Robert Ronald Kane

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EXPERIENCE

2013-2018 Adjunct Investigator, Baylor Institute for Immunology Research, Baylor Health Care System.
2005 Director, Institute for Biomedical Studies, Baylor University.
2002 Associate Professor, Department of Chemistry & Biochemistry, Baylor University.
1999-2009 Director, Center for Drug Discovery, Baylor University.
1996-2002 Assistant Professor, Department of Chemistry & Biochemistry and Institute of Biomedical Studies, Baylor University, Waco Texas.
1991 Post-Ph.D., The University of California, Los Angeles.
Professor M. Frederick Hawthorne, Research Advisor.
1990 Ph.D. degree in Chemistry (Organic), Texas Tech University, Lubbock Texas. Professor Robert D. Walkup, Research Advisor.
1987 B.S. degree in Chemistry, Texas Lutheran College, Seguin Texas.

PROFESSIONAL DISTINCTIONS

2021 Faculty Senate, Baylor University
2020 Chair, ACS 'Heart of Texas' Local section
2019 Research highlighted in C&E News, "Drug-releasing transplants combat rejection in mice" *C&E News* **2018**, *96(6)*, 7.
2016 "Circle of Achievement" Award from Baylor University Mortar Board (also 1998 and 2000)
2014 Session Chair, Keystone Conference "The Modes of Action of Vaccine Adjuvants"
2013 General Chair, 69th Southwest Regional Meeting of the American Chemical Society
2009 Phi Beta Kappa Acknowledgement (x2; also 2006, 2004, 2003, 2002 (x2) and 2001)
2002 Symposia Chair, "Frontiers of Oligonucleotides" and "The Future of Academic/Industrial Collaborations", 58th SW Regional Meeting, American Chemical Society, Austin, TX
2002-2013 Chair, Conflict of Interest Committee, Baylor Research Inst. (Baylor Health Care System)
2001 Appointed to Board of Trustees, Baylor Research Institute (Baylor Health Care System)
2000 Presentation highlighted in C&E News, "Reductive method alkylates amines" *C&E News* **2000**, *78(37)*, 30.
2000 Chair, 'Broaden CCR To Other Disciplines' Action Network, Council of Chemical Research
1999-2004 Consultant, Genzyme Tissue Repair (Boston, MA)
1998-2003 Consultant; Member, Scientific Advisory Board; OXiGENE (Lund, Sweden), Campamed, Inc. (Arlington, VT)
1994-97 Consultant, IONIX Corporation (Seattle, WA)
1994 Session Chair (Chemistry), Sixth International Symposium on Neutron Capture Therapy for Cancer, November 1994, Kobe Japan.
1992-95 NIH Individual Postdoctoral Fellowship; NIH Institutional Postdoctoral Fellowship (Tumor Cell Biology Training Program).
1992 Invited presentation to the Board of Scientific Counselors of the Division of Cancer Treatment of the National Cancer Institute (NIH), Bethesda Maryland.
1991 First Annual Song Prize, TTU (best dissertation, Chemistry & Biochemistry).
1989 First Place Award for paper presented at the Student Research Conference at ENMSU; 2nd Place Award for paper presented at the South Plains Research Symposium at TTU.
1985 Robert A. Welch Foundation Undergraduate Research Fellow, Department of Chemistry, Texas Lutheran College.

GRADUATE THESES

"Study of the Photochemical Protein Crosslinking of 1,8-Naphthalimides", Timothy M. Rowland, *Masters of Science Thesis, Biomedical Studies (Spring 1999)*.

"Modification of Metoclopramide at the Ortho-Methoxy Position Enhances Cytotoxicity and Induces Apoptosis", Elizabeth A. Keschman, *Masters of Science Thesis, Biomedical Studies (Spring 2000)*.

"Photochemical Protein Crosslinking by 1,8-Naphthalimides", Robert Jeremy Woods, *Doctor of Philosophy Dissertation (Summer 2003).*

"The Synthesis of Novel Phosphate Diester Prodrugs of Combretastatin A4; DNA Cleavage with a Metal Ion-Iminoacetic Acid Linked Deoxyoligonucleotide System or by Photoreaction with 4-Amino-1,8-Naphthalimides", Mark Devannand Jonklaas, *Doctor of Philosophy Dissertation (Summer 2003).*

"Modification of Fresh Tissue Surfaces; Synthesis of Labeled *L*-DOPA Analogs; Synthesis of Metaclopramide Analogs", Aruna Perera, *Doctor of Philosophy Dissertation (Fall 2005).*

"Coenzymes for *in Vitro* Selection of DNA Enzymes", Dorn L. Carranza, *Doctor of Philosophy Dissertation (Spring 2006).*

"Synthesis of Protected Amino Thymidines and New Thiol Derivatives of the Vascular Targeting Agent Combretastatin A-4", Daniel A. Ramirez, *Masters of Science Thesis (Summer 2006).*

"Meniscal Tissue Bonding and Exploration of Sonochemical Tissue Modification", Drew W. Dean, *Masters of Science Thesis (Fall 2008).*

"Mechanistic Studies of Protein Crosslinking Using 1,8-Naphthalimides", Ae Gyeong Kang, *Masters of Science Thesis (Spring 2009).*

