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University of Mississippi. School of Pharmacy, "Research News: 2008, no. 2" (2008). *Research News (2000-2014)*. 23.

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The University of Mississippi

Interoffice Memorandum
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TO: All School of Pharmacy & USDA Personnel
FROM: Charles D. Hufford, Associate Dean for Research and Graduate Programs
DATE: June 30, 2008
SUBJECT: Research News (#2)

The following **GRANTS/CONTRACTS** have recently been awarded:

1. **Dr. Joseph Byrd** (P.I. - Pharmacy Practice). Mississippi State Hospital and University of Mississippi School of Pharmacy Agreement - FY 08-09 (Mississippi State Hospital), \$24,000, May 1, 2008-April 30, 2009.
2. **Dr. Joseph Byrd** (P.I. - Pharmacy Practice). University of Mississippi Medical Center/University of Mississippi School of Pharmacy/Department of Pharmacy Practice Agreement - FY 08-09 (UMMC, Department of Pediatrics), \$23,575, July 1, 2008-June 30, 2009.
3. **Dr. Stephen Cutler** (P.I. - Medicinal Chemistry). Center for Excellence in Natural Products Neuroscience - Year 3 (National Institutes of Health/National Center for Research Resources), \$1,967,642, July 1, 2008-June 30, 2009.
4. **Dr. Mahmoud ElSohly** (P.I. - NCNPR), and **Dr. Ikhlas Khan** (Co-P.I. - NCNPR). Production, Analysis and Distribution of Cannabis, Marijuana Cigarettes and Related Materials - Mod. No. 9 (National Institute on Drug Abuse), \$260,910, March 15, 2005-March 14, 2010.
5. **Dr. Mark Hamann** (P.I. - Pharmacognosy) and **Dr. Jiangnan Peng** (Co-P.I. - Pharmacognosy). Assessment of Supercritical CO₂ Inactivation of Oyster Associated Bacteria (Mississippi/Alabama Sea Grant Consortium/The University of Southern Mississippi/U.S. Department of Commerce/National Oceanic and Atmospheric Administration), \$14,996, February 1, 2008-January 31, 2009.
6. **Dr. Mark Hamann** (P.I. - Pharmacognosy). The Isolation and Characterization of Antimalarial Agents with Marine Micro-Organisms - No. 3 (Medicines for Malaria Venture), \$15,000, January 1, 2006-December 31, 2011.
7. **Dr. Muhammad Ilias** (P.I. - NCNPR), **Dr. Babu Tekwani** (Co-P.I. - NCNPR), and **Dr. Ikhlas Khan** (Co-P.I. - NCNPR). Standardization of *Banisteriopsis caapi* for Chemical and Biological Markers - Year 2 (National Institutes of Health), \$211,680, May 1, 2008-April 30, 2009.
8. Dr. Thomas Lombardo (P.I. - Psychology/ORSP), **Dr. John Bentley** (Co-P.I. - Pharmacy Administration), and **Dr. Sandra Bentley** (Co-P.I. - Pharmacy Practice). "ACT Now" Tobacco Intervention Program - FY 08 (University of Mississippi Medical Center/State of Mississippi), \$5,000, May 1, 2008-June 30, 2008.
9. **Dr. Michael Repka** (P.I. - Pharmaceutics), and **Dr. Soumyajit Majumdar** (Co-P.I. - Pharmaceutics). Equipment for Center for Thermal Pharmaceutical Processing (Health Resources and Services Administration), \$284,030, June 1, 2008-September 30, 2010.

