NICOLAS WINSSINGER, PhD

Born in Belgium (1970), married with two children.

CONTACT

Organic chemistry department - University of Geneva
30, quai Ernest-Ansermet, CH-1211 Geneva 4 – Switzerland - Tel: +41 22 379 6526
Emial: nicolas.winssinger@unige.ch - Web: http://www.unige.ch/sciences/chiorg/winssinger/

EDUCATION

2000-2002	**The Scripps Research Institute**, Department of Chemistry NIH postdoctoral fellow with Professor P.G. Schultz
1995-2000	**The Scripps Research Institute**, PhD in Chemistry *Advisor:* Professor K.C. Nicolaou
1989-1993	**Tufts University**, BS in Chemistry

EMPLOYMENT AND POSITIONS

2012-present	Organic chemistry department, Université de Genève (PO); Head of the department (July 2014-July 2016)
2005-2012	Institut de Science et d'Ingénierie Supramoléculaires (ISIS), Université de Strasbourg, *Professeur (Pr1), director of the organic and bioorganic laboratory.*
2002-2005	Institut de Science et d'Ingénierie Supramoléculaires (ISIS), Université Louis Pasteur, *Professeur Associé, director of the organic and bioorganic laboratory.*
1993-1995	Sphinx Pharmaceuticals, a Division of Eli Lilly, *research associate*

CURRENT RESEARCH

> Directed evolution of small molecules and catalyst. Self-organization and selection of nucleic acid encoded small molecules are being developed.

> Template directed chemical synthesis. Modified oligonucleotides are being explored to direct designed chemical reactions based on sequence-specific supramolecular organization.

> Natural product synthesis and diversity-oriented synthesis. Synthetic methodologies are being developed to access families of natural products, with a particular emphasis on covalent inhibitors.

DISTINCTION & AWARDS

JSPS Invited professor (2017) - Xinda Lectureship (2015) - INPI Innovation Trophy (2012) - Prix Guy Ourisson, Cercle Gutemberg (2008) - Institut Universitaire de France (IUF), junior nomination (2008) - Acros Prize, Société Française de Chimie (SFC) (2008) - European Research Council (ERC) young investigator laureate (2008) - Invited Professor, Academia Sinica, Taipei (2005) - Human Frontiers Young Investigator Award (2003) - TSRI Society of Fellow Symposium Award (2001) - NIH Postdoctoral Fellowship (2000) - Hewitt Foundation for Medical Research Fellowship (1999) -ACS Division of Organic Chemistry Graduate Fellowship (1998) - Roche Award for Excellence in Organic Chemistry (1998) - Lesly Starr Shelton Award for Excellence in Chemistry(1998)

MEMBERSHIPS

American chemical society (1992-present); Société Française de chimie (2002-2013); Member of the CNRS comité national, section 16 (2008-2012); Centre International de la Recherche aux Fontrière de la Chimie (FRC), committee member (2011-2013); Swiss chemical community (2012-present); Editorial board member

of Artificial DNA: PNA and XNA (2009-present); Editorial advisory board of ChemBioChem (2010-present), member of the KGF-SCS award committee (212-present), board member of SCS division of fundamental research (2013-present); Board member of the Société Chimique de Genève (2013-present); Panel member for ERC consolidator grant (PE5 ; 2014-present), Editorial advisory board of Bioorganic and Medicinal Chemistry (2016-present).

BIBLIOMETRICS (Web of Knowledge – March 2018)

136 articles; 11 patents; H-index: 43; total citations: 6550; average citation 41

INVITED PRESENTATIONS (past 5 years)*:*

1. IBMC depatemental seminar, Strasbourg **2013**
   Translating nucleic acid instructions into a function through programmed self assemblies
2. Bürgenstock Conference 2013, April 28th –May 3rd **2013**
   Programming Assemblies in Chemical Biology with Nucleic Acids
3. Novartis, Basel, June 7th **2013**
   Using nucleic acids to encode small molecules and program their assembly for cooperative interactions
4. La Sorbonne (UPMC), June 10th **2013**
   PNA-programmed Self Assemblies in Chemical Biology
5. ISHC24, Shanghai, Sept 8th-13th **2013**
   Following the lead from Nature, synthesis and discovery of covalent inhibitors
6. Firmenich, Geneva, Sep 20th **2013**
   Following the lead from Nature, synthesis and discovery of covalent inhibitors
7. Steping Stone Symposium on Natural Product and Drug Discovery, Shanghai Oct 24th-25th 2013
   Nucleic acids encoding of small molecules and programmed assemblies in chemical biology
8. Keio University, Tokyo, Nov 11th **2013**
   PNA-programmed Self Assemblies in Chemical Biology
9. RIKEN, Wacko, Nov 12th **2013**
   Programming reactions and ligand-protein interactions with nucleic acid instructions
10. ISNAC2013, Yokohama, Nov 13th-15th **2013**
    PNA-programmed Self Assemblies in Chemical Biology
11. Société de Chimie Thérapeutic, Fall meeting, Paris, Nov 25th **2013**
    Following the lead from Nature, synthesis and discovery of covalent inhibitors
12. Société Académique de Genève, Dec 9th **2013**
    De l'auto-assemblage vers une function
13. University of Edinburgh, Jan 22nd **2014**
    DNA-display and DNA-templated reactions in Chemical Biology
14. CICbiomaGUNE San Sebastian, Feb 2nd **2014**
    DNA-display and DNA-templated reactions in Chemical Biology
15. Spanish Society of Chemical Biology, biannual conference, Bilbao, Feb 3rd **2014**
    DNA-display and DNA-templated reactions in Chemical Biology
16. Grunenthal, Acheen, Feb 25th **2014**
    Using nucleic acids to encode small molecules and program their assembly for cooperative interactions
17. Structural Genomic Center, Oxford University, Apr 14th **2014**
    Using nucleic acids to encode small molecules and program their assembly for cooperative interactions
18. ETH Zurich, March 25th **2014**
    DNA-display and DNA-templated reactions in Chemical Biology
19. University of Zurich, May 13th **2014**
    DNA-display and DNA-templated reactions in Chemical Biology
20. Journée thématique "Chemical biology", IBMM, Montpelier, May 21st **2014**
    PNA-programmed self-assemblies in chemical biology
21. BIOGEM, Italy, June 19th **2014**
    PNA-programmed self-assemblies in chemical biology

