

Curriculum Vitae
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Department of Chemistry
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Marital Status: Married

Citizenship: U.S.A.

Education:

1960	B.S.	Nebraska State College, Peru, NE Chemistry
1965	Ph.D.	Oklahoma State Univ. Stillwater, OK Chemistry
1965	Post doc.	Oklahoma State Univ. Stillwater, OK
1966-67	Post doc.	Univ. of Chicago, Chicago, IL
1968	Post doc.	Harvard Univ. Cambridge, MA

Sabbaticals:

1970 (Summer)	Harvard University, Cambridge, MA
1972 (Summer)	Woods Hole Oceanographic, Woods Hole, MA
1974 (Summer)	Corning Glass Works, Medfield, MA
1992 (Summer)	Massachusetts Institute of Technology, Cambridge, MA
2007 (Fall)	University of Texas Health Science Center, San Antonio, TX
2007 (Fall)	University of California, San Francisco, San Francisco, CA

Research and Professional Experience:

1961-65	Research Assistant, Oklahoma State University
1965-66	Research Associate, Oklahoma State University
1966-67	Research Associate, University of Chicago
1968	Research Associate, Harvard University
1968-71	Assistant Professor of Biochemistry, Purdue University
1971-76	Associate Professor of Biochemistry, Purdue University
1976-78	Associate Director, Agricultural Experiment Station, Purdue University
1976-1990	Professor of Biochemistry, Purdue University
1990-2004	Professor of Chemistry, Purdue University
2002-2012	Director, Purdue Proteomics Center, Purdue University
2004-2013	Distinguished Professor of Chemistry, Purdue University
2013-Present	Distinguished Professor of Chemistry Emeritus, Purdue University
2014-Present	Chief Executive Officer; Novilytic Inc.

Societies:

Phi Lambda Upsilon
Sigma Xi
American Chemical Society
American Society of Biological Chemists

Awards and Honors:

- David B. Hime Award for Achievement in Chromatography. Presented by the Chicago Chromatography Discussion Group, 1982.
- Stephen Dal Nogare Award for Achievements in Chromatography. Presented by the Delaware Valley Chromatography Discussion Group, 1987.
- American Chemical Society Award in Chromatography. Presented by the American Chemical Society, 1989.
- Martin Gold Medal. Presented by the Chromatographic Society of Great Britain, 1993.
- ISCO Award. Presented by Instrument Specialties Corporation, 1995.
- Pierce Award in Affinity Chromatography. Presented by the International Society for Affinity Chromatography, 1995.
- Eastern Analytical Symposium Award for Achievements in Separation Science, 1996.
- Distinguished Lecturer, School of Science at the University of Leiden. Annual Scientific Awards Symposium (1999).
- CASSS Scientific Achievement Award, 2000.
- Golay Award. Presented by the Dutch Chromatography Society, 2001.
- Nauta Distinguished Lecturer. University of Leiden. (2004), Netherlands.
- Outstanding Commercialization Award, Presented by Purdue University and the Central Indiana Corporate Partnership, 2006.
- Edward Herbert Boomer Distinguished Lecturer. (2006), University of Alberta, Edmonton, Canada.
- Horvath Medal. Presented by the Connecticut Chromatography Society and Hungarian Society for Separation Science in Honor of Professor Csaba Horvath, 2012.
- American Chemical Society Award in Separation Science and Technology; Presented by the American Chemical Society, 2013.
- LCGC Lifetime Achievement Award; Presented by LCGC Magazine, 2014.
- 2014 R&D 100 Award. A Miniature Plasma Extraction Device For Clinical Diagnostics.

Editorial Boards:

- Anal. Biochem. (1982-1990)
- Anal. Chem. (1989-1994), (2003 -2007)
- Journal of Pharmaceutical and Biomedical Analysis (1989-1996)
- Anal, Meth. and Instr. (1992-1999)
- J. Chromatogr. (1986-1999)
- Liquid Chromatography Magazine (1983-Present)
- Chimica Oggi/Chemistry Today (1995-1999)
- J. High Res. Chromatogr. (1997-2007)
- Int. J. Bio-Chromatogr. (1995-2007)
- J. Sep. Sci. (2000-2007)
- Pharmagenomics (2002-2007)
- J. Proteome Res. (2002-2007)
- Bioanalytical Reviews (2008-present)

Journal Articles:

1. **Simple, Miniaturized Blood Plasma Extraction Method.** Kim, Jin-Hee; Woenker, Timothy; Adamec, Jiri; Regnier, Fred E. Anal. Chem. (2013), 85(23), 11501-11508.
2. **Design, Implementation and Multisite Evaluation of a System Suitability Protocol for the Quantitative Assessment of Instrument Performance in Liquid Chromatography-Multiple Reaction Monitoring-MS (LC-MRM-MS).** Abbatiello, Susan E.; Mani, D. R.; Schilling, Birgit; MacLean, Brendan; Zimmerman, Lisa J.; Feng, Xingdong; Cusack, Michael P.; Sedransk, Nell; Hall, Steven C.; Addona, Terri; Regnier, Fred E. Mol. Cell. Proteomics. (2013), 12(9), 2623-2639.