"Discovery of DNA-enzymes Dependant on Small-Molecule Cofactors; Design, Synthesis, and Evaluation of TLR-7 Agonists and their Immunoprotein Conjugates", José Roberto Boquin Romero, *Doctor of Philosophy Dissertation (Summer 2010).*

"Photochemical Modification of Proteins and Tissue Surfaces using 1,8-Naphthalimides", Gabriela Uzcategui, *Doctor of Philosophy Dissertation (Summer 2010).*

"Synthesis and Evaluation of 8-Substituted Adenine Derivatives as Toll-like Receptor 7 Agonists", Zach Seifert, *Masters of Science Thesis (Spring 2015).*

"Synthesis of Modulators of TLR2, TLR4, and TLR7 Functionalized for Conjugation to Biomolecules", Babatope Akinbobuyi, *Doctor of Philosophy Dissertation (Fall 2016).*

"Inhibition of TLR4 Minimizes Islet Damage due to Sterile Inflammation and Improves Islet Transplant Outcomes", Charles A. Chang, *Doctor of Philosophy Dissertation (Summer 2018).*

"Synthesis and Bioconjugation of Small Organic Molecules for Immunomodulation", Jeremy M. Quintana, *Doctor of Philosophy Dissertation (Spring 2020).*

"Synthetic Studies towards Penicisulfuranol B; C-H Activation Borylation of Staurosporine (Mentor Wood); Design, Synthesis, and Evaluation of Rapamycin and Everolimus Analogs; Design, Synthesis, and Evaluation of Gemfibrozil Analogs" (Mentor Kane), Kevin M. Gayler, *Doctor of Philosophy Dissertation (Summer 2021). Note – this dissertation included 3 chapters performed in the John L. Wood group and 2 chapters performed in my lab.*

"Design, Synthesis, and Characterization of Substrate-activated Prodrugs of TAK-242 and Mycophenolic acid; TAK-242 Methodology Studies and Derivative Syntheses", Michael A. Plunk, *Doctor of Philosophy Dissertation (Summer 2021).*

UNDERGRADUATE THESES

"A Study of Synthetic DNA Fitted with Metal Binding Ligands", Carla E. Torres, *Honors Thesis (Spring 1998)*.

"Synthesis of Deuterium-Labeled 4-Hydroxy-3-methoxyphenylalanine from 3,4-Dihydroxy-benzaldehyde", Emily Morgan, *Honors Thesis (Spring 2004)*.

"Synthesis of the Novel Compound 4-((6-amino-2-butoxy-8-hydroxy-9H-purin-9-yp)benzoic acid", Tuan Loh, *Honors Thesis (Spring 2011).*

"Synthesis of Sulfur and Amino 8-Substituted Adenine Derivatives as TLR7 Agonists", Rachel Petersen, *Honors Thesis (Fall 2014).*

"Development of TLR7 Agonist-Antibody Conjugates", Jeremy Quintana, *Honors Thesis (Spring 2015).*

"FK506 and Rapamycin Bioconjugation: A Proposal to Increase the Viability of Transplanted Pancreatic Islets", Chloë Sells, *Honors Thesis (Spring 2017).*

"Improving Transplant Efficacy", Kayla Murphy, *Honors Thesis (Spring 2018).*

"Synthesis of Nitrile TAK-242 Derivatives and Gemfibrozil Analogs", Harold Nguyen, *Honors Thesis, (Spring 2020)*

BOOKS

Chuck Garner and Bob Kane, *Experiments in Organic Chemistry Laboratory*, Kendall/Hunt, Dubuque, IA; 2002 (ISBN 0-7872-9625-2).

PUBLICATIONS

53. "Effect of Rubus ideaus L. consumption during pregnancy on maternal mice and their offspring", Marie Hastings-Tolsma, Ryan T. Stoffel, Alexandra L Quintana, Robert R. Kane, Jacob Turner, Xuan Wang, *J. Medicinal Food,* **2021**, *in press*. (https://doi.org/10.1089/jmf.2021.0078)

52. "Gemfibrozil derivatives as activators of soluble guanylyl cyclase – a structure- activity study", Kevin M. Gayler, Jeremy M. Quintana, Jordan Mattke, Michael A. Plunk, Jessica H. Kostyo, Johann Karunananthan, Harold Nguyen, Mina Shuda, Liam Ferreira, Hannah Baker, Alexandra L. Quintana, Iraida Sharina, Robert R. Kane, Emil Martin, *European Journal Medicinal Chemistry*, **2021**, *224*, 113729. (https://doi.org/10.1016/j.ejmech.2021.113729)

51. "Dectin-1 controls TSLP-induced Th2 response by regulating STAT3, STAT6, and p50-RelB activities in dendritic cells", Chao Gu, Katherine Upchurch, Joshua Horton, Ling Ni, Mathew Wiest, Sandra Zurawski, Robert Coffman, Mark Millard, Robert Kane, HyeMee Joo, Lisa Miller, SangKon Oh, *Frontiers in Immunology*, **2021**, *12,* 2612. (https://doi.org/10.3389/fimmu.2021.678036)

50. "Design and Catalyzed Activation of Mycophenolic Acid Prodrugs", Michael A. Plunk, Jeremy M. Quintana, Carly M. Darden, Michael C. Lawrence, Bashoo Naziruddin, and Robert R. Kane, *ACS Medicinal Chemistry Letter*s, **2021**, *12, 5, 812–816.* (https://doi.org/10.1021/acsmedchemlett.1c00079)