22. 4th International Symposium on DNA-encoded Chemical Libraries, Sep 1st **2014**
    PNA to encode molecules and program their assembly
23. 24th French-Japanese Symposium on Medicinal and Fine Chemistry, Lyon, Sep14-17th **2014**
    PNA-programmed self-assemblies in chemical biology
24. Actelion Pharmaceutical, Sep 22nd **2014**
    Using nucleic acids to encode small molecules and program their assembly for cooperative interactions
25. University of Geneva, MolBio symposium, Sep 25th **2014**
    Peptide Nucleic Acids to encode molecules and program their assembly
26. University of Bern, Swiss-Japanese chemical biology meeting, Oct 2-3rd **2014**
    Imaging with templated reactions
27. Dechema Natural Product Conference, Irsee, Bavaris, Feb 25-27th **2015**
    Following the lead from Nature, synthesis and discovery of covalent inhibitors
28. Dortmund University, June 10th **2015**
    Peptide Nucleic Acids to encode molecules and program their assembly
29. 24th International Symposium: Synthesis in Organic Chemistry, Cambridge, UK, Jul 20-23rd 2015
    PNA-programmed self-assemblies in chemical biology
30. Peking University, Oct 29th **2015**
    Following the lead from Nature, synthesis and discovery of covalent inhibitors
31. Xingda Lecture, Peking University, Oct 30th **2015**
    PNA-programmed self-assemblies in chemical biology
32. Peking University ShenZhen, Nov 1st **2015**
    PNA-programmed self-assemblies in chemical biology
33. University of Zurich, Dec 1st **2015**
    Following the lead from Nature, synthesis and discovery of covalent inhibitors
34. Société Francaise de Chimie, Fall symposium, Dec 8th **2015**
    Imaging with templated reactions
35. KIT, Karlsruhe, Jan 19th **2016**
    PNA-programmed self-assemblies in chemical biology
36. Proteins & Peptides, Geneva, July 22-24th **2016**
    Programmed assemblies of peptides and applications in chemical biology
37. 2016 Schutlz-Symposium, La Jolla, July 30th **2016**
    Imaging with templated reactions
38. 5th International Symposium on DNA-encoded Chemical Libraries, Aug 26st **2016**
    Fragment-based DNA display
39. Barluenga Lecture, Oviedo, Spain, Nov 2nd **2016**
    Following the lead from Nature, synthesis and discovery of covalent inhibitors
40. GDCh-lecturer in Mainz University, Nov 17th **2016**
    PNA-programmed self-assemblies in chemical biology
41. 2nd Nordic Chemical Biology Conference, Copenhagen, Jun 5-7th **2017**
    PNA-programmed self-assemblies in chemical biology
42. Gordon Research Confrence Nucleic acid, Newport, June 25th-30th **2017**
    PNA-programmed self-assemblies in chemical biology
43. JSPS invited professor, Osaka Uunivesity, Kyoto University, Kumamoto University, Kyusyu University, Tohoku University, University of Tokyo, Tokyo Institute of Technology, Yokohama Pharmaceutical University, Nagoya University, July 8th-26th **2017**
    PNA-programmed self-assemblies in chemical biology
44. Basel Life, Peptide Therapeutics Forum, Basel, Sep 12th-13th **2017**
    Constraining peptide conformation through hybridization of peptide-PNA adducts
45. Structural and Physical Aspects of Carbohydrates in Glycobiology and Material Science, Ringberg Castle, Germany, Sep 25th-29th **2017**
    PNA to tag glycomimetics and program their assembly

46. Honk Kong University of Science and Technology, Nov. 23th **2017**
PNA-programmed self-assemblies in chemical biology
47. Honk Kong University, Nov. 24th **2017**
PNA-programmed self-assemblies in chemical biology
48. Friedrich-Alexander-Universität Erlangen, Germany, Jan 25th **2018**
PNA-programmed self-assemblies in chemical biology
49. Weizmann Institute, Israel, Mar 4th **2018**
PNA-programmed Self Assemblies for Responsive Systems
50. CRC 1093 "Supramolecular Chemistry on Proteins" in Essen, Germany, Jun 26th **2018**
PNA-encoded molecules to program assemblies and reaction in chemical biology
51. Société Chimique de France (SCF) national Symposium, Montpelier, 2-4th July **2018**
PNA-programmed Self Assemblies for Responsive Systems
52. Tohoku Chemical Biology Symposium, Sendai, Japan, Sep 10-11th **2018**
Emerging Function From Biosupramolecular Assemblies

PUBLICATIONS

1. Multiple Simultaneous Synthesis of Phenolic Libraries. H.V. Meyer, G.J. Dilley, T.S. Powers, N.A. Winssinger, M.R. Pavia, *Molecular Diversity* **1995**, *8*, 278.

2. Versatile Method for Parallel Synthesis. H.V. Meyer, G.J. Dilley, T.L. Durgin, T.S. Powers, N.A. Winssinger, H. Zhu, M.R. Pavia, *Methods Mol. Cell Biol.* **1996**, *6*, 1.

3. A General and Highly Efficient Solid Phase Synthesis of Oligosaccharides. Total Synthesis of a Heptasaccharide Phytoalexin Elicitor (HPE). K.C. Nicolaou, N. Winssinger, J. Pastor, F. DeRoose, *J. Am. Chem. Soc.* **1997**, *119*, 449-450.

4. Synthesis of Epothilones A and B in Solid and Solution Phase. K.C. Nicolaou, N. Winssinger, J. Pastor, S. Ninkovic, F. Sarabia, Y. He, D. Vourloumis, Z. Yang, T. Li, P. Giannakakou, E. Hamel, *Nature* **1997**, *387*, 268-272.

5. Designed Epothilones: Combinatorial Synthesis, Tubulin Assembly Properties, and Cytotoxic Action Against Taxol-Resistant Tumor Cells, K.C. Nicolaou, D. Vourloumis, T. Li, J. Pastor, N. Winssinger, Y. He, S. Ninkovic, F. Sarabia, H. Vallberg, F. Roschangar, N.P. King, M.R.V. Finlay, P. Giannakakou, P. Verdier-Pinard, E. Hamel, *Angew. Chem. Int. Ed. Eng.* **1997**, *36*, 2097-2103.