3. **Integrated Sample Preparation Methodology for Proteomics: Analysis of Native Proteins.** Kim, Jin-Hee; Inerowicz, Dorota; Hedrick, Vicki; Regnier, Fred E. *Anal. Chem.* (2013), 85(17), 8039-8045.
4. **Disparities between immobilized enzyme and solution based digestion of transferrin with trypsin.** Rivera-Burgos, Dinelia; Regnier, Fred E. *J. Sep. Sci.* (2013), 36(3), 454-460.
5. **Mass-Linked Immuno-Selective Assays In Targeted Proteomics.** Madian, Ashraf G.; Rochelle, Nishi S.; Regnier, Fred E. *Anal. Chem.* (2013), 85(2), 737-748.
6. **Toward a metadata model for mass-spectrometry based clinical proteomics.** Springer, John; Zhang, Fan; Hussey, Peter; Buck, Charles; Regnier, Fred; Chen, Jake. *Current Bioinformatics.* (2012), 7(3), 246-254.
7. **Plates versus selectivity: an emerging issue with complex samples.** Regnier, Fred E. *LCGC North America* (2012), 30(8), 622-623.
8. **Native protein proteolysis in an immobilized enzyme reactor as a function of temperature.** Dinelia Rivera-Burgos and Fred E. Regnier. *Anal. Chem.* (2012), 84(16), 7021-7028.
9. **Effect of single amino acid substitution on oxidative modifications of the Parkinson's disease-related protein, DJ-1.** Madian, Ashraf G.; Hindupur, Jagadish; Hulleman, John D.; Diaz-Maldonado, Naomi; Mishra, Vartika R.; Guigard, Emmanuel; Kay, Cyril M.; Rochet, Jean-Christophe; Regnier, Fred E. *Mol. Cell. Proteomics.* (2012), 11(2), 010892/1-010892/15, 15 pp.
10. **Lectin Chromatography/Mass Spectrometry Discovery Workflow Identifies Putative Biomarkers of Aggressive Breast Cancers.** Drake, Penelope M.; Schilling, Birgit; Niles, Richard K.; Prakobphol, Akraporn; Li, Bensheng; Jung, Kwanyoung; Cho, Wonryeon; Braten, Miles; Inerowicz, Halina D.; Williams, Katherine; Gibson, Brad; Regnier, Fred E.; Susan Fischer. *J. Proteome Res.* (2012), 11(4), 2508-2520.
11. **Determining the Effects of Antioxidants on Oxidative Stress Induced Carbonylation of Proteins.** Madian, Ashraf G.; Myracle, Angela D.; Diaz-Maldonado, Naomi; Rochelle, Nishi S.; Janle, Elsa M.; Regnier, Fred E. *Anal. Chem.* (2011), 83(24), 9328-9336.
12. **Oxidative stress induced carbonylation in human plasma.** Madian, Ashraf G.; Diaz-Maldonado, Naomi; Gao, Qiang; Regnier, Fred E. *J. Proteome Res.* (2011), 10(11), 2395-2416.
13. **Differential Carbonylation of Proteins as a Function of in vivo Oxidative Stress.** Madian, A.G.; Myracle, A.D.; Diaz-Maldonado, N.; Rochelle, N. S.; Janle, E.M.; Regnier, F.E. *J. Proteome Res.* (2011), 10(9), 3959-3972.
14. **A large, consistent plasma proteomics data set from prospectively collected breast cancer patient and healthy volunteer samples.** Riley, C.P.; Zhang, X.; Nakshatri, H.; Schneider, B.; Regnier, F.E.; Adamec, J.; Buck, C. *J. Trans. Med.* (2011), 9, 80.
15. **A lectin affinity workflow targeting glycosite-specific, cancer-related carbohydrate structures in trypsin-digested human plasma.** Drake, P.M.; Schilling, B.; Niles, R.K.; Braten, M.; Johansen, E.; Liu, H.; Lerch, M.; Sorensen, D.J.; Li, Bensheng; Allen, S.; Regnier, F.E.; Susan Fischer. *Anal. Biochem.* (2011), 408(1), 71-85.
16. **Glutathione-S-transferase P1 is a critical regulator of Cdk5 kinase activity.** Sun, K.-H.; Chang, Kuei-H.; Clawson, S.; Ghosh, S.; Mirzaei, H.; Regnier, F.; Shah K. *J. Neurochem.* (2011) 118, 902-914.
17. **Dynamics of protein damage in yeast frataxin mutant exposed to oxidative stress.** Kim, Jin-Hee; Sedlak, Miroslav; Gao, Qiang; Riley, Catherine P.; Regnier, Fred E.; Adamec, Jiri. *OMICS* (2010), 14(6), 689-699.
18. **Sialylated Lewis x Antigen Bearing Glycoproteins in Human Plasma.** Cho, Wonryeon; Jung, Kwanyoung; Regnier, Fred E. *J. Proteome Res.* (2010), 9(11), 5960-5968.
19. **Coupling protein complex analysis to peptide based proteomics.** Gao, Qiang; Madian, Ashraf G.; Liu, Xiuping; Adamec, Jiri; Regnier, Fred E. *J. Chromatogr., A* (2010), 1217(49), 7661-7668.
20. **Proteomic Identification of Carbonylated Proteins and Their Oxidation Sites.** Madian, Ashraf G.; Regnier, Fred E. *J. Proteome Res.* (2010), 9(8), 3766-3780
21. **Screening antibody and immunosorbent selectivity by two-dimensional liquid chromatography-MS/MS.** Cho, Wonryeon; Jung, Kwanyoung; Regnier, Fred E. *J. Sep. Sci.* (2010), 33(10), 1438-1447.
22. **Sweetening the pot: adding glycosylation to the biomarker discovery equation.** Drake, Penelope M.; Cho, Wonryeon; Li, Bensheng; Prakobphol, Akraporn; Johansen, Eric; Anderson, N.