49. "Design and Catalyzed Activation of Tak-242 Prodrugs for Localized Inhibition of TLR4-Induced Inflammation", Michael A. Plunk, Alyssa Alaniz, Olatunde P. Olademehin, Thomas L. Ellington, Kevin L. Shuford, Robert R. Kane, *ACS Medicinal Chemistry Letters* **2020**, *11(2)*, 141-146. (doi: 10.1021/acsmedchemlett.9b00518

48. "Chemical Strategies for Improving Islet Transplant Outcomes", Jeremy M. Quintana, Alexandra L. Stinchcomb, Jessica H. Kostyo, Blair M. Robichaud, Michael A. Plunk, Robert R. Kane, *OBM Transplantation* **2018**, *2(4)*, 036. (doi: 10.21926/obm.transplant.1804036)

47. "Early TLR-4 blockade attenuates sterile inflammation-mediated stress in islets during isolation and promotes successful transplant outcomes in mice", Charles A. Chang, Kayla Murphy, Robert R. Kane, Michael Lawrence, Bashoo Naziruddin, *Transplantation* **2018**, *102(9)*, 1505-1513. (doi: 10.1097/TP.0000000000002287)

46. "*Ex-vivo* generation of drug-eluting islets improves transplant outcomes by inhibiting TLR4-Mediated NFkB upregulation", Charles A. Chang, Babatope Akinbobuyi, Jeremy M. Quintana, Gumpei Yoshimatsu, Bashoo Naziruddin, Robert R. Kane, *Biomaterials* **2018**, *159C*, 13-24. (doi: 10.1016/j.biomaterials.2017.12.020)

45. "Synthesis and immunostimulatory activity of substituted TLR7 agonists", Babatope Akinbobuyi, Lei Wang, Katherine C. Upchurch, Matthew R. Byrd, Charles A. Chang, Jeremy M. Quintana, Rachel E. Petersen, Zacharie J. Seifert, José R. Boquin, SangKon Oh, and Robert R. Kane, *Bioorganic and Medicinal Chemistry Letters* **2016**, *26*, 4246-4249. (doi:10.1016/j.bmcl.2016.07.049)

44. "New TLR7 Agonists with Improved Humoral and Cellular Immune Responses", Katherine C. Upchurch, José R. Boquín, Wenjie Yin, Yaming Xue, HyeMee Joo, Robert R. Kane, and SangKon Oh, *Immunology Letters* **2015**, *168(1)*, 89-97. (doi:10.1016/j.imlet.2015.09.007)

43. "Facile syntheses of functionalized toll-like receptor 7 agonists", Babatope Akinbobuyi, Matthew R. Byrd, Charles A. Chang, Mysa Nguyen, Zacharie J. Seifert, Anne-Laure Flamar, Gerard Zurawski, Katherine C. Upchurch, SangKon Oh, Stephen H. Dempsey, Thomas J. Enke, John Le, Hunter J. Winstead, José R. Boquín, and Robert R. Kane *Tetrahedron Letters* **2015**, *56(2)*, 458-460. (doi 10.1016/j.tetlet.2014.11.126)

42. "Comparison of surface modification chemistries in mouse, porcine, and human islets", Jeffrey A. SoRelle, Mazhar A. Kanak, Takeshi Itoh, Joshua M. Horton, Bashoo Naziruddin, Robert R. Kane, *J. Biomed. Mater. Res. Part A* **2015**, *103(3)*, 869-877. (doi 10.1002/jbm.a.35229)

41. "History of the biomedical studies PhD program: a joint graduate program of the Baylor Health Care System and Baylor University", Christine R. Morel, Joshua M. Horton, Han Peng, Kangling Xu, Sushil K. Batra, Jonathan P. Miles, and Robert R. Kane, *Baylor University Medical Center Proceedings* **2008**, 21(4), 403-410.

40. "Development of a photochemical method for meniscal repair: A preliminary study", Carolyn P. Skurla, Aruna Perera, Christopher T. Towe, Peter R. Robertson, Jennifer L. Healy, and Robert R. Kane, *J. Biomechanics* **2007**, 40(13), 220-224. (doi:10.1016/j.jbiomech.2005.10.036)

39. "Synthesis and crystal structures of cis- and trans-1-(3'-*N, N*-dimethylthiocarbamoyl-4'-methoxy)-2-(3", 4", 5"-trimethoxyphenyl) ethene", Daniel A. Ramirez, Jianxing Zhang, Kevin Klausmeyer, and Robert R. Kane, *J. Chem. Crystallography* **2005**, 35(3), 227-232.

38. "Synthesis and *in vitro* Biological Evaluation of Aminal and Thioaminal Analogues of Cordycepin", Hui-Min Chang, Jesse Oakes, Anders Olsson, Luminita Panaitescu, B. Mark Britt, Christopher M. Kearney, and Robert R. Kane, *Letters in Drug Design & Discovery* **2005**, *2(2),*133-136.

37. "Suture-Less Avascular Meniscal Repair: A Preliminary Animal Study", Fabian E. Pollo, Robert W. Jackson, Robert R. Kane, Hui-Min Chang, Jianxing Zhang, Chad P. Dieterichs, and Stephan Riedel, *Arthroscopy: The Journal of Arthroscopic and Related Surgery* **2004**, *20(8)*, 824-830.

