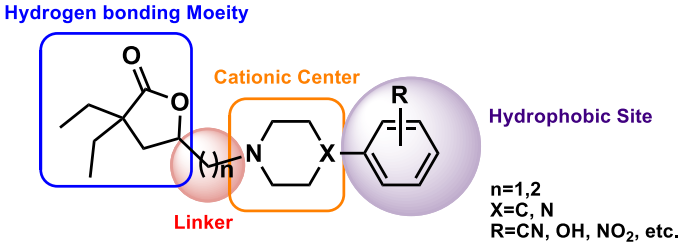
BIOSKETCH

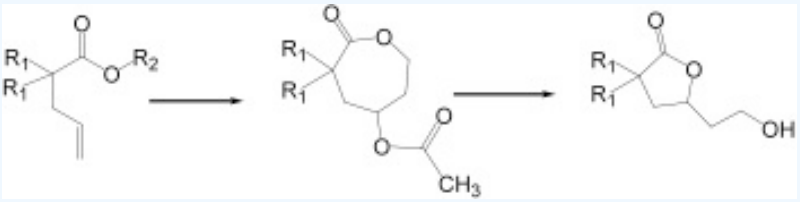
After receiving his B.S. degree in Pharmacy, Dr. Canney went on to earn a PhD in Medicinal Chemistry at Temple University. He then accepted a position as a postdoctoral fellow in the Department of Pharmacology and Molecular Biology at Washington University School of Medicine, St. Louis working on the development of novel anticonvulsant agents. He later joined the University of Pennsylvania's Department of Radiology (Section of Radiopharmaceutical Chemistry) as a research assistant professor where he worked on the development of organ and receptor-specific imaging agents for use in SPECT imaging studies (technetium and radioiodinated ligands).

Dr. Canney joined the faculty of TUSP in 1993 as assistant professor of medicinal chemistry. His current research interests include structure-activity relationship (SAR) studies involving molecules that modulate pharmacologically important protein targets. Examples include novel ligands for cholinergic (**muscarinic** and nicotinic), **serotonin**, and Sigma receptor subtypes. The lactone scaffold shown below was used in the design of these ligands. In the recent past, we have also designed ligands for retinoic acid receptor (RAR) subtypes.

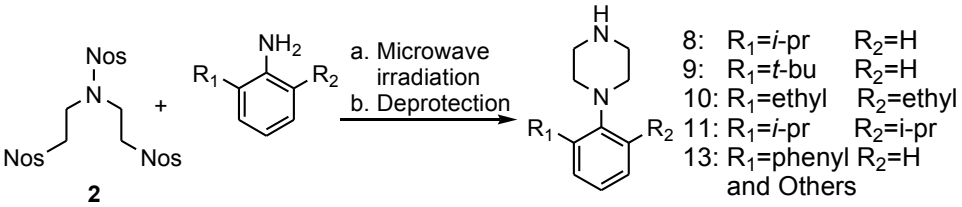
Fig. 1. General structural features of the newly designed ligands



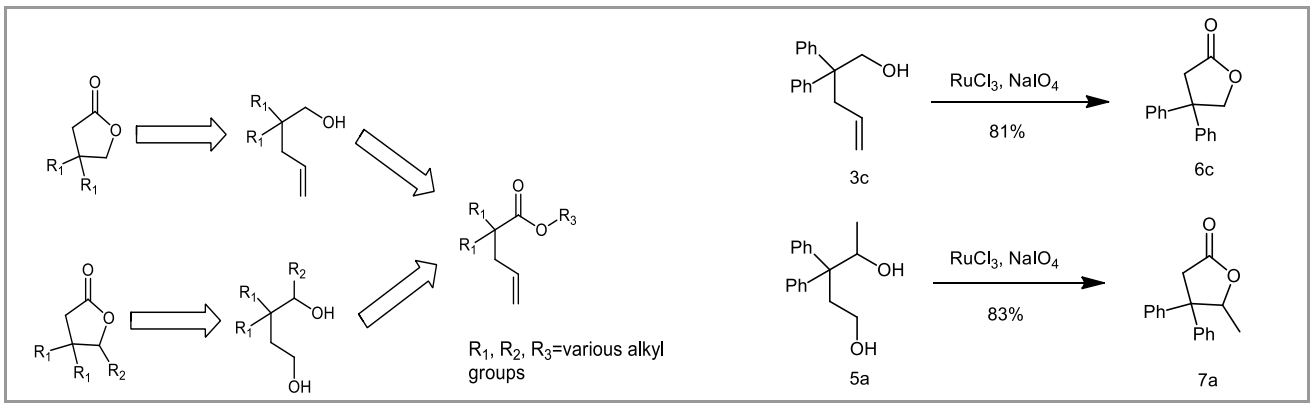
The development of efficient and versatile synthetic routes to pharmacologically useful building blocks is another interest of the group (see below). Dr. Canney continues to collaborate with scientists in the pharmaceutical industry and in academia in order to further our understanding of the relationship between ligand structure and biological activity. Information pertaining to the specific research areas mentioned above can be found under Publications/Posters.



