

## ***Curriculum vitae***

Andrzej Joachimiak,                      Biophysicist                      07/14/1951  
University of A. Mickiewicz, Poznan, Poland,                      M. S. 1974, Chemistry  
University of A. Mickiewicz, Poznan, Poland,                      Ph. D. 1979, Chemistry  
Institute of Biochemistry and Biophysics,                      D. Sc., 1991, Molecular Biology  
Polish Academy of Sciences, Warsaw, Poland,

### **Research Experience**

1978-1979      Research Assistant, Institute of Bioorganic Chemistry, Polish Academy of Sciences  
1980-1981      Adjunct, Institute of Bioorganic Chemistry, Polish Academy of Sciences  
1981-1984      Research Associate, University of Chicago  
1985-1986      Research Associate, Instructor, University of Chicago  
1986-1992      Adjunct, Institute of Bioorganic Chemistry, Polish Academy of Sciences  
1990-1993      Research Scientist, Yale University  
1993-present      Staff Member, Argonne National Laboratory  
1994-2003      Cochairman Argonne Biotechnology Council  
1996-present      Associate Adjunct Professor, Northwestern University, Evanston  
1997-present      Director, Structural Biology Center, Argonne National Laboratory  
2000-present      PI/Director Midwest Center for Structural Genomics, Argonne National Laboratory  
2001-present      Senior Biophysicist, Argonne National Laboratory  
2005-present      Senior Fellow, Computation Institute UoC/Argonne  
2004-present      Professor, University of Chicago  
2007-present      Senior Fellow, Institute for Genomics and Systems Biology  
2007-present      Co-Investigator, Center for Structural Genomics of Infectious Diseases  
2008-present      Argonne Distinguished Fellow, Argonne National Laboratory

### **Honors, Awards, and Societies**

1973      Dean's Science Award, University of A. Mickiewicz, Poznan  
1976      Polish Academy of Sciences Scientific Society Award  
1978      Mozolowski Polish Biochemical Society Award  
1982      City of Poznan Scientific Award  
1982      American Association for the Advancement of Science  
1996      Argonne National Laboratory Pacesetter Award  
1999      American Science Association  
2001      University of Chicago Award for Distinguished Performance  
2002      European Academy of Sciences, Member  
2004      International Structural Genomics Organization Advisory Board, Member  
2005      Inventor Award, Argonne National Laboratory  
2005      Protein Data Bank Advisory Committee, Member  
2005      Protein Structure Initiative Target Selection Committee, Chair  
2005      Protein Structure Initiative Steering Committee, Member  
2005      The Integrated Center for Structure and Function Innovation Advisory Panel, Member  
2006      Inventor Award, Argonne National Laboratory  
2006      Protein Structure Initiative Milestones Committee, Member  
2006      National Center for Macromolecular Imaging, Advisory Committee, Member

2007 University of Chicago SA Institutional Biosafety Committee, Member  
2007 Arthur H. Compton Award, Advanced Photon Source  
2007 NSLS-II Experimental Facilities Advisory Committee, Member  
2007 Protein Structure Initiative OMG, Member  
2008 DOE BER Advisory Committee, Member  
2009 PSI Knowledge Base Stirring Committee, Member  
2012 Review Committee of the Photon Sciences ABBIX Project, Member  
2012 Polish Academy of Arts and Sciences, Member

## Editorial Boards

Journal Structural and Functional Genomics, Editor in Chief  
Protein Science  
Journal of Biological Chemistry

## Reviewer

National Institute of Health  
Department of Energy  
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Journal of Biological Chemistry  
Journal Structural Biology  
Journal Bacteriology  
Journal of Functional and Structural Genomics  
Journal Molecular Biology  
Proteins  
Protein Science  
Nature Structural and Molecular Biology  
Proc. Nat. Acad. Sci. USA