36. "Photochemical Tissue Bonding Using 4-Amino-1,8-Naphthalimides", Jianxing Zhang, R. Jeremy Woods, Phillip B. Brown, Richard A. Mowery, Fabian Pollo, Robert W. Jackson, and Robert R. Kane, *Journal of Biomedical Optics* **2004**, *9(5), 1089-1092.*

35. "Combretastatin Family Member OXI4503 induces Tumor Vascular Collapse Through the Induction of Endothelial Apoptosis", Yezhou Sheng, Jianyi Hua, Kevin G. Pinney, Charles M. Garner, Robert R. Kane, Joseph A. Prezioso, David J. Chaplin, and Klaus Edvardsen, *International Journal of Cancer* **2004**, *111*, 604-610.

34. "Protein Crosslinking by 1,8-Naphthalimides: Influence of the 4-Substituent", R. Jeremy Woods, Jianxing Zhang, Charalene R. Green, and Robert R. Kane, *ARKIVOC* **2003**, (xiii), 109-118.

33. "OXI4503 A Novel Vascular Targeting Agent: Effects on Bloodflow and Antitumor Activity in Comparison to Combretastatin A-4 Phosphate", Jianyi Hua, Yezhou Sheng, Kevin Pinney, Charles M. Garner, Robert R. Kane, Joseph A. Prezioso, George R. Pettit, David J. Chaplin, and Klaus Edvardsen, *Anticancer Research* **2003***, 23*, 1433-1440.

32. "[(E)-1-(2-hydroxy-4-methoxyphenyl)-2-(3,4,5-trimethoxyphenyl)-ethene]", Jianxing Zhang, Shou-Feng Chen, Kevin K. Klausmeyer and Robert R. Kane, *Acta Crys. C.* **2003**, *C59*, o381-o382.

31. "Synthesis, *in vitro*, and *in vivo* Evaluation of Phosphate Ester Derivatives of Combretastatin A-4", M. Devan Jonklaas, Jianxing Zhang, Klaus Edvardsen, Robert R. Kane, and Kevin. G. Pinney, *Biochem. Med. Chem. Lett.,* **2003**, *13(9)*, 1505-1508.

30. "Synthesis of deuterium-labeled 3-*O*-methyldopa and 4-*O*-methyldopa", Aruna Perera, Hoa K. Nguyen, Keith Hyland, and Robert R. Kane*, J. Labeled Cmpds. Radiopharm.* **2003**, *46(5)*, 389-394.

29. "Synthesis and Photochemical Protein Crosslinking Studies of Hydrophilic Naphthalimides", Jianxing Zhang, R. Jeremy Woods, Philip B. Brown, Kap Duk Lee, and Robert R. Kane*, Biochem. Med. Chem. Lett.* **2002**, *12(6)*, 853-856.

28. "Reductive Alkylation of Aromatic Amines via Amidine Intermediates", Jianxing Zhang, Hui-Min Chang, and Robert R. Kane*, Synlett* **2001**, *(5)*, 643-645.

27. "Pharmacokinetics and Central Nervous System Toxicity of Declopramide (3-Chloroprocainamide) in Rats and Mice", Jianyi Hua, Robert R. Kane, and Ronald W. Pero*, Anticancer Drugs* **1999**, *10*, 79-88.

26. "The Synthesis of 3'- and 5'-Iminodiacetic Acid Derivatives of Thymidine and Their Incorporation into Synthetic Oligonucleotides", M. Devan Jonklaas and Robert R. Kane*, Tetrahedron Letters* **2000**, *41*, 4035-3037.

25. "Comparison of Antitumor Activity of Declopramide (3-Chloroprocainamide) and N-Acetyl-Declopramide", Jianyi Hua, Carl Bryngelsson, Robert R. Kane, and Ronald W. Pero*, Anticancer Research* **1999***, 19(1A)*, 285-290.

24. "Toward a Cancer Therapy with Boron-Rich Oligomeric Phosphate Diesters Which Target the Cell Nucleus", Akira Nakanishi, Lufeng Guan, Robert R. Kane, Harumi Kasamatsu, and M. Frederick Hawthorne*, Proceedings of the National Academy of Sciences (USA)* **1999**, *96(1)*, 238-241.

23. "Efficient Asymmetric Synthesis of the C9-C21 Portion of the Aplysiatoxin and Oscillatoxin Marine Natural Products", Robert D. Walkup, Jeffrey D. Kahl, and Robert R. Kane*, Journal of Organic Chemistry* **1998**, *63(24)*, 9113-9116.

22. "Homogeneous Immunoconjugates for Boron Neutron Capture Therapy: Design, Synthesis, and Preliminary Characterization", Lufeng Guan, Letitia A. Wims, Robert R. Kane, Mark B. Smuckler, Sherie L. Morrison, and M. Frederick Hawthorne, *Proceedings of the National Academy of Sciences (USA)* **1998**, *95(22)*, 13206-13210.

21. "The Synthesis, Purification, Characterization, And Derivatization Of Boron-Rich Oligophosphates", Robert R. Kane, Young Soo Kim, and M. Frederick Hawthorne, *Advances in Neutron Capture Therapy*, **1997.** Edited by B. Larson, J. Crawford, and R. Weinreich, eds., Elsevier Science; Amsterdam, pp 126-130.