10. **Dr. Michael Repka** (P.I. - Pharmaceuticals), and **Dr. Soumyajit Majumdar** (Co-P.I. - Pharmaceuticals). Transmucosal Intra-Oral Drug Delivery Systems for THC (ElSohly Laboratories, Inc./NIH, \$189,654, June 1, 2008-May 31, 2009).
11. **Dr. Ziaeddin Shariat-Madar** (P.I. - Pharmacology). Evaluation of the Physiologic Effects of FX_{1a} Inhibitors Possessing Plasma Kallikrein Activity (Pfizer, Inc.), \$50,000, March 14, 2008-March 13, 2009.
12. **Dr. Marc Slattery** (P.I. - Pharmacognosy), and **Dr. Deborah Gochfeld** (Co-P.I. - NNCPR). New Ocean Resources: Exploration and Drug Discovery in the “Twilight Zone” (U.S. Department of Commerce - National Oceanic and Atmospheric Administration), \$23,230, May 1, 2008-April 30, 2009.
13. **Dr. Robert Speth** (P.I. - Pharmacology). Inhibition of Angiotensin II - Induced Cardiac Fibrosis-Phase V (University of Florida), \$4,500, 6/1/06-5/31/08.
14. **Dr. Robert Speth** (P.I. - Pharmacology). Summer Research Opportunities for Undergraduates Program (Mississippi Functional Genomics Network/NIH), \$1,000, May 14, 2008-August 15, 2008.
15. **Dr. Noel Wilkin** (P.I. - Research Institute for Pharmaceutical Services/Center for Pharmaceutical Marketing and Management), **Dr. William Lobb** (Co-P.I. - RIPS/CPMM), **Dr. Benjamin Banahan** (Co-P.I. - RIPS/CPMM). The Role and Value of Compounded Prescription Medications (International Academy of Compounding Pharmacists), \$15,003, September 1, 2007-June 30, 2008.
16. **Dr. Kristine Willett** (P.I. - Pharmacology/Environmental Toxicology Research Program). Coastal Health: Katrina (U.S. Dept. of Commerce, NOAA), Regrant - Increase Funding from \$57,024 to \$83,527, October 1, 2006-September 30, 2011.
17. **Dr. Kristine Willett** (P.I. - Pharmacology). Roles of CYP1 & 19 in Fundulus Steroids & PAH Metabolism (National Institute of Environmental Health Sciences), \$220,178, May 1, 2008-April 30, 2009.
18. **Dr. John Williamson** (P.I. - Medicinal Chemistry). Mississippi Functional Genomics Network (The University of Southern Mississippi/NIH), \$86,400, May 1, 2008-April 30, 2009.

The following **PUBLICATIONS** have appeared:

1. **Ameeta Agarwal, Tao Xu, Melissa Jacob, Qin Feng, Xing-Cong Li, Larry Walker, and Alice Clark**, “Genomic and Genetic Approaches for the Identification of Antifungal Drug Targets”, *Infectious Disorders – Drug Targets*, 8, 2-15 (2008).
2. **Ameeta Agarwal, Tao Xu, Melissa Jacob, Qin Feng, M.C. Lorenz, Larry Walker, and Alice Clark**, “Role of Heme in the Antifungal Activity of the Azaoxoaporphine Alkaloid Sampangine”, *Eukaryotic Cell*, 7, 387-400 (2008).
3. V.K. Agnihotri, H.N. ElSohly, **Shabana Khan, Troy Smillie, Ikhlas Khan, and Larry Walker**, “Antioxidant Constituents of *Nymphaea caerulea* Flowers”, *Phytochemistry*, (2008).
4. **Zulfiqar Ali and Ikhlas Khan**, “Alkaloids and Saponins from Blue Cohosh”, *Phytochemistry*, 69, 1037-1042 (2008).
5. **Zulfiqar Ali, Shabana Khan, and Ikhlas Khan**, “New Cycloartane-Type Triterpene Arabinosides from the Roots of *Actaea podocarpa* and their Biological Study”, *Letter... Planta Med*, 73, 699-703 (2007).
6. **Zulfiqar Ali, Daneel Ferreira, Paulo Carvalho, Mitchell Avery, and Ikhlas Khan**, “Nigellidine-4- O-Sulfite, the First Sulfated Indazole-Type Alkaloid from the Seeds of *Nigella*” *Journal of Natural Products* 71, 1111-1112 (2008).
7. **Zulfiqar Ali, F.R. Fronczek, and Ikhlas Khan**, “Phenylalkanoids and Monoterpene Analogues from the Roots of *Rhodiola rosea*”, *Letter... Planta Med*, 74, 178-181 (2008).
8. M. Aviram, N. Volkova, R. Coleman, M. Dreher, M.K. Reddy, **Daneel Ferreira**, and M. Rosenblat, “Pomegranate Phenolics from the Peels, Arils, and Flowers are Antiatherogenic: Studies *in Vivo* in Atherosclerotic Apolipoprotein E-Deficient (E⁰) Mice and *in Vitro* in Cultured Macrophages and Lipoproteins”, *Journal of Agriculture and Food Chemistry*, 56, 1148-1157 (2008).
9. K.M. Babu, **Christopher McCurdy**, and E.W. Boyer, “Opioid Receptors and Legal Highs: *Salvia divinorum* and Kratom”, *Clinical Toxicology*, 46, 146-152 (2008).

