# Yitzhak Tor

## *Curriculum Vitae*

### Education

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|---|---|
| 1982 | B.Sc., Chemistry, Tel-Aviv University, Tel-Aviv, Israel |
| 1990 | Ph.D., Chemistry, The Weizmann Institute of Science, Rehovot, Israel |
| 1993 | Postdoctoral Fellow, California Institute of Technology, Pasadena, CA |

### Honors and Awards

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| 1980 | The Amos De-Shalit Foundation |
| 1979–81 | Tel-Aviv University Scholarships of Distinction for Undergraduate Studies (In Memory of the University's Students and Employees) |
| 1989 | John F. Kennedy Prize for Distinguished Graduate Studies, The Weizmann Institute of Science |
| 1990 | Weizmann Postdoctoral Fellow |
| 1991 | Weizmann-Bantrell Postdoctoral Fellow |
| 1991 | Gerhardt F. Schmidt Prize for a Distinguished Ph.D. Thesis |
| 1996 | Hellman Faculty Fellow |
| 2000 | Project Kaleidoscope Faculty for the 21st Century |
| 2006–2011 | Teddy Traylor Scholar in Organic Chemistry |
| 2006– | Editor-In-Chief *Perspectives in Medicinal Chemistry* |
| 2007–2015 | Editorial Advisory Board *Drug Design, Development and Therapy* |
| 2009– | Editorial Board *Journal of Nucleic Acids* |
| 2009– | Lifetime Honorary Membership, Israel Chemical Society |
| 2009– | Editorial Advisory Board *HIV/AIDS - Research and Palliative Care* |
| 2010– | US National Institutes of Health, College of Reviewers |
| 2011– | Editor-In-Chief *Organic Chemistry Insights* |
| 2013 | The George W. and Carol A. Lattimer Campus Professorship |

### Professional and Research Experience

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| 1979–1980 | Tel-Aviv University: Development of synthetic methodologies for the fluorination of aromatic compounds (Undergraduate research).<br>Research Advisor: Professor Shlomo Rozen. |
| 1980–1981 | The Weizmann Institute of Science: The synthesis of macrocyclic oxa-thialactones using template Sn chemistry and their metal-binding properties (undergraduate research).<br>Research Advisor: Professor Abraham Shanzer. |
| 1981–1986 | Israel Defense Forces: National Service. |
| 1985–1990 | The Weizmann Institute of Science: The design, synthesis, structural and binding properties of biomimetic chiral tripodal ligands (Ph.D.).<br>Dissertation Advisor: Professor Abraham Shanzer. |
| 1990–1993 | California Institute of Technology: Study of folded RNA structures using the affinity cleavage method. Enzymatic incorporation on modified bases (e.g., isoG) into RNA.<br>Research Advisor: Professor Peter B. Dervan. |
| 1993–1994 | The University of Chicago: Assistant Professor of Chemistry. |
| 1994–1999 | The University of California, San Diego: Assistant Professor of Chemistry. |
| 1999–2003 | The University of California, San Diego: Associate Professor of Chemistry. |
| 2003– | The University of California, San Diego: Professor of Chemistry. *Current Research: Organic-, bioorganic- and biological chemistry: Nucleic acids–ligand interactions; antiviral and antibacterial agents; modified nucleosides and nucleotides; new emissive nucleosides and oligonucleotides; novel cellular delivery agents.* |

## *Publications*

1. Acetyl Hypofluorite as a Taming Carrier of Elemental Fluorine for Novel Electrophilic Fluorination of Activated Aromatic Rings.
   O. Lerman, Y. Tor and S. Rozen, *J. Org. Chem.* **1981**, *46*, 4629–4631.

2. A Novel Electrophilic Fluorination of Activated Aromatic Rings Using Acetyl Hypofluorite Suitable also for Introduction of $^{18}F$ into Benzene Nuclei.
   O. Lerman, Y. Tor, D. Habel and S. Rozen, *J. Org. Chem*. **1984**, *49*, 806–813.

3. Template Synthesis, Structure and Binding Properties of Macrocyclic Oxa-Thialactones.
   Y. Tor, J. Libman, R. Lazar, F. Frolow, H. E. Gottlieb and A. Shanzer, *J. Org. Chem*. **1985**, *50*, 5476–5480.

4. A Trispeptide Circularly Organized through Inter-chain Hydrogen Bonds.
   Y. Tor, J. Libman, A. Shanzer, C.E. Felder and S. Lifson, *J. Chem. Soc. Chem. Comm.* **1987**, 749–750.

5. Helical Ferric Ion Binders.
   J. Libman, Y. Tor and A. Shanzer, *J. Am. Chem. Soc.* **1987**, *109*, 5880–5881.

6. Biomimetic Ferric Ion Carriers. A Chiral Analog of Enterobactin.
   Y. Tor, J. Libman , A. Shanzer and S. Lifson, *J. Am. Chem. Soc*. **1987**, *109*, 6517–6518.

7. Biomimetic Ferric Ion Carriers. Chiral Ferrichrome Analogs.
   Y. Tor, J. Libman and A. Shanzer, *J. Am. Chem. Soc.* **1987**, *109*, 6518–6519.

8. Helical Structures; Artificial Solutions for Ion Transport.
   A. Shanzer, J. Libman, Y. Tor and H. Gottlieb, *Transport through Membranes: Carriers, Channels and Pumps*, **1988**, pp. 57–66.

9. From Ring Structures to Helices.
   J. Libman, Y. Tor and A. Shanzer, *J. Coord. Chem.* **1988***, 18,* 241–244.

10. Ionic Recognition and Selective Response in Self-Assembling Monolayer Membrane on Electrodes.
    I. Rubinstein, S. Steinberg, Y. Tor, A. Shanzer and J. Sagiv, *Nature* **1988**, *332,* 426–429; **1989**, *337*, 216.

11. Synthetic Ferrichrome Analogues with Growth Promotion Activity for *Arthrobacter Flavescens.*
    A. Shanzer, J. Libman, R. Lazar, Y. Tor and T. Emery, *Biochem. Biophys. Res. Comm.* **1988**, *157*, 389–394.

12. Assessment of the Purity of *d,l* HM-PAO from Diastereomeric Mixtures Using NMR Techniques.
    I. Feinstein-Jaffe, M. Boazi and Y. Tor, *J. Nuc. Med.* **1989**, *30*, 106–109.

13. Receptor Mapping with Artificial Siderophores.
    A. Shanzer, J. Libman, R. Lazar and Y. Tor, *Pure & Appl. Chem.* **1989**, *61*, 1529–1534.

14. Biomimetic Design of Ion-Carriers.
    S. Lifson, Y. Tor, J. Libman and A. Shanzer, *Peptides, Chemistry, Structure and Biology,* **1990**, pp. 795–797.

15. Geometries of Non-Transition-Metal Complexes of a Novel Chiral β-Keto Amide Tripodal Ligand Elucidated from Optical Transitions to Excitonic States.
    Y. Tor, A. Shanzer and A. Scherz, *Inorg. Chem.* **1990**, *29,* 4096–4099.

16. Polytopic Chiral Binders.
A. Shanzer, P. Yakirevitch, H. Gottlieb, Y. Tor and J. Libman, *Pure & Appl. Chem.* **1990**, *62*, 1111–1114.