- Leigh; Regnier, Fred E.; Gibson, Bradford W.; Fisher, Susan. *J. Clin. Chem.* (2010), 56(2), 223-236.
23. **Protein-based multiplex assays: mock pre submissions to the US Food and Drug Administration.** Regnier, Fred E.; Skates, Steven J.; Mesri, Mehdi; Rodriguez, Henry; Tezak, Zivana; Kondratovich, Marina V.; Alterman, Michail A.; Levin, Joshua D.; Roscoe, Donna; Reilly, Eugene; Callaghan, James; Kelm, Kellie; Brown, David; Philip, Reena; Carr, Steven A.; Liebler, Daniel C.; Fisher, Susan J.; Tempst, Paul; Hiltke, Tara; Kessler, Larry G.; Kinsinger, Christopher R.; Ransohoff, David F.; Mansfield, Elizabeth; Anderson, N. Leigh. *Clin. Chem.* (2010), 56(2), 165-171.
 24. **Profiling carbonylated proteins in human plasma.** Madian, Ashraf G.; Regnier, Fred E. *J. Proteome Res.* (2010), 9(3), 1330-1343.
 25. **In vitro stable isotope labeling for discovery of novel metabolites by liquid chromatography-mass spectrometry: Confirmation of γ -tocopherol metabolism in human A549 cell.** Yang, W-C; Regnier, F.E.; Jiang, Q.; Adamec, J. *J. Chromatogr., A* (2010), 1217, 667-675.
 26. **Oxidative stress studies in yeast frataxin mutant: A proteomics perspective.** Kim, Jin-Hee; Sedlak, Miroslav; Gao, Qiang; Riley, Catherine P.; Regnier, Fred E.; Adamec, Jiri. *J. Proteome Res.* (2010), 9(2), 730-736.
 27. **Repeatability and Reproducibility in Proteomic Identifications by Liquid Chromatography-Tandem Mass Spectrometry.** Tabb, David L.; Vega-Montoto, Lorenzo; Rudnick, Paul A.; Variyath, Asokan Mulayath; Ham, Amy-Joan L.; Bunk, David M.; Kilpatrick, Lisa E.; Billheimer, Dean D.; Blackman, Ronald K.; Cardasis, Helene L.; Regnier, Fred E. *J. Proteome Res.* (2010), 9(2), 761-776.
 28. **Interlaboratory study characterizing a yeast performance standard for benchmarking LC-MS platform performance.** Paulovich, Amanda G; Billheimer, Dean; Ham, Amy-Joan L; Vega-Montoto, Lorenzo; Rudnick, Paul A; Tabb, David L; Wang Pei; Blackman Ronald K; Bunk David M; Cardasis Helene L; Regnier, Fred. *Mol. Cell. Proteomics.* (2010), 9(2), 242-54.
 29. **Performance metrics for liquid chromatography-tandem mass spectrometry systems in proteomics analyses.** Rudnick Paul A; Clauser Karl R; Kilpatrick Lisa E; Tchekhovskoi Dmitrii V; Neta Pedatsur; Blonder Niksa; Billheimer Dean D; Blackman Ronald K; Bunk David M; Cardasis Helene L; Regnier, Fred. *Mol. Cell. Proteomics.*(2010), 9(2), 225-41.
 30. **Intrinsic subtype-associated changes in the plasma proteome in breast cancer.** Nakshatri, Harikrishna; Qi, Guihong; You, Jinsam; Kerry, Bemis; Schneider, Bryan; Zon, Robin; Buck, Charles; Regnier, Fred; Wang, Mu. *Proteomics: Clin. Appl.* (2009), 3(11), 1305-1313.
 31. **Multi-site assessment of the precision and reproducibility of multiple reaction monitoring-based measurements of proteins in plasma.** Addona, Terri A.; Abbatiello, Susan E.; Schilling, Birgit; Skates, Steven J.; Mani, D. R.; Bunk, David M.; Spiegelman, Clifford H.; Zimmerman, Lisa J.; Ham, Amy-Joan L.; Keshishian, Hasmik; Regnier, Fred; Carr, Steve. *Nat. Biotech.* (2009), 27(7), 633-641.
 32. **A lectin HPLC method to enrich selectively-glycosylated peptides from complex biological samples.** Johansen, Eric; Schilling, Birgit; Lerch, Michael; Niles, Richard K; Liu, Haichuan; Li, Bensheng; Allen, Simon; Hall, Steven C; Witkowska, H Ewa; Regnier, Fred E; Gibson, Brad; Fischer, Susan. *J. Vis. Exp.* (2009), (32).
 33. **Glycoproteomics of Plasma Based on Narrow Selectivity Lectin Affinity Chromatography.** Jung, Kwanyoung; Cho, Wonryeon; Regnier, Fred E. *J. Proteome Res.* (2009), 8(2), 643-650.
 34. **Comparative metabolite profiling of carboxylic acids in rat urine by CE-ESI MS/MS through positively pre-charged and 2H-coded derivatization.** Yang, Wen-Chu; Regnier, Fred E.; Adamec, Jiri. *Electrophoresis* (2008), 29(22), 4549-4560.
 35. **Simultaneous Quantification of Metabolites Involved in Central Carbon and Energy Metabolism Using Reversed-Phase Liquid Chromatography-Mass Spectrometry and In Vitro ^{13}C Labeling.** Yang, Wen-Chu; Sedlak, Miroslav; Regnier, Fred E.; Mosier, Nathan; Ho, Nancy; Adamec, Jiri. *Anal. Chem.* (2008), 80(24), 9508-9516.
 36. **Glycoproteomic profiling of serum peptides in canine lymphoma and transitional cell carcinoma.** Wilson, C. R.; Regnier, F. E.; Knapp, D. W.; Raskin, R. E.; Andrews, D. A.; Hooser, S. B. *Vet. Comp. Oncol.* (2008), 6(3), 171-181.
 37. **GAPDH Is Conformationally and Functionally Altered in Association with Oxidative Stress in Mouse Models of Amyotrophic Lateral Sclerosis.** Pierce, Anson; Mirzaei, Hamid; Muller,