A modified Prins reaction for the facile synthesis of structurally diverse substituted lactones

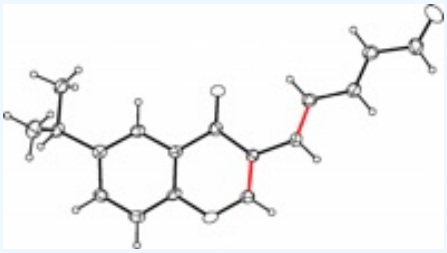


A Versatile and Practical Microwave Assisted Synthesis of Sterically Hindered N-Aryl Piperazines

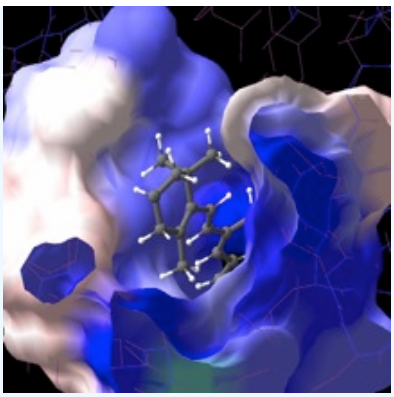


Retrosynthetic analysis of β,β-disubstituted γ-butyrolactones

Oxidation of 1, 4-diol & γ-hydroxy olefins to γ-butyrolactones



X-Ray crystal structures of ATRA-ligand



ATRA in the RARγ binding pocket

Dr. Canney serves on the international Board of Associate Editors of Life Sciences, on the Editorial Advisory Boards of several journals (Medicinal Chemistry and Perspectives in Medicinal Chemistry) and a reviewer for journals in the areas of organic synthesis and medicinal chemistry. Additional faculty responsibilities include service as the Director of Graduate Studies, teaching at the professional (Medicinal Chemistry I, II, and III) and graduate levels (Advanced Medicinal Chemistry I and II, Pharmaceutical Analysis) and the direction of graduate students in his lab (M.S. and Ph.D.). In the Pharm.D. program he serves as the Faculty Advisor for the Rho Chi Pharmaceutical Honor Society and the Committee on Addiction and Substance Abuse (C.A.S.A., Rx).

PUBLICATIONS

Monographs

- **Canney, D.J**.: Chapter 71: Cholinomimetic Drugs in Remington: The Science and Practice of Pharmacy, 22nd Edition, A.R. Gennaro (ed.), Pharmaceutical Press, London, UK, **2012**
- **Canney, D.J**.: Chapter 73: Antimuscarinic and Antispasmodic Drugs in Remington: The Science and Practice of Pharmacy, 22nd Edition, A.R. Gennaro (ed.), Pharmaceutical Press, London, UK, **2012**

Book Chapters

- **Canney, D.J**.: Chapter 71: Cholinomimetic Drug in Remington: The Science and Practice of Pharmacy, 21st Edition, A.R. Gennaro (ed.), Lippincott, Williams & Wilkins, Baltimore, MD, **2005**
- **Canney, D.J**.: Chapter 73: Antimuscarinic and Antispasmodic Drugs in Remington: The Science and Practice of Pharmacy, 21st Edition, A.R. Gennaro (ed.), Lippincott, Williams & Wilkins, Baltimore, MD, **2005**

Recent peer-reviewed journal articles

1. Gao, R., Fan, R., **Canney, D.J.** Synthesis of β,β-disubstituted γ-butyrolactones by chemoselective oxidation of 1,4-diols and γ-hydroxy olefins with $RuCl_3/NaIO_4$, submitted to Synlet, **2014**, in press.

2. Bhandare, R., **Canney, D.J.** Bioisosteric replacement in the design, synthesis and evaluation of ligands for muscarinic acetylcholine receptors, *Medicinal Chemistry Journal* (Bentham), **2014**, 10(4):361-375.

3. Gao, R., Bhandare, R., **Canney, D.J.** Homologation as a lead modification approach en route to a series of lactone-based muscarinic ligands, *Medicinal Chemistry Research*, **2014**, *23*:1023–1030

4. Annadurai**,** S**.,** Martinez, R., **Canney, D.J.,** Dunman, P.M., Abou-Gharbia**,** M. Promising 2-aminothiazole based antimicrobial leads against MRSA strains. *Bioorg. Med. Chem. Lett.,* **2012** Dec 15;22(24), 7719-7725.

5. Sharan, S., Iwuchukwu, O. F., **Canney, D.J.**, Zimmerman, C.L., Nagar, S. In-vivo Formed Versus Preformed Metabolite Kinetics of Trans-resveratrol-3-sulfate (R3S) and Trans-resveratrol-3-glucuronide (R3G). *Drug Metab Dispos.*, **2012** Oct;40(10):1993-2001.

6. Iwuchukwu, O. F., Sharan, S., **Canney, D.J.**, Nagar, S. Analytical method development for conjugated metabolites of trans-resveratrol, and application to pharmacokinetic studies. *J. Pharm. Biomed. Anal.* **2012**, *63***,** 1-8.

7. Nantogmah, S., Desai, S., Bhandare, R., Gabriel, J., Soprano, D., **Canney, D.J**. Synthesis and Preliminary Evaluation of Affinity for Retinoic Acid Receptors for Novel Organosilicon-Based retinoids. *Pharmaceutical Chemistry Journal*, **2012**, *45* (10), 612-621.

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9. Gao, R., **Canney, D.J.** A Versatile and Practical Microwave Assisted Synthesis of Sterically Hindered N-Aryl Piperazines, *J. Org. Chem.*, **2010**, *75* (21), 7451–7453.

10. Annadurai, S., Krynetskaia, Phadke, M.S., Krynetskiy, E., **Canney, D.J.** Inhibition of sequence independent DNA-binding activity of human recombinant HMGB1 protein with natural triperpines. *Der Pharmacia Lettre*, **2010**, *2(3)*, 432-443.

11. Bhandare, R.R., **Canney, D.J**. Modifications to five-substituted 3,3-diethyl-4,5-dihydro-2(3H)-furanones *en* route to novel muscarinic receptor ligands. *Medicinal Chemistry Research,* **2010***, 20* (5), 558-565.

12. Crismon, M.L., Albright, F.S., **Canney, D.J.,** Das, N,G,, Mehanna, A,S,, Welage, L,S,, Wu-Pong, S., Miller, K.W. The role of dual-degree programs in colleges and schools of pharmacy: the report of the 2008-09 Research and Graduate Affairs Committee. *Am J Pharm Educ.* **2009**;73, Suppl:S6.

13. Gao, R., **Canney, D.J.** A modified Prins reaction for the facile synthesis of structurally diverse substituted 5-(2-hydroxyethyl)-3,3-dihydrofurane-2(3H)-ones. *Tetrahedron Lett*., **2009**, *50;43*, 5914-5916.

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15. Desai, S., Sun, W., Gabriel, J. L., and **Canney, D. J.** The Synthesis and Preliminary Evaluation of Substituted Chromones, Coumarins, Chromanones, and Benzophenomones as Retinoic Acid Receptor Ligands. *Heterocyclic Communications***, 2008***, 14:3,* 129-137.

16. Sun, W., Desai, S., Piao, H., Carroll, P., and **Canney, D.J.** Wittig-Horner-Emmons Reactions of Triethyl-3-methyl-phosphonocrotonate with 3-Formylchromones en Route to Benzophenone-Based Retinoid Candidates. *Heterocycles*, **2007,** *71:3*, 557–567.