17. Study of Cu(II) Binding to Novel Chiral Tripodal Ligands by Electron Spin Echo Spectroscopy.
D. Goldfarb, J.-M. Fauth, Y. Tor and A. Shanzer, *J. Am. Chem. Soc.* **1991***, 113,* 1941–1948.

18. Ion-Selective Monolayer Membranes Based upon Self-Assembly Tetradentate Ligand Monolayers on Gold Electrodes. 2. The Effect of Applied Potential on the Ion Binding.
S. Steinberg, Y. Tor, E. Sabatani and I. Rubinstein, *J. Am. Chem. Soc.* **1991**, *113*, 5176–5182.

19. Vibrational Circular Dichroism of Interchain Hydrogen Bonded Tripodal peptides.
M. G. Paterlini, T. B. Freedman, L. A. Nafie, Y. Tor and A. Shanzer, *Biopolymers* **1992**, *32*, 765–782.

20. Tripodal Peptides with Chiral Conformations Stabilized by Interstrand Hydrogen Bonds.
Y. Tor, J. Libman, A. Shanzer, C. E. Felder, and S. Lifson, *J. Am. Chem. Soc.* **1992**, *114,* 6653–6661.

21. Chiral Siderophore Analogs: Enterobactin.
Y. Tor, J. Libman, A. Shanzer, C. E. Felder and S. Lifson, *J. Am. Chem. Soc.* **1992**, *114,* 6661–6671.

22. Li+ and Ca2+ Ions as Complementary Regulatory Elements for the Formation of Propeller-like Conformations.
I. Dayan, Y. Tor, J. Libman, and A. Shanzer, *J. Org. Chem*. **1992**, *57*, 6060–6063.

23. Synthetic Receptors Possessing Non-covalent Macrocyclic Rings.
J. Libman, Y. Tor, I. Dayan, A. Shanzer and S. Lifson, *Israel J. Chemistry* **1992**, *32*, 31–40.

24. Site-specific Enzymatic Incorporation of an Unnatural Base, $N^6$-(6-Aminohexyl)isoguanosine, into RNA.
Y. Tor and P. B. Dervan, *J. Am. Chem. Soc*. **1993**, *115*, 4461–4467.

25. Ion-Selective Monolayer Membranes Based upon Self-Assembly Tetradentate Ligand Monolayers on Gold Electrodes: Nature of the Ionic Selectivity.
S. Steinberg, Y. Tor, A. Shanzer and I. Rubinstein, *Thin Films* **1995**, *20*, 183–205.

26. Dendritic Polyphosphates: Globular Polyelectrolytes?
Y. Tor, Proceedings of the NATO Advanced Workshop on Supramolecular Sterochemistry, J.S. Siegel, Ed; Kluwer: Dortrecht, 1995, pp. 247–253.

27. Simple One-Step Synthesis of 3-Bromo- and 3,8-Dibromo-1,10-Phenanthroline: Fundamental Building Blocks in the Design of Metal Chelates.
D. Tzalis, Y. Tor, S. Failla and J. S. Siegel, *Tetrahedron Lett*. **1995**, *36*, 3489–3490.

28. Tuning the Electronic Properties of Phenanthroline Ligands: 3,8-Bis(arylethynyl)-1,10-Phenanthrolines and their Ru(II) Complexes.
D. Tzalis and Y. Tor, *Tetrahedron Lett.* **1995**, *36*, 6017–6020.

29. DNA-Carbohydrate Interactions. Specific Binding of Head-to-Head and Head-to-Tail Dimers of the Calicheamicin Oligosaccharide to Duplex DNA.
K.C. Nicolaou, B.M. Smith, K. Ajito, H. Komatsu, L. Gomez-Paloma and Y. Tor, *J. Am. Chem. Soc.* **1996**, *118*, 2303–2304.

30. Coordination Compounds as Building Blocks: Single-Step Synthesis of Multi-Ru(II) Complexes.
D. Tzalis and Y. Tor, *Chem. Commun.* **1996**, 1043–1044.

31. Toward Self-Assembling Dendrimers: Metal Complexation Induces the Assembly of Hyperbranched Structures.
D. Tzalis and Y. Tor, *Tetrahedron Lett.* **1996**, *37*, 8293–8396.

32. Stereochemically-defined Supramolecular Architectures: Diastereomerically-Pure Multi-$Ru^{II}$ Complexes.
D. Tzalis and Y. Tor, *J. Am. Chem. Soc.* **1997**, *118*, 852–853.

33. Dimeric Aminoglycosides: Design, Synthesis and RNA Binding.
H. Wang and Y. Tor, *Bioorg. Med. Chem. Lett.* **1997**, *7*, 1951–1956.

34. Electrostatic interactions in RNA-aminoglycosides binding.
H. Wang and Y. Tor, *J. Am. Chem. Soc.* **1997**, 119, 8734–8735.

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H. Wang and Y. Tor, *Angew. Chem., Int. Ed.* **1998**, *37*, 109–111.

37. Dendrimers and Chirality. C. W. Thomas and Y. Tor, *Chirality*, **1998**, *10*, 53–59.

38. Hydrolysis of an RNA Dinucleoside Monophosphate by Neomycin B.
S. R. Kirk and Y. Tor, *Chem. Commun.*, **1998**, 147–148.

39. Coordination Compounds as Building Blocks: Single-Step Synthesis of Heteronuclear Multimetallic Complexes Containing $Ru^{II}$ and $Os^{II}$.
P. J. Connors, Jr., D. Tzalis, A. L. Dunnick and Y. Tor, *Inorg. Chem.*, **1998**, *37*, 1121–1123.
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40. Metal-Containing Oligonucleotides: Solid-Phase Synthesis and Luminescence Properties.
D. J. Hurley and Y. Tor, *J. Am. Chem. Soc.* **1998**, *120*, 2194–2195.

41. Designing Novel RNA Binders.
K. Michael and Y. Tor, *Chem. Eur. J.* **1998**, *4*, 2091–2098 (a “Concepts” article).

42. Deciphering RNA Recognition: Aminoglycoside Binding to the Hammerhead Ribozyme.
Y. Tor, T. Hermann and E. Westhof, *Chem. Biol.* **1998**, *5*, R277–R283.

43. Tobramycin-EDTA Conjugate: A Noninnocent Affinity-Cleaving Reagent.
H. Wang and Y. Tor, *Bioorg. Med. Chem. Lett.*, **1998**, *8*, 3665–3670.

44. Enhanced RNA Binding of Dimerized Aminoglycosides.
K. Michael, H. Wang and Y. Tor, *Bioorg. Med. Chem.*, **1999**, *7*, 1361–1371.

45. $tRNA^{Phe}$ Binds Aminoglycoside Antibiotics.
S. R. Kirk and Y. Tor, *Bioorg. Med. Chem.*, **1999**, *7*, 1979–1991.

46. RNA and the Small Molecule World.
Y. Tor, *Angew. Chem. Int. Ed.* **1999**, *38*, 1579–1582.

47. Coordination compounds as building blocks: simple synthesis of $Ru^{II}$-containing amino acids and peptides.
D. J. Hurley, J. R. Roppe and Y. Tor, *Chem. Commun.* **1999**, 993–994.

48. Conjugated 1,10-Phenanthrolines as Tunable Fluorophores
H. S. Joshi, R. Jamshidi and Y. Tor, *Angew. Chem. Int. Ed.* **1999**, *38*, 2721–2725.