- Florian; De Waal, Eric; Taylor, Alexander B.; Leonard, Shanique; Van Remmen, Holly; Regnier, Fred; Richardson, Arlan; Chaudhuri, Asish. *J. Mol. Biol.* (2008), 382(5), 1195-1210.
38. **Protein:protein aggregation induced by protein oxidation.** Mirzaei, Hamid; Regnier, Fred. *J. Chromatogr., B: Anal. Tech. Biomed. Life Sci.* (2008), 873(1), 8-14.
39. **Stable isotope-coded quaternization for comparative quantification of estrogen metabolites by high-performance liquid chromatography-electrospray ionization mass spectrometry.** Yang, Wen-Chu; Regnier, Fred E.; Sliva, Dan; Adamec, Jiri. *J. Chromatogr., B: Anal. Tech. Biomed. Life Sci.* (2008), 870(2), 233-240.
40. **Optical methods: high-throughput proteomics: spinning disc interferometry.** Vallejos, Patricio Espinoza; Lawrence, Greg; Nolte, David; Regnier, Fred; Schreiber, Joerg. *Proteomics Sample Preparation* (2008), 187-207.
41. **Use of Glycan Targeting Antibodies To Identify Cancer-Associated Glycoproteins in Plasma of Breast Cancer Patients.** Cho, Wonryeon; Jung, Kwanyoung; Regnier, Fred E. *Anal. Chem.* (2008), 80(14), 5286-5292.
42. **Identification of oxidized proteins in rat plasma using avidin chromatography and tandem mass spectrometry.** Mirzaei, Hamid; Baena, Beatriz; Barbas, Coral; Regnier, Fred. *Proteomics* (2008), 8(7), 1516-1527.
43. **Two-dimensional correlation optimized warping algorithm for aligning GC x GC-MS data.** Zhang, Dabao; Huang, Xiaodong; Regnier, Fred E.; Zhang, Min. *Anal. Chem.* (2008), 80(8), 2664-2671.
44. **Comprehensive two-dimensional gas chromatography/time-of-flight mass spectrometry peak sorting algorithm.** Oh, Cheolhwan; Huang, Xiaodong; Regnier, Fred E.; Buck, Charles; Zhang, Xiang. *J. Chromatogr., A* (2008), 1179(2), 205-215.
45. **Toward chromatographic analysis of interacting protein networks.** Liu, Xiuping; Yang, Wen-chu; Gao, Qiang; Regnier, Fred. *J. Chromatogr., A* (2008), 1178(1-2), 24-32.
46. **Differential Metabolomics Using Stable Isotope Labeling and Two-Dimensional Gas Chromatography with Time-of-Flight Mass Spectrometry.** Huang, Xiaodong; Regnier, Fred E. *Anal. Chem.* (2008), 80(1), 107-114.
47. **Enhancement of the LC/MS Analysis of Fatty Acids through Derivatization and Stable Isotope Coding.** Yang, Wen-Chu; Adamec, Jiri; Regnier, Fred E. *Anal. Chem.* (2007), 79(14), 5150-5157.
48. **Destabilization of DJ-1 by Familial Substitution and Oxidative Modifications: Implications for Parkinson's Disease.** Hulleman, John D.; Mirzaei, Hamid; Guigard, Emmanuel; Taylor, Biochem. (2007), 46(19), 5776-5789
49. **Identification of yeast oxidized proteins.** Mirzaei, Hamid; Regnier, Fred. *J. Chromatogr., A* (2007), 1141(1), 22-31.
50. **Neural network prediction of peptide separation in strong anion exchange chromatography.** Oh, Cheolhwan; Zak, Stanislaw H.; Mirzaei, Hamid; Buck, Charles; Regnier, Fred E.; Zhang, Xiang. *Bioinformatics* (2007), 23(1), 114-118.
51. **A method for the identification of glycoproteins from human serum by a combination of lectin affinity chromatography along with anion exchange and Cu-IMAC selection of tryptic peptides.** Qiu, Ruiqing; Zhang, Xiang; Regnier, Fred E. *J. Chromatogr., B: Anal. Tech. Biomed. Life Sci.* (2007), 845(1), 143-150.
52. **Differential phase-contrast BioCD biosensor.** Zhao Ming; Cho Wonryeon; Regnier Fred; Nolte David *Appl. Optics.* (2007), 46(24), 6196-209.
53. **Adaptive interferometry of protein on a BioCD.** Peng Leilei; Varma Manoj M; Cho Wonryeon; Regnier Fred E; Nolte David D. *Appl. Optics.* (2007), 46(22), 5384-95.
54. **High-speed interferometric detection of label-free immunoassays on the biological compact disc.** Zhao, Ming; Nolte, David; Cho, Wonryeon; Regnier, Fred; Varma, Manoj; Lawrence, Greg; Pasqua, John. *Clin. Chem.* (2006), 52(11), 2135-2140.
55. **Identification and quantification of protein carbonylation using light and heavy isotope labeled Girard's P reagent.** Mirzaei, Hamid; Regnier, Fred. *J. Chromatogr., A* (2006), 1134(1-2), 122-133.
56. **Protein-RNA Cross-Linking in the Ribosomes of Yeast under Oxidative Stress.** Mirzaei, Hamid; Regnier, Fred. *J. Proteome Res.* (2006), 5(12), 3249-3259.

