 47

Countries represented: Cameroon; China; Egypt; India; Jordan; Nepal; Nigeria; Peru; Russia; United States

Number of Research Faculty 18

Countries represented: Argentina; Australia; Brazil; Canada; China; India; Peru; Poland; and United States

Research Specialties

- | | | |
|---------------------------|-------------------------|---------------------|
| • Molecular Spectroscopy | • Inorganic synthesis | • Bioinformatics |
| • Computational | • Organometallic | • Electrochemistry |
| • Synthesis | Chemistry and Catalysis | • Sensors |
| • Organic and Medicinal | • Mechanistic | • Nanomaterials |
| • Natural Products | Enzymology | • Microscopy |
| • Metallosulfur | • Protein Structure- | • Electroanalytical |
| • Metal-thiolates | Function | |
| • Ligand-based reactivity | • Bioanalytical | |

Collaborations (not including other Schools at University of Louisville)

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| • Campbellsville University, USA | • Universidad Peruana Cayetano Heredia, Peru |
| • Gunma University, Japan | • University of California Davis, Department of |
| • Heidelberg University, Germany | Neurosciences, Davis CA, USA |
| • Indiana University, School of Medicine, USA | • University of California LA, USA |
| • Medical College of Wisconsin, USA | • University of Kentucky, USA |
| • Montreal Neurological Institute, Canada | • University of Leeds, Leeds, UK |
| • National Cancer Institute, Frederick MD, USA | • UofL Conn Center for Renewable Energy |
| • Ohio University, Athens, OH, USA | Research, Kentucky, USA |
| • Oxford University, England | • University of Nevada-Reno, USA |
| • Purdue University, Indiana, USA | • University of North Carolina at Greensboro, USA |
| • Shandong University, Taian, China | • University of Texas-Austin, USA |
| • Sichuan University, China | • University of Wisconsin, USA |
| • The City College of New York, NYC, USA | • Wayne State University, Michigan, USA |
| • The Ohio State University, Columbus, OH USA | |

AREAS OF RESEARCH

Analytical Chemistry

Richard P. Baldwin, Professor - Phone: 502-852-5892 Email: rick.baldwin@louisville.edu

- Specialty: Electroanalytical Chemistry
- Education and Research Experience:
 - 1) B.A. 1970 Thomas More College
 - 2) Ph.D. 1976 Purdue University
- Research Interests:
 - 1) Electroanalytical Chemistry
 - 2) Electrochemical Instrumentation for HPLC and Capillary Electrophoresis Detection
 - 3) Chemically Modified Electrodes and Other Novel Electrode Materials
 - 4) Electrophoresis-Based Assay for Biologically Important Compounds
 - 5) Preparative-Scale Applications of Chemically Modified Electrodes

M. Cecilia Yappert, Professor - Phone: 502-852-7061 Email: mcyappert@louisville.edu

- Education and Research Experience:
 - 1) B.S. 1978 Universidad Nacional del Litroal, Argentina
 - 2) Ph.D. 1985 Oregon State University
- Research Interests:
 - 1) the development and application of spectrochemical analytical approaches for the selective determination and quantitation of species in complex matrices, particularly those of biological interest
 - 2) The theoretical and experimental characterization of fiber optical sensors
 - 3) Besides the above areas of research, my students are actively involved in the development of instrumental accessories, and interface hardware and software.