49. Neomycin-Acridine Conjugate: A Potent Inhibitor of Rev-RRE Binding.
S. R. Kirk, N. W. Luedtke and Y. Tor, *J. Am. Chem. Soc.* **2000**, *122*, 980–981.

50. A Novel Solid-Phase Assembly for Identifying Potent and Selective RNA Ligands.
N. W. Luedtke and Y. Tor, *Angew. Chem. Int. Ed.* **2000**, *39*, 1788–1790.

51. Development of a Functional Backbone Cyclic mimetic of the HIV-1 Tat Arginine Rich Motif.
A. Friedler, D. Friedler, N. W. Luedtke, Y. Tor, A. Loyter and C. Gilon, *J. Biol. Chem.*, **2000**, *275*, 23783–23789.

52. Guanidinoglycosides: A Novel Family of RNA Ligands.
N. W. Luedtke, T. J. Baker, M. Goodman and Y. Tor, *J. Am. Chem. Soc.* **2000**, *122*, 12035–12036.

53. Synthesis and Anti-HIV activity of Guanidinoglycosides.
T. J. Baker, N. W. Luedtke, Y. Tor and M. Goodman, *J. Org. Chem.* **2000**, *65*, 9054–9058.

54. Modifying Aminoglycoside Antibiotics.
K. Michael and Y. Tor, *RNA-Binding Antibiotics*, Schroeder & Wallis (eds), Landes Bioscience, Austin **2001**, Ch. 11, pp. 130–145.

55. A Simple Conversion of Amines into Monosubstituted Ureas in Organic and Aqueous Solvents.
Q. Liu, N. W. Luedtke and Y. Tor, *Tetrahedron Lett*. **2001**, *42*, 1445–1447.

56. Oligo-ligandosides: A DNA Mimetic Approach to Helicate Formation.
H. Weizman and Y. Tor, *Chem. Commun.* **2001**, 453–454.

57. Metal-containing DNA Hairpins as Hybridization Probes.
H. S. Joshi and Y. Tor, *Chem. Commun.* **2001**, 549–550.

58. 2,2'-Bipyridine Ligandoside: A Novel Building Block for Modifying DNA with Intra-Duplex Metal Complexes.
H. Weizman and Y. Tor, *J. Am. Chem. Soc*. **2001**, *123*, 3375–3376.

59. 2-Aminopurine as a Real-Time Probe of Enzymatic Cleavage and Inhibition of Hammerhead Ribozymes.
S. R. Kirk, N. W. Luedtke, and Y. Tor *Bioorg. Med. Chem*. **2001**, *9*, 2295–2301.

60. Lowering the Symmetry of Difunctionalized Coordination Compounds via Nucleophilic Aromatic Substitutions.
D. J. Hurley and Y. Tor, *Tetrahedron Letters*, **2001**, *42*, 7217–7220.

61. Redox Active Metal-Containing Nucleotides: Synthesis, Tunability and Enzymatic Incorporation into DNA.
H. Weizman and Y. Tor, *J. Am. Chem. Soc*. **2002**, *124*, 1568–1569.

62. Coordination Compounds as Synthetic Building Blocks.
Y. Tor, *Synlett* **2002**, 1043–1054.

63. Ru(II) and Os(II) Nucleosides and Oligonucleotides: Synthesis and Properties.
D. J. Hurley and Y. Tor, *J. Am. Chem. Soc*. **2002**, *124*, 3749–3762.

64. Donor/Acceptor Interactions in Systematically Modified RuII–OsII Oligonucleotides.
D. J. Hurley and Y. Tor, *J. Am. Chem. Soc*. **2002**, *124*, 13231–13241.

65. Eilatin Ru(II) Complexes Display Anti-HIV Activity and Enantiomeric Diversity in the Binding of RNA.
N. W. Luedtke, J. S. Hwang, E. C. Glazer, D. Gut, M. Kol and Y. Tor, *ChemBioChem*. **2002**, *3*, 766–771.

66. Fluorescent 1,10-Phenanthroline-containing oligonucleotides distinguish between perfect and mismatched base pairing.
D. J. Hurley, S. E. Seaman, J. C. Mazura and Y. Tor, *Org. Lett.* **2002**, *4*, 2305–2308.

67. RuII-Complexes of "Large-Surface" Ligands.
E. C. Glazer and Y. Tor, *Angew. Chem. Int. Ed*. **2002**, *41*, 4022–4026.

68. Targeting HIV RNA with Small Molecules
N. W. Luedtke and Y. Tor in Small Molecule DNA and RNA Binders: From Synthesis to Nucleic Acid Complexes, Eds. M. Demeunynck, C. Bailly, D. Wilson, Wiley-VCH, 2003, pp. 18–40.

69. Inhibition of Nuclear Import Mediated by the Rev-Arginine Rich Motif by RNA Molecules.
K. Fineberg, T. Fineberg, A. Graessmann, N. W. Luedtke, Y. Tor, R. Lixin, D. A. Jans and A. Loyter, *Biochemistry*, **2003**, *42*, 2625–2633.

70. Simple Conversion of Aromatic Amines into Azides
Q. Liu and Y. Tor, *Org. Lett.* **2003**, *5*, 2571–2572.

71. RNA–Aminoglycoside Interactions.
H. Weizman and Y. Tor, in Carbohydrate-based Drug Discovery, C.-H. Wong (Ed), Wiley-VCH, 2003, vol. 2, pp 661–683.

72. RNA–Ligand Interactions.
Y. Tor, Biopolymers, (Editorial), *Biopolymers/Nucleic Acid Sciences* **2003**, *70*, 1–3.

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N. W. Luedtke and Y. Tor, *Biopolymers/Nucleic Acid Sciences* **2003**, *70*, 103–119.

74. Metal-containing Oligomers, Dendrimers and Biopolymers
Y. Tor, *Comptes rendus Chimie*, **2003**, *6*, 755–766.

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N. W. Luedtke, Q. Liu and Y. Tor, *Biochemistry* **2003**, *42*, 11391–11403.

76. Targeting RNA with Small Molecules
Y. Tor, *ChemBioChem*. **2003**, *4*, 998–1007.

77. Using Pyrene-labeled HIV-1 TAR to Measure RNA–Small Molecule Binding
K. F. Blount and Y. Tor, *Nucleic Acids Research*, **2003**, *31*, 5490–5500.

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N. W. Luedtke, J. S. Hwang, E. Nava, D. Gut, M. Kol and Y. Tor, *Nucleic Acids Research*, **2003**, *31*, 5732–5740.

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N. W. Luedtke, P. Carmichael and Y. Tor, *J. Am. Chem. Soc.* **2003**, *125*, 12374–12375.

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82. Advancing RNA as a Drug Target
Y. Tor, *MedChem News* (The Pharmaceutical Society of Japan) **2004**, 14 (No. 3, August 2004), 6–13.

83. Synthesis of N-methylpyrrole and N-methylimidazole amino acids suitable for solid-phase synthesis
D. Jaramillo, Q. Liu, J. Aldrich-Wright and Y. Tor, *J. Org. Chem*. **2004**, *69*, 8151–8153.

