

DAVID Y. GIN, PH.D.

**Molecular Pharmacology & Chemistry
Memorial Sloan–Kettering Cancer Center
1275 York Avenue, Box 379
New York, NY 10065**

**Voice: (646)-888-2555
Fax: (646)-422-0416
Email: gind@mskcc.org
Web: www.mskcc.org/gin**

PERSONAL

Born: May 16, 1967; Ashcroft, British Columbia, Canada
Citizenship: USA, Canada

ACADEMIC APPOINTMENTS

2006-present Member; Molecular Pharmacology & Chemistry, Sloan-Kettering Institute,
Memorial Sloan-Kettering Cancer Center
2006-present Tri-Institutional Professor; Sloan-Kettering Institute (Primary Appt.), Cornell University,
The Rockefeller University
2002-2006 Associate Professor of Chemistry; University of Illinois at Urbana-Champaign
1996-2002 Assistant Professor of Chemistry; University of Illinois at Urbana-Champaign

EDUCATION

1994-1996 NSERC Postdoctoral Fellow, Harvard University
Research: Enantioselective Total Synthesis of Ecteinasidin 743. (with E. J. Corey)
1994 Ph.D., Chemistry, California Institute of Technology (NSERC Predoctoral Fellow)
Thesis: *A Convergent Synthetic Route to the Tunicamycin Antibiotics*. (with A. G. Myers)
1989 B.Sc., Honors Chemistry, University of British Columbia, Canada
Thesis: *Mesitylene Adducts with Selected Tin (II) Compounds*. (with F. Aubke)
1988-1989 NSERC Undergraduate Research Fellow, University of British Columbia, Canada
Research: Synthesis of complex terpenes from camphor derivatives. (with T. Money)

AWARDS

2008 Novartis Chemistry Lectureship Award
2006 Horace S. Isbell Award in Carbohydrate Chemistry (American Chemical Society)
2006 Visiting Professor, Tokyo University of Science
2001 Camille Dreyfus Teacher Scholar Award
2001 Pfizer New Faculty Award (Pfizer Inc.)
2000 Abbott New Faculty Award (Abbott Laboratories)
2000 Lilly Research Laboratories Grantee
2000 Merck Research Laboratories – Academic Development Award
1999-2001 Alfred P. Sloan Research Fellowship
1999 Cottrell Scholar Award (Research Corporation)
1999-2001 Glaxo Wellcome Chemistry Scholars Award
1998-2000 Beckman Young Investigator Award (Arnold and Mabel Beckman Foundation)
1998 School of Chemical Sciences Teaching Excellence Award (UIUC)
1998-2000 Research Innovation Award (Research Corporation)
1994-1996 NSERC Postdoctoral Fellowship (Harvard)
1994 Herbert N. McCoy Thesis Award in Chemistry (Caltech)
1989-1993 NSERC 1967 Science and Engineering Predoctoral Fellowship (Caltech)

NAMED LECTURESHIPS

2009 Naeja Lecturer, University of Alberta, Edmonton, AB, Canada
2008 Wawzonek Lecturer, University of Iowa, Iowa City, IA
2008 Clayton H. Heathcock Lecture, University of California, Berkeley, CA
2007 AstraZeneca Lecturer, University of Ottawa, ON, Canada

BIBLIOGRAPHY

Peer-Reviewed Publications

Independent:

52. "Preclinical Evaluation of the Synthetic Adjuvant SQS-21 and its Constituent Isomeric Saponins." Ragupathi, G.; Damani, P.; Deng, K.; Adams, M. M.; Hang, J.; George, C.; Livingston, P. O.; **Gin, D. Y.** *Vaccine* **2010**, (accepted).
51. "Annulation of Thioimides and Vinyl Carbodiimides to Prepare 2-Aminopyrimidines, Competent Nucleophiles for Intramolecular Alkyne Hydroamination. Synthesis of (–)-Crambidine." Perl, N. R.; Ide, N. D.; Prajapati, S.; Perfect, H. H.; Durón, S. G.; **Gin, D. Y.** *J. Am. Chem. Soc.* **2010**, *132*, (ASAP).
50. "Design and Synthesis of Potent *Quillaja* Saponin Vaccine Adjuvants." Adams, M. M.; Damani, P.; Perl, N. R.; Won, A.; Hong, F.; Livingston, P. O.; Ragupathi, G.; **Gin, D. Y.** *J. Am. Chem. Soc.* **2010**, *132*, (ASAP). "Research Highlights" *Nature Chem.* **2010**, doi:10.1038/nchem.582.
49. "Immunologic and Biochemical Features of Human WT1 Peptide Epitope Analogs Containing Non-Natural Amino Acids." Gomez-Nunez, M.; Haro, K.; Dao, T.; Chau, D.; Won, A.; Escobar-Alvarez, S.; Zakhaleva, V.; Korontsvit, T.; **Gin, D. Y.**; Scheinberg, D. A. *PLoS ONE* **2008**, *3*, e3938.
48. "Ring-Opening of Aziridine 2-Carboxamides with Carbohydrate C1-O-Nucleophiles. Stereoselective Preparation of α - and β -O-Glycosyl Serine Conjugates." Ryan, D. A.; **Gin, D. Y.** *J. Am. Chem. Soc.* **2008**, *130*, 15228-15229.
47. "Synthetic Access to the Chlorocyclopentane Cores of the Proposed Original and Revised Structures of Palau'amine." Bultman, M. S.; Ma, J.; **Gin, D. Y.** *Angew. Chem., Int. Ed.* **2008**, *47*, 6821-6824.
46. "Synthesis of QS-21-Xylose. Establishing Immuno-Potentiating Activity of Synthetic QS-21 Adjuvant with a Melanoma Vaccine." Deng, K.; Adams, M. M.; Damani, P.; Livingston, P. O.; Ragupathi, G.; **Gin, D. Y.** *Angew. Chem., Int. Ed.* **2008**, *47*, 6395-6398.
45. "Synthesis and Structure Verification of the Vaccine Adjuvant QS-7-Api. Synthetic Access to Homogeneous *Quillaja saponaria* Immunostimulants." Deng, K.; Adams, M. M.; **Gin, D. Y.** *J. Am. Chem. Soc.* **2008**, *130*, 5860-5861.
44. "Synthesis of Anti-Proliferative Cephalotaxus Esters and Their Evaluation Against Several Human Hematopoietic and Solid Tumor Cell Lines. Ester Chain Structure in the Modulation of Multi-Drug Resistance." Eckelbarger, J. D.; Wilmot, J. T.; Epperson, M. T.; Thakur, C. S.; Shum, D.; Antczak, C.; Tarassishin, L.; Djaballah, H.; **Gin, D. Y.** *Chem. Eur. J.* **2008**, *14*, 4293-4306.
43. "Application of an Intramolecular Dipolar Cycloaddition to an Asymmetric Synthesis of the Fully Oxygenated Tricyclic Core of the Stemofoline Alkaloids." Carra, R. J.; Epperson, M. T.; **Gin, D. Y.** *Tetrahedron* **2008**, *64*, 3629-3641.
42. "Asymmetric Synthetic Access to the Hetisine Alkaloids. Total Synthesis of (+)-Nominine." Peese, K. M.; **Gin, D. Y.** *Chem. Eur. J.* **2008**, *14*, 1654-1665.
41. "Chemical Glycosylation in the Synthesis of Glycoconjugate Antitumour Vaccines." Galonić, D. P.; **Gin, D. Y.** *Nature* **2007**, *446*, 1000-1007.
40. "Total Synthesis of (+)-Batzelladine A and (–)-Batzelladine D via [4+2]-Annulation of Vinyl Carbodiimides with *N*-Alkyl Imines." Arnold, M. A.; Day, K. A.; Durón, S. G.; **Gin, D. Y.** *J. Am. Chem. Soc.* **2006**, *128*, 13255-13260.
39. "Synthetic Studies of Complex Immunostimulants from *Quillaja Saponaria*. Synthesis of the Potent Clinical Immunoadjuvant QS-21A_{api}." Kim, Y.-J.; Wang, P.; Navarro-Villalobos, M.; Rohde, B. D.; Derryberry, J.; **Gin, D. Y.** *J. Am. Chem. Soc.* **2006**, *128*, 11906-11915.
38. "Strain-Release Rearrangement of *N*-Vinyl-2-Arylaziridines. Total Synthesis of the Anti-Leukemia Alkaloid (–)-Deoxyharringtonine." Eckelbarger, J. E.; Wilmot, J. T.; **Gin, D. Y.** *J. Am. Chem. Soc.* **2006**, *128*, 10370-10371.
37. "Efficient Synthetic Access to the Hetisine C₂₀-Diterpenoid Alkaloids. A Concise Synthesis of Nominine via Oxidoisoquinolinium-1,3-Dipolar and Dienamine-Diels-Alder Cycloadditions." Peese, K. M.; **Gin, D. Y.** *J. Am. Chem. Soc.* **2006**, *128*, 8734-8735.
36. "Highly Convergent Synthesis of C₃- or C₂-Symmetric Carbohydrate Macrocycles." Bodine, K. D.; **Gin, D. Y.**; Gin, M. S. *Org. Lett.* **2005**, *7*, 4479-4482.