Francis P. Zamborini, Professor - Phone: 502-852-6550 Email: f.zamborini@louisville.edu

- Specialty: Electrochemistry, Sensors, Nanomaterials, Microscopy
- Education and Research Experience:
 - 1) B.A. 1993 Carthage College
 - 2) Ph.D. 1998 Texas A&M University
 - 3) 1998-2001 University of North Carolina at Chapel, Postdoctoral Research Associate
- Research Interests:
 - 1) Catalytic Activity of Pd and PdAg MPCs
 - 2) Electrochemical Deposition of Ag NRs/NWs
 - 3) Negative Shift in Potential for Oxidation of Au and Ag Nanoparticles vs Bulk Material
 - 4) Optical Properties of Coupled Nanostructures

Xiang Zhang, Professor - Phone: 502-852-8878 Email: xiang.zhang@louisville.edu

- Specialty: Bioanalytical Chemistry & Bioinformatics
- Education and Research Experience:
 - 1) B.S. 1989 Lanzhou University
 - 2) M.S. 1994 Institute of Modern Physics, Chinese Academy of Sciences
 - 3) Ph.D. 2001 Purdue University
- Research Interests:
 - 1) multidisciplinary life sciences research
 - 2) bioanalytical research
 - 3) bioinformatics research in our group develops informatics system

Biochemistry

Muriel C. Maurer, Professor and Vice-Chair - Phone: 502-852-7008 Email: Muriel.maurer@louisville.edu

- Specialty: Protein Structure-Function
- Education and Research Experience:
 - 1) B.A. 1987 Goucher College
 - 2) Ph.D. 1993 University of Virginia
 - 3) 1992-1995 Cornell University, NIH Postdoctoral Fellow
 - 4) 1995-1996 Cornell University, Postdoctoral Fellow
 - 5) 1996-1997 Cornell University, Research Associate
 - 6) Fall 2007 Honorary Senior Research Fellow
Leeds Institute of Genetics, Health, and Therapeutics (LIGHT)
- Research Interests:
 - 1) enzymes involved in blood coagulation and related processes
 - 2) examining the transglutaminase Factor XIII (FXIII) and the serine protease thrombin

Eugene G. Mueller, Professor and Charles L. Bloch Endowed Chair - Phone: 502-852-5811

Email: Eugene.mueller@louisville.edu

- Specialty: Mechanistic Enzymology
- Education and Research Experience:
 - 1) B.S. 1987 University of Illinois–Urbana
 - 2) Ph.D. 1992 Harvard University
- Research Interests:
 - 1) Enzymology
 - 2) tRNA Modification
 - 3) Sulfur Transfer
 - 4) Bioorganic Mechanism

Inorganic Chemistry

Robert M. Buchanan, Professor and Associate Dean of Research, College of Arts & Sciences

Phone: 502-852-5635 Email: bob.buchanan@louisville.edu

- Education and Research Experience:
 - 1) B.A. 1973 Western Maryland College
 - 2) Ph.D. 1980 University of Colorado
- Research Interests:
 - 1) Synthesis, structure, and magnetic properties of inorganic and bioinorganic compounds
 - 2) active site models of mu.-oxo iron proteins
 - 3) polynuclear manganese complexes as models of PSII and pseudocatalase proteins
 - 4) mixed valence complexes
 - 5) C-H bond function; conducting polymers
 - 6) phthalocyanine complexes, electrocatalysis

Christopher T. Burns, Assistant Professor - Phone: 502-852-5977 Email: Christopher.burns@louisville.edu

- Specialty: Organometallic Chemistry and Catalysis
- Education and Research Experience:
 - 1) B.S. 1996 University of Idaho
 - 2) M.S. 2003 University of Idaho
 - 3) Ph.D. 2005 University of Chicago
 - 4) 2005-2008 Postdoctoral Research Appointee in the Materials Science Division of Argonne National Laboratory
- Research Interests:
 - 1) synthetic and mechanistic organometallic chemistry involving the design of novel organic based ligands and transition metal complexes for catalytic C-X (X = H, C, B, Si) bond formation
 - 2) understanding the roles of transition metals in catalysis and developing new stoichiometric and catalytic transformations for converting readily available molecules such as olefins and alkanes into more valuable products

Craig A. Grapperhaus, Professor - Phone: 502-852-5932 Email: grapperhaus@louisville.edu