10. **Scott Baerson, Agnes Rimando, and Zhiqiang Pan**, “Probing Allelochemical Biosynthesis in Sorghum Root Hairs”, *Plant Signaling & Behavior*, 3, 1-4 (2008).
11. **Scott Baerson, Franck Dayan, Agnes Rimando, Dhammika Nanayakkara, C.J. Liu, J. Schroder, M. Fishbein, Zhiqiang Pan, I.A. Kagan, L.H. Pratt, M.M. Cordonnier-Pratt, and Stephen Duke**, “A Functional Genomics Investigation of Allelochemical Biosynthesis in *Sorghum bicolor* Root Hairs”, *The Journal of Biological Chemistry*, 283, 3231-3247 (2008).
12. R.V. Bikbulatov, J. Stewart, W. Jin, F. Yan, B.L. Roth, **Daneel Ferreira, and Jordan Zjawiony**, “Short Synthesis of a Novel Class of Salvinorin A Analogs with Hemiacetalic Structure”, *Tetrahedron Letters*, 49, 937-940 (2008).
13. P. Bissel, A. Khalil, **John Rimoldi**, K. Igarashi, D. Edmondson, A. Miller, and N. Castagnoli, Jr., “Stereochemical Studies on the Novel Monoamine Oxidase B Substrates (1*R*,6*S*)- and (1*S*,6*R*)-3-methyl-6-phenyl-3-aza-bicyclo[4.1.0]heptane”, *Bioorganic & Medicinal Chemistry*, 16, 3557-3564 (2008).
14. E.W. Boyer, K.M. Babu, **Jessica Adkins, Christopher McCurdy**, and J.H. Halpern, “Self-Treatment of Chronic Pain and Opioid Withdrawal Using Kratom (*Mitragynia speciosa korth*)”, *Addiction*, 103, 1048-1050 (2008).
15. **Suvapun Bunniran, Erin Holmes, William Lobb, and David McCaffrey**, “Ratings of Journals for the Dissemination of Pharmacy-related Social and Administrative Science”, *Research in Social and Administrative Pharmacy*, 4, 125-143 (2008).
16. S. Cheboyina, and **Christy Wyandt**, “Wax-Based Sustained Release Matrix Pellets Prepared by a Novel Freeze Pelletization Technique – I. Formulation and Process Variables Affecting Pellet Characteristics”, *International Journal of Pharmaceutics*, 359, 158-166 (2008).
17. S. Cheboyina, and **Christy Wyandt**, “Wax-Based Sustained Release Matrix pellets Prepared by a Novel Freeze Pelletization Technique – II. *In vitro* Drug Release Studies and Release Mechanisms”, *International Journal of Pharmaceutics*, 359, 166-173 (2008).
18. K.A. ElSayed, M.A. Khanfar, H.M. Shallal, A. Muralidharan, B. Awate, D.T.A. Youssef, **Yang Liu, Yu-Dong Zhou, Dale Nagle**, and G. Shah, “Latrunculin A and Its C-17-*O*-Carbamates Inhibit Prostate Tumor Cell Invasion and HIF-1 Activation in Breast Tumor Cells”, *Journal of Natural Products*, 71, 396-402 (2008).
19. A. Evidente, A. Cimmino, A. Andolfi, M. Vurro, M.C. Zonno, **Charles Cantrell**, and A. Motta, “Phyllostictines A-D, Oxazatricycloalkenones Produced by *Phyllosticta cirsii*, A Potential Mycoherbicide for *Cirsium arvense* Biocontrol”, *Tetrahedron*, 64, 1612-1619 (2008).
20. **Deborah Gochfeld**, C. Schloder, and R.W. Thacker, “Sponge Community Structure and Disease Prevalence on Coral Reefs in Bocas del Toro, Panama”, *Porifera Research: Biodiversity, Innovation, and Sustainability*, 335-343 (2007).
21. **H.M.T. Bandara Herath, and N.P. Dhammika Nanayakkara**, “Synthesis of Enantiomerically Pure Fire Ant Venom Alkaloids: Solenopsins and Isosolenopsins A, B and C”, *Journal of Heterocyclic Chemistry*, 45, 129-136 (2008).
22. W. Herath, **Julie Mikell, A.L. Hale, Daneel Ferreira, and Ikhlas Khan**, “Microbial Metabolism Part 9.¹⁾ Structure and Antioxidant Significance of the Metabolites of 5,7-Dihydroxyflavone (Chrysin), and 5- and 6-Hydroxyflavones”, *Chem. Pharm. Bull.*, 56, 418-422 (2008).
23. B.E. Kane, **Christopher McCurdy**, and D.M. Ferguson, “Towards a Structure-Based Model of Salvinorin A Recognition of the μ -Opioid Receptor”, *Journal of Medicinal Chemistry*, 51, 1824-1830 (2008).
24. **Vardan Karamyan, and Robert Speth**, “Animal Models of BMAA Neurotoxicity: A Critical Review”, *Life Sciences*, 82, 233-246 (2008).
25. **Soumyajit Majumdar, K. Hippalgaonkar, and Michael Repka**, “Effect of Chitosan, Benzalkonium Chloride and Ethylenediaminetetraacetic Acid on Permeation of Acyclovir Across Isolated Rabbit Cornea”, *International Journal of Pharmaceutics*, 348, 175-178 (2008).
26. **Christophe Mesangeau, Sanju Narayanan, A.M. Green, J. Shaikh, N. Kaushal, E. Viard, Y.T. Xu, James Fishback, J.H. Poupaert, R.R. Matsumoto, and Christopher McCurdy**, “Conversion of a Highly Selective Sigma-1 Receptor-Ligand to Sigma-2 Receptor Preferring Ligands with Anticocaine Activity”, *Journal of Medicinal Chemistry*, 51, 1482-1486 (2008).