84. On the Electronic Structure of Ethidium
N. W. Luedtke, Q Liu and Y. Tor, *Chem. Eur. J*. **2005**, *11*, 495–508.

85. RNA-selective Modification by a PtII Complex Conjugated to Amino- and Guanidino-glycosides
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87. Dual Emission from a Family of Conjugated Dinuclear Ru(II) Complexes
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E. C. Glazer, B. Belyea and Y. Tor, *Inorg. Chem. Commun*. **2005**, *8*, 517–519.

89. Genetic Alphabetic Order: What came before A?
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F. Zhao, Q. Zhao, K. F. Blount, Q. Han, Y. Tor and T. Hermann *Angew. Chem. Int. Ed*. **2005**, *44*, 5329–5334.

92. Synthesis and Stability of Exocyclic Triazine Nucleosides.
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94. The ribosomal A-site as an inspiration for the design of RNA binders.
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106. Synthesis and Site Specific Incorporation of a Simple Fluorescent Pyrimidine
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N. J. Greco and Y. Tor, *Tetrahedron*, **2007**, *63*, 3515–1527.

109. Using an emissive uridine analogue for assembling fluorescent HIV-1 TAR constructs.
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E. Wexselblatt, J. D. Esko, and Y. Tor, *J. Org. Chem.,* **2014**, 79, 6766–6774.

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M. Sholokh, R. Sharma, D. Shin, R. Das, O. Zaporozhets, Y. Tor, Y. Mély, *J. Am. Chem. Soc.* **2015***, 137,* 3185–3188.

170. GNeosomes: Highly Lysosomotropic Nanoassemblies for Lysosomal Delivery
E. Wexselblatt, J. D. Esko, and Y. Tor, *ACS Nano,* **2015**, *9*, 3961–3968.

171. Fluorescent Adenosine Analog as a Substrate for an A-to-I RNA Editing Enzyme
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172. Small Molecule Antagonists of Cell-Surface Heparan Sulfate and Heparin–Protein Interactions
R. Weiss, J. D. Esko, and Y. Tor, *Chem Sci.* **2015**, *submitted*.

## *Invited Lectures*

1. Modified Aminoglycoside Antibiotics as Anti-HIV Drugs, 13th Annual AIDS Investigator's Meeting, Universitywide AIDS Research Program, San Francisco, March 21, 1996.

2. Modified Aminoglycoside Antibiotics as RNA binders
   ISIS Pharmaceuticals, Carlsbad, CA, August 16, 1996.

3. Coordination Compounds as Synthetic Building Blocks: Single-Step Synthesis of Multimetallic Arrays, 31st International Conference on Coordination Chemistry (ICCC), Vancouver, Canada, August 23, 1996.

4. The Coordination Chemistry Approach to New Materials
   4th NSF Workshop on Chemistry, Philadelphia, PA, October 19, 1996.

5. Designing New Materials
   Industrial Advisory Committee Meeting (IAC), UCSD, February 8, 1997.

6. Modified Aminoglycoside Antibiotics as RNA Binders
   213 American Chemical Society Meeting, San Francisco, April 16, 1997.

7. Modified Aminoglycoside Antibiotics as RNA Binders
   The Immune Response Corporation, Carlsbad, CA, August 13, 1997.

8. Metal Ion Complexation Induces the Assembly of Hyperbranched Structures
   214 American Chemical Society Meeting, Las Vegas, September 10, 1997.

9. From coordination compounds to aminoglycoside–RNA interactions, Departmental Colloquium, Department of Chemistry and Biochemistry, UCSD, October 15, 1997.

10. Coordination Compounds as Building Blocks for the Construction of Supramolecular Architecture
    Pacific Conference on Chemistry and Spectroscopy, Irvine, CA, October 22, 1997.

11. The Organic Chemistry of Coordination Compounds: Functionalized Metal Complexes as Synthetic Building Blocks.
    Organic Chemistry Seminar, University of California, Riverside, CA, November 7, 1997.

12. Metal–Containing Oligonucleotides: Synthesis and Luminescence Properties
    Nanogen, San Diego, CA, March 18, 1998

13. RNA–Small Molecules Recognition
    1998 NSF workshop, Physical Organic Chemistry, Logan, Ohio, June 22, 1998.

14. The Organic Chemistry of Coordination Compounds:
    From Metal-Containing Polymers to Metal-Decorated DNA
    Macquarie University, NSW, Australia, July 6, 1998.

15. The Organic Chemistry of Coordination Compounds:
    From Metal-Containing Polymers to Metal-Decorated DNA
    University of Western Sydney, Macarthur, NSW, Australia, July 8, 1998.

16. Novel Approaches to Metal-Containing Polymers and Self-Assembling Dendrimers
    World Polymers Congress, Macro 98, Gold Coast, Australia, July 15, 1998.

17. Combinatorial Chemistry.... Shooting Craps with Molecules
    Frontiers in Science '98: "The Wonder of Discovery... The Joy of Sharing", UCSD, July 30, 1998.

18. Designing RNA Binders: What can we learn from Aminoglycoside Antibiotics?
    19th International Carbohydrate Symposium, San Diego, August 11, 1998.

19. RNA Recognition: What can we learn from Aminoglycoside Antibiotics?
    Hebrew University of Jerusalem, Jerusalem, Israel, August 27, 1998.

20. The Organic Chemistry of Coordination Compounds:
    From Metal-Containing Polymers to Metal-Decorated DNA
    Clinical Micro Sensors, Inc., Pasadena, CA, September 10, 1998.

21. The Organic Chemistry of Coordination Compounds:
    From Multi-metallic Arrays to Metal-Decorated DNA
    University of Utah, Salt Lake City, October 22, 1998.

22. The Organic Chemistry of Coordination Compounds:
    From Metal-Containing Polymers to Metal-Decorated DNA
    University of California, Los Angeles, October 29, 1998.

23. The Organic Chemistry of Coordination Compounds:
    From Multi-metallic Arrays to Metal-Decorated DNA
    The Scripps Research Institute, La Jolla, December 16, 1998.

24. Targeting RNA with Small Molecules
    San Diego Glycobiology Symposium, January 16, 1999.

25. The Organic Chemistry of Coordination Compounds:
    From Metal-Containing Polymers to Metal-Decorated DNA
    ISIS Pharmaceuticals, Carlsbad, CA, February 10, 1999.

26. Targeting RNA with Small Molecules
    ISIS Pharmaceuticals, Carlsbad, CA, February 10, 1999.

27. Adventures with Nucleic Acids: Targeting RNA with Small Molecules and Decorating DNA with Coordination Compounds
    Departmental Colloquium, UCSD, Chem & Biochem. CA, March 3, 1999.

28. Adventures with Nucleic Acids: Targeting RNA with Small Molecules and Decorating DNA with Coordination Compounds
    California Institute of Technology, Pasadena, March 10, 1999.

29. Chiral Metal-Containing Polymers
    217th ACS Meeting, Anaheim, CA, March 24, 1999.

30. Adventures with Nucleic Acids: Targeting RNA with Small Molecules and Decorating DNA with Coordination Compounds
    Neurocrine Biosciences, San Diego, May 14, 1999.

