

# CURRICULUM VITAE

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**Marcin D. Dyba, Ph.D.**

## PERSONAL DATA

**Name:** Marcin Daniel Dyba, Ph.D.  
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Lombardi Comprehensive Cancer Center  
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## ACADEMIC TRAINING

**Ph.D.** in Chemistry, Faculty of Chemistry, Wrocław University, Wrocław, Poland. Dissertation: "Co-ordination ability of phosphonic moieties in bioinorganic systems", advisor: Professor Henryk Kozłowski, Ph.D., D.Sc., December 1998.

**M.Sc.** in Chemistry, Faculty of Chemistry, Wrocław University, Wrocław, Poland. Dissertation: "Synthesis of a palindrome pentapeptide sequence from a loop region of lactoferrin and lactoferrin analogues", advisor: Professor Ignacy Z. Siemion, Ph.D., D.Sc., June 1994.

## ACADEMIC AND OTHER PROFESSIONAL POSITIONS

April 2010 – present

Research Associate (Research Specialist 2)  
Georgetown University Medical Center, Washington, DC, USA  
Lombardi Comprehensive Cancer Center  
Department of Oncology

- Investigation of the role of  $\omega$ -3 and  $\omega$ -6 polyunsaturated fatty acids (PUFAs) in carcinogenesis
- Study the repair of cyclic dG adducts in modified plasmid DNA with the cell free extracts obtained from human HT29 colon cells
- Characterization of the relationships of cyclic adduct formation with apoptosis in human HT29 colon cells

- Developed synthetic schemes and strategies for variety of enals-DNA conjugates
- Investigating the role of isothiocyanates (ITCs) in cancer prevention
- Developing mass spectrometry assays to quantify major ITCs metabolites in urine

October 2006 – April 2010

Visiting Fellow

Georgetown University Medical Center, Washington, DC, USA

Lombardi Comprehensive Cancer Center

Department of Oncology

- Quantitative mass spectrometry analysis of DNA adducts
- Investigated the role of isothiocyanates (ITC's) in cancer prevention
- Developed synthetic schemes and strategies for variety of enals-DNA conjugates
- Characterization of compounds (HPLC, HPLC-MS, MS/MS, UV-Vis, NMR, CD)

August 2001 – August 2006

Visiting Fellow

National Cancer Institute at Frederick, MD, USA

Structural Biophysics Laboratory

Molecular Aspects of Drug Design Section

- Synthesized novel organic compounds and drug-peptide conjugates
- Investigated the role of targeted delivery of hemiasterlins, substituted dibenzo[de,h]isoquinoline-1,3-diones and other related toxins in cancer
- Developed synthetic schemes and strategies for variety of toxin-peptide conjugates
- Characterized compounds (HPLC, HPLC-MS, UV-Vis, NMR, CD)

February 1999 - August 2004

Assistant Professor, organic chemistry

Faculty of Chemistry, Wrocław University, Wrocław, Poland

- Synthesis and conformational studies of peptides with RGD sequences using CD spectroscopy, MS-MS, CE, CE-MS and molecular modeling
- Investigation of the properties of cyclic peptides with diazo bond
- Developing methods to quantitate natural extracts by CE, HPLC, CE-MS and MS-MS techniques

October 1994 - December 1998

Ph.D. Student

Faculty of Chemistry, Wrocław University, Wrocław, Poland

- Investigated metal interactions with natural peptides their derivatives, pesticides and mono and bis-phosphonates utilizing potentiometry, EPR, UV-spectrophotometry, CD and NMR

## HONORS

Domestic Grant for Young Scholars, Foundation for Polish Science, 2000

Team Award from the Secretary of National Education, Poland for series of papers:  
"Bioinorganic models for therapeutic and toxic effects of metal ions", 1999

Rector's Award for scientific achievements in 1996, Wrocław University, Wrocław, Poland, 1997

## PROFESSIONAL ORGANIZATION AND SOCIETIES

American Chemical Society (regular)

American Association for Cancer Research (associate)

Mass Spectrometry Interest Group of the NCI-Frederick

## REFEREE FOR

Bioorganic & Medicinal Chemistry Letters

Bioorganic & Medicinal Chemistry

## AREAS OF RESEARCH INTEREST

Cancer Prevention

Organic Chemistry

Medicinal chemistry

Peptide chemistry

Co-ordination chemistry

Analytical techniques in chemistry:

- Mass Spectrometry
  - Quantitative MS
  - MS/MS
  - Proteomics
  - Metabolomics
- HPLC / UHPLC
- Capillary Electrophoresis (CE)
- Circular Dichroism Spectroscopy (CD)
- Absorption Spectroscopy (UV-Vis)

- Electron Paramagnetic Resonance Spectroscopy (EPR)
- NMR
- Potentiometry

## PATENTS

1. United States Patent No.: 8,008,316; PCT No.: PCT/US2007/078233; PCT Pub. No.: WO/2008/033891; Azonafide Derived Tumor and Cancer Targeting Compounds. Tarasova, N. I.; Dyba, M.; and Michejda, C. J.
2. United States Patent Application No.: US 2005/0171014; PCT No.: PCT/US2003/006344; PCT Pub. No.: WO/2003/072754; Conjugates of Ligand, Linker and Cytotoxic Agent and Related Composition and Methods of Use. Tarasova, N. I.; Michejda, C. J.; Dyba, M.; and Cohran, C. F.

## PUBLICATIONS

1. Pan, J.; Awoyemi, B.; Xuan, Z.; Vohra, P.; Wang, H.T.; Dyba, M.; Greenspan, E.; Fu, Y.; Creswell, K.; Zhang, L.; Berry, D.; Tang, M.S.; Chung, F.L. Detection of acrolein-derived cyclic DNA adducts in human cells by monoclonal antibodies. *Chem. Res. Toxicol.*, Article ASAP (in press); doi: 10.1021/tx3004104
2. Greenspan, E. J.; Lee, H., Dyba, M.; Pan, J.; Mekambi, K.; Johnson, T.; Blancato, J.; Mueller, S.; Berry, D. L.; Chung, F. L. High-throughput, quantitative analysis of acrolein-derived DNA adducts in human oral cells by immunohistochemistry. *J. Histochem. Cytochem.*, **2012**, 60 (11), 844-853.
3. Chung, F. L.; Wu, M. Y.; Basudan, A.; Dyba, M.; Nath, R. G. Regioselective formation of acrolein-derived cyclic 1,*N*<sup>2</sup>-propanodeoxyguanosine adducts mediated by amino acids, proteins, and cell lysates. *Chem. Res. Toxicol.*, **2012**, 25 (9), 1921–1928.
4. Dyba, M.; Wang, A.; Noone, A. M.; Goerlitz, D.; Shields, P.; Zheng, Y. L.; Rivlin, R.; Chung, F. L. Metabolism of isothiocyanates in individuals with positive and null GSTT1 and M1 genotypes after drinking watercress juice. *Clin. Nutr.*, **2010**, 29 (6), 813-818.
5. Yang, G.; Gao, Y. T.; Shu, X. O.; Cai, Q.; Li, G. L.; Li, H. L.; Ji, B. T.; Rothman, N.; Dyba, M.; Xiang, Y. B.; Chung, F. L.; Chow, W. H.; Zheng, W. Isothiocyanate exposure, glutathione S-transferase polymorphisms, and colorectal cancer risk. *Am. J. Clin. Nutr.*, **2010**, 91 (3), 704-711.
6. Epplein, M.; Wilkens, L. R.; Tiirikainen, M.; Dyba, M.; Chung, F. L.; Goodman, M. T.; Murphy, S. P.; Henderson, B. E.; Kolonel, L. N.; Le Marchand, L. Urinary isothiocyanates; glutathione S-transferase M1, T1, and P1 polymorphisms; and risk of colorectal cancer:

- the Multiethnic Cohort Study. *Cancer Epidemiol. Biomarkers Prev.*, **2009**, 18 (1), 314-320.
7. Moody, T. W.; Pradhan, T.; Mantey, S. A.; Jensen, R. T.; Dyba, M.; Moody, D.; Tarasova, N. I.; Michejda, C. J. Bombesin marine toxin conjugates inhibit the growth of lung cancer cells. *Life Sci.*, **2008**, 82 (15-16), 855-861.
  8. Emami, A.; Dyba, M.; Cheema, A. K.; Pan, J.; Nath, R. G.; Chung, F. L. Detection of the acrolein-derived cyclic DNA adduct by a quantitative <sup>32</sup>P-postlabeling/solid-phase extraction/HPLC method: Blocking its artifact formation with glutathione. *Anal. Biochem.*, **2008**, 374 (1), 163-172.
  9. Moody, D. L.; Dyba, M.; Kosakowska-Cholody, T.; Tarasova, N. I.; and Michejda, C. J. Synthesis and biological activity of 5-aza-ellipticine derivatives. *Bioorg. Med. Chem. Lett.*, **2007**, 17 (8), 2380-2384.
  10. Dyba, M.; Tarasova, N. I.; Kosakowska-Cholody, T.; Hamel, E.; Michejda, C. J. Tetra and pentapeptide derivatives of hemiasterlin. Synthesis and activity studies. *Proceedings of the Nineteenth American Peptide Symposium*, **2006**, 509.
  11. Dyba, M.; Tarasova, N. I.; Michejda, C. J. Small molecule toxins targeting tumor receptors. *Curr. Pharm. Des.*, **2004**, 10 (19), 2311-2334.
  12. Kowalik-Jankowska, T.; Ruta, M.; Wiśniewska, K.; Łankiewicz, L.; Dyba, M. Products of Cu(II)-catalyzed oxidation in the presence of hydrogen peroxide of the 1-10, 1-16 fragments of human and mouse  $\beta$ -amyloid peptide. *J. Inorg. Biochem.*, **2004**, 98 (6), 940-950.
  13. Szewczuk, Z.; Biernat, M.; Dyba, M.; Zimecki, M. Dimerization of the immunosuppressive peptide fragment of HLA-DR molecule enhances its potency. *Peptides*, **2004**, 25 (2), 207-215.
  14. Szewczuk, Z.; Biernat, M.; Dyba, M.; Zimecki, M. Dimeric analogs of the immunosuppressive fragment of HLA-DR. *Proceedings of the Eighteenth American Peptide Symposium*, **2004**, 938-939.
  15. Sokołowska, M.; Krężel, A.; Dyba, M.; Szewczuk, Z.; Bal, W. Short peptides are not reliable models of thermodynamic and kinetic properties of the N-terminal metal binding site in serum albumin. *Eur. J. Biochem.*, **2002**, 269 (4), 1323-1331.
  16. Bal, W.; Dyba, M.; Szewczuk, Z.; Jeżowska-Bojczuk, M.; Łukszo, J.; Ramakrishna, G.; Kasprzak, K. S. Differential zinc and DNA binding by partial peptides of human protamine HP2. *Mol. Cell Biochem.*, **2001**, 222 (1-2), 97-106.
  17. Szewczuk, Z.; Wilczyński, A.; Dyba, M.; Petry, I.; Siemion, I. Z.; Wieczorek, Z. New conformationally restricted analog of the immunosuppressive mini-domain of HLA-DQ and its biological properties. *Peptides*, **2000**, 21 (12), 1849-1858.

