

**BIOGRAPHICAL SKETCH**

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NAME Robert McKenna	POSITION TITLE Assistant Professor		
eRA COMMONS USER NAME RMCKENNA			
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
University of London, Kings College, London, UK	B.Sc. (Hons)	1985	Biology and Physics
University of London, ICR, UK	Ph.D.	1989	Crystallography
Purdue University; West Lafayette, Indiana, USA	Postdoc	1989-92	Viral Crystallography

**NOTE: The Biographical Sketch may not exceed four pages. Items A and B (together) may not exceed two of the four-page limit. Follow the formats and instructions on the attached sample.**

**A. Positions and Honors.**

1992-1993 Research Associate, Dept. of Biological Sciences, Purdue University, IN., USA.  
1993-1995 Assistant Research Scientist, Dept. of Biological Sciences, Purdue University, IN., USA.  
1995-1999 Warwick Research Fellow, Dept. of Biological Sciences, University of Warwick, UK.  
1999-present Assistant Professor, Dept. of Biochemistry & Molecular Biology, University of Florida, FL., USA.

**Honors / Awards / Memberships:**

4/97-5/99 Elected member of the British Crystallographic Association Biological Structure Group committee.  
6/99- Member of the American Crystallographic Association

**