31. Targeting RNA with Small Molecules
    National 218th ACS Meeting, New Orleans, Louisiana, August 25, 1999.

32. RNA and the Small Molecule World
    Industrial Advisory Committee Meeting (IAC), UCSD, February 11, 2000.

33. Targeting RNA–Protein Complexes with Small Molecules
    Affymax Research Institute, March 31, 2000.

34. Targeting Rev–RRE with Small Molecules: Novel Assays and New Inhibitors
HIV Rev as a Therapeutic Target, National Institute of Allergy and Infectious Diseases, Bethesda, April 28, 2000.

35. RNA–Small Molecule Interactions
University of Texas at Austin, May 05, 2000.

36. RNA as a Drug Target
Anadis Pharmaceuticals, August 16, 2000.

37. Targeting RNA with Carbohydrate-Based Molecules
4th Annual San Diego Glycobiology Symposium, San Diego, January 13, 2001.

38. Exploring and Exploiting RNA–Ligand Interactions
ITP, UC Santa Barbara, March 23, 2001.

39. Targeting RNA with Carbohydrate-Based Molecules
221st National ACS Meeting, San Diego, April 1, 2001.

40. Photophysical Processes in Metal-Decorated DNA Oligonucleotides
Gordon Research Conference on Physical Organic Chemistry, Plymouth NH, July 2, 2001.

41. Hybrid Inorganic/biological polymers
Targeted Nanomachines, Dana Point, CA, July 19, 2001.

42. Photophysical Processes in DNA Oligonucleotides Decorated with Polypyridine-based Coordination Compounds
The 10th International Symposium on Novel Aromatic Compounds, UCSD, August 6, 2001.

43. Targeting RNA with Small Molecules
222nd National ACS Meeting, Chicago, August 27, 2001.

44. Targeting RNA with Small Molecules
Georgia State University, Atlanta, GA, September 10, 2001.

45. Targeting RNA with Small Molecules
University of Georgia, Athens, GA, September 11, 2001.

46. Targeting RNA with Small Molecules
Department of Pharmacology, Robert Wood Johnson Medical School, University of Medicine and Dentistry of New Jersey, NJ, November 19, 2001.

47. Targeting RNA with Small Molecules
Department of Biochemistry, MCP Hahnemann University, School of Medicine, Philadelphia, PA, November 21, 2001.

48. Cis-Platinum Containing Molecules as Anti-HIV Agents
19th Annual AIDS Investigators Meeting, February 22, 2002.

49. Targeting RNA with Aminoglycoside-Based Molecules
National ACS Meeting, Orlando, Fl, April 9, 2002

50. Targeting RNA with Small Molecules
University of Washington, Seattle, May 24 2002.

51. Targeting RNA with Small Molecules
Immusol, Inc., San Diego, August 20, 2002.

52. RNA as a Drug Target: Novel Assays and Ligands
The 5th Annual San Diego Combinatorial Chemistry Symposium, August 23, 2002.

53. Targeting RNA with Small Molecules
University of Sydney, Australia, September 4, 2002.

54. Targeting RNA with Small Molecules
University of Western Sydney, Australia, September 6, 2002.

55. Targeting RNA with Small Molecules
Australian National University, Canberra, Australia, September 11, 2002.

56. Targeting RNA with Small Molecules
Yale University, November 20, 2002.

57. Targeting RNA with Small Molecules
"Entering the unexplored world: RNA targeting", Wiesbaden, Germany, January 25, 2003.

58. Targeting RNA with Small Molecules
6$^{th}$ Annual San Diego Glycobiology Symposium, San Diego, February 7, 2003.

59. Targeting RNA with Small Molecules
University of Zurich, Zurich, Switzerland, April 22, 2003.

60. Therapeutic Approaches Based on RNA
*Understanding the RNAissance*, Horizon Symposium, Maine, May 3, 2003.

61. Targeting RNA: Past, Present and Future.
University of Zurich, Zurich, Switzerland, July 8, 2003.

62. Targeting RNA with Small Molecules
California State University, Los Angeles, October 14, 2003.

63. Luminescent Nucleosides and Oligonucleotides
*Modern Photochemistry*, 38$^{th}$ Regional ACS Meeting, Long Beach, October 15, 2003.

64. Targeting RNA with Small Molecules
The Knowledge Foundation's 3$^{rd}$ Annual International Conference, RNA in Drug Development: RNA as a Tool and a Target, November 10, 2003.

65. Donor/Acceptor Interactions in Systematically-Modified Metal-Containing Oligonucleotides.
Energy and Electron Transfer in DNA and Related Systems, SERMACS 2003, Atlanta, November 18, 2003.

66. From Tripodal $Fe^{3+}$ Binders to Targeting RNA with Small Molecules
NSF Young Investigator Workshop on Supramolecular Chemistry, Sanibel Island, Fl, January 11, 2004.

67. Targeting RNA with Small Molecules
Northwestern University, February 19, 2004.

68. Design, Synthesis and Utilization of Novel Emissive Nucleosides
Bowling Green State University, March 24, 2004.

69. Advancing RNA as a Drug Target
Georgia State University, March 26, 2004.

70. Targeting RNA with Small Molecules
228th ACS National Meeting, Philadelphia, PA, August 22, 2004

71. Advancing RNA as a Drug Target
Biophysical Society 2005 Annual Meeting, February 13, 2005.

72. Adventures with Nucleic Acids: Targeting RNA with Small Molecules and Decorating DNA with Emissive Nucleotides
NYU, February 18, 2005.

73. Targeting RNA with Small Molecules
229th ACS National Meeting, March 14, 2005.

74. Targeting RNA with Small Molecules
National Convention of The Royal Australian Chemical Institute, Sydney, Australia, July 2005.

75. Novel Ru(II) Complexes
PacifiChem 2005, Hawaii, December 15, 2005.

76. Targeting RNA with Small Molecules
"The Interface of Chemistry and Biology", PacifiChem 2005, Hawaii, December 19, 2005.

77. Aminoglycosides, Guanidinoglycosides and Glycobiology…
San Diego Glycobiology Symposium, January 21, 2006.

78. Nucleotides–Guanidinoglycosides Conjugates as Anti-HIV Agents
21st UARP HIV/AIDS Biennial Investigators Meeting February 24, 2006.

79. Fluorescent Nucleosides
NSF Workshop NSF workshop on Physical Organic chemistry, October 30, 2006.

80. Aminoglycosides, Guanidinoglycosides and Glycobiology… Part III
San Diego Glycobiology Symposium, January 19, 2007.

81. Adventures with Nucleic Acids: from RNA-Ligand Interactions to Emissive Nucleosides and Oligonucleotides
Weizmann Institute of Science, Rehovot, Israel, February 27, 2007.

82. Studying RNA–Ligand Interactions Using Fluorescent Oligonucleotides
ACS National Meeting, Chicago, March 28, 2007.
(Covered in *ACS Chem. Biol*. **2007**, *2*, 440–444)

83. Targeting and Exploiting Negatively Charged Biomolecules
LIMES Program Unit Chemical Biology & Medicinal Chemistry, Universität Bonn, Germany, September 26, 2007.

84. New Fluorescent Nucleosides as Tools for Exploring RNA–Ligand Interactions
2nd International Symposium on RNA–Ligand Interactions, University of Frankfurt, Germany, September 27, 2007.

85. Life Saving Role of Crystallography in the Discovery of New Fluorescent Nucleosides
Regional ACS Meeting, San Diego, October 10, 2007.