20. "Approaches To The Selective Concentration Of Boron-Rich Oligophosphates In Tumors", Robert R. Kane, Lufeng Guan, Kenneth Shelly, and M. Frederick Hawthorne*, Advances in Neutron Capture Therapy*, **1997.** Edited by B. Larson, J. Crawford, and R. Weinreich, eds., Elsevier Science; Amsterdam, pp 362-365.

19. "Boron-Rich Oligophosphates – Novel Molecules for Use in BNCT", Robert R. Kane, Karin Drechsel, Young-Soo Kim, Cynthia L. Beno, Christine S. Lee, Gabriel Mendez, Solomon Romano, and M. Frederick Hawthorne, *Neutron Capture Therapy of Human Cancers*, Y. Mishima, Ed., Plenum Press, New York, *in press*.

18. "Rods, Rings, Balls, and Strings!", Mark D. Mortimer, Wei Jiang, Zhiping Zheng, Robert R. Kane, Igor T. Chizhevsky, Carolyn B. Knobler, and M. Frederick Hawthorne, in *Modular Chemistry*, J. Michl, Ed., Kluwer Academic Publishers, Dordrecht (the Netherlands), **1997**, 551–564.

17. "The Novel $[n\text{-}B_{20}H_{18}]^{2-}$ Induced Nucleophilic Ring-Opening of Tetrahydrofuran by Alkoxide Anions", Fangbiao Li, Kenneth Shelly, Robert R. Kane, Carolyn B. Knobler, and M. Frederick Hawthorne, *Angewandte Chemie Int. Ed. Engl.* **1996***, 35(22)*, 2646-2649.

16. "Targeting of Anionic *nido*-Carboranes to Human Colon Carcinoma Cells with Bispecific Antibodies", F. James Primus, Roger H. Pak, Karen J. Rickard-Dickson, Robert R. Kane, and M. Frederick Hawthorne, *Bioconjugate Chemistry* **1996**, *7(5)*, 532–535.

15. "Synthesis and Structure of the Polyhedral [μ-$B_{20}H_{17}OH]^{2-}$ Borane Anion Containing Both Oxygen- and Hydrogen-Bridge Bonds", Fangbiao Li, Kenneth Shelly, Robert R. Kane, Carolyn B. Knobler, and M. Frederick Hawthorne, *Journal of the American Chemical Society* **1996**, *118(27)*, 6506–6507.

14. "Preparation and Properties of *nido*-Carborane-specific Monoclonal Antibodies for Potential Use in Boron Neutron Capture Therapy (BNCT) of Cancer", Roger H. Pak, F. James Primus, Karen J. Rickard-Dickson, Lai Ling Ng, Robert R. Kane, and M. Frederick Hawthorne, *Proceedings of the National Academy of Sciences (USA)* **1995**, *92*, 6986-6990.

13. "Synthesis of New Building Blocks for Boron-Rich Oligomers in Boron Neutron Capture Therapy (BNCT). II. Monomers Derived From 2,2-Disubstituted-1,3-Diols", Young Soo Kim, Robert R. Kane, Cynthia L. Beno, Solomon Romano, Gabriel Mendez, and M. Frederick Hawthorne, *Tetrahedron Letters* **1995**, *36(29)*, 5147-5150.

12. "Synthesis and Characterization of Oligomeric *nido*-Carboranyl Phosphate Diester Conjugates to Antibodies and Antibody Fragments for Potential Use in Boron Neutron Capture Therapy of Solid Tumors", Christine J. Chen, Robert R. Kane, F. James Primus, Gyorgy Szalai, M. Frederick Hawthorne, and John E. Shively, *Bioconjugate Chemistry* **1994**, *5(6)*, 557-564.

11. "Synthesis and Structural Characterization of $[(CH_3)_3NH][$*nido*-9,11-I_2-7,8-$C_2B_9H_{10}]$ and $[(CH_3)_3NH][$*nido*-9-I-7,8-$C_2B_9H_{11}]$", Roger H. Pak, Robert R. Kane, Carolyn B. Knobler, and M. Frederick Hawthorne, *Inorganic Chemistry* **1994**, *33(23)*, 5355-5357.

10. "Synthesis of New Building Blocks for Boron-Rich Oligomers in Boron Neutron Capture Therapy (BNCT). I.", Karin Drechsel, Christine S. Lee, Eamon W. Leung, Robert R. Kane, and M. Frederick Hawthorne, *Tetrahedron Letters* **1994**, *35(34)*, 6217-6220.

9. "Automated Syntheses of Carborane-Derived Homogeneous Oligophosphates", Robert R. Kane, Karin Drechsel, and M. Frederick Hawthorne, *J. Am. Chem. Soc.* **1993**, *115(19)*, 8853-8854.

8. "Solution-Phase Synthesis of Boron-Rich Oligophosphates", Robert R. Kane, Christine S. Lee, Karin Drechsel, and M. Frederick Hawthorne, *Journal of Organic Chemistry* **1993**, *58(12)*, 3227-3228.

7. "Solution-Phase Segment Synthesis of Boron-Rich Peptides", Robert R. Kane, Roger H. Pak, and M. Frederick Hawthorne, *Journal of Organic Chemistry* **1993**, *58(5)*, 991-992.