6. Solid Phase Synthesis of Macrocycles by Intramolecular Ketophosphonate Reaction. Synthesis of a (*dl*)-Muscone Library, K.C. Nicolaou, J. Pastor, N. Winssinger, F. Murphy, *J. Am. Chem. Soc.* **1998**, *120*, 5132-5133.

7. Solid Phase Synthesis of Oligosaccharides: Construction of a Dodecasaccharide, K.C. Nicolaou, N. Watanabe, J. Li, J. Pastor, N. Winssinger, *Angew. Chem. Int. Ed.* **1998**, *37*, 1559-1661.

8. Solid Phase Synthesis of Macrocyclic Systems by a Cyclorelease Strategy. Application of the Stille Coupling to a Synthesis of (*S*)-Zearalenone, K.C. Nicolaou, N. Winssinger, J. Pastor, F. Murphy, *Angew. Chem. Int. Ed.* **1998**, *37*, 2534-2537.

9. The Art and Science of Organic and Natural Products Synthesis, K.C. Nicolaou, E.J. Sorensen, N. Winssinger, *J. Chem. Ed.* **1998**, *75*, 1225-1258.

10. Solid and Solution Phase Synthesis and Biological Evaluation of Combinatorial Sarcodictyin Libraries, K.C. Nicolaou, N. Winssinger, D. Vourloumis, T. Ohshima, J. Xu, S. Kim, J. Pfefferkorn, T. Li, *J. Am. Chem. Soc.* **1998**, *120*, 10814-10826.

11. Polymer-Supported Selenium Reagents for Organic Synthesis, K.C. Nicolaou, J. Pastor, S. Barluenga, N. Winssinger, *Chem. Commun*. **1998**, 1947.

12. Total Synthesis of Vancomycin, K.C. Nicolaou, H.J. Mitchell, N.F. Jain, N. Winssinger, R. Hughes, T. Bando, *Angew. Chem. Int. Ed.* **1999**, *38*, 240-244.

13. Synthesis of the Macrocyclic Core of Sanglifehrin A, K.C. Nicolaou, T. Ohshima, F. Murphy, S. Barluenga, J. Xu, N. Winssinger, *Chem. Commun.* **1999**, 809-910.

14. Chemistry, Biology and Medicine of the Glycopeptide Antibiotics, K.C. Nicolaou, C.N.C. Boddy, S. Bräse, N. Winssinger, *Angew. Chem. Int. Ed.* **1999**, *38*, 2097-2152.

15. Total Synthesis of Vancomycin-Part 4: Attachment of the Sugar Moieties and Completion of the Synthesis, K.C. Nicolaou, H.J. Mitchell, N.F. Jain, T. Bando, R. Hughes, N. Winssinger, S. Natarajan, A.E. Koumbis, *Chem.-Eur. J.* **1999**, *5*, 2648-2667.

16. Total Synthesis and Chemical Biology of the Sarcodictyins, K. C. Nicolaou, J. Pfefferkorn, J. Xu, N. Winssinger, T. Ohshima, S. Kim, S. Hosokawa, D. Vourloumis, F. Van Delft, T. Li, *Chem. Pharm. Bull.* **1999**, *47*, 1199-1213.

17. The Art and Science of Total Synthesis at the Dawn of the Twenty-first Century, K. C. Nicolaou, D. Vourloumis, N. Winssinger, P. Baran, *Angew. Chem. Int. Ed.* **2000**, *39*, 44-122.

18. New Selenium-based Safety-Catch Linkers: Solid Phase Semisynthesis of Vancomycin, K. C. Nicolaou, N. Winssinger, R. Hughes, C. Smethurst, T.-Y. Cho, *Angew. Chem. Int. Ed.* **2000**, 1084-1088.

19. Total Synthesis of 16-Desmethylepothilone B, Epothilone B_{10}, Epothilone F and Related Side Chain Modified Epothilone B Analogues, K.C. Nicolaou, D. Hepworth, N.P. King, M.R.V Finlay, R. Scarpelli, M.M.A. Pereira, B. Bollbuck, A. Bigot, B. Weschkun, N. Winssinger, *Chem.--Eur. J.* **2000**, *15*, 2783-2800.

20. Epothilones and Sarcodictyins: From Combinatorial Libraries to Designed Analogs, N. Winssinger, K.C. Nicolaou, in *Prospects in Anticancer Agents for the 21st Century, 219th ACS National Meeting Symposium, ACS Symposium Series, ACS Press* **2001**, 148-170.

21. Target-accelerated Combinatorial Synthesis and Discovery of Highly Potent Antibiotics Effective Against Vancomycin-Resistant Bacteria, K.C. Nicolaou, R. Hughes, S.-Y. Cho, N. Winssinger, C. Smethurst, H. Labischinski, R. Endermann, *Angew. Chem. Int. Ed.* **2000**, *39*, 3823-3828.

22. New Photolabile Linker with Applications to Cyclorelease. K. C. Nicolaou, B. Safina, N. Winssinger, *SynLett* **2001**, 900-903.

23. Solid and Solution Phase Synthesis of Vancomycin and Vancomycin Analogues with Activity against Vancomycin-Resistant Bacteria K.C. Nicolaou, S. Y. Cho, R. Hughes, N. Winssinger, C. Smethurst, H. Labischinski and R. Endermann, *Chem.--Eur. J.* **2001**, *8*, 3798-3823.

24. Synthesis and Biological Evaluation of Vancomycin Dimers with Potent Activity Against Vancomycin-Resistant Bacteria. Target-Accelerated Combinatorial Synthesis K.C. Nicolaou, R. Hughes, S. Y. Cho, N. Winssinger, H. Labischinski, R. Endermann, *Chem.--Eur. J.* **2001**, *8*, 3824-3843.

25. From Split-Pool Libraries to Spatially Addressable Microarrays and its Application to Functional Proteomic Profiling, N. Winssinger, J. L. Harris, B. J. Backes, P. G. Schultz, *Angew. Chem. Int. Ed.* **2001**, *40*, 3152-3155.

26. Profiling Protein Function with Small Molecule Microarrays, N. Winssinger, S. Ficarro, P. G. Schultz, J. L. Harris, *Proc. Natl. Acad. Sci. USA* **2002**, *99*, 11139-11144.