57. **Primary amine coding as a path to comparative proteomics.** Regnier, Fred E.; Julka, Samir. *Proteomics* (2006), 6(14), 3968-3979.
58. **Creation of Allotypic Active Sites during Oxidative Stress.** Mirzaei, Hamid; Regnier, Fred. J. *Proteome Res.* (2006), 5(9), 2159-2168.
59. **Enhancement of Amino Acid Detection and Quantification by Electrospray Ionization Mass Spectrometry.** Yang, Wen-Chu; Mirzaei, Hamid; Liu, Xiuping; Regnier, Fred E. *Anal. Chem.* (2006), 78(13), 4702-4708.
60. **Enhancing Electrospray Ionization Efficiency of Peptides by Derivatization.** Mirzaei, Hamid; Regnier, Fred. *Anal. Chem.* (2006), 78(12), 4175-4183.
61. **Phase-contrast BioCD: High-speed immunoassays at sub-picogram detection levels.** Zhao, Ming; Peng, Leilei; Cho, W.; Regnier, F.; Nolte, D. D. *Proceedings of SPIE-The International Soc. for Optic. Eng.* (2006), 6095 (Nanobiophotonics and Biomedical Applications III),
62. **Identification of Rotenone-Induced Modifications in α -Synuclein Using Affinity Pull-Down and Tandem Mass Spectrometry.** Mirzaei, Hamid; Schieler, Jeremy L.; Rochet, Jean-Christophe; Regnier, Fred. *Anal. Chem.* (2006), 78(7), 2422-2431.
63. **Enrichment of Carbonylated Peptides Using Girard P Reagent and Strong Cation Exchange Chromatography.** Mirzaei, Hamid; Regnier, Fred. *Anal. Chem.* (2006), 78(3), 770-778.
64. **Comparative Glycoproteomics of N-Linked Complex-Type Glycoforms Containing Sialic Acid in Human Serum.** Qiu, Ruiqing; Regnier, Fred E. *Anal. Chem.* (2005), 77(22), 7225-7231.
65. **Soft lithography based micron-scale electrophoretic patterning of purple membrane.** Crittenden, S.; Reifenberger, R.; Hillebrecht, J.; Birge, R.; Inerowicz, D.; Regnier, F. *J. Micromech. Microeng.* (2005), 15(8), 1494-1497.
66. **An Automated Method for the Analysis of Stable Isotope Labeling Data in Proteomics.** Zhang, Xiang; Hines, Wade; Adamec, Jiri; Asara, John M.; Naylor, Stephen; Regnier, Fred E. *J. Am. Soc. Mass Spectrom.* (2005), 16(7), 1181-1191.
67. **Adaptive optical biocompact disk for molecular recognition.** Peng, Leilei; Varma, Manoj M.; Regnier, Fred E.; Nolte, David D. *Appl. Phys. Letters* (2005), 86(18), 183902/1-183902/3
68. **Label-free multi-analyte detection using a BioCD.** Varma, Manoj M.; Peng, Leilei; Regnier, Fred E.; Nolte, David D. *Proceedings of SPIE-Int. Soc. Optic. Eng.* (2005), 5699, 503-510.
69. **The adaptive BioCD: Interferometric immunoassay on a spinning disk.** Peng, Leilei; Varma, Manoj M.; Regnier, Fred E.; Nolte, David D. *Proceedings of SPIE-Int. Soc. Optic. Eng.* (2005), 5692, 224-232.
70. **Use of Multidimensional Lectin Affinity Chromatography in Differential Glycoproteomics.** Qiu, Ruiqing; Regnier, Fred E. *Anal. Chem.* (2005), 77(9), 2802-2809
71. **Affinity chromatographic selection of carbonylated proteins followed by identification of oxidation sites using tandem mass spectrometry.** Mirzaei, Hamid; Regnier, Fred. *Anal. Chem.* (2005), 77, 2386-2392.
72. **Quantification of phosphoproteins with global internal standard technology.** Riggs, Larry; Seeley, Erin H.; Regnier, Fred E. *J. Chromatogr., B: Anal. Tech. Biomed. Life Sci.* (2005), 817(1), 89-96.
73. **Reduction of non-specific binding in Ga(III) immobilized metal affinity chromatography for phosphopeptides by using endoproteinase glu-C as the digestive enzyme.** Seeley, Erin H.; Riggs, Larry D.; Regnier, Fred E. *J. Chromatogr., B: Anal. Tech. Biomed. Life Sci.* (2005), 817(1), 81-88.
74. **Structure specific chromatographic selection in targeted proteomics.** Mirzaei, Hamid; Regnier, Fred. *J. Chromatogr., B: Anal. Tech. Biomed. Life Sci.* (2005), 817(1), 23-34.
75. **The BioCD: A high-sensitivity spinning-disk interferometer for antigen detection.** Varma, M. M.; Nolte, D. D.; Inerowicz, H. D.; Regnier, F. E. *Trends in Optics and Photonics* (2004), 96/B.
76. **A spinning-disk interferometry detection system for monitoring antigen: antibody complex formation on protein arrays.** Varma, Manoj M.; Inerowicz, Halina D.; Regnier, Fred E.; Nolte, David D. *Special Publication - Royal Society of Chemistry* (2004), 297(Micro Total Analysis Systems 2004, Volume 2), 195-200.
77. **Processing of Data Generated by 2-Dimensional Gel Electrophoresis for Statistical Analysis: Missing Data, Normalization, and Statistics.** Chang, Jinsook; Van Remmen, Holly; Ward, Walter F.; Regnier, Fred E.; Richardson, Arlan; Cornell, John. *J. Proteome Res.* (2004), 3(6), 1210-1218.