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35. "Conjugation of Selenols with Aziridine-2-Carboxylic Acid-Containing Peptides." Ide, N. D.; Galonić, D. P.; van der Donk, W. A.; **Gin, D. Y. *Synlett* 2005**, 2011-2014.
34. "An Enantioselective Approach to the Hetisine Alkaloids. Synthesis of the 3-Methyl-1-azatricyclo[5.2.1.0^{3,8}]decane Core via Intramolecular Dipolar Cycloaddition." Peese, K. M.; **Gin, D. Y. *Org. Lett.* 2005**, 7, 3323-3325.
33. "Sulfoxide Covalent Catalysis in Dehydrative Glycosylation. Probing the Mechanism of Hemiacetal Activation." Boebel, T. A.; **Gin, D. Y. *J. Org. Chem.* 2005**, 70, 5818-5826.
32. "Aziridine-2-Carboxylic Acid Containing Peptides. Application to Solution- and Solid-Phase Convergent Site-Selective Peptide Modification." Galonić, D. P.; Ide, N. D.; van der Donk, W. A.; **Gin, D. Y. *J. Am. Chem. Soc.* 2005**, 127, 7359-7369. "Research Highlights" *Nature* 2005, 435, 250-251.
31. "Diastereoselective [4+2] Annulation of Vinyl Carbodiimides with *N*-Alkyl Imines. Asymmetric Synthetic Access to the Batzelladine Alkaloids." Arnold, M. A.; Durón, S. G.; **Gin, D. Y. *J. Am. Chem. Soc.* 2005**, 127, 6924-6925.
30. "Synthesis of the Potent Immunostimulatory Adjuvant QS-21A." Wang, P.; Kim, Y.-J.; Navarro-Villalobos, M.; Rohde, B. D.; **Gin, D. Y. *J. Am. Chem. Soc.* 2005**, 127, 3256-3257. "Research Highlights" *Nature* 2005, 434, 290.
29. "Site-Selective Conjugation of Thiols with Aziridine-2-Carboxylic Acid Containing Peptides." Galonić, D. P.; van der Donk, W. A.; **Gin, D. Y. *J. Am. Chem. Soc.* 2004**, 126, 12712-12713.
28. "Synthesis of Readily Modifiable Cyclodextrin Analogs via Cyclodimerization of an Alkynyl-Azido Trisaccharide." Bodine, K. D.; **Gin, D. Y.**; Gin, M. S. *J. Am. Chem. Soc.* 2004, 126, 1638-1639.
27. "Oligosaccharide-Peptide Ligation of Glycosyl Thiulates with Dehydropeptides. Synthesis of *S*-Linked Mucin Glycopeptide Conjugates." Galonić, D. P.; van der Donk, W. A.; **Gin, D. Y. *Chem. Eur. J.* 2003**, 9, 5997-6006.
26. "Sulfoxide Covalent Catalysis. Application to Glycosidic Bond Formation." Boebel, T. A.; **Gin, D. Y. *Angew. Chem. Int. Ed.* 2003**, 42, 5874-5877.
25. "Dehydrative Sialylation with C2-Hemiketal Donors." Haberman, J. M.; **Gin, D. Y. *Org. Lett.* 2003**, 5, 2539-2541.
24. "C2-Acetamidomannosylation. Synthesis of 2-*N*-Acetyl-amino-2-Deoxy- α -D-Mannopyranosides with Glucal Donors." Liu, J.; **Gin, D. Y. *Tetrahedron Lett.* 2003**, 44, 4015-4018.
23. "Dehydrative Glycosylation with 1-Hydroxy Donors." **Gin, D. Y. *J. Carbohydr. Chem.* 2002**, 21, 645-665.
22. "C2-Amidoglycosylation. Scope and Mechanism of Nitrogen Transfer." Liu, J.; **Gin, D. Y. *J. Am. Chem. Soc.* 2002**, 124, 9789-9797.
21. "C2-Hydroxyglycosylation with Glycal Donors. Probing the Mechanism of Sulfonium-Mediated Oxygen Transfer to Glycal Enol Ethers." Honda, E.; **Gin, D. Y. *J. Am. Chem. Soc.* 2002**, 124, 7343-7352.
20. "Enantiospecific Synthesis of the Bridged Pyrrolizidine Core of Asparagamine A. Dipolar Cycloadditions of Azomethine Ylides Derived from the Sulfonylation of Vinylogous Amides." Epperson, M. T.; **Gin, D. Y. *Angew. Chem. Int. Ed.* 2002**, 41, 1778-1780.
19. "Sulfide-Mediated Dehydrative Glycosylation with 1-Hydroxy Donors." Nguyen, H. M.; Chen, Y.; Durón, S. G.; **Gin, D. Y. *J. Am. Chem. Soc.* 2001**, 123, 8766-8772.
18. "C(2)-Acyloxyglycosylation with Glycal Donors." Shi, L.; Kim, Y.-J.; **Gin, D. Y. *J. Am. Chem. Soc.* 2001**, 123, 6939-6940.
17. "Synthesis of the Trisaccharide Portion of the Immunologic Adjuvant QS-21A via Sulfonium Mediated Oxidative and Dehydrative Glycosylation." Kim, Y.-J.; **Gin, D. Y. *Org. Lett.* 2001**, 3, 1801-1804.
16. "A New C(1)-Auxiliary for Anomeric Stereocontrol in the Synthesis of α -Sialyl Glycosides." Haberman, J. M.; **Gin, D. Y. *Org. Lett.* 2001**, 3, 1665-1668.
15. "Asymmetric Synthesis and Determination of the Absolute Configuration of the Bicyclic Guanidine Core of Batzelladine A." Durón, S. G.; **Gin, D. Y. *Org. Lett.* 2001**, 3, 1551-1554.
14. "Total Synthesis of (+)-Pyrenolide D." Engstrom, K. E.; Mendoza, M. R.; Navarro-Villalobos, M.; **Gin, D. Y. *Angew. Chem. Int. Ed.* 2001**, 40, 1128-1130.
13. "Stereoselective Synthesis of 2-Hydroxy- α -Mannopyranosides from Glucal Donors." Kim, J.-Y.; Di Bussolo, V.; **Gin, D. Y. *Org. Lett.* 2001**, 3, 303-306.