## Citation H-Index – 54

## Book chapters

1. Quait-Randall E, Joachimiaak A. Purification of hsp60 from *Thermus thermophilus*. (2000) *Methods in Molecular Biology, Chaperonin Protocols*, (Ed. C. Schneider, Humana Press), p 15-27.
2. Quait-Randall E, Joachimiaak A. Purification of GroEL from an overproducing *E. coli* strain, (2000) *Methods in Molecular Biology, Chaperonin Protocols*, (Ed. C. Schneider, Humana Press), p 29-39.
3. Quait-Randall E, Joachimiaak A. Purification of GroES from an overproducing *E. coli* strain. (2000) *Methods in Molecular Biology, Chaperonin Protocols*, (Ed. C. Schneider, Humana Press), p 41-49.
4. Quait-Randall E, Joachimiaak A. Purification of archaeal chaperonin from *Sulfolobus shibatae*. (2000) *Methods in Molecular Biology, Chaperonin Protocols*, (Ed. C. Schneider, Humana Press), p 1-14.
5. Joachimiaak A. Structural genomics – expanding protein structural universe (2005) *The Encyclopedia of Genetics, Genomics, Proteomics and Bioinformatics*, Wiley & Sons Ed.,
6. Abdullah JM, Joachimiaak A., Collart FR. “System 48” high-throughput cloning and protein expression analysis. (2009) *Methods in Molecular Biology: High Throughput Protein Expression and Purification*, Ed. S. A. Doyle, Humana Press, 498:117-27.

7. Joachimiaak A. High-throughput Technologies for Structural Biology: The Protein Structure Initiative Perspective (2008) in *Structural proteomics and its impact on the life sciences*, Eds. J.L. Sussman and I. Silman Hackensack, NJ : World Scientific Pub.
8. Joachimiaak A. Advances in Protein Chemistry and Structural Biology Vol. 75 Structural Genomics Part A, Ed. (2008) Elsevier.
9. Joachimiaak A. Advances in Protein Chemistry and Structural Biology Vol. 76 Structural Genomics Part B, Ed. (2009) Elsevier.
10. Eschenfeldt WH, Lucy S, Millard CS, Joachimiaak A., Mark ID. A Family of LIC Vectors for High-Throughput Cloning and Purification of Proteins. (2009) *Methods in Molecular Biology: High Throughput Protein Expression and Purification*, Ed. S. A. Doyle, Humana Press, 498:105-15.
11. Kim YC, Bigelow L, Borovilos M, Dementieva I, Duggan E, Eschenfeldt W, Hatzos C, Joachimiaak G, Li H, Maltseva N, Mulligan R, Quartey P, Sather A, Stols L, Volkart L, Wu R, Zhou M, Joachimiaak A. High throughput protein purification for X-ray crystallography and NMR. (2009) *Advances in Protein Chemistry and Structural biology, Vol. 75, Structural Genomics, Part A*, pp. 85-105.
12. Liang J, Tseng YY, Dundas J, Binkowski TA, Joachimiaak A., Ouyang Z, Adamian L. Predicting and characterizing protein functions through matching geometric and evolutionary patterns of binding surfaces. (2009) *Advances in Protein Chemistry and Structural biology, Vol. 75, Structural Genomics, Part A*, pp. 107-141.

#### **Publications (peer reviewed):**

1. Joachimiaak A., Barciszewski J, Twardowski T, Barciszewska M, Wiewiorowski M. Purification and properties of methionyl-tRNA synthetase from lupine seeds. (1978) *FEBS Letters* **93**:51-54.
2. Barciszewski J, Joachimiaak A., Rafalski A, Barciszewska M, Twardowski T, Wiewiorowski M. Conservation of the structures of plant tRNAs and aminoacyl-tRNA synthetases. (1979) *FEBS Letters* **102**:194-197.
3. Joachimiaak A., Barciszewska M, Barciszewski J, Wiewiorowski M. Application of spermine-Sepharose column chromatography to separation of plant tRNAs and aminoacyl-tRNA synthetases. (1979) *J. Chromatography* **180**:157-162.
4. Pulikowska J, Barciszewska M, Barciszewski J, Joachimiaak A., Rafalski A, Twardowski T. Effect of elastase on elongation factor 1 from wheat germ. (1979) *Biochem. Biophys. Res. Commun.* **91**:1011-1017.
5. Joachimiaak A., Barciszewski J. Simple method for recovery of active oligomeric enzymes from its diluted solutions. (1980) *J. Biochem. Biophys. Methods* **2**:227-231.
6. Joachimiaak A., Barciszewski J. Amino acid: tRNA ligases /E.C.6.1.1.-./ compilation. (1980) *FEBS Letters* **119**:201-211.
7. Joachimiaak A., Zwierzynski T, Radocki D, Barciszewski J. A method for detection of enzymatic activities which used aminoacyl-tRNA as a substrate. (1980) *J. Biochem. Biophys. Methods* **2**:239-243.
8. Joachimiaak A., Zwierzynski T, Barciszewska M, Rafalski A, Twardowski T, Barciszewski J. A method for isolation of aminoacyl-tRNA synthetases from plants. Purification and some properties of methionyl-, phenylalanyl-, and arginyl-tRNA synthetases from yellow lupine seeds. (1981) *International J. Biol. Macromol.* **3**:121-134.
9. Joachimiaak A., Zwierzynski T, Barciszewska M, Radocki D, Barciszewski J. Heparin-Sepharose column chromatography as a new method for purification of aminoacyl-tRNA synthetases. (1981) *J. Chromatography* **206**:600-605.