27. Novel Strategies for the Solid Phase Synthesis of Substituted Indolines and Indoles. K.C. Nicolaou, A.J. Roecker, R. Hughes, R. van Summeren, J.A. Pfefferkorn, N. Winssinger, N. *Bioorg. Med. Chem.* **2003**, *11*, 465-76.

28. Azidopeptide Nucleic Acid. An Alternative Strategy for Solid Phase Peptide Nucleic Acid (PNA) Synthesis. F. Debaene, N. Winssinger *Org. Lett.* **2003**, *5*, 4445-4447.

29. Applications of Laser-polarized 129Xe to Biomolecular Assays. Lowery, T. J.; Rubin, S. M.; Ruiz, E. J.; Spence, M. M.; Winssinger, N.; Schultz, P. G.; Pines, A.; Wemmer, D. E. *Magn. Reson. Imaging* **2003**, *21*, 1235-1239.

30. Modular Asymmetric Synthesis of Pochonin C. S. Barluenga, P. Lopez, E. Moulin, N. Winssinger, *Angew. Chem., Int. Ed*, **2004**, *43*, 3467 –3470.

31. Synthesis of a PNA-Encoded Cysteine Protease Inhibitor Library. F. Debaene, L. Mejias, J. L. Harris, N. Winssinger *Tetrahedron* **2004**, *60*, 8677-8690.

32. Development of a Functionalized Xenon Biosensor. M. M. Spence, E. J. Ruiz, S. M. Rubin, T. J. Lowery, N. Winssinger, P. G. Schultz, D. E. Wemmer, A. Pines *J. Am. Chem. Soc.* **2004**, *126*, 15287-94.

33. Activity profile of dust mite allergen extract using substrate libraries and functional proteomic microarrays. J. Harris, D. Mason, K. W. Burdick, B. Backes, T. Chen, G. Van Heeke, L. Gough, A. Ghaemmaghami, F. Shakib, F. Debaene, N. Winssinger *Chem. Biol.* **2004**, *11*, 1361-1372.

34. PNA-Encoded Protease Substrate Microarrays. N. Winssinger, R. Damoiseaux, D. C. Tully, B. H. Geierstanger, K. W. Burdick, J. L. Harris *Chem. Biol.* **2004**, *11*, 1373-1381.

35. Design, Synthesis and Biological Evaluation of HSP90 Inhibitors Based on conformational Analysis of Radicicol and its Analogs. E. Moulin, V. Zoete, S. Barluenga, M. Karplus, N. Winssinger *J. Am. Chem. Soc.* **2005**, 6999-7004.

36. Solution and Solid Phase Synthesis of Radicicol and Pochonin C. S. Barluenga, E. Moulin, P. Lopez, N. Winssinger *Chem. Eur. J.* **2005**, *11*, 4935-4952.

37. PNA encoding: From Solution Based Libraries to Organized Microarrays. J. L. Harris, N. Winssinger *J. Eur. Chem.* **2005**, *11*, 6792-6801.

38. Microarray-Based Functional Protein Profiling Using Peptide Nucleic Acid-Encoded Libraries, N. Winssinger, J. L. Harris, *Exp*. *Rev*. *Proteom*., **2005**, *2*, 937-946.

39. Concise Synthesis of Pochonin A, an HSP90 Inhibitor E. Moulin, S. Barluenga, N. Winssinger *Org. Lett.*, **2005**, *7*, 5637-5639.

40. Modular Asymmetric Synthesis of Aigialomycin D, a Kinase Inhibitory Scaffold, S. Barluenga, P.-Y. Dakas, Y. Ferandin, L. Meijer, N. Winssinger *Angew. Chem., Int. Ed*. **2006**, *45*, 3951-3954.

41. Diversity-Oriented Synthesis of Pochonins and biological evaluation against a panel of kinases E. Moulin, S. Barluenga, F. Totzke**,** N. Winssinger *Chem. Eur. J.* **2006**, *12*, 8819-8834.

42. Self-assembled small molecule microarrays for protease screening and profiling, H. D. Urbina, F. Debaene, B. Jost, C. Bole-Feysot, P. Kuzmic, J. L. Harris, N. Winssinger *ChemBioChem***, 2006**, *7*, 1790-1797.

43. The chemistry and Biology of Resocylic Acid Lactones, N. Winssinger and S. Barluenga, *Chem Comm*, **2007**, 22-36.

44. Probing Biology with Small Molecule Microarrays, N. Winssinger, Z. Pianowski, F. Debaene, *Top. Curr. Chem.* **2007***, 278*, 311-342.

45. IPy_2BF_4 mediated Glycosylation and Glycosyl fluoride formation*,* K.-T. Huang, N. Winssinger, *Eur. J. Org. Chem.*, **2007**, 1887-90.

46. Expanding the Scope of PNA-Encoded Libraries: Divergent Synthesis of Libraries Targeting Cysteine, Serine and Metallo-Proteases as well as Tyrosine Phosphatase, F. Debaene, J. DaSilva, Z. Pianowski, F. Duran, N. Winssinger *Tetrahedron* **2007**, *63*, 6577-6586.

47. Exploring Biology with Small Molecules, N. Winssinger, Z. Panowski, S. Barluenga *in Chemical and Functional Genomic Approaches to Stem Cell Biology and Regenerative Medicine,* Wiley-VCH*,* Ed. S. Ding, p109-145.

48. A Highly Efficient Azide-based Protecting Group for Amines and Alcohols, S. Pothukanuri, N. Winssinger *Org. Lett.* **2007**, *9,* 2223-2225.

49. Modular Synthesis of Radicicol A and related resorcyclic acid lactone, potent kinase inhibitors, P. Y. Dakas, S. Barluenga, F. Totzke, U. Zirrgiebel and N. Winssinger, *Angew. Chem. Int. Ed. Engl.*, **2007**, *46*, 6899-6902.

50. Fluorescence-based Detection of Single Nucleotide Permutation in DNA via Catalytically Templated Reaction, Z. Pianowski and N. Winssinger, *Chem. Comm.*, **2007**, 3820-3822.

51. Nucleic Acid Encoding to Program Self-Assembly in Chemical Biology, Z. Pianowski and N. Winssinger, *Chem. Soc. Rev.*, **2008**, *37,* 1330-39.