- Specialty: Metal-thiolates, ligand-based reactivity, inorganic synthesis
- Education and Research Experience:
 - 1) B.S. 1994 Southern Illinois University at Edwardsville
 - 2) Ph.D. 1998 Texas A&M University
 - 3) 1998-2000 Alexander von Humboldt Postdoctoral Fellow Max-Planck Institut für Strahlenchemie
- Research Interests:
 - 1) the inorganic and bioinorganic chemistry of transition metal-thiolates
 - 2) to identify and exploit these factors for the design of systems with synthetic or industrial utility
 - 3) systems that support reactive metal-coordinated thiyl radicals or that serve as artificial mimics of the enzyme nitrile hydratase

Mark E. Noble, Professor - Phone: 502-852-7296 Email: menoble@louisville.edu

- Specialty: Metallosulfur Chemistry
- Education and Research Experience:
 - 1) B.S. 1976 Eckerd College
 - 2) Ph.D. 1982 Indiana University
- Research Interests:
 - 1) Metal- Sulfur Chemistry

John F. Richardson, Professor and Director of Honors Program, College of Arts and Sciences

Phone: 502-852-7069 Email: john.richardson@louisville.edu

- Specialty: Physical-Inorganic and X-ray Crystallography Chemistry
- Education and Research Experience:
 - 1) B.S. 1976 University of Western Ontario, Canada
 - 2) Ph.D. 1981 University of Western Ontario, Canada
- Research Interests:
 - 1) X-RAY CRYSTALLOGRAPHY
 - 2) MOLECULAR GRAPHICS/COMPUTATIONAL CHEMISTRY

Organic Chemistry

Gerald B. Hammond, Professor and Endowed Chair in Organic Chemistry

Phone: 502-852-5998 Email: gb.hammond@louisville.edu

- Specialty: Synthesis and Natural Products
- Education and Research Experience:
 - 1) B.S. 1975 Pontificia Universidad Catolica del Peru in Lima, Peru
 - 2) M.S. 1979 University of British Columbia, Vancouver, Canada
 - 3) Ph.D. 1985 University of Birmingham, England
- Research Interests:
 - 1) Interactions of fluorine with organic and organometallic compounds, aimed toward the synthesis of fluorinated building blocks
 - 2) Systematic, international, and multidisciplinary studies of Peruvian medicinal plants targeting cancer and the so-called neglected diseases
 - 3) Development of environmentally friendly synthetic methodologies and external supports for the construction of organic molecules
 - 4) New anticancer therapies, in collaboration with faculty from other disciplines and institutions

Fredrick A. Luzzio, Professor - Phone: 502-852-7323 Email: faluzz01@louisville.edu

- Specialty: Organic and Medicinal Chemistry
- Education and Research Experience:
 - 1) B.S. 1976 Vanderbilt University
 - 2) M.S. 1979 Tufts University
 - 3) Ph.D. 1982 Tufts University

- 4) 1982-1985 Harvard University, Postdoctoral Fellow
- Research Interests:
 - 1) the development of new methods and strategy which are applicable to the synthesis of biologically active compounds
 - 2) the total synthesis of a wide range of complex molecules including natural products, pharmaceutical leads and their analogues
 - 3) the isolation and discovery of biologically active compounds from natural sources

Michael H. Nantz, Professor - Phone: 502-852-8069 Email: michael.nantz@louisville.edu

- Specialty: Synthesis
- Education and Research Experience:
 - 1) B.S. 1981 Western Kentucky University
 - 2) Ph.D. 1987 Purdue University
 - 3) 1987-1989 MIT
 - 4) 1989-2006 UC Davis
- Research Interests:
 - 1) Vectors for non-viral gene therapy
 - 2) Drug delivery
 - 3) Functionalized nanoparticles
 - 4) Synthetic methodology

Christine V. Rich, Associate Professor - Phone: 502-852-7814 Email: cvrich01@louisville.edu