78. **Analytical techniques.** Zenobi, Renato; Regnier, Fred. *Curr. Opin. Chem. Biol.* (2004), 8(5), 517-518.
79. **Spinning-disk laser interferometers for immuno-assays and proteomics: the BioCD.** Nolte, David D.; Varma, Manoj M.; Peng, Leilei; Inerowicz, Halina D.; Regnier, Fred E. *Proceedings of SPIE-Int. Soc. Optic. Eng.* (2004), 5328 41-48.
80. **Real-time spinning-disk interferometric immunoassays.** Varma, Manoj M.; Inerowicz, Halina D.; Regnier, Fred E.; Nolte, David D. *Proceedings of SPIE-Int. Soc. Optic. Eng.* (2004), 5328 62-68.
81. **Optimization of diagonal chromatography for recognizing post-translational modifications.** Liu, Peiran; Feasley, Christa L.; Regnier, Fred E. *J. Chromatogr., A* (2004), 1047(2), 221-228.
82. **Benzoyl Derivatization as a Method To Improve Retention of Hydrophilic Peptides in Tryptic Peptide Mapping.** Julka, Samir; Regnier, Fred E. *Anal. Chem.* (2004), 76(19), 5799-5806.
83. **Enrichment of cysteine-containing peptides from tryptic digests using a quaternary amine tag.** Ren, Diya; Julka, Samir; Inerowicz, Halina D.; Regnier, Fred E. *Anal. Chem.* (2004), 76(15), 4522-4530.
84. **Proteomic Analysis of Arabidopsis Glutathione S-transferases from Benoxacor- and Copper-treated Seedlings.** Smith, Aaron P.; De Ridder, Ben P.; Guo, Woei-Jiun; Seeley, Erin H.; Regnier, Fred E.; Goldsbrough, Peter B. *J. Biol. Chem.* (2004), 279(25), 26098-26104.
85. **Proteomic analysis of carbonylated proteins in two-dimensional gel electrophoresis using avidin-fluorescein affinity staining.** Yoo, Byoung-Sam; Regnier, Fred E. *Electrophoresis* (2004), 25(9), 1334-1341.
86. **New Approach for Analysis of the Phosphotyrosine Proteome and Its Application to the Chicken B Cell Line, DT40.** Zolodz, Melissa D.; Wood, Karl V.; Regnier, Fred E.; Geahlen, Robert L. *J. Proteome Res.* (2004), 3(4), 743-750.
87. **Integrative Biological Analysis of the APOE*3-Leiden Transgenic Mouse.** Clish, Clary B.; Davidov, Eugene; Oresic, Matej; Plasterer, Thomas N.; Lavine, Gary; Londo, Tom; Meys, Michael; Snell, Philip; Stochaj, Wayne; Adourian, Aram; Zhang, Xiang; Morel, Nicole; Neumann, Eric; Verheij, Elwin; Vogels, Jack T. W. E.; Havekes, Louis M.; Afeyan, Noubar; Regnier, Fred; Van Der Greef, Jan; Naylor, Stephen. *OMICS* (2004), 8(1), 3-13.
88. **High-speed label-free detection by spinning-disk micro-interferometry.** Varma, Manoj M.; Inerowicz, Halina D.; Regnier, Fred E.; Nolte, David D. *Biosens. Bioelect.* (2004), 19(11), 1371-1376.
89. **Effect of microenvironment pH of aluminum hydroxide adjuvant on the chemical stability of adsorbed antigen.** Wittayanukulluk, Arunee; Jiang, Dongping; Regnier, Fred E.; Hem, Stanley L. *Vaccine* (2004), 22(9-10), 1172-1176.
90. **Contributions of commercial sorbents to the selectivity in immobilized metal affinity chromatography with Cu(II).** Ren, Diya; Penner, Natalia A.; Slentz, Benjamin E.; Inerowicz, Halina D.; Rybalko, Marina; Regnier, Fred E. *J. Chromatogr., A* (2004), 1031(1-2), 87-92.
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2. **Chromatographic Supports, Methods, and Apparatus for Preparing the Same.** F. E. Regnier and S. H. Chang. U.S. Patent 4,029,583.
3. **Rapid Liquid Chromatographic Analysis of Hemaglobin Variants.** F. E. Regnier and S. H. Chang. U.S. Patent 4,108,609.
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5. **Pellicular Coated Support and Method.** F. E. Regnier and A. J. Alpert. U.S. Patent 4,245,005.
6. **Polyamine Based Bonded Phase Chromatography.** F. E. Regnier and S. P. Gupta. U.S. Patent, 4,560,704.
7. **Reversed Phase Packing Material and Method.** F. E. Regnier and W. Kopaciewicz. U.S. Patent 4, 920,152.
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10. **Immobilized Antigen-Antibody Displacement Process.** T. D. Schlabach and F. E. Regnier. U.S. Patent 4,895,809.