52. Resorcylic Acid Lactones: A Pluripotent Scaffold with Therapeutic Potential, S. Barluenga, P.-Y. Dakas, M. Boulifa, E. Moulin, N. Winssinger, *C. R. Chim.*, **2008**, *11*, 1306-1317

53. High Throughput Synthesis of Natural Products, N. Winssinger, S. Barluenga, P.-Y. Dakas *in The Power Functional Resins*, Wiley-VCH, Ed. F. Albericio, J. Tulla-Puche, **2009**, 613-637. ISBN: 978-3-527-31936-7

54. Divergent Synthesis of a Pochonin Library Targeting HSP90 and in vivo Efficacy of Identified Inhibitor S. Barluenga, C. Wang, J.-G. Fontaine, K. Aouadi, K. Beebe, S. Tsutsumi, L. Neckers, N. Winssinger, *Angew. Chem. Int. Ed. Engl.*, **2008**, *47*, 4432-5.

55. Expanding the Scope and Orthogonality of PNA Synthesis, S. Pothukanuri, Z. Pianowski, N. Winssinger, *Eur. J. Org. Chem.*, **2008**, *18*, 3141-48.

56. Self Assembly of PNA-Encoded Peptides into Microarrays, F. Debaene and N. Winssinger *inPetide Microarray, Methods in Molecular Biology*, vol 570, Humana Press, Ed. M. Cretich, **2009**. ISBN 978-1-60327-393-0

57. Diversity-oriented synthesis of novel polycyclic scaffolds using polymer-bound reagents, D. García-Cuadrado, S. Barluenga N. Winssinger *Chem. Commun.*, **2008,** 4619-21.

58. The HSP90 binding mode of a radicicol-like E-oxime from docking, binding free energy estimations, and NMR 15N-chemical shifts, M. Spichty, A. Taly, F. Hagn, H. Kessler, S. Barluenga, N. Winssinger, M. Karplus, *BioPhysChem* **2009**, 111-123.

59. Synthesis of Pochoxime Prodrugs as Potent HSP90 Inhibitors, C. Wang, S. Barluenga, G. K. Koripelly, J.-G. Fontaine, R. Chen, J.-C. Yu, X. Shen, J.C. Chabala, J.V. Heck, A. Rubenstein, N. Winssinger, *Bioorg. Med. Chem. Lett.* **2009**, 3836-3840.

60. Imaging of mRNA in Live Cells Using Nucleic-Acid Templated Reduction of Azidorhodamine Probes, Z. Pianowski, K. Gorska, L. Oswald, C. A. Merten, N. Winssinger, *J. Am. Chem. Soc.,* **2009**, 6492-6497.

61. Solid-phase synthesis of resorcylic acid lactones including L-783277 and LL-Z1640-2 and hypothemycin P.-Y. Dakas, R. Jogireddy, G. Valot, S. Barluenga, N. Winssinger, *Chem. Eur. J.*, **2009**, *15*, 11490-11497.

62. Synthesis of a resorcylic acid lactones (RAL) library using fluorous-mixture synthesis and profile of their selectivity against a panel of kinases. R. Jogireddy, P.-Y. Dakas, G. Valot, S. Barluenga, N. Winssinger, *Chem. Eur. J.*, **2009**, *15*, 11498-11506.

63. DNA-Templated Homo and Heterodimerization of PNA-encoded Oligosaccharides Mimicking HIV's Carbohydrate Epitope, K. Gorska, K.-T. Huang, O. Chaloin, N. Winssinger, *Angew. Chem. Int. Ed.*, **2009**, *48*, 7695-7700.

64. Inhibition of HSP90 with pochoximes: SAR and structure-based insights, S. Barluenga, J.-G. Fontaine, C. Wang, K. Aouadi, R. Chen, K. Beebe, L. Neckers, N. Winssinger, *ChemBioChem*, **2009**, *10*, 2753-2759.

65. Hsp90 Inhibition with Resorcyclic Acid Lactones (RALs), N. Winssinger, J.-G. Fontaine, S. Barluenga, *Curr. Topic Med. Chem.*, **2009**, *9*, 1419-1435.

66. Selection of bead-displayed, PNA-encoded chemicals. N. R. Gassman, J. P. Nelli, S. Dutta, A. Kuhn, K. Bonin, Z. Pianowski, N. Winssinger, M. Guthold, J. C. Macosko, *J. Mol. Recognit.,* **2010**, *5*, 414-422.

67. Substrate screening identifies a novel target sequence for the proteasomal activity regulated by ionizing radiation A. Broggini-Tenzer, A. Hollenstein, Z. Pianowski, A. Wampfler, P. Furmanova, N. Winssinger, M. Pruschy, *Proteomics,* **2010**, *10*, 304-314.

68. Molecular Editing of Kinase-Targeting Resorcylic Acid Lactones (RAL): Fluoroenone RAL, R, Jogireddy, S. Barluenga, N. Winssinger, *ChemMedChem*, **2010**, *5*, 670-3.

69. Concise, Modular Asymmetric Synthesis of Deguelin, Tephrosin and Investigation into their Mode of Action, J. Garcia, S. Barluenga, L. Neckers, K. Beebe, N. Winssinger, *Chem. Eur. J.*, **2010**, 9767-9771.

70. Metathesis Reactions in Solid-Phase Organic Synthesis, S. Barluenga, P.-Y. Dakas, R. Jogireddy, G.Valot, N.Winssinger *in Metathesis*, Wiley-VCH, Ed. J. Cossy, **2010**, 349-372. ISBN: 9783527324408

71. In Vivo Efficacy of Natural Product-Inspired Irreversible Kinase Inhibitors, S. Barluenga, R. Jogireddy, G.K. Koripelly, N. Winssinger, *ChemBioChem*, **2010**, *11*, 1692-1699.

72. Clickable Peptide Nucleic Acids (cPNA) with Tunable Affinity, D. Chouikhi, S. Barluenga, N. Winssinger, *ChemComm*, **2010**, *46*, 5476-5478.

73. Autoactivation of transforming growth factor beta-activated kinase 1 is sequential bimolecular process R. Scholz, C. L. Sidler, R. F. Thali, N. Winssinger, P. C. F. Cheung, D. Neumann, *J. Biol. Chem.,* **2010**, *33*, 25753-25766.