18. Dyba, M.; Solinas, S.; Culeddu, N.; Ganadu, M. L.; Kozłowski, H. Cu(II) complexes with rutin. *Pol. J. Chem.*, **1999**, *73* (5), 873-878.
19. Kozłowski, H.; Bal, W.; Dyba, M.; Kowalik-Jankowska, T. Specific structure-stability relations in metallopeptides. *Coord. Chem. Rev.*, **1999**, *184* (1), 319-346.
20. Bal, W.; Dyba, M.; Kasprzykowski, F.; Kozłowski, H.; Latajka, R.; Łankiewicz, L.; Maćkiewicz, Z.; Pettit, L. D. How non-bonding amino acid side-chains may enormously increase the stability of a Cu(II)-peptide complex. *Inorg. Chim. Acta*, **1998**, *283* (1), 1-11.
21. Chruścińska, E.; Olczak, J.; Zabrocki, J.; Dyba, M.; Micera, G.; Sanna, D.; Kozłowski, H. Specific interactions of bovine and human  $\beta$ -casomorphin-7 with Cu(II) ions. *J. Inorg. Biochem.*, **1998**, *69* (1-2), 91-95.
22. Dyba, M.; Kozłowski, H.; Tłałka, A.; Leroux, Y.; El Manouni, D. Oxovanadium(IV) complexes of 1-hydroxyalkane-1,1-diylidiphosphonic acids. *Pol. J. Chem.*, **1998**, *72* (7), 1148-1153.
23. Bal, W.; Dyba, M.; Kozłowski, H. The impact of the amino-acid sequence on the specificity of copper(II) interactions with peptides having nonco-ordinating side-chains. *Acta Biochim. Pol.*, **1997**, *44* (3), 467-476.
24. Boduszek, B.; Dyba, M.; Jeżowska-Bojczuk, M.; Kiss, T.; Kozłowski, H. Biologically active pyridine mono- and bis-phosphonates: efficient ligands for co-ordination of Cu<sup>2+</sup> ions. *J. Chem. Soc., Dalton Trans.*, **1997**, (6), 973-976.
25. Buglyó, P.; Kiss, T.; Dyba, M.; Jeżowska-Bojczuk, M.; Kozłowski, H.; Bouhsina, S. Complexes of aminophosphonates-10. Copper(II) complexes of phosphonic derivatives of iminodiacetate and nitrilotriacetate. *Polyhedron*, **1997**, *16* (19), 3447-3454.
26. Chruścińska, E.; Dyba, M.; Micera, G.; Ambroziak, W.; Olczak, J.; Zabrocki, J.; Kozłowski, H. Binding ability of Cu<sup>2+</sup> ions by opiate-like fragments of bovine casein. *J. Inorg. Biochem.*, **1997**, *66* (1), 19-22.
27. Chruściński, L.; Dyba, M.; Jeżowska-Bojczuk, M.; Kozłowski, H.; Kupryszewski, G.; Maćkiewicz, Z.; Majewska, A. Specific interactions of Cu<sup>2+</sup> ions with fragments of envelope protein of hepatitis B virus. *J. Inorg. Biochem.*, **1996**, *63* (1), 49-55.
28. Duda, A. M.; Dyba, M.; Kozłowski, H.; Micera, G.; Pusino, A. Copper(II) complexes of the imidazolinone herbicide imazapyr. *J. Agric. Food Chem.*, **1996**, *44* (11), 3698-3702.
29. Jeżowska-Bojczuk, M.; Várnagy, K.; Sóvágó, I.; Pietrzyński, G.; Dyba, M.; Kubica, Z.; Rzeszotarska, B.; Smełka, L.; Kozłowski, H. Co-ordination of copper(II) ions by prolyl- $\alpha$ , $\beta$ -dehydroamino acids: comparative studies and general considerations. *J. Chem. Soc., Dalton Trans.*, **1996**, (15), 3265-3268.

30. Dyba, M.; Jeżowska-Bojczuk, M.; Kiss, E.; Kiss, T.; Kozłowski, H.; Leroux, Y.; El Manouni, D. 1-Hydroxyalkane-1,1-diylidiphosphonates as potent chelating agents for metal ions. Potentiometric and spectroscopic studies of copper(II) coordination. *J. Chem. Soc., Dalton Trans.*, **1996**, (6), 1119-1123.

### LECTURES AND COMMUNICATIONS PRESENTED

1. Dyba, M.; Chemistry of Cruciferous Vegetable Isothiocyanates (ITCs), National University of Singapore, Singapore, February 26, **2010**.
2. Dyba, M.; Metabolism of isothiocyanates in individuals with positive and null GSTT1 and GSTM1 genotypes after drinking watercress juice, National University of Singapore, Singapore, February 23, **2010**.
3. Dyba, M.; Acrolein – Sources, Origin, Metabolism and Bimolecular Interactions, Georgetown University, Washington, DC, December 17, **2009**.
4. Dyba, M.; Schultz, C. L.; Yang, P.; Desai, D.; Amin, S.; Chung, F. L. Detection of 7-(1',2'-dihydroxyheptyl) substituted etheno deoxyadenosine in vivo by both <sup>32</sup>P-postlabeling/HPLC and liquid chromatography/tandem mass spectrometry methods: Evidence for epoxidation of 4-hydroxynonenal, AACR Annual Meeting, April 12-16, **2008**, Poster 2251, p. 229.
5. Dyba, M.; Tarasova, N. I.; Kosakowska-Chołodny, T.; Hamel, E.; Michejda, C. I. Tetra and Pentapeptide Derivatives of Hemiasterlin. Synthesis and Activity Studies, *19<sup>th</sup> American Peptide Symposium, San Diego, California, June 18-23, 2005, Biopolymers*, **2005** 80(4), P 268, p. 571.
6. Szewczuk, Z.; Biernat, M.; Dyba, M.; Siemion, I.; Z.; Wieczorek, Z.; Zimecki, M. Dimeric Analogs of the Immunosuppressory Fragment of HLA-DR, *18<sup>th</sup> American Peptide Symposium, Boston, MA, July 19-23, 2003, Biopolymers*, **2003**, 71(3), P 451, p. 400 and O 60, p. 298.
7. Cohran, C. F.; Dyba, M.; Czerwiński, G.; Tarasova, N. I.; Michejda, C. J. Receptor-targeted drugs for the CCK-2 receptor, *NCI Molecular Targets Program Retreat, Marriott Hunt Valley Inn, MD, February 6-7 2003, Abstracts*, #15, p. 18.
8. Tarasova, N. I.; Dyba, M.; Cohran, C.; Czerwinski, G.; Priebe, W.; Michejda, C. J. Synthetic targeted anti-tumor agents: Selection of effective toxic moieties, *93<sup>rd</sup> Annual Meeting of the American Association for Cancer Research, San Francisco, CA, April 6-10, 2002, Scientific Proceedings*, #699, p. 140.