86. Studying Nucleic Acids Recognition using Fluorescent Nucleosides
Regional ACS Meeting, San Diego, October 11, 2007.

87. Exploring RNA–Ligand Interactions
Department of Chemistry and Biochemistry, Brigham Young University, Provo, Utah, October 25, 2007.

88. Exploring RNA–Ligand Interactions
Department of Chemistry and Biochemistry, Ben Gurion University, Israel, January 7, 2008.

89. Aminoglycosides, Guanidinoglycosides and Glycobiology… Part IV
San Diego Glycobiology Symposium, February 8, 2008.

90. Last Lecture Series
University of California, San Diego, February 27, 2008.

91. From Antibiotics to Cellular Transporters
The 7th Congress of the Israel Association of Medicinal Chemistry, The Weizmann Institute of Science, Israel, March 24, 2008.

92. Exploring RNA–Ligand Interactions
American Chemical Society National Meeting, New Orleans, April 6, 2008.

93. Ru(II) Complexes that Break the Rules
American Chemical Society National Meeting, New Orleans, April 8, 2008.

94. Applications of fluorescent nucleosides and oligonucleotides
Division of Biological and Chemical Engineering, Seoul National University, Seoul, Korea, June 18, 2008.

95. Tunable organic and metal-containing emitters
Department of Chemistry, Korea University, Seoul, Korea, June 18, 2008.

96. Fluorescent nucleosides and oligonucleotides as sensors
Department of Chemistry, Pohang University of Science & Technology, Pohang, Korea, June 19, 2008.

97. Aminoglycosides and their derivatives – uses in glycobiology
2008 Spring Symposium of the Korean Society for Glycoscience, Yonsei University, Seoul, Korea, June 20, 2008.

98. Aminoglycosides and their derivatives – uses in glycobiology
Department of Chemistry & Education, Seoul National University, Seoul, Korea, June 21, 2008.

99. Exploring RNA–Ligand Interactions
17th International Conference on Organic Synthesis (ICOS–17), Daejeon, Korea, June 23, 2008.

100. Targeting and Exploiting Negatively Charged Biopolymers
Department of Medicinal Chemistry, College of Pharmacy, University of Minnesota, September 9, 2008.

101. Aminoglycoside Derivatives as Drug Transporters: Delivery Magic Bullets?
Ehrlich II – 2nd World Conference on Magic Bullets, Nürnberg, Germany, October 3, 2008.

102. Targeting and Exploiting Negatively Charged Biopolymers
Department of Chemistry, University of Illinois, Urbana-Champaign, January 26, 2009.

103. Antibiotics Turned Cellular Delivery Vehicles
Keynote presentation, 74th Israel Chemical Society Meeting, Tel Aviv, Israel, February 8, 2009.

104. Fluorescent Nucleosides and Oligonucleotides
Departmental Colloquium, Schulich Faculty of Chemistry, Technion-Israel Institute of Technology, Haifa, Israel, February 12, 2009.

105. Targeting and Exploiting Negatively Charged Biopolymers
Foster Colloquium, Department of Chemistry, University of Buffalo, SUNY, March 6, 2009.

106. Exploring RNA–Ligand Interactions
University of Milan, Italy, March 16, 2009.

107. The Development and Applications of Fluorescent Nucleoside Analogs
University of Pisa, Italy, March 19, 2009.

108. Exploring RNA Recognition Processes Using Fluorescent Nucleosides
"RNA Targeting", ACS National Meeting, Washington DC, August 18, 2009.

109. Exploring RNA Recognition Events Using Fluorescent Nucleosides
Utah State University, Logan, September 16, 2009.

110. New fluorescent nucleosides for real-time exploration of nucleic acids
University of Utah, Salt Lake City, September 17, 2009.

111. New fluorescent nucleosides for real-time exploration of nucleic acids
San Diego State University, San Diego, November 6, 2009.

112. New fluorescent nucleosides for real-time exploration of nucleic acids
BiOS SPIE, San Francisco, January 27, 2010.

113. Guanidinoglycosides: cellular delivery vehicles
UCSD Moores Cancer Center, February 22, 2010.

114. New fluorescent nucleosides for real-time exploration of nucleic acids
Department of Chemistry and Biochemistry, Ben Gurion University, Israel, March 21, 2010.

115. New fluorescent nucleosides for real-time exploration of nucleic acids
Department of Chemistry and Biochemistry, Dipartimento di Chimica, Materiali ed Ingegneria Chimica "Giulio Natta", Politecnico di Milano, Italy, May 18, 2010.

116. New Fluorescent Nucleosides, Nucleotides and Oligonucleotides
Departmental Colloquium, Department of Chemistry and Biochemistry, UCSD, May 26, 2010.

117. New Fluorescent Nucleosides, Nucleotides and Oligonucleotides
Archemix Corp., Cambridge, MA, June 7, 2010.

118. New Fluorescent Nucleosides, Nucleotides and Oligonucleotides
Nucleic Acid Workshop, Telluride, CO, August 6, 2010.

119. New Fluorescent Nucleosides, Nucleotides and Oligonucleotides
Department of Chemistry, University of the Pacific, CA, September 14, 2010.

120. New Fluorescent Nucleosides, Nucleotides and Oligonucleotides
Wichita State University, KS, September 22, 2010.

121. New Fluorescent Nucleosides, Nucleotides and Oligonucleotides
Arizona State University, AZ, September 24, 2010.

122. New Fluorescent Ribonucleosides for Studying RNA Folding and Recognition
2010 International Conference of RNA Nanotechnology and Therapeutics, Cleveland, Ohio, October 24, 2010.
(Covered in *ACS Nano.* **2011**, *5*, 3405–3418)

123. Exploring Nucleic Acids with Fluorescent Nucleosides
Osaka University, Japan, November 8, 2010.

124. Exploring Nucleic Acids with Fluorescent Nucleosides
Tokyo Institute of Technology, Japan, November 9, 2010.

125. New Fluorescent Nucleosides, Nucleotides and Oligonucleotides
ISNAC 2010, Yokohama, Japan, November 10, 2010.

126. Heparan sulfate-mediated cellular uptake of therapeutically relevant guanidinoglycoside conjugates
Carbohydrate Recognition in Health and Disease, Pacifichem 2010, December 16, 2010.

127. Exploring Nucleic Acid Damage and Recognition with New Fluorescent Nucleosides
University of Miami, Fl, January 28, 2011.

128. Heparan Sulfate-mediated Cellular Delivery of Therapeutically Relevant Guanidinoglycoside Conjugates
14$^{th}$ Annual San Diego Glycobiology Meeting, San Diego, Febrruary 18, 2011.

129. Exploring Nucleic Acid Damage and Recognition with New Fluorescent Nucleosides
Tel Aviv University, March 23, 2011.

130. Exploring Nucleic Acid Damage and Recognition with New Fluorescent Nucleosides
University of California, Riverside, April 1, 2011.

131. From Ion Transport to Protein Delivery: A Journey into the Center of the Cell
Frontiers in Biomimetic and Coordination Chemistry, a Symposium honoring Professor Abraham Shanzer, The Weizmann Institute of Science, June 2, 2011.

132. New Fluorescent Nucleosides
15th Symposium on Chemistry of Nucleic Acid Components, Cesky Krumlov, Czech Republic, June 9, 2011.

133. Exploring Nucleic Acid Damage and Recognition with New Fluorescent Nucleosides
Chalmers University of Technology, Gothenburg, Sweden, July 6, 2011.