11. **Coated Media for Chromatography.** L. Varady, F. E. Regnier, Y-B. Yang, and S. Cook. U. S. Patent 5,030,352.
12. **Perfusive Chromatography.** N.B. Afeyan, F.E. Regnier, and R. Dean, Jr. U.S. Patent 5,019,270.
13. **Perfusive Chromatography.** N.B. Afeyan, F.E. Regnier, and R. Dean Jr. U.S. Patent 5,552,041.
14. **Perfusive Chromatography.** N.B. Afeyan, F.E. Regnier, and R. Dean Jr. U.S. Patent 5,384,042.
15. **Perfusive Chromatography.** N.B. Afeyan, F.E. Regnier, and R. Dean Jr. U.S. Patent 5,605,623.
16. **Perfusive Chromatography.** N.B. Afeyan, F.E. Regnier, and R. Dean Jr. U.S. Patent 5,228,989.
17. **Perfusive Chromatography.** N.B. Afeyan, F.E. Regnier, and R. Dean Jr. U.S. Patent 5,833,861.
18. **Adsorbed Cation-Exchange Coatings for High Performance Chromatography.** F. E. Regnier and, W. Kopaciewicz. U.S. Patent 4,804,686.
19. **Molecular Imaging.** N.B. Afeyan, L. Varady, and F.E. Regnier. U.S. Patent 5,372,719.
20. **Molecular Imaging.** N.B. Afeyan, L. Varady, and F.E. Regnier. U. S. Patent 5,641,539.
21. **Molecular Imaging.** N.B. Afeyan, L. Varady, and F.E. Regnier. U. S. Patent 5,453,199.
22. **Analysis Utilizing Isoelectric Focusing.** N.B. Afeyan and F.E. Regnier U.S. Patent 5,376,249.
23. **On-Line Product Identification in a Chromatography Effluent By Subtraction.** N.B. Afeyan, and F.E. Regnier. U.S. Patent 5,234,586.
24. **Covalently Bonded Coatings For Poly(Styrene-Divinyl Benzene) Supports.** N. Mu and F. E. Regnier, U.S. Patent 5,503,900.
25. **Covalently Bonded Coatings.** N.B. Afeyan, F.E. Regnier, and N. Mu. U.S. Patent 5,503,933.
26. **Protein Imaging.** S. Paliwal, T.K. Nadler, L. Varady, and F.E. Regnier. U.S. Patent 5,756,717.
27. **Electrophoretically Mediated Chemical Analysis.** J. Bao, B. Harmon, D. Patterson and F. E. Regnier. U.S. Patent 5,810,985.
28. **Capillary electrophoresis enzyme immunoassay.** Regnier; Fred E.; Yao; Xian-Wei; Taylor; Todd A.; Fuchs; Martin; Schmalzing; Dieter; Koutny; Lance.; Nashabeh; Wassim. U.S. Patent 5,958,202
29. **Improved Separation Columns and Methods for Manufacturing the Improved Separation Columns.** B. He and Fred E. Regnier. U.S. Patent 6,156,273.
30. **In Situ Micromachined Mixer for Microfluidic Analytical Systems.** B. He and F.E. Regnier. U.S. Patent 6,170,981.
31. **High speed, automated, continuous flow, multi-dimensional molecular selection and analysis.** Jindal; Satish, Regnier; Fred, Williams; Kevin, Afeyan; Noubar, Paliwal; Sandeep, Evans; David, Pingali; Aruna. U.S. Patent 6,358,692.
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34. **Bio-optical compact disk system.** Nolte, David D.; Regnier, Fred E.; Varma, Manoj. U.S. Patent 6,685,885.
35. **High speed, automated, continuous flow, multi-dimensional molecular selection and analysis.** Jindal; Satish, Regnier; Fred, Williams; Kevin, Afeyan; Noubar, Paliwal; Sandeep, Evans; David, Pingali; Aruna. U.S. Patent 6,794,148.
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37. **Affinity selected signature peptides for protein identification and quantification.** Fred E. Regnier, U.S. Patent 6,872,575.
38. **Laser Scanning Interferometric Surface Metrology.** David Nolte, Manoj Varma, Fred E. Regnier, U.S. Patent 7,405,831.
39. **Materials and Methods for Controlling Isotope Effects During Fractionation of Analytes.** Fred E. Regnier and Roujian Zhang. U.S. Patent 7,449,170.
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43. **Multiplexed biological analyzer planar array apparatus and methods.** David D. Nolte, Manoj Varma, Fred E. Regnier, Leilei Peng. U.S. Patent 7,910,356.
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Students and Post-Doctoral Associates Trained