74. Pochoxime, a Novel Hsp90 Inhibitor, as a Single Agent Therapy for Glioblastoma Multiforme, H. Zhu, S. Woolfenden, R. T. Bronson, Z. M. Jaffer, S. Barluenga, N. Winssinger, A. E. Rubenstein, R. Chen, A. Charest, *Mol. Can. Ther.*, **2010***, 9*, 2618-26.

75. Ligand dimerization programmed by hybridization to study multimeric ligand-receptor interactions. K. Gorska, J. Beyrath, S. Fournel, G. Guichard, N. Winssinger *ChemCommun* **2010**, *46*, 7742-4.

76. The molecular Chaperone HSP90α Is Required for Meitotic Progression of Spermatocytes beyond Pachytene in the Mouse, I. Grad, C.R. Cederroth, J. Walicki, C. Grey, S. Barluenga, N. Winssinger, B. De Massy, S. Nef, D. Picard, *PLoS One*, **2010**, *5*, 15770-15779.

77. Combinatorial Self-Assembly of Glycan Fragments into Microarrays, K.-T. Huang, K. Gorska, S. Alvarez, S. Barluenga, N. Winssinger, *ChemBioChem*, **2011**, *12,* 56-60.

78. Translating Instructions Into Function by Nucleic Acid Programmed Self-Assembly, N. Winssinger, *Actualité Chimique*, **2011**, *348*, 42-48.

79. DNA-Templated Combinatorial Assembly of Small Molecule Fragments Amenable to Selection/Amplification Cycles, J.P. Daguer, M. Ciobanu, S. Alvarez, S. Barluenga, N. Winssinger, *Chem. Sci.,* **2011**, *2*, 770-775.

80. Cysteine Mapping in Conformationally Distinct Kinase Nucleotide Binding Sites: Application to the Design of Selective Covalent Inhibitors, E. Leproult, S. Barluenga, D. Moras, J.-M. Wurtz, N. Winssinger, *J. Med. Chem.,* **2011**, *54*, 1347-55.

81. DNA-Templated Release of Functional Molecules with an azide-reduction-triggered immolative linker, K. Gorska, A. Manicardi, S. Barluenga, N. Winssinger *ChemCommun,* **2011**, *47*, 4364-67.

82. Rapid Fluorescence Imaging of miR-21 in Cells Using Templated Staudinger Reaction, K. Gorska, I. Keklikoglou, U. Tschulena, N. Winssinger *Chem. Sci.* **2011**, *2,* 1969-1975.

83. Selection of a Synthetic Glycan Oligomer from a Library of DNA-Templated Fragments Against DC-SIGN and Inhibition of HIV gp120 Binding to Dendritic Cells, M. Ciobanu, K.-T. Huang, J.-P. Daguer, S. Barluenga, O. Chaloin, E. Schaeffer, C. G. Mueller, D.A. Mitchell, N. Winssinger, *ChemCommun,* **2011, *47***, 9321-9323.

84. Nucleic Acid-Templated Energy Transfer Leading to a Photorelease Reaction and its Application to a System Displaying a Nonlinear Response, M. Röthlingshöfer, G. Gorska. N. Winssinger, *J. Am. Chem. Soc.* **2011**, *133*, 18110-18113.

85. Synthesis of deguelin-biotin conjugates and investigation into deguelin's interactions, J. Garcia, S. Barluenga, K. Gorska, F. Sasse, N. Winssinger, *Bioorg. Med. Chem.* **2012**, *20,* 672-680.

86. Polyubiquitination at Lys34 of TAK1 mediates nuclear factor-kappa B activation in several signal transduction pathways, A. Hamidi, V. von Bulow, N. Winssinger, S. Barluenga, C.-H. Heldin, M. Landström, *J. Biol. Chem.,* **2012**, *287*, 123-33.

87. Nucleic Acid Templated Uncaging of Fluorophores Using Ru-Catalyzed Photoreduction with Visible Light, M. Röthlingshöfer, G. Gorska. N. Winssinger, *Org. Lett.,* **2012**, 14, 482-485.

88. Discovery of an entropically-driven small molecule streptavidin binder from nucleic acid-encoded libraries, J.P. Daguer, M. Ciobanu, S. Barluenga, N. Winssinger, *Org. Biomol. Chem.*, **2012**, 10, 1502-1505.

89. Diversity-oriented synthesis of diverse polycyclic scaffolds inspired by the logic of sesquiterpene lactones biosynthesis, G. Valot, J. Garcia, V. Duplan, C. Serba, S. Barluenga, N. Winssinger *Angew. Chem. Int. Ed.*, **2012**, *51*, 5391-5394.

90. Asymmetric synthesis of pochonin E and F, revision of their proposed structure, and their conversion to potent hsp90 inhibitors, G. Karthikeyan, C. Zambaldo, S. Barluenga, V. Zoete, M. Karplus, N. Winssinger *Chem. Eur. J.*, **2012**, *18*, 5391-5394.

91. DNA Display of PNA-tagged ligands: A versatile strategy to screen libraries and control geometry of multidentate ligands, N. Winssinger *Art. DNA, PNA & XNA* **2012**, *3*, 105-108.

92. Expanding the scope of PNA-encoded synthesis (PES): Mtt-protected PNA fully orthogonal to Fmoc chemistry and a broad array of robust diversity generating reactions D. Chouikhi, M. Ciobanu, C. Zambaldo, V. Duplan, S. Barluenga, N. Winssinger, *Chem. Eur. J.*, **2012**, *18*, 12698-704.

93. Photoreductive Uncaging of Fluorophore in Response to Protien Oligomers by Templated Reaction in Vitro and in Cellulo, K.K. Sadhu, T. Eierhoff, W. Romer, N. Winssinger, *J. Am. Chem. Soc.* **2012**, *134*, 20013-20016.

94. DNA as a Platform to Program Assemblies with Emerging Functions in Chemical Biology, K. K. Sadhu, M. Röthlingshöfer, N. Winssinger, *Isr. J. Chem*, **2013***, 53*, 75-86.

95. Self-Assembled Antibody Multimers through Peptide Nucleic Acid Conjugation, S.A. Kazane, J.Y. Axup, C.H. Kim, M. Ciobanu, E.D. Wold, S. Barluenga, B.A. Hutchins, P.G. Schultz, N. Winssinger, V.V. Smider *J. Am. Chem. Soc.* **2013**, *135*, 340-346.