9. Łodyga-Chruścińska, E.; Dyba, M.; Kozłowski, H.; Olczak, J.; Zabrocki, J. Oddziaływanie jonów Cu(II) z opiato-podobnymi peptydami wyizolowanymi z hydrolizatów białkowych mleka, *XLI Zjazd Naukowy Polskiego Towarzystwa Chemicznego i Stowarzyszenia Inżynierów i Techników Przemysłu Chemicznego, Wrocław, September 14-18, 1998, Abstracts, M3K17, p. 24.*
10. Dyba, M.; Kozłowski, H.; Tłałka, A.; Leroux, Y.; El Manouni, D. Oxovanadium(IV) complexes of 1-hydroxyalkane-1,1-diylidiphosphonic acids, *COST D8 and ESF WORKSHOP on Biological and Medicinal Aspects of Metal Ion Speciation at Attila József University, Szeged, Hungary, August 22-25, 1998, Abstracts, P22.*
11. Dyba, M.; Chruścińska, E.; Micera, G.; Ambroziak, W.; Olczak, J.; Zabrocki, J.; and Kozłowski, H. Właściwości koordynacyjne fragmentów kazeiny bydlęcej z jonami miedzi (II), *XIV Polskie Sympozjum Peptydowe PEPTYDY '97, Polanica Zdrój, Poland, September 1-5, 1997, Abstracts, k. 19.*
12. Chruściński, L.; Chruścińska, E.; Kozłowski, H.; Dyba, M.; Micera, G.; Zabrocki, J.; Olczak, J. Wpływ jonów Cu<sup>2+</sup> na strukturę tetrazolowych analogów enkefalin, *IV Sympozjum Chemii Bionieorganicznej i Biomedycznej, Karpacz, Poland, June 5-8, 1997, Abstracts, p. 48-49.*
13. Chruścińska, E.; Dyba, M.; Kozłowski, H.; Micera, G.; Zabrocki, J.; Olczak, J. Oddziaływanie jonów Cu(II) z peptydami o aktywności opiatowej wyizolowanymi z hydrolizatów białkowych mleka, *IV Sympozjum Chemii Bionieorganicznej i Biomedycznej, Karpacz, Poland, June 5-8, 1997, Abstracts, p. 39.*
14. Dyba, M.; Kozłowski, H.; Jeżowska-Bojczuk, M.; Kiss, T.; Kiss, E.; Leroux, Y.; El Manouni, D. Właściwości koordynacyjne kwasów alkilohydroksydifosfonowych, *IV Sympozjum Chemii Bionieorganicznej i Biomedycznej, Karpacz, Poland, June 5-8, 1997, Abstracts, p. 37.*
15. Dyba, M.; Chruścińska, E.; Micera, G.; Ambroziak, W.; Olczak, J.; Zabrocki, J. and Kozłowski, K. Właściwości koordynacyjne jonów Cu<sup>2+</sup> z opiatopodobnymi fragmentami kazeiny wołowej, *VI Ogólnopolskie Sympozjum „Konformacja peptydów, białek i kwasów nukleinowych” Karpacz, Poland, May 1-4, 1997.*
16. Dyba, M.; Kiss, T.; Jeżowska-Bojczuk, M.; Boduszek, B. and Kozłowski, H. Biologically active mono- and bis-phosphonates a family of potent chelating agents for Cu<sup>2+</sup> ions, *NATO Advanced Study Institute Cytotoxic, Mutagenic and Carcinogenic Potential of Heavy Metals Related to Human Environments, Przesieka, Poland, June 15-26, 1996, Book of Abstracts p. 205-206.*
17. Bal, W.; Dyba, M.; Kasprzykowski, F.; Kozłowski, H.; Latajka, R.; Łankiewicz, L.; Maćkiewicz, Z. Exceptionally high stability of Cu<sup>2+</sup> complexes with pentapeptide fragment of Atrial Natriuretic Factor. Looking for reasons, *NATO Advanced Study Institute Cytotoxic, Mutagenic and Carcinogenic Potential of Heavy Metals Related to Human Environments, Przesieka, Poland, June 15-26, 1996, Book of Abstracts p. 165-166.*