- Specialty: Chemistry Education
- Education and Research Experiences:
 - 1) B.S. 1992 University of Louisville
 - 2) Ph.D. 1997 University of Louisville
- Research Interests:
 - 1) STEM education investigates models of job-embedded professional development for science and mathematics educators at the K-5 level
 - 2) to assess the efficacy of a learning community approach as a strategy for fostering sustained improvements in both content mastery and best teaching practices
 - 3) development and integration of discovery-based experiments into the college laboratory curriculum
 - 4) informal assessment strategies that gauge student learning of state and district core content at the K-12 level

Physical Chemistry

Pawel M. Kozlowski, Professor - Phone: 502-852-6609 Email: pawel@louisville.edu

- Specialty: Computational Chemistry
- Education and Research Experience:
 - 1) M.S. 1985 Jagiellonian University, Krakow Poland
 - 2) Ph.D. 1998 University of Arizona
 - 3) 1994-1996 University of Arkansas, Postdoctoral Research Associate

- 4) 1996-1999 Princeton University, Research Staff
- Research Interests:
 - 1) the application of quantum mechanical principles to problems in molecular structure, dynamics and spectroscopy and with work on quantum-mechanical methods to improve their reliability and physical credibility
 - 2) obtain a correct quantitative description for important physical and chemical properties of molecules
 - 3) research interest is focused on the application of computational chemistry to solve problems of a bioinorganic nature

Jinjun Liu, Assistant Professor - Phone: 502-852-1223 Email: j.liu@louisville.edu

- Specialty: Molecular Spectroscopy
- Education and Research Experience:
 - 1) B.S. 1999 East China Normal University
 - 2) 1999-2001 State Key Laboratory for Optical and Magnetic Resonance Spectroscopy (now State Key Laboratory of Precision Spectroscopy) Shanghai, Research Assistant
 - 3) Ph.D. 2007 Ohio State University
 - 4) 2007-2010 Swiss Federal Institute of Technology (ETH) Zurich, Postdoctoral Researcher
 - 5) 2010-2011 The Ohio State University, Postdoctoral Researcher
- Research Interests:
 - 1) spectroscopic studies on gas-phase molecules and molecular complexes, and condensed-phase materials in both frequency domain (using high-resolution lasers) and time domain (using ultrafast laser systems)
 - 2) molecular species with so-called Jahn-Teller effect

Richard J. Wittebort, Professor and Chair - Phone: 502-852-6613 Email: rjwitt01@louisville.edu

- Education and Research Experience:
 - 1) B.S. 1972 Ohio State University
 - 2) Ph.D. 1978 Indiana University
 - 3) 1978-2001, NIH post-doctoral fellow, Massachusetts Institute of Technology
- Research Interests:
 - 1) experimental studies of molecular dynamics in the solid state
 - 2) Biophysics of fibrous proteins
 - 3) NMR instrumentation
 - 4) NMR theory



General Information

Chemistry Graduate Students Association

Description

The main objective of the Chemistry Graduate Students Association of the University of Louisville is to help chemistry graduate students interact with each other as well as with the chemistry faculty. For example, we start each year with a cookout so everyone can meet and relax.

We are also interested in promoting the department both locally and nationally. Our proudest achievement is our annual Distinguished Lecturer Series (aka Derby Lectures), which presents some of the most recognized names in the world of chemistry, many of which are former Nobel Laureates.

Officers

The CGSA Officers are elected each fall and have the responsibility of organizing a graduate student picnic, the Distinguished Lecturer Series, and acting as a liaison for all chemistry graduate students to the University Graduate Student Council while continuing their own course work and research. We are currently in the process of complimenting department relations with incoming chemistry graduate students, especially those from foreign countries. It is our mission to ensure that every University of Louisville Chemistry graduate student has a positive and rewarding experience.