96. Selective affinity-based probe for oncogenic kinases suitable for live cell imaging, C. Zambaldo , K. K. Sadhu , G. Karthikeyan , S. Barluenga , J.-P. Daguer, N. Winssinger, *Chem. Sci.* **2013**, *4,* 2088-2092.

97. Nucleic Acid-programmed Assemblies: Translating Instruction into Function in Chemical Biology, N. Winssinger *Chimia*, **2013**, *67*, 340-348.

98. Detection of miRNAs in live cells using templated Ru(II) catalyzed unmasking of fluorophore, K. K. Sadhu, N. Winssinger, *Chem. Eur. J.*, **2013**, *19*, 8182-8189.

99. Following the Lead from Nature: Divergent Pathways in Natural Product Synthesis and Diversity-Oriented Synthesis, C. Serba, N. Winssinger, *Eur. J. Org. Chem.* **2013**, *20*, 4195-4214.

100. Reactions Templated by Nucleic Acids: More ways to translate Oligonucleotide-based Instructions into Emerging Function, K. Gorska, N. Winssinger *Angew. Chem. Int. Ed.* **2013**, *52*, 682-6843**.**

101. Solid-Phase Synthesis of Glycopeptide Using Shoda's Activation, A. Novoa, S. Barluenga, C. Serba, N. Winssinger *ChemCommun,* **2013**, *49*, 7608-10.

102. Picture Perfect: DNA-Templated Photoaffinity Labeling, S. Barluenga, N. Winssinger *ChemBioChem*, **2013**, *14*, 1927-8.

103. Nucleic Acid-tagged Peptides: Encoding Libraries and Controlling Dimerization and Conformation, K. K. Sadhu, N. Winssinger *Chimia*, **2013**, *67*, 905-9.

104. Synthesis of Sesquiterpene-Inspired Derivatives Designed for Covalent Binding and their Inhibition of the NF-κB pathway, V. Duplan, C. Serba, J. Garcia, G. Valot, S. Barluenga, M. Hoerlé, M. Cuendet, N. Winssinger, *Org. Biomol. Chem.*, **2014**, *12*, 370-5.

105. Rapid miRNA Imaging in Cells using Fluorogenic Templated Staudinger Reaction Between PNA-based Probes, Gorska and N. Winssinger in *PNA, Methods in Molecular Biology*, vol 1050, Spingers, Ed. P. Nielsen, D. Appella, **2014**, ISBN 978-1-62703-552-1.

106. Assembly of PNA-tagged Small Molecules, Peptides and Carbohydrates onto DNA Templates: Programming the Combinatorial Pairing and Inter-ligand Distance N. Winssinger, K. Gorska, M. Ciobanu, J.-P. Daguer, S. Barluenga in *PNA, Methods in Molecular Biology*, vol 1050, Spingers, Ed. P. Nielsen, D. Appella, **2014**, ISBN 978-1-62703-552-1.

107. PNA-Encoded Synthesis (PES) of a 10 000-member Glycan Library and Microarray Analysis of Diverse Lectins, A. Novoa, S. Barluenga, A. Imberty, N. Winssinger, *ChemBioChem* **2014***, 15,* 2058-65.

108. Novel LecA Ligand Identified from Glycan Array Inhibits Host Cell Invasion by *Pseudomonas aeruginosa,* A. Novoa, T. Eierhoff, J. Topin, A. Varrot, S. Barluenga, A. Imberty, W. Römer, N. Winssinger, *Angew. Chem. Int. Ed.* **2014***, 53,* 8885-9.

109. DNA display of fragment pairs as a tool for the discovery of novel biologically active small molecules, J.P. Daguer, C. Zambaldo, M. Ciobanu, P. Morieux, S. Barluenga, N. Winssinger *Chem. Sci.,* **2015**, *6*, 739-744.

110. Identification of Covalent Bromodomain Binders from DNA Display of Small Molecules, J.P. Daguer, C. Zambaldo, D. Abegg, S. Barluenga, C. Tallant, S. Müller, A. Adibekian, N. Winssinger, *Angew. Chem. Int. Ed.* **2015***, 54,* 6057-61.

111. PNA-encoded chemical libraries, C. Zambaldo, S. Barluenga, N. Winssinger, *Curr. Opin. Chem. Biol.* **2015***, 23,* 8-15.

112. PNA as a Biosupramolecular Tag for Programmable Assemblies and Reactions, S. Barluenga, N. Winssinger, *Acc. Chem. Res.* **2015***, 48*, 1319-1331.

113. Site-Specific Glycoconjugation of Protein via Bioorthogonal Tetrazine Cycloaddition with a Genetically Encoded trans-Cyclooctene, T. Machida, K. Lang, L. Xue, J. Chin, N. Winssinger, *Bioconjugate Chem.* **2015***, 26*, 802-806.

114. DNA Display of Glycoconjugate to Emulate Oligomeric Interactions of Glycans, A. Novoa, N. Winssinger, *Beil. J. Org. Chem.* **2015**, *11*, 707-719.

115. HSP90 inhibition as a means of radiosensitizing resistant, aggressive soft tissue sarcomas, A.H. Ernst, H. Kapfhammer, M. Orth, R. Hennel, K. Seidl, N. Winssinger, C. Belka, S. Unkel, K. Lauber *Cancer Lett.* **2015**, *365*, 211-22.

116. In cellulo protein labeling with Ru-conjugate for luminescence imaging and bioorthogonal photocatalysis, K.K. Sadhu, E. Lindberg, N. Winssinger *Chem. Commun.* **2015**, *51*, 16664-6.

117. Duplex formation and secondary structure of gamma-PNA observed by NMR and CD, J.M. Viéville, S. Barluenga, N. Winssinger, M.A. Delsuc, *Biophys. Chem.* **2016**, *210*, 9-13.

118. Novel PTP1B inhibitors identified by DNA display of fragment pairs, S. Barluenga; C. Zambaldo; H. A. Ioannidou; M. Ciobanu; P. Morieux; J.P. Daguer *Bioorg. Med. Chem. Lett.*, **2016**, *26*, 1080-1085.

119. Rapid and Scalable Synthesis of cis-Fused Guaiane-Type Sesquiterpenes, C. Serba, R. Lagoutte, N. Winssinger, *Eur. J. Org. Chem.* **2016**, 644-646.