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12. "Chemoselective Iterative Dehydrative Glycosylation." Nguyen, H. M.; Poole, J. L.; **Gin, D. Y.** *Angew. Chem., Int. Ed.* **2001**, *40*, 414-417.
11. "Synthesis of Glycosyl-1-Phosphates via Dehydrative Glycosylation." Garcia, B. A.; **Gin, D. Y.** *Org. Lett.* **2000**, *2*, 2135-2138.
10. "Dehydrative Glycosylation with Activated Diphenyl Sulfonium Reagents. Scope, Mode of C(1)-Hemiacetal Activation, and Detection of Reactive Glycosyl Intermediates." Garcia, B. A.; **Gin, D. Y.** *J. Am. Chem. Soc.* **2000**, *122*, 4269-4279.
9. "Acetamidoglycosylation with Glycal Donors. A One-Pot Glycosidic Coupling with Direct Stereoselective Installation of the C(2)-N-Acetylamino Functionality." Di Bussolo, V.; Liu, J.; Huffman, Jr., L. G.; **Gin, D. Y.** *Angew. Chem. Int. Ed.* **2000**, *39*, 204-207. "News of the Week" *Chem. & Eng. News* **2000**, *78*, 7-8.
8. "Direct Oxidative Glycosylations with Glycal Donors." Di Bussolo, V.; Kim, Y.-J.; **Gin, D. Y.** *J. Am. Chem. Soc.* **1998**, *120*, 13515-13516.
7. "Direct Glycosylations with 1-Hydroxy Glycosyl Donors Using Trifluoromethanesulfonic Anhydride and Diphenyl Sulfoxide." Garcia, B. A.; Poole, J. L.; **Gin, D. Y.** *J. Am. Chem. Soc.* **1997**, *119*, 7597-7598.