Department Contacts

Chair	Richard Wittebort, Ph.D.	502-852-6798	dick.wittebort@louisville.edu
Vice Chair	Muriel Maurer, Ph.D.	502-852-7008	muriel.maurer@louisville.edu
Graduate Admissions	Eugene Mueller, Ph.D.	502-852-5811	eugene.mueller@louisville.edu
Department General Information		502-852-6798	

2013

1. Billeter, A. T., Druen, D., Franklin, G. A., Smith, J. W., Wrightson, W., & Richardson, J. D. (2013). Video-assisted thoracoscopy as an important tool for trauma surgeons: a systematic review. *Langenbecks Archives of Surgery*, 398(4), 515-523. doi: 10.1007/s00423-012-1016-7
2. Borchman, D., Yappert, M. C., Milliner, S. E., Duran, D., Cox, G. W., Smith, R. J., & Bhola, R. (2013). C-13 and H-1 NMR ester region resonance assignments and the composition of human infant and child meibum. *Experimental Eye Research*, 112, 151-159. doi: 10.1016/j.exer.2013.04.017
3. Foulks, G. N., Borchman, D., Yappert, M., & Kakar, S. (2013). Topical Azithromycin and Oral Doxycycline Therapy of Meibomian Gland Dysfunction: A Comparative Clinical and Spectroscopic Pilot Study. *Cornea*, 32(1), 44-53. doi: 10.1097/ICO.0b013e318254205f
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5. Henson, A. L., Moore, J. B., Alard, P., Wattenberg, M. M., Liu, J. M., & Ellis, S. R. (2013). Mitochondrial function is impaired in yeast and human cellular models of Shwachman Diamond syndrome. *Biochemical and Biophysical Research Communications*, 437(1), 29-34. doi: 10.1016/j.bbrc.2013.06.028
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9. Koo, I., Kim, S., & Zhang, X. (2013). Comparative analysis of mass spectral matching-based compound identification in gas chromatography-mass spectrometry. *Journal of Chromatography A*, 1298, 132-138. doi: 10.1016/j.chroma.2013.05.021
10. Kornobis, K., Kumar, N., Lodowski, P., Jaworska, M., Piecuch, P., Lutz, J. J., . . . Kozlowski, P. M. (2013). Electronic structure of the S1 state in methylcobalamin: Insight from CASSCF/MC-XQDPT2, EOM-CCSD, and TD-DFT calculations. *Journal of Computational Chemistry*, 34(12), 987-1004. doi: 10.1002/jcc.23204
11. Kornobis, K., Ruud, K., & Kozlowski, P. M. (2013). Cob(I)alamin: Insight Into the Nature of Electronically Excited States Elucidated via Quantum Chemical Computations and Analysis of Absorption, CD and MCD Data. *Journal of Physical Chemistry A*, 117(5), 863-876. doi: 10.1021/jp310446c
12. Kumar, D., Masitas, C. A., Nguyen, T. N., & Grapperhaus, C. A. (2013). Bioinspired catalytic nitrile hydration by dithiolato, sulfinato/thiolato, and sulfenato/sulfinato ruthenium complexes. *Chemical Communications*, 49(3), 294-296. doi: 10.1039/c2cc35256g
13. Kumar, M., Galezowski, W., & Kozlowski, P. M. (2013). Computational modeling of standard reduction potentials of B-12 cofactors. *International Journal of Quantum Chemistry*, 113(4), 479-488. doi: 10.1002/qua.24155
14. Kumar, M., & Kozlowski, P. M. (2013). Can the local enzyme scaffold act as an H-donor for a Co(I) - H bond formation? The curious case of methionine synthase-bound cob(I)alamin. *Journal of Inorganic*