6. "Novel Carboranyl Diols and Their Derived Phosphate Esters", Robert R. Kane, Christine S. Lee, Cynthia L. Coe, Melissa A. St. Rose, Karin Drechsel, and M. Frederick Hawthorne, in *Advances in Neutron Capture Therapy*, A.H. Soloway, Ed., Plenum Press, New York, **1993**, 293-296.

5. "Novel Carboranyl Amino Acids and Peptides", Robert R. Kane, Roger H. Pak, Lai-Ling Ng, and M. Frederick Hawthorne, in *Advances in Neutron Capture Therapy*, A.H. Soloway, Ed., Plenum Press, New York, **1993**, 273-276.

4. "A Stereoselective Route to the Spirobicyclic Ring System of Oscillatoxin D", Robert D. Walkup, P. Douglas Boatman, Jr., Robert R. Kane, and Raymond T. Cunningham, *Tetrahedron Letters* **1991**, *32(32)*, 3937-3940.

3. "Expeditious Synthesis of a Key C_9-C_{21} Subunit of the Aplysiatoxins and Oscillatoxins", Robert D. Walkup, Robert R. Kane, P. Douglas Boatman, Jr., and Raymond T. Cunningham, *Tetrahedron Letters* **1990**, *31(52)*, 7587-7590.

2. "Effects of Substituents Upon a Radical Cyclization of β-Chloroethylsilyl Enol Ethers", Robert D. Walkup, Robert R. Kane, and Nihal U. Obeyesekere, *Chemistry Letters* **1990**, *(7)*, 1055-1058.

1. "An α-Alkylation/Reduction of Ketones via Radical Cyclizations of β-Chloroethylsilyl Enol Ethers", Robert D. Walkup, Robert R. Kane, and Nihal U. Obeyesekere, *Tetrahedron Letters* **1990**, *31(11)*, 1531-1534.

ISSUED PATENTS

10/27/20 "Drug-eluting live tissue for transplantation", Babatope Akinbobui, Charles Chang, Bashoo Naziruddin, and Robert R. Kane, U.S. Patent No. 10,814,036 B2.

2/25/14 "Spatially-Defined Modification of Fresh Tissue Using Covalent Chemistry", Aruna Perera and Robert R. Kane, U.S. Patent No. 8,658,348.

8/16/11 "Spatially-Defined Modification of Fresh Tissue Using Covalent Chemistry", Aruna Perera and Robert R. Kane, U.S. Patent No. 7,998,925.

6/10/08 "Functionalized Stilbene Derivatives as Improved Vascular Targeting Agents", Dai Chaplin, Klaus Edvardsen, Charles M. Garner, Robert R. Kane, Kevin G. Pinney, and Joseph A. Prezioso, U.S. Patent No. 7,384,925.

7/19/05 "Functionalized *Z*- and *E*- Stilbene Derivatives as Improved Vascular Targeting Agents", Dai Chaplin, Klaus Edvardsen, Charles M. Garner, Robert R. Kane, Kevin G. Pinney, and Joseph A. Prezioso, U.S. Patent No. 6,919,324.

6/19/01 "Macromolecular Structure for Boron Neutron Capture Therapy", M. Frederick Hawthorne and Robert R. Kane, U.S. Patent No. 6,248,916.

6/5/99 "Macromolecular Structure for Boron Neutron Capture Therapy", M. Frederick Hawthorne and Robert R. Kane, U.S. Patent No. 5,856,551.

PATENT APPLICATIONS

6/2/14 “Methods and Compositions for Treating Allergy and Inflammatory Diseases”, SangKon Oh, Robert R. Kane, and Gerard Zurawski.

3/14/14 “Surface Modification of Porcine Islets”, Robert R. Kane, Bashoo Naziruddin, Jeffrey A. SoRelle, and Mazhar A. Kanak, US Application 2014026394.

9/13/12 “Novel Vaccine Adjuvants Based on Targeting Adjuvants to Antibodies Directly to Antigen-Presenting Cells”, Gerard Zurawski, Jacques F. Banchereau, Anne-Laure Flamar, and Robert R. Kane, US Application 20120231023.

3/20/08 “Compounds Resistant to Metabolic Deactivation and Methods of Use”, Robert R. Kane and Hui-Min Chang, US Application 20080070859.

6/8/06 “Nucleoside Prodrugs Resistant to Metabolic Deactivation”, Hui-Min Chang and Robert R. Kane, US Application 20060122144.

PRESENTATIONS

Past 5 years

2021 Invited Presentation, St. Edwards University (October 29, Austin TX) “Localized Drug Delivery for Transplantation”

Invited Presentation, Trinity University (October 21, San Antonio, TX) “Localized Drug Delivery for Transplantation”

Invited Presentation, Southwestern University (October 7, Georgetown TX) “Localized Drug Delivery for Transplantation”

Invited Presentation, Texas Lutheran University (October 1, Seguin TX) “Localized Drug Delivery for Transplantation”

Invited Presentation, Baylor Scott & White Healthcare System Transplantation Grand Rounds (April 22, Zoom) “Localized Drug Delivery for Transplantation”

2019 Invited presentation, Baylor University Department of Environmental Sciences (February 13, Waco, TX) “Drug-Eluting Transplants - Live Tissue as a Functional Biomaterial”