27. **Cassia Mizuno, Guoyi Ma, Shabana Khan, A. Patny, Mitchell Avery, and Agnes Rimando**, “Design, Synthesis, Biological Evaluation and Docking Studies of Pterostilbene Analogs Inside PPAR ”, *Bioorganic & Medicinal Chemistry*, 16, 3800-3808 (2008).
28. S.S. Murthy, V.S.R. Kiran, S.K. Mathur, and **Narasimha Murthy**, “Noninvasive Transcutaneous Sampling of Glucose by Electroporation”, *Journal of Diabetes Science and Technology*, 2, 250-254 (2008).
29. **Narasimha Murthy**, V.A. Boguda, and K. Payasada, “Electret Enhances Transdermal Drug Permeation”, *Biol. Pharm. Bull.*, 31, 99-102 (2008).
30. **Narasimha Murthy**, “Electroporatin and Transcutaneous Sampling (ETS) of Acyclovir”, *Journal of Dermatological Science*, 49, 249-251 (2008).
31. **Dharmika Nanayakkara**, and **Kevin Schrader**, “Synthesis of Water-Soluble 9,10-Anthraquinone Analogues with Potent Cyanobactericidal Activity toward the Musty-Odor Cyanobacterium *Oscillatoria perornata*”, *Journal of Agricultural and Food Chemistry*, 56, 1002-1007 (2008).
32. **Dharmika Nanayakkara**, A.L. Ager, M.S. Bartlett, V. Yardley, S.L. Croft, **Ikhlas Khan**, J.D. McChesney, and **Larry Walker**, “Antiparasitic Activities and Toxicities of Individual Enantiomers of the 8-Aminoquinoline 8-[(4-Amino-1-Methylbutyl)Amino]-6-Methoxy-4-Methyl-5-[3,4-Dichlorophenoxy]Quinoline Succinate[□]”, *Antimicrobial Agents and Chemotherapy*, 52, 2130-2137 (2008).
33. V.K. Nandula, K.N. Reddy, **Agnes Rimando**, **Stephen Duke**, and D.H. Poston, “Glyphosate-Resistant and -Susceptible Soybean (*Glycine max*) and Canola (*Brassica napus*) Dose Response and Metabolism Relationships with Glyphosate”, *Journal of Agricultural and Food Chemistry*, 55, 3540-3545 (2008).
34. **Zhiqiang Pan**, **Ameeta Agarwal**, **Tao Xu**, **Qin Feng**, **Scott Baerson**, **Stephen Duke**, and **Agnes Rimando**, “Identification of Molecular Pathways Affected by Pterostilbene, a Natural Dimethylether Analog of Resveratrol”, *BMC Medical Gemomics*, 1 (2008).
35. **Nirmal Pugh**, H. Tamta, **Premalatha Balachandran**, X. Wu, **J'Lynn Howell**, **Franck Dayan**, and **David Pasco**, “The Majority of *in vitro* Macrophage Activation Exhibited by Extracts of Some Immune Enhancing Botanicals is Due to Bacterial Lipoproteins and Lipopolysaccharides”, *International Immunopharmacology*, 8, 1023-1032 (2008).
36. **Mohamed Radwan**, **Samir Ross**, **Desmond Slade**, **Safwat Ahmed**, **Fazila Zulfiqar**, and **Mahmoud ElSohly**, “Isolation and Characterization of New Cannabis Constituents from a High Potency Variety”, *Planta Med*, 74, 267-272 (2008).
37. **Ziyaur Rahman**, K. Kohli, S.Q. Zhang, R.K. Khar, M. Ali, N.A. Charoo, M. Tauseef, A.A. Shamsher, N.N. Mohammed, and **Michael Repka**, “*In-Vivo* Evaluation in Rats of Colon-Specific Microspheres Containing 5-Fluorouracil”, *Journal of Pharmacy and Pharmacology*, 60, 615-623 (2008).
38. M.A. Rashid, V.U. Ahmad, M.A. Abbasi, Z. Ali, N. Rasool, M. Zubair, M.A. Lodhi, M.I. Choudhary and **Ikhlas Khan**, “[□]-Chymotrypsin Inhibiting Benzylated Glycosides from *Symplocos racemosa*”, *Phytochemistry Letters*, 1, 54-58 (2008).
39. **Samir Ross**, K. Krishnaven, **Mohamed Radwan**, S. Takamatsu, and **Charles Burandt**, “Constituents of *Zanthoxylum flavum* and their Antioxidant and Antimalarial Activities”, *Natural Product Communications*, 3, 791-794 (2008).
40. C.S. Satish, C. Kumar, **Narasimha Murthy**, and H.G. Shivakumar, “Biocompatibility Issues of Implanted Polymeric Materials”, *Indian Journal of Pharmaceutical Education and Research*, 41, 195-204 (2007).
41. H.N. Shivakumar, B.G. Desai, **Narasimha Murthy**, and Ashish Sharma, “The Disintegration and Dissolution of Nabumetone Dispersible Tablets”, *Pharmaceutical Technology*, 60-68 (2007).
42. N. Singh, **Tammy Nolan**, and **Christopher McCurdy**, “Chemical Function-Based Pharmacophore Development for Novel, Selective Kappa Opioid Receptor Agonists”, *Journal of Molecular Graphics and Modelling*, (2008).
43. **Robert Speth**, and **Vardan Karamyan**, “The Significance of Brain Aminopeptidases in the Regulation of the Actions of Angiotensin Peptides in the Brain”, *Heart Fail Rev.*, 13, 299-309 (2008).