120. One-Step Derivatization of Reducing Oligosaccharides for Rapid and Live-Cell Compatible Chelation-Assisted CuAAC conjugation, T. Machida, N. Winssinger, *ChemBioChem* **2016**, *17*, 811-815.

121. Nucleic-acid templated chemical reaction in a live vertebrate, L. Holtzer, I. Oleinich, M. Anzola, K. K. Sadhu, E. Lindberg, M. Gonzalez-Gaitan, N. Winssinger, *ACS Central Science,* **2016**, *2,* 394-400.

122. Screening for covalent inhibitors using DNA-display of small molecule libraries functionalized with cysteine reactive moieties, C. Zambaldo, J.-P. Daguer, J. Saarbach, S. Barluenga and N. Winssinger, *Med. Chem. Commun.*, **2016**, *7*, 1340-1351.

123. High Spatial Resolution Imaging of Endogenous Hydrogen Peroxide in Living Cells by Solid-State Fluorescence, E. Lindberg, N. Winssinger, *ChemBioChem* **2016**, *17*, 1612-1615.

124. Allosterically Regulated Phosphatase Activity from Peptide-PNA Conjugates Folded Through Hybridization, T. Machida, S. Dutt, N. Winssinger, *Angew. Chem. Int. Ed.* **2016***, 55,* 8595-8.

125. A novel HSP90 inhibitor with reduced hepatotoxicity synergizes with radiotherapy to induce apoptosis, abrogate clonogenic survival, and improve tumor control in models of colorectal cancer, L. Kinzel, A. Ernst, M. Orth, V. Albrecht, R. Hennel, N. Brix, B. Frey, U. S. Gailp, G. Zuchtrigel, C. A. Reichel, A. Blutke, D. Schilling, G. Multhoff, M. L. Li, M. Niyazi, A. A. Fridel, N. Winssinger, C. Belka, K. Lauber *Oncotarget* **2016**, *28*, 43199-43219.

126. Divergent synthesis and identification of the cellular targets of deoxyelephantopins, R. Lagoutte, C. Serba, D. Abegg, A. Adibekian, N.Winssinger, *Nature Commun.* **2016**, *7*, 12470.

127. Activation of Cell-Penetrating Peptides with Ionpair-π Interactions and Fluorophiles, N. Chuard, K. Fujisawa, P. Morelli, J. Saarbach, N. Winssinger, P. Metrangolo, G. Resnati, N. Sakai, Naomi, S. Matile, *J. Am. Chem. Soc.* **2016**, *138*, 11264-71.

128. Critical Analysis of Rate Constants and Turnover Frequency in Nucleic Acid-Templated Reactions: Reaching Terminal Velocity, D. Chang, E. Lindberg, N. Winssinger, *J. Am. Chem. Soc.* **2017**, *139*, 1444-1447.

129. Dynamic Cooperative Glycan Assembly Blocks the Binding of Bacterial Lectins to Epithelial Cells, T. Machida, A. Novoa, E. Gillon, S. Zheng, J. Claudinon, T. Eierhoff, A. Imberty, W. Römer, N. Winssinger *Angew. Chem. Int. Ed.* **2017**, *56*, 6762-6766.

130. Kinase-templated abiotic reaction, J. Saarbach, E. Lindberg, S. Folliet, S. Georgeon, O. Hantschel, N.Winssinger, *Chem. Sci.* **2017**, *8*, 5119 - 5125. Doi: 10.1039/C7SC01416C

131. Facile access to modified and functionalized PNAs through Ugi-based solid phase oligomerization, J. Saarbach, D. Masi, C. Zambaldo, N. Winssinger, *Bioorg. Med. Chem.* **2017**, *19*, 5171-5177. doi: 10.1016/j.bmc.2017.05.064

132. Covalent inhibitors: an opportunity for rational target selectivity, R. Lagoutte, R. Patouret, N. Winssinger *Curr. Opin. Chem. Biol*. **2017**, *39*, 54-63. doi: 10.1016/j.cbpa.2017.05.008

133. Following the Lead from Nature with Covalent Inhibitors, R. Lagoutte, N. Winssinger, *Chimia* **2017**, *71*, 703-11. doi: 10.2533/chimia.2017.703

134. Synthesis of deoxyelephantopin analogues, R. Lagoutte, C. Serba, N. Winssinger, *J. Antibiotics* **2018**, *71*, 248-256. doi: 10.1038/ja.2017.132

135. Biography of Professor Nicolaou: a journey to the extremes of molecular complexity, N. Winssinger, *J. Antibiotics* **2018**, *71*, 149-150. doi: 10.1038/ja.2017.144

136. Accelerating Turnover Frequency in Nucleic Acid Templated Reactions. D. Chang, K.T. Kim, N. Winssinger *Bioconjugate Chem.* **2018**, *29*, 158-163. doi: 10.1021/acs.bioconjchem.7b00663

137. Peptide nucleic acid-templated selenocystine–selenoester ligation enables rapid miRNA detection, J. Sayers, R.J. Payne, N. Winssinger, *Chem. Sci.* **2018**, *9,* 896-903. doi: 10.1039/c7sc02736b

138. Mitochondria-specific photoactivation to monitor local sphingosine metabolism and function, S. H. Feng, T. Harayama, S. Montessuit, F. P. A. David, N. Winssinger, J. C. Martinou, H. Riezman, *Elife* **2018**, *7,* pii: e34555. doi: 10.7554/eLife.34555

139. Double-stranded RNA-specific templated reaction with triplex forming PNA, K.T. Kim, D. Chang. N. Winssinger, *Helvetica* **2018**, *101*, Article Number: e1700295. doi: 10.1039/c7sc02736b

140. Ruthenium-based Photocatalysis in Templated Reactions, J. Saarbach, E. Lindberg, N. Winssinger, *Chimia,* 25, 207-2011, **2018**. doi: 10.2533/chimia.2018.207

141. Luciferase-induced photoreductive uncaging of small-molecule effectors, E. Lindberg, S. Angerani, M. Anzola, N. Winssinger, *Nature Commun.* **2018**, *9*, 3539.

142. Rapid and scalable synthesis of chiral bromolactones as precusrors to α-exo-methyl-γ-butyrolactones-containging sesquiterpene lactones, R. Lagoutte, M. Pastor, M. Berthet, N. Winssinger, *Tetrahedron*, **2018**, *74*, 6012-6021.