18. Chruścińska, E.; Chruściński, L.; Dyba, M.; Ambroziak, W.; Olczak, J.; Zabrocki, J.; Micera, G.; Kozłowski, H. Binding ability of opiate-like acting fragments of bovine casein towards  $\text{Cu}^{2+}$  ions, *NATO Advanced Study Institute Cytotoxic, Mutagenic and Carcinogenic Potential of Heavy Metals Related to Human Environments, Przesieka, Poland, June 15-26, 1996, Book of Abstracts p. 163-164.*
19. Duda, A.; Dyba, M.; Micera, G.; Pusino, A.; Kozłowski, H. Metal binding ability of imidazolinone type of herbicides; *13<sup>th</sup> Summer School on Coordination Chemistry, Polanica Zdrój, Poland, June 2-8 1996, Book of Abstracts P19, p. 77.*
20. Dyba, M.; Jeżowska-Bojczuk, M.; Kiss, E.; Kiss, T.; Kozłowski, H.; Leroux, Y.; El Manouni, D.  $\text{Cu}^{2+}$  complexes with hydroxalkanediphosphonic acids and dihydroxyalkane-tetrakisphosphonic acids, *VIII<sup>th</sup> Winter School on Coordination Chemistry, Karpacz, Poland, December 11-15, 1995, Book of Abstract p. 78.*
21. Chruściński, L.; Dyba, M.; Jeżowska-Bojczuk, M.; Kozłowski, H.; Kupryszewski, G.; Maćkiewicz, Z.; Majewska, A. Binding ability of the fragments of envelope protein of hepatitis B virus towards  $\text{Cu(II)}$  ions, *II<sup>nd</sup> Workshop on Bioinorganic Chemistry "DONATION'95", Karpacz, Poland, September 22-26, 1995, Book of Abstracts p. 96.*
22. Chruściński, L.; Dyba, M.; Jeżowska-Bojczuk, M.; Kozłowski, H.; Kupryszewski, G.; Maćkiewicz, Z. and Majewska, A. Kompleksy  $\text{Cu(II)}$  z oligopeptydami - fragmentami zewnętrznego antygeny żółtaczk B, *V Sympozjum "Konformacja Peptydów i Struktura Białek", Karpacz, Poland, April 29 - May 2, 1995.*

## PROFESSIONAL TRAINING AND COURSES TAKEN

- Complex Material Characterization with High Definition Mass Spectrometry, Waters Corporation, December 1, 2011
- Effective UPLC Implementation, Waters Corporation, Columbia, MD, October 10, 2011
- Training on Waters Xevo TQ Mass Spectrometer, Waters Corporation, Washington, DC, November 23, 2010
- Pharmacophore Modeling & Database Searching using Catalyst, Accelrys Inc, National Cancer Institute at Frederick, December 14, 2005
- Introduction to Web of Science / Porpoise, Scientific Library, National Cancer Institute at Frederick, March 31, 2005

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- Understanding Quantitative Structure-Activity Relationships (QSAR) Methodology, Advanced Biomedical Computing Center (ABCC/SAIC-Frederick), National Cancer Institute at Frederick, May 27, 2004
  - Simulating Receptor-Flexible Ligand binding Using AutoDock, Advanced Biomedical Computing Center (ABCC/SAIC-Frederick), National Cancer Institute at Frederick, May 25, 2004
  - Homology Modeling: Methods and Protocols, Advanced Biomedical Computing Center (ABCC/SAIC-Frederick), National Cancer Institute at Frederick, May 20, 2004
  - Introduction to Molecular Modeling and Computer Simulation, Advanced Biomedical Computing Center (ABCC/SAIC-Frederick), National Cancer Institute at Frederick, May 18, 2004
  - Cancer Biotechnology Course, National Cancer Institute at Frederick, April 2004
  - Introduction to Biological Mass Spectrometry, National Cancer Institute at Frederick, April 2004
  - Basic HPLC ChemStation, Agilent Technologies, Germantown, MD, October 22, 2002