44. A. Srivastava, **Prasenjit Mukherjee**, P.V. Desai, **Mitchell Avery**, and **Babu Tekwani**, "Structural Analysis of Farnesyl Pyrophosphate Synthase from Parasitic Protozoa, a Potential Chemotherapeutic Target", *Infectious Disorders - Drug Targets*, 8, 16-30 (2008).
45. V.S. Tumuluri, M.S. Kemper, I.R. Lewis, S. Prodduturi, **Soumyajit Majumdar**, **Bonnie Avery**, and **Michael Repka**, "Off-Line and On-Line Measurements of Drug-Loaded Hot-Melt Extruded Films Using Raman Spectroscopy", *International Journal of Pharmaceutics*, 357, 77-84, (2008).
46. H. Ueda, M.C. Hacker, A. Haesslein, **Seongbong Jo**, D.M. Ammon, R.N. Borazjani, J.F. Kunzler, J. C. Salamone, and A.G. Mikos, "Injectable, *in situ* Forming Poly(propylene fumarate)-Based Ocular Drug Delivery Systems", *Journal of Biomedical Materials Research Part A*, 656-666 (2007).
47. S.Q. Zhang, S. Thumma, G.H. Chen, W.B. Deng, **Michael Repka**, and S.M. Li, "*In Vitro* and *In Vivo* Evaluation of Tegaserod Maleate pH-Dependent Tablets", *European Journal of Pharmaceutics and Biopharmaceutics*, 69, 247-254 (2008).
48. V.D. Zheljaskov, **Charles Cantrell**, W.B. Evans, M.W. Ebelhar, and C. Coker, "Yield and Composition of *Ocimum basilicum* L. and *Ocimum sanctum* L. Grown at Four Locations", *HortScience*, 43, 737-741 (2008).