Biochemistry, 126, 26-34. doi: 10.1016/j.jinorgbio.2013.04.009

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16. Kumar, N., Kuta, J., Galezowski, W., & Kozlowski, P. M. (2013). Electronic Structure of One-Electron-Oxidized Form of the Methylcobalamin Cofactor: Spin Density Distribution and Pseudo-Jahn-Teller Effect. *Inorganic Chemistry*, 52(4), 1762-1771. doi: 10.1021/ic3013443
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20. Lu, M., Campbell, J. L., Chauhan, R., Grapperhaus, C. A., & Chen, H. (2013). Probing the Reactivity and Radical Nature of Oxidized Transition Metal-Thiolate Complexes by Mass Spectrometry. *Journal of the American Society for Mass Spectrometry*, 24(4), 502-512. doi: 10.1007/s13361-012-0537-1
21. Malhotra, D., Liu, L. P., Mashuta, M. S., & Hammond, G. B. (2013). Gold-Catalyzed Annulations of 2-Alkynyl Benzaldehydes with Vinyl Ethers: Synthesis of Dihydronaphthalene, Isochromene, and Bicyclo 2.2.2 octane Derivatives. *Chemistry-a European Journal*, 19(12), 4043-4050. doi: 10.1002/chem.201203841
22. Malovichko, M. V., Sabo, T. M., & Maurer, M. C. (2013). Ligand Binding to Anion-binding Exosites Regulates Conformational Properties of Thrombin. *Journal of Biological Chemistry*, 288(12), 8667-8678. doi: 10.1074/jbc.M112.410829
23. McCubbins, D. M., Hammond, G. B., & Kumar, M. (2013). Synthesis of amines. *Abstracts of Papers of the American Chemical Society*, 245.
24. Moreno, M., Kissell, L. N., Jasinski, J. B., & Zamborini, F. P. (2012). Selectivity and Reactivity of Alkylamine- and Alkanethiolate-Stabilized Pd and PdAg Nanoparticles for Hydrogenation and Isomerization of Allyl Alcohol. *Acs Catalysis*, 2(12), 2602-2613. doi: 10.1021/cs300361y
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26. Reyes-Reyes, E. M., Jin, Z., Vaisberg, A. J., Hammond, G. B., & Bates, P. J. (2013). Physangulidine A, a Withanolide from *Physalis angulata*, Perturbs the Cell Cycle and Induces Cell Death by Apoptosis in Prostate Cancer Cells. *Journal of Natural Products*, 76(1), 2-7. doi: 10.1021/np300457g
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28. Sezgin, G., Henson, A. L., Nihrane, A., Singh, S., Wattenberg, M., Alard, P., . . . Liu, J. M. (2013). Impaired growth, hematopoietic colony formation, and ribosome maturation in human cells depleted of Shwachman-Diamond syndrome protein SBDS. *Pediatric Blood & Cancer*, 60(2), 281-286. doi: 10.1002/pbc.24300
29. Singh, S., Blanc, L., Henson, A., Sezgin, G., Ellis, S. R., & Liu, J. M. (2012). Suppression of the Hematopoietic Defect in TF-1 Cells Depleted of Shwachman-Diamond Syndrome Protein: Correlation with Decreased eIF6 Levels. *Blood*, 120(21).

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31. Song, M., Schuschke, D. A., Zhou, Z. X., Chen, T., Shi, X., Zhang, J. Y., . . . McClain, C. J. (2013). Modest Fructose Beverage Intake Causes Liver Injury and Fat Accumulation in Marginal Copper Deficient Rats. *Obesity*, 21(8), 1669-1675. doi: 10.1002/oby.20380
32. Wei, X., Shi, X., Zhong, W., Zhao, Y., Tang, Y., Sun, W., . . . Zhou, Z. (2013). ALCOHOL EXPOSURE CAUSES LIPID DYSHOMEOSTASIS AT THE ADIPOSE TISSUE-LIVER AXIS IN MICE: ANALYSIS OF TRIACYLGLYCEROLSWITH IN VIVO METABOLITE DEUTERIUM LABELING. *Alcoholism-Clinical and Experimental Research*, 37, 224A-224A.
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