134. Exploring Nucleic Acid Damage and Recognition with New Fluorescent Nucleosides
MAF12, Strasbourg, France, September 13, 2011

135. From Antibiotics to Enzyme Replacement Therapy
Sanofi-Aventis, Frankfurt, Germany, September 16, 2011

136. Fluorescent Nucleosides as tools for Studying RNA Damage and Recognition
Monash University, Chemistry Department, Melbourne, Australia, February 6, 2012

137. From Antibiotic to Cellular Delivery Vehicles
Monash University, Schools of Pharmacy, Melbourne, Australia, February 8, 2012

138. New Fluorescent Nucleosides for Studying RNA-based Processes
Virginia Tech, March 2, 2012

139. From Antibiotics targeting RNA to Enzyme Replacement Therapy
Chalmers University of Technology, Gothenburg, Sweden, March 8, 2012

140. New Fluorescent Nucleosides for Studying RNA-based Processes
University of Bern, May 14, 2012.

141. New Fluorescent Nucleosides for Studying RNA-based Processes
University of Zurich, May 15, 2012.

142. From Antibiotics to Cellular Delivery Vehicles
University of Geneva, May 18, 2012.

143. Exploring RNA Damage and Recognition with New Fluorescent Nucleosides
University of Pennsylvania, June 18, 2012.

144. Modified Nucleosides
2012 Telluride Workshop on Nucleic Acid Chemistry, July 30, 2012.

145. Exploring RNA and its processes with new fluorescent nucleosides
University of California, Berkeley, November 6, 2012

146. New Fluorescent Nucleosides for Studying RNA-based Processes
International Symposium in Chemical Biology, Pune, India, May 27, 2013

147. New Fluorescent Nucleosides for Studying RNA-based Processes
"Shape-responsive Fluorophores", Telluride, CO, June 11, 2013

148. New Responsive Fluorescent Nucleosides for Studying DNA and RNA Biology
International Conference on Photochemistry, KU Leuven, Belgium, July 22, 2013

149. From Antibiotics to Cellular Delivery Vehicles
A workshop on "Drug Delivery", Dipartimento di Chimica, Materiali ed Ingegneria Chimica "Giulio Natta", Politecnico di Milano, September 13, 2013.

150. New Antibiotics for Old Targets and New Targets for Old Antibiotics
International Conference on the Chemistry of Antibiotics (ICCA-13), Yamanashi Prefecture, Japan, September 24–27, 2013.

151. From Antibiotics to Cellular Delivery Vehicles: Small Molecules that Target Biopolymers
Weizmann Institute of Science, February 19, 2014.

152. New Isomorphic Fluorescent Nucleosides and Nucleotides for Exploring RNA-based Processes
Division of Biological Chemistry, 247th ACS National Meeting, Dallas, TX, March 17, 2014

153. RNA targeting antibiotics
Division of Carbohydrate Chemistry, 247th ACS National Meeting, Dallas, TX, March 19, 2014

154. New Isomorphic Fluorescent Nucleosides for Studying RNA-based Processes
Nucleic Acid Research & Discovery, GTC, San Diego, CA June 20, 2014

155. New Isomorphic Fluorescent Nucleosides for Studying RNA-based Processes
21st International Roundtable on Nucleosides, Nucleotides and Nucleic Acids (IRT 2014), Poznan, Poland, August 26, 2014.

156. From Antibiotics to Cellular Delivery Vehicles: Small Molecules that Target Biopolymers
Politecnico di Milano, September 16, 2014.

157. New Isomorphic Fluorescent Nucleosides for Studying RNA-based Processes
San Diego State University, October 10, 2014.

158. From Antibiotics to Cellular Delivery Vehicles: Small Molecules that Target Biopolymers
Max Planck Institute of Colloids and Interfaces, Berlin, Germany, January 26, 2015

159. Glow in the dark DNA
Cuyamaca College, San Diego, February 26, 2015.

160. New Isomorphic Fluorescent Nucleosides and Nucleotides for Exploring RNA-based Processes
Center for RNA Biology, Ohio State University, March 10, 2015

161. New Isomorphic Fluorescent Nucleosides for Studying RNA-based Processes
University of Glasgow, March 16, 2015.

162. New Isomorphic Fluorescent Nucleosides for Exploring RNA-based Processes
University of Edinburgh, March 17, 2015.

163. Targeting and Exploiting Cellular Biopolymers: From Fluorescent Nucleosides to Cellular Delivery Agents
Laboratory of Molecular Biology, Cambridge, UK, March 19, 2015.

164. New Isomorphic Fluorescent Nucleosides for Studying RNA-based Processes
Oxford University, UK, March 20, 2015.

165. New Isomorphic Fluorescent Nucleosides for Studying RNA-based Processes
Tianjin University, China, July 3, 2015.

## *Funding (active and recently completed)*

R01 GM069773 Tor (PI) 01/01/04 – 04/30/16
Agency: NIH/NIGMS

***"Fluorescent Nucleosides and Oligonucleotides"***

*The goal of this program is to design, synthesize and implement new fluorescent nucleoside analogs as probes for nucleic acids structure, dynamics and recognition. The main criteria directing the proposed work are to maintain the highest possible structural similarity to the natural nucleobases, to shift the emission to longer wavelengths, and to retain adequate emission quantum efficiency.*

Keck 2012 Dowdy, Tor (PIs) 07/01/12 – 06/30/15
Agency: W. M. Keck Foundation

***"New Technology: Bio-reversible PhosphoTriester RiboNucleic Neutral RNAi"***

*The goal of this project is to develop a universal siRNA delivery technology that shrinks the delivery size by 5,000-fold to monomeric self-delivering siRNA molecules less than 20 kiloDaltons. The specific aims are: Aim 1) To synthesize a Diverse Library of Phosphotriester RNN Building Blocks; Aim 2) To identify self-delivering siRNNs; and Aim 3) To evaluate systemic In vivo siRNN Delivery.*

NSF ID#: 1303554 Tor (PI) 08/15/13 – 08/14/16
Agency: NSF

***"International Collaboration in Chemistry: Exploring the interactions between small molecules and biopolymers using localized surface plasmon resonance (LSPR) spectroscopy"***

*The goal of this project is to develop a universal platform for the analysis of ligand–biomolecule recognition events (including drug–RNA and carrier–heparan sulfate proteoglycan interactions) using gold islands based sensors. This project is part of a NSF/BSF collaborative effort (BSF's PI: Professor Rubinstein, Weizmann Institute of Science).*

1 R56 AI093815 Messmer (PI; Tor: Co-PI) 04/15/12 – 03/31/13
Agency: NIH/NIAIDS

***"HMGB1-Derived Peptides As Vaccine Adjuvants"***

*The goal of this program is to Novel class of peptide adjuvants based on the endogenous molecule HMGB1 for a herpes simplex virus 2 vaccine are being explored.*

R01 GM077471 Tor (PI; Esko Co-PI) 05/01/07 – 02/28/11
Agency: NIH/NIGMS

***"Cellular uptake of glycoside-based transporters"***

*The goal of this program is to design, synthesize and implement new cellular transporters that are based on guanidinylated aminoglycosides.*