10. Zwierzynski T, Joachimiak A, Kulinska K, Barciszewski J. Interactions of alkaloids with plant transfer ribonucleic acids. Effect of sparteine on lupine arginyl-tRNA formation. (1982) *J. Chem. Biol. Interaction* **42**:107-116.
11. Joachimiak A, Kelly R, Gunsalus R, Yanofsky C, Sigler P. Purification and characterization of *trp* aporepressor. (1983) *Proc. Natl. Acad. Sci. USA* **8**: 668-672.
12. Joachimiak A, Schevitz R, Kelly R, Yanofsky C, Sigler P. Functional inferences from crystals of *E. coli trp* repressor. (1983) *J. Biol. Chem.* **208**:12641-12643.
13. Ackerman E, Joachimiak A, Klinghofer V, Sigler P. Directly photocrosslinked nucleotides joining tRNA to aminoacyl-tRNA synthetase in methionine and tyrosine systems. (1985) *J. Mol. Biol.* **181**:93-102.
14. Schevitz R, Otwinowski Z, Joachimiak A, Lawson C, Sigler P. Three-dimensional structure of the *trp* repressor. (1985) *Nature* **317**:782-786.
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16. Zhang R, Joachimiak A, Lawson C, Schevitz R, Otwinowski Z, Sigler P. The crystal structure of *trp* aporepressor at 1.8 Å shows how binding tryptophan enhances DNA affinity. (1987) *Nature* **327**:591-597.
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269. Tan K, Zhou M, Zhang R, Anderson WF, Joachimiak A. The crystal structures of the  $\alpha$ -subunit of the  $\alpha(2)\beta(2)$  tetrameric Glycyl-tRNA synthetase. *J Struct Funct Genomics*. 2012 Oct 6. [Epub ahead of print] PubMed PMID: 23054484.

## Publications in Refereed Proceedings

270. Van Kley H, Quait-Randall E, Trent J, Joachimiaak A. Characterization of a low molecular weight proteinase from the hyperthermophile *Sulfolobus shibatae*. (1995) *The FASEB Journal*, **9**:1259.
271. Karpova E, Kubareva E, Petrauskene O, Joachimiaak A. Peculiarity of the recognition and cleavage by restriction endonuclease *EcoRII*. (1995) *The FASEB Journal*, **9**:834.
272. Quait-Randall E, Trent J, Josephs R, Joachimiaak A. The conformational cycle of a CCT-like chaperonin from *Sulfolobus shibatae*. (1995) *The FASEB Journal*, **9**:51.
273. Joachimiaak A, Knowlton J, Quait-Randall E. Formation of stable complexes between proteins and the chaperonin from *Thermus aquaticus*. (1995) *The FASEB Journal*, **9**:52.
274. Kagawa H, Osipiuk J, Quait-Randall E, Joachimiaak A, Trent J. A novel subunit discovered in the hetero-oligomeric chaperonin of the hyperthermophilic archaeon, *Sulfolobus shibatae*. (1995) *The FASEB Journal*, **9**, 50.
275. Shu D, Toellner TS, Alp EE, Maser J, Mancini D, Lai B, McNulty I, Joachimiaak A, Lee P, Lee WK, Cai Z, Lee SH, Han Y, Preissner C, Ginell S, Alkire R, Schuessler R. High-precision positioning mechanism development at the Advanced Photon Source, (2003) 2nd International Workshop on Mechanical Engineering Design of Synchrotron Radiation Equipment and Instrumentation (MEDSI02) ANL, (MEDSI02), 214 – 222.
276. Shu D, Joachimiaak A, Preissner C, Nocher D, Han Y, Barraza J, Lee P, Lee WK, Cai Z, Ginell S, Alkire R, Lazarski K, Schuessler R. Design and development of a robot-based automation system for cryogenic crystal sample mounting at the Advanced Photon Source. (2003) *Proceedings 8th International Conference on Synchrotron Radiation Instrumentation (SRI 2003)*, San Francisco, 1201-1204.