a. Post Doctoral Associates and Visiting Scientists

- | | |
|-------------------------------|----------------------------------|
| 1. Jin-Hee Kim, 2011-2012 | 16. Mercedes de Frutos, 1990/92 |
| 2. Shirshendu Kumar Deb, 2011 | 17. Eszter Birck-Wilson, 1989/91 |
| 3. Kwanyoung, Jung, 2009/11 | 18. Jing Jong Lu, 1989/90 |
| 4. Ashraf Madian, 2012/11 | 19. Laszlo Varady, 1988/89 |
| 5. Wonryeon Cho, 2008 - 2011 | 20. Yan-Bo Yang, 1987/90 |
| 6. Hamid Mirzaei, 2005/07 | 21. Geraldine Thevenon, 1986/89 |
| 7. Xiao-Dong Huang, 2006/07 | 22. Gunther Seidl, 1987 |
| 8. Wen-Chu Yang, 2005/07 | 23. Istvan Mazsaroff, 1985/89 |
| 9. Byoung-Sam Yoo, 2000/02 | 24. Rainer Bischoff, 1985/86 |
| 10. Dorota Inerowicz, 2000/04 | 25. Zhou Shi, 1984/85 |
| 11. Natasha Penner, 2000/02 | 26. Xindu Geng, 1982/84 & 1995 |
| 12. Shu-Hui Chen, 2001/02 | 27. Shri Gupta, 1981/82 |
| 13. Young-Mo Koo, 2000 | 28. Grant Wagner, 1981/82 |
| 14. Emilia Lugowska, 2000/01 | 29. George Vanacek, 1980/82 |
| 15. Ahmad Amini, 1999/00 | 30. Marjorie Neih, 1973/74 |

b) Graduate Students

- | | |
|-------------------------------------|-----------------------------------|
| 1. Nishi Rochelle Ph.D. 2012 | 15. Malaika Durham Ph.D. 2005 |
| 2. Dinelia Rivera Burgos Ph.D. 2012 | 16. Erin Seeley Ph.D. 2004 |
| 3. Naomi Diaz Maldonado Ph.D. 2011 | 17. Diya Ren, Ph.D. 2004 |
| 4. Qiang Gao Ph.D. 2010 | 18. Peiran Liu, Ph.D. 2003 |
| 5. Ashraf Madian Ph.D. 2010 | 19. Benjamin Slentz, Ph.D. 2003 |
| 6. JinHe Lee Ph.D. 2009 | 20. Larry Riggs, Ph.D. 2003 |
| 7. Kwanyoung Jung Ph.D. 2009 | 21. Cathy Sioma, Ph.D. 2003 |
| 8. Xiuping Liu Ph.D. 2007 | 22. Brian Burke, Ph.D. 2002 |
| 9. Elizabeth M. Miller Ph.D. 2006 | 23. Roujian Zhang, Ph.D. 2002 |
| 10. Wonyreon Cho Ph.D. 2006 | 24. Li Xiong, Ph.D. 2001 |
| 11. Christa Feasley Ph.D. 2005 | 25. Asish Chakraborty, Ph.D. 2001 |
| 12. Hamid Mirzaei Ph.D. 2005 | 26. Xiang Zhang, Ph.D. 2001 |
| 13. Samir Julka Ph.D. 2005 | 27. Junyan Ji, Ph.D. 2001 |
| 14. Rui Quing Liu Ph.D. 2005 | 28. Shihong Wang, Ph.D. 2001 |

29. Ming Geng, Ph.D. 2000
30. John Busse, Ph.D. 2000
31. Wensheng Xu, Ph.D. 1999
32. Shelly Dormady, Ph.D. 1999
33. Shen Lin, Ph.D. 1999
34. Sara Peohlein, Ph.D. 1999
35. Jianming Li, Ph.D. 1998
36. Li Tan, Ph.D. 1998
37. Bing He, Ph.D. 1998

38. Gang , Ph.D. 1998
39. Li Yin, M.S. 1997
40. Zhou, Hong, Ph.D. 1996
41. Michael Regehr, Ph.D. 1996

42. Chitra Ratnayake, Ph.D. 1995
43. Lisa Hahn, M.S. 1995
44. Zhisong Ji, M.S. 1995
45. Brian Harmon, Ph.D. 1994
46. Dale Patterson, Ph.D. 1994
47. Sandeep Paliwal, Ph.D. 1994
48. Inkeun Leesong, Ph.D. 1994
49. Xian Wei Yao, Ph.D. 1993
50. Timothy Nadler, Ph.D. 1993
51. Scott Cassidy, Ph.D. 1993

52. HongQi Wang, Ph.D. 1993
53. Dan Wu, Ph.D. 1993
54. Jim Bao, Ph.D. 1993
55. Ning Mu, Ph.D. 1992
56. Alice Riggan, Ph.D. 1992
57. Chen Xu, Ph.D. 1992
58. Adam Ligeralde, M.S. 1991
59. John Towns, Ph.D. 1991
60. Roger Stringham, Ph.D. 1989
61. Lin Janis, Ph.D. 1989
62. Roman Chicz, Ph.D. 1988
63. Carla Desilets, Ph.D. 1988
64. Steve Cook, Ph.D. 1988
65. Brenda Roettger, Ph.D. 1988
66. Randy Drager, M.S. 1987
67. P. Andrew Tice, M.S. 1987
68. Jodi Fausnaugh, Ph.D. 1986
69. Bill Kopaciewicz, Ph.D. 1984
70. Deena Krestel Rickert, Ph.D. 1983
71. Jim Pearson, Ph.D. 1982
72. Andrew Alpert, Ph.D. 1980
73. Timothy Schlabach, Ph.D. 1978
74. David Canada, Ph.D. 1978
75. Rodney Noel, Ph.D. 1977
76. ShungHo Chang, Ph.D. 1976
77. Royal Fader, Ph.D. 1974
78. Melvin Arnold, Ph.D. 1974
79. Peter Dunn, Ph.D. 1973
80. Julia Luby, M.S. 1972.