## *Mentoring Activities*

**Doctoral students**

Dimitrios Tzalis (PhD 1998)
Hai Wang (PhD 1998)
Sarah R. Kirk (PhD 2000)
Dennis Hurley (PhD 2000)
Hima Joshi (PhD 2001)
Chris W. Thomas (PhD 2001)
Edith C. Glazer (PhD 2003)
Nathan Luedtke (PhD 2003)
Nicole Smith (PhD 2004)
Michelle Hysell (PhD 2004)
Qi Liu (PhD 2004)
Weibo Cai (PhD 2004)
Susan Seaman (PhD 2004)
Grace Yang (PhD 2005)
Fang Zhao (PhD 2006)
Lev Elson-Schwab (PhD 2006)
Victor Tam (PhD 2007)
Nick Greco (PhD 2008)
Yun Xie (PhD 2010)
Andrew Dix (PhD 2011)
Mary Noe (PhD 2012)
Andros Rios (PhD 2012)
Richard Fair (PhD 2014)
Lisa Sator (PhD 2014)
Ryan Weiss (PhD 2015)
Kristina Hamill (PhD expected 2015)
Patrycja Hopkins (PhD expected 2016)
Alexander Rovira (PhD expected 2017)

**Master students**

Yao Li (MS expected 2015)

**Postdoctoral fellows**

Dr. Katja Michael (Ph.D., Technische Universität München)
Dr. Haim Weizman (Ph.D., The Weizmann Institute of Science)
Dr. Jürgen Boer (Ph.D., Technische Universität München)
Dr. Ken Blount (Ph.D., University of Colorado, Boulder)
Dr. Avi Koller (Ph.D., Tel Aviv University)
Dr. Michelle Hysell (Ph.D., UCSD)
Dr. Damien Jouvenot (Ph.D., Universite Louis Pasteur, Strasbourg)
Dr. David Jaramillo (Ph.D., University of Western Sydney)
Dr. M. Paola Castaldi (Ph.D., Imperial College, London)
Dr. Feng Yang (Ph.D., Ph.D., Academia Sinica, Beijing)
Dr. Pradip Chakraborty (Ph.D., University of Göttingen)
Dr. Srivatsan Seergazhi (Ph.D., Indian Institute of Technology, Kanpur)
Dr. Lucile Fischer (Ph.D., Universite Louis Pasteur, Strasbourg)
Dr. Beth Wilson (Ph.D., Georgia State University)
Dr. Renatus Sinkeldam (Ph.D., Eindhoven University of Technology)
Dr. Dongwon Shin (Ph.D., UCR)
Dr. Noam Freeman (Ph.D., Hebrew University, Jerusalem)
Dr. Ezequiel Wexselblatt (Ph.D., Hebrew University, Jerusalem)
Dr. Andrea Fin (Ph.D., University of Geneva, Switzerland)
Dr. Lisa Sator (PhD, UCSD)
Dr. Bheemaiah Jayashankara

**Undergraduate students**

Diana Johansen, Alejandro Dunnick, Kendal Becker, Douglas Carson, Ramin Jamshidi, Jerry Wu, Douglas Miesen, Jeff Roppe, Kathy Soltani, Kevin Destro, Olivia Griffiths, Andrew Dutton, Abdul Rastagar, Scott Ellis, Jonathan Rotter, Chris Foster, Jan Mazura, Judy Hwang, Jori Bogetz, John Andrew Enquist, Katy Ann Muzikar, Stephanie Kinkel, Sing Lam, Dan Palacios, Samar Yalda, Denise Kwong, Baia Lasky, Joey Goldenberg, Kay Buchner, Brian Agan, Bryan Phan, Sara Wu, Kim Nguyen, Paul Marcus, Kathryn Kesselman, Arian Mashood, Gloria Lee, Natalie Elder, Justin Bennink, Andrea Wheat, Hande Boyaci, Tucker Maxson, Dmitriy Uchenik, Alyssa Miyake, Jasmine Kalsi, Robert Lewis, Daniel Phung, Hiu T Yu, Ji Myung Han, David Horstman, Yao, Li, Lauren Dea, Jonathan Winfield, Frances Fernandez, Jessica Huang, Kelsey Krug, Adam Simon, Christian Smith, Kaivin Hadidi, Ember Tota, Nam Trinh, Carolyn White, Sang Lee, John Lopp.

**Visiting Scholars/Scientists**

David Jaramillo – University of Western Sydney, Australia
Dr. Haim Weizman – The Weizmann Institute, Israel
Professor Michito Shiotsuka – Nagoya Institute of Technology, Japan
Professor Jaehoon Yu – Seoul National University, Korea
Dr. Maria Cristina Bellucci – University of Milano, Italy
Matthew Belousff – Visiting Fulbright Scholar, Monash University, Australia
Chizura Ichimura – Graduate School of Engineering Science, Osaka University, Japan
Maiko Miyanaga – Osaka University, Japan
Shigehiro Sumiya – Osaka University, Japan
Alberto Schena – visiting scholar, University of Pisa, Italy
Bopha Kong – Visiting Scholar, Monash University, Australia
Dr. Makoto Inoue – Visiting Scholar, Astellas, Japan
Professor Changge Zheng – Visiting Scholar, Jiangnan University, China
Dr. Jingbo Sun – Visiting Scholar, Jilin University, China
Charlotte Vranken – Visiting PhD student, KU Leuven, Belgium
Aurora Sganappa – Visiting PhD student, Politecnico di Milano, Italy
Mick Hornum – Visiting PhD student, University of Southern Denmark, Denmark
Mick Hornum – Visiting PhD student, University of Southern Denmark, Denmark
Kosuke Hoshi – Visiting scholar, Japan Patent Office, Japan

## *University Service*

1. Undergraduate Affairs, Chemistry and Biochemistry
   1995–1997 (Recruitment, member), 1996–1997 (First Year Advising and Placement Exams, chair)
2. Undergraduate Affairs, Chemistry and Biochemistry
   1997–1998 (member), 1999–2000 (chair)
3. Undergraduate Scholarships and Honors
   1999–2000 (member), 2000–2001 (vice chair), 2001–2002 (Chair)
4. Chemistry and Biochemistry, Undergraduate Affairs
   1997–1998 (member), 1999–2000 (chair)
5. Diverse departmental search and ad hoc committees (1994–present)
6. Chair, Staffing Committee, Department of Chemistry and Biochemistry, 2005–2006
7. Chair, Organic Search Committee, Department of Chemistry and Biochemistry, 2005–2007
8. 6$^{th}$ College Founding Faculty
9. 6$^{th}$ College Education Committee (member)
10. Steering Committee, Glycobiology Research and Training Center (member)
11. Physical Sciences Dean's Cabinet (member)
12. Council, Chemistry & Biochemistry, 2006–2008 (member)
13. General Campus Subcommittee on Research
    2007–2008 (member); 2008–2009 (vice chair)
14. Chair, Search Committee, Assistant VC, Office of Contract and Grant Administration, 2009–2010
15. Committee on Research (COR)
    2008–2009 (member), 2009–2010 (vice-chair), 2010–2011 (Chair)
16. Graduate Council (GC)
    2012–2013 (vice-chair)
17. Chair, Chemical Biology Search Committee, Department of Chemistry and Biochemistry, 2012–2013.
18. Chair, Frontiers of Innovation Scholars Program (FISP) Graduate Review Committee, 2014 – 2015.