Postdoctoral (Harvard):

6. "Enantioselective Total Synthesis of Ecteinasidin 743." Corey, E. J.; **Gin, D. Y.**; Kania, R. S. *J. Am. Chem. Soc.* **1996**, *118*, 9202-9203.
5. "A Convergent Enantioselective Synthesis of the Tetrahydroisoquinoline Unit in the Spiro Ring of Ecteinasidin 743." Corey, E. J.; **Gin, D. Y.** *Tetrahedron Lett.* **1996**, *37*, 7163-7166.

Graduate (Caltech):

4. "Synthetic Studies of the Tunicamycin Antibiotics. Preparation of (+)-Tunicaminylluracil, (+)-Tunicamycin V, and 5'-epi-Tunicamycin V." Myers, A. G.; **Gin, D. Y.**; Rogers, D. H. *J. Am. Chem. Soc.* **1994**, *116*, 4697-4718.
3. "Stereoselective Synthesis of the Tunicamycin Antibiotics. Synthesis of (+)-Tunicamycin V." Myers, A. G.; **Gin, D. Y.**; Rogers, D. H. *J. Am. Chem. Soc.* **1993**, *115*, 2036-2037.
2. "Silicon-Mediated Reductive Coupling of Aldehydes and Allylic Alcohols. A Stereoselective Synthesis of Tunicaminylluracil." Myers, A. G.; **Gin, D. Y.**; Widdowson, K. L. *J. Am. Chem. Soc.* **1991**, *113*, 9661-9662.

Undergraduate (UBC):

1. "Mesitylene Adducts with Selected Tin (II) Compounds. The Synthesis of $\text{Sn}(\text{SO}_3\text{F})_2 \cdot \text{C}_9\text{H}_{12}$ and $\text{Sn}(\text{SbF}_6)_2 \cdot 2\text{C}_9\text{H}_{12}$." **Gin, D. Y.**; Cader, M. S. R.; Sams, J. R.; Aubke, F. *Can. J. Chem.* **1990**, *68*, 350-355.

Book Chapters

2. Ryan, D. A.; **Gin, D. Y.** "Glycoside Synthesis with 1-Oxygen Substituted Glycosyl Donors – Hemiacetal and O-Acyl/Carbonyl Derivatives." in: *Handbook of Chemical Glycosylation*; Demchenko, A., Ed.; Wiley-VCH: 2008.
1. **Gin, D. Y.** "Dehydrative Glycosylation with 1-Hydroxy Donors." in: *Glycochemistry: Principles, Synthesis and Applications*; Wang, P. and Bertozzi, C.R., Ed.; Marcel Dekker, Inc.: New York, NY, 2001.

Patents

3. "Triterpene Saponins, Methods of Synthesis, and Uses Thereof." **Gin, D.**; Deng, K.; Adams, M.; Perl, N.; Won, A. Provisional Patent Application 61/043,197, 2008.
2. "Cephalotaxus Esters, Methods of Synthesis, and Uses Thereof." **Gin, D.**; Djaballah, H.; Wilmot, J. Provisional Patent Application 61/033,187, 2008.
1. "Process for Producing Ecteinasidin Compounds." Corey, E. J.; **Gin, D.** U. S. Patent 5 721 362, 1998.