17. Tao, X., Piao, H., **Canney**, **D. J. ,** Borenstein, M.R., Nnane, I.P. Biotransformation of Letrazole in Rat Microsomes: Effects of Gender and Tamoxifen. *J. Pharm. Biomed. Anal.*, **2006**, *43*, 1078-1085.

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1. Bhandare, R.R., Gao, R., **Canney, D.J**., and Kharkar, P. Investigational Analysis using Pharmacophore and Docking Studies on Five-Substituted 3,3-Diethyl-4,5-Dihydro-2(3*H*)-Furanones and their Homologs Targeted as Muscarinic Receptor Ligands, *ICPAC*, Mauritius, June, **2014**.

2. Bhandare, R., Gao, R., **Canney, D.J.,** Lead Modification Approaches in the Design of Cholinergic Ligands: Synthesis and Preliminary Evaluation of Novel Ligands for Muscarinic Acetylcholine Receptors, *A.A.P.S. National Meeting*, Chicago, **2012**.

3. Sharan, S., Iwuchukwu, O. F., **Canney, D.J.**, Nagar, S. Pharmacokinetics of resveratrol (t-Res) and its preformed sulfated and glucuronidated metabolites in vivo. *A.A.P.S. National Meeting*, Washington DC, **2011**.

4. Bhandare, R., **Canney, D.J.**, Investigations into bioisosteric replacements for the 4,5-dihydro-2(3H)-furanone moiety of lead muscarinic acetylcholine receptor ligands. *A.A.P.S. National Meeting*, Washington DC, **2011**.

5. Gao, R., **Canney, D.J**. Synthesis and preliminary evaluation of substituted N-aryl-piperazine based compounds as muscarinic ligands. *American Chemical Society (ACS) National Meeting*, Denver, CO, August, **2011.**

6. Annadurai, S., Martinez, R., Dunman, P., **Canney, D.J**., Abou-Gharbia, M. Lead generation using a privileged structure-based approach. *American Chemical Society (ACS) National Meeting*, Denver, CO, August, **2011**

7. Iwuchukwu, O. F., **Canney, D.J.**, Nagar, S. Contribution of glucuronidation to resveratrol's pharmacologic effects and low systemic bioavailability. *Resveratrol 2010: The 1st international scientific conference of Resveratrol and Health*, Elsinore, Denmark, Sept., 13-15, **2010**.

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12. Bhandare, R., **Canney, D.J.,** Development of Benzylpiperazines as Subtype Selective Muscarinic Ligands. *American Chemical Society (ACS) National Meeting*, Philadelphia, PA, August, **2008**.

13. Gao, R, **Canney, D.J.,** Five-substituted 4,5-dihydro-3,3-diethyl-2(3H)-furanones as Muscarinic Ligands: Synthesis and Preliminary Evaluation, *American Chemical Society (ACS) National Meeting*, Philadelphia, PA, August, **2008**

14. Annadurai S., Krynetskaia,N., Krynetskiy, E., **Canney, D.J.** Design, Synthesis and Screening of Novel Inhibitors of HMGB1/DNA Complex Formation. *ACS National Meeting*, New Orleans, April, **2008**.

15. Thoma, B., Dragic, M., Appel, D., **Canney, D.J.,** Student pharmacists' awareness and attitudes toward addiction and chemical dependency. *Journal of the American Pharmacists Association,* 48: 2, March–April, Abstract 296, p 307, **2008**.

16. Thoma, B., Dragic, M., Appel, D., **Canney, D.J.,** Effectiveness of a substance abuse/chemical dependency roundtable discussion in educating student pharmacists and influencing attitudes. *Journal of the American Pharmacists Association***,** 48:2, March–April, Abstract 294, p 307, **2008**.

17. Iwuchukwu,O., **Canney, D.J.**., Nagar, S. Resveratrol Glucuronidation Exhibits Atypical Kinetic Profiles with Different Recombinant UGT1A Isoforms. *American Association of Pharmaceutical Scientists (AAPS), National Meeting,* San Diego, November **2007**.

18. Iwuchukwu, O., **Canney, D.J.,** Nagar, S. Contribution of Metabolic Conjugation to Decreased Bioavailabilty of Resveratrol. *GRASP, 27th Annual Meeting*, **June 2007**, Piscataway, N.J., USA.