Poster presentation at Gordon Research Conference ‘Tissue Repair and Regeneration’ (June 9-14; New London NH) “Covalent Cell and Tissue Modification for Drug Delivery”

2018 Invited presentation, 5th Annual Biopharmaceutical Research and Development Symposium, 'Nanotechnology for Immunotherapy' (September 5-6, Omaha NE) "Drug-Eluting Transplants - Live Tissue as a Functional Biomaterial"

Invited seminar presentation at University of Northern Colorado (February 16; Greeley CO) "Development of Drug-Eluting Transplants"

Oral presentation at Atlantic Basin Conference on Chemistry (January 25, Cancun MEXICO) "Development of Drug-Eluting Transplants"

2017 Oral presentation, 72nd Southwest Regional Meeting of the ACS (October 31, Lubbock, TX) "Development of Drug-Eluting Transplants"

Invited seminar presentation at Houston Baptist University (October 13; Houston TX) "Improving Vaccines and Transplants Using Synthetic Chemistry"

Poster presentation at Annual Meeting of the Society for Biomaterials (April 4-9, Minneapolis MN) "Drug Delivery by Transplanted Islets"

Invited seminar presentation at LeTourneau University (February 2; Longview TX) "Improving Vaccines and Transplants Using Synthetic Chemistry"

RESEARCH FUNDING

(TOTAL $3,471,763; $3,319,321 EXTERNAL; $192,442 INTERNAL; $553,732 OVERHEAD)

"Postdoctoral Hiring Program", 6/01/22-5/31/25, Baylor University (not included in funding totals)

"Mitigating Noise-Induced Inflammatory Responses in the Inner Ear", American Hearing Research Foundation, 1/1/21 – 12/31/21, $50,000 (co-PI with Dwane Simmons; not included in funding totals)

"Hepatocyte Surface Engineering for Improved Post-transplant Viability", NIH R15, 9/15/20 – 9/14/22, $431,685 ($93,843 overhead).

"Substrate Activated Prodrug Strategies for the Protection of Transplanted Islets and Beta Cells", Beta Cell Replacement Innovative Grants, Juvenile Diabetes Research Foundation, 6/1/19 – 5/31/20, $109,478 ($7,073 overhead).

"Protection of Hepatocytes from Innate Inflammation", URSA, Baylor University, 6/1/20 – 5/31/21, $4,968 (no overhead).

"Optimization and characterization of covalent tissue modification for post-transplantation TLR4 inhibition affording improved transplant outcomes", FRIP, Baylor University, 6/1/19 – 5/31/20, $33,500 (no overhead).

"TLR4 prodrugs for use in transplantation", URSA, Baylor University, 6/1/18 – 5/31/19, $4,968 (no overhead).

"Novel anti-inflammatory prodrugs for the generation of drug-eluting islets", URC, Baylor University, 1/1/18 – 5/31/18, $2,500 (no overhead).

"Synthesis of slow-release inhibitors of blood clotting", URSA, Baylor University, 6/1/16 – 5/31/17, $4,768 (no overhead).

"Synthesis and Characterization of TLR Ligands and Ligand Conjugates", Baylor Health Care System, 8/1/16 – 7/31/17, $70,035 ($19,468 overhead).

"Initial ex-vivo clinical validation of a dendritic cell-targeting therapeutic HPV vaccine for HIV-positive patients with HPV-related cancers", Baylor University Collaborative Faculty Research Investment Program, 6/01/15 – 5/31/16, $25,000 (no overhead).

"Synthesis and Characterization of TLR Ligands and Ligand Conjugates", Baylor Health Care System, 8/1/15 – 7/31/16, $69,044 ($19,193 overhead).

"Islet Immunoprotection Using Multiple Surface Modifications", Baylor University Collaborative Faculty Research Investment Program, 6/01/14 – 5/31/15, $25,000 (no overhead).

"Synthesis and Evaluation of Novel Immune System Modulators", Baylor University URC, 6/01/14 – 5/31/15, $7,500 (no overhead).

"Synthesis and Characterization of TLR Ligands and Ligand Conjugates", Baylor Health Care System, 7/1/14 – 6/30/15, $86,632 ($20,251 overhead).

"Characterization of Islet Surface Modification Chemistry", URSA, Baylor University, 6/1/13 – 5/31/14, $4,230 (no overhead).

"Synthesis and Characterization of TLR Ligands and Ligand Conjugates", Baylor Health Care System, 6/15/12 – 6/14/14, $115,548 ($30,897 overhead).

"Advanced Instrumentation Workshop for High School Teachers", American Chemical Society, 6/1/12 – 12/31/13, $2006 (no overhead).

"Summer undergraduate research support for the synthesis and characterization of immunoconjugates containing TLR7 agonists", NIH (ARRA Supplement to 2U19AI057234-06; 'Harnessing Human DC Subsets for Improved Mucosal Vaccines'), 6/1/09 – 5/31/11, $34,969 ($8,577 overhead).

"Development of Methods for Covalent Modification of Pancreatic Islets", URSA, Baylor University, 6/1/09 – 5/1/10, $4,052 (no overhead).

"Characteristics of Effective Small-Molecule Cofactors for DNA Enzymes", Robert A. Welch Foundation, 6/1/07 – 5/31/10, $150,000 (no overhead).