## Abstracts

Published over 250 abstracts in journal proceedings.

## Structures deposited to Protein Data Bank

Coauthored over 1850 protein, DNA, RNA and protein-DNA complexes

## Patents

1. Donnelly MI, Joachimiaak A. Methods for production of proteins in host cells. Patent **6,677,139** issued on 01-13-2004.
2. Collart F, Huberman EM, Joachimiaak A, Zhang RG, Westbrook EM. Crystals, molecular complexes, and methods of developing lead compounds for inhibitors of bacterial IMPDH. Patent **6,826,488** issued on 11-30-2004.
3. Shu D, Joachimiaak A, Preissner C, Nocher D, Han Y, Barraza J, Lee P, Lee WK, Cai Z, Ginell S, Alkire R, Schuessler R. Robot based automation system for cryogenic sample mounting. Patent **7,162,888** issued on 01-16-2007.
4. Lazarski KZ, Joachimiaak A. Automatic cryoloop alignment for protein crystals. Patent **7,438,472** issued on 10-21-2008.

### **Co-organizer of international conferences and workshops (past 5 years)**

1. Chair, Automated Structure Determination using HKL2000, Argonne, Jan. 2006
2. Co-Chair, Keystone Structural Genomics Meeting, January, 2006
3. Chair, MCSG Annual meeting, Argonne, May, 2006
4. Session Chair, International Conference on Structural Genomics, Beijing/Tokyo, October 2006
5. Chair, MCSG Annual meeting, Argonne, March, 2007
6. Session Chair, Structural Genomics, Keystone, 2008
7. Session Chair, Biophysical Society Annual Meeting, Long Beach, 2008
8. Chair, MCSG Annual meeting, Argonne, March, 2008
9. Session Chair, International Conference on Structural Genomics, Oxford, England, 2008
10. SBC SAC Meeting, Argonne, 2009
11. MCSG Annual meeting, Argonne, 2009
12. HKL Workshop, Argonne, 2009
13. Session Chair, Structural Genomics, Keystone, 2010
14. Session Chair, co organizer, NIH Workshop, Salvage Pathways in Structure Determination, 2010, Bethesda,
15. Session Chair, CMD23, 2010, Warsaw
16. Chair, MCSG Annual meeting, Argonne, March, 2010
17. SBC SAC Meeting, Argonne, 2010
18. Chair, MCSG Annual meeting, Argonne, 2011
19. Session Chair, Multi-Pole Approach to Structural Biology, Warsaw, 2011
20. Session Chair, High-Throughput Structural Biology, Keystone, 2012

### **Invited speaker and other meetings (past 5 years)**

1. Keystone Structural Genomics Meeting, January, 2006
2. Keystone Symposium on Structure Based Drug Discovery, Whistler, April 2006,
3. 11<sup>th</sup> Annual Sealy Structural Biology Symposium, University of Texas, Galveston, May, 2006
4. PSI Target Selection Workshop, Bethesda, June 2006
5. CLS User meeting, June 2006
6. International Conference on Structural Genomics, Beijing/Tokyo, October 2006
7. Integrated Center for Structure and Function Innovation, Virginia, October 2006
8. GLRCE Annual Meeting, November 2006
9. PSI Annual Meeting, Bethesda, December 2006
10. PSI Bottleneck Meeting, Bethesda, March 2007,
11. Advanced Photon Source User Meeting, Argonne, May 2007
12. Biophysics of Ligand Binding to Drug Targets, Strasbourg, 2007
13. Midatlantic Crystallographic Meeting, Keynote Speaker, Charlottesville, June 2007
14. 9th International Conference on Biology and Synchrotron Radiation, Manchester, August, 2007
15. Modeling of Protein Interactions Conference, Lawrence, 2007
16. PSI Assessment, Bethesda, 2007
17. PSI Annual Meeting, Bethesda, 2007
18. Structural Genomics, Keystone, 2008
19. Biophysical Society Annual Meeting, Long Beach, 2008
20. Am. Soc. of Microbiol. Biodefense and Emerging Diseases Research Meeting, Baltimore, 2008
21. National RCE Meeting, Chicago, 2008
22. Workshop on Biological Annotation of Novel Proteins, La Jolla, 2008