TECHNOLOGY TRANSFER transactions:

(In the interest of protecting confidential information, the names and titles associated with School of Pharmacy invention disclosures and patent applications will no longer be published until after a patent has issued.)

Research Disclosures Filed in FY2007-2008: 11

U. S. Patent Applications Pending: 26

Recent U. S. Patents Granted: *Novel Compounds and Methods for Inhibiting Cellular Responses to Hypoxia*; Zhou, Yu-Dong; Nagle, Dale; Mohammed, Asjad; Hossain, Chowdhury. U.S. Patent # 7,375,132

The following **SPECIAL ANNOUNCEMENTS** are also listed:

- **Dr. Michael A. Repka** was:
 - (a) Invited Speaker, "Stabilization of actives in hot-melt extruded PEO films, APV Experts' Workshop on Hot-Melt Extrusion and its use in the manufacturing of pharmaceutical dosage forms", March 4-5, 2008 in Ludwigshafen, Germany.
 - (b) Invited Speaker and Chair of Plenary Sessions, "Evaluation of Buccal Delivery of Δ^9 -Tetrahydrocannabinol Prodrugs Utilizing Hot-Melt Processed Oral Transmucosal Patch Systems, 6th World Meeting on Pharmaceutics, Biopharmaceutics and Pharmaceutical Technology", April 7-10, 2008 in Barcelona, Spain.
 - (c) Recently appointed to the Editorial Advisory Board of distinguished pharmaceutical journals, *AAPS PharmSciTech* and *Pharmaceutical Development and Technology*.

Please continue to send me important research and graduate information so that I might share it with your faculty colleagues.

This information is now being posted on the School of Pharmacy web page (www.pharmacy.olemiss.edu).

cc: Dean Barbara G. Wells
 Ms. Dabney Weems
 Ms. Julie Edgington, Office of Research