"Methods for Meniscal Repair", Stryker Orthopaedics, 12/1/05 – 11/30/06, $118,800 ($30,800 overhead).

"DNA Enzymes That Require Synthetic Cofactors", Robert A. Welch Foundation, 6/1/04 – 5/31/07, $150,000 (second renewal; no overhead).

"Synthesis and HPLC Analysis of Quinic Acid (QA) Derivatives", Optigenex, 5/1/04 – 11/30/04, $30,000 ($7050 overhead).

"Mechanistic Studies of Photochemical Tissue-Bonding Agents", Faculty Research Incentive Award, Baylor University, 9/5/03 – 5/31/04, $25,000 (no overhead).

"The Development of Novel Naphthalimide-Based Inhibitors of PARP-1", University Research Committee, Baylor University, 1/1/03 – 5/31/03, $5956 (no overhead).

"CA1P Scale-Up, Formulation, and Stability", Oxigene, Inc., 6/1/01-7/31/01, $25,000 ($1,763 overhead).

"Quinic Acid Lactone and Salts", Campamed LLC, 9/1/02-10/31/02, $7,000 ($1,815 overhead).

"Synthetic Cofactors for DNA Enzymes", Robert A. Welch Foundation, 6/1/01 - 5/31/04, $150,000 (no overhead).

"Novel Photochemical Tissue-Bonding Agents", Genzyme Tissue Repair, 6/1/01 - 12/31/01, $96,395 ($18,975 overhead).

"Synthesis of Novel CA-4 and CA-1 Prodrug Constructs; Development of Phosphorylation Methodologies; General Synthesis Support", Oxigene, Inc., 6/1/01-5/31/02 $129,890 ($29,370 overhead).

"Drug Discovery Center Support", Oxigene, Inc., 6/1/01-5/31/02, $ 79,050 ($7,150 overhead).

"CA1P Scale-Up", Oxigene, Inc., 6/1/01-7/31/01, $ 9,238 ($2,063 overhead).

"Novel Photochemical Tissue-Bonding Agents", Genzyme Tissue Repair, 11/1/00 - 5/31/01, $84,810 ($15,923 overhead).

"Synthesis of Presumed 'Peak 4' Material: *N*-(2'-Ethylaminoethyl)-4-amino-3-chlorobenzamide", Oxigene, Inc., 3/1/00-5/31/00, $ 3,738 ($963 overhead).

"Synthesis of ADA-resistant Cordycepins, Novel Sensitizing or Anti-Inflammatory Benzamides, and Combretastatin Analogues", Oxigene, Inc., 6/1/00-4/30/01 $153,475 ($35,475 overhead).

"Biological Evaluation of Cordycepins, Benzamides, and Tubulin-Binding Drugs", Oxigene, Inc., 6/1/00-4/30/01 $155,175 ($26,675 overhead). *(co-PI with Chris Kearney)*

"Drug Discovery Center Support", Oxigene, Inc., 6/1/00-4/30/01, $ 115,600 ($8,800 overhead).

"Synthesis of Photoactive Napthalimides", PhotoBioMed, 11/1/99 – 3/1/00, $10,000 (no overhead).

"Tissue Welding Compound Development Supplement", Genzyme Tissue Repair, 12/1/99 - 1/30/00, $6,000 (no overhead).

"Synthesis of ADA-resistant Cordycepins and Novel Sensitizing or Anti-Inflammatory Benzamides", Oxigene, Inc., 6/1/99 – 5/31/00, $130,114 ($28,600 overhead).

"Biological Evaluation of Cordycepins, Combretastatins, and Benzamides", Oxigene, Inc., 6/1/99 – 5/31/00, $161,398 ($34,584 overhead).

"Center for Drug Discovery Support", Oxigene, Inc., 6/1/99 – 5/31/00, $41,069 (no overhead).

"Tissue Welding Compound Development ", Genzyme Tissue Repair, 6/1/99 - 11/30/99, $99,264 ($19,250 overhead).

"The Synthesis of Photoactive Tissue-Welding Napthalimides", Genzyme Tissue Repair, 1/1/99 - 6/30/99, $38,550 ($11,550 overhead).

"Chemistry and Biology of Benzamides and Related Compounds", Oxigene, Inc., 12/1/98 - 5/31/99, $151,669 ($41,250 overhead).

"Napthalimide Precursor Synthesis Optimization", Genzyme Tissue Repair, 10/1/98 - 10/31/98, $8,000 ($550 overhead).

"Mechanistic Studies of Photoactive Napthalimides", PhotoBioMed, 8/1/98 - 7/31/99, $25,000 (no overhead).

"The Design and Synthesis of Cordycepin Derivatives Exhibiting Enhanced *in vivo* Activity", Oxigene, Inc., 4/1/98 - 3/31/99, $91,242 ($18,827 overhead).

"Structure and Reactivity of Radiolysis Products of Metoclopramide and Other Benzamides", Oxigene, Inc., 7/1/97 - 6/30/98, $55,503 ($12,997 overhead).

"Engineering Metal-Coordination Sites Into Oligonucleotides", Robert A. Welch Foundation, 6/1/97 - 5/31/00, $126,000 (no overhead).

"The Iterative Selection and Evolution of DNA", University Research Committee, Baylor University, 01/01/97 – 08/31/97, $5,000 (no overhead).