23. Workshop on Applications of Protein Models in Biomedical Research, San Francisco, 2008
24. Synchrotrons and Lasers for Structural Systems Biology, Hamburg, 2008
25. IUCr Congress, Keynote Lecture, Osaka, Japan, 2008
26. International Conference on Structural Genomics, Oxford, England, 2008
27. Integrated Center for Structure and Function Innovation, ANL, 2008
28. APS Workshop, ANL, 2008
29. Metagenomics Meeting, San Diego, 2008
30. GLRCE Annual Meeting, Hilton Head, 2008
31. PSI-2 annual meeting, Washington DC, 2008
32. PSI Structural Genomics Workshop, Washington DC, 2008
33. DOE GTL meeting, Washington DC, 2009
34. Enabling Technologies for Structural Biology Workshop, Washington DC, 2009
35. 7<sup>th</sup> ASM Biodefence and Emerging Diseases Research meeting, Baltimore, 2009
36. CSGID Annual Meeting, Chicago, 2009
37. NSLS-II Advisory Board meeting, Brookhaven, 2009
38. HKL Workshop, Argonne, 2009
39. ACA Meeting, Toronto, 2009
40. Membrane Protein NIH Road Map meeting, San Francisco, 2009
41. CSGID/SSGCID joint planning meeting, Seattle, 2009
42. ISFI Annual meeting, Berkeley, 2009
43. NCMi Advisory Meeting, Houston, 2009
44. Gene-2009, China, 2009
45. Keystone, Structural Genomics and Structural Biology, 2010
46. ALS Biology Review, 2010, Berkeley
47. APS\_MX\_review 2010, Argonne
48. DOE BER Genomic Sciences Contractor Workshop, Washington D.C. 2010
49. DOE/BER Grand Challenge Workshop, Washington D.C. 2010
50. BSR\_MASR\_2010, Melbourne, Australia
51. NIH Workshop, Salvage Pathways in Structure Determination, 2010, Bethesda,
52. ASBMB, 2010, Anaheim,
53. MCGS annual meeting, 2010, Argonne,
54. ACA Meeting, 2010, Chicago, key note lecture,
55. PSI:Biological Kickoff Meeting, 2010, Bethesda,
56. CMD23, 2010, Warsaw
57. CSGID/SSGCID joint planning meeting, Chicago, 2010
58. PDB Advisory Meeting, 2010, Rutgers Univ.
59. NCMi Advisory Meeting, Houston, 2010
60. Modeling Protein Interactions, Lawrence, 2010
61. PSI:Biological annual meeting, Washington DC, 2010
62. University of Missouri, Columbia, 2011,
63. MCGS annual meeting, 2011, Argonne,
64. CSGID Annual Meeting, 2011, Chicago,
65. Genomic Science Annual Contractor-Grantee Workshop, 2011, Washington,
66. Mexican Synchrotron User Meeting, 2011, Mexico.
67. International Structural Genomics Conference, ISCO, 2011, Toronto,
68. SSGID/CSGID Programmatic Meeting, 2011, Seattle,
69. CELS, UofC Review, 2011, Argonne
70. Zing Conference Protein and RNA Structure Prediction, 2011, Mexico
71. PSI:Biological Annual Meeting, Washington DC, 2011
72. PepTalk, Higher Throughput Protein Purification, San Diego, 2012
73. High-Throughput Structural Biology, Keystone, 2012
74. International Conference on Metabolomics, San Francisco, 2012

75. MCSG Annual Meeting, Argonne, 2012
76. CSGID Annual Meeting, Chicago, 2012
77. APS User Meeting, Workshop APCF: Crystals, Robots and X-rays, Argonne, 2012
78. LCS Workshop, Argonne, 2012
79. Jagiellonski University Seminar, Krakow, 2012
80. Students Seminar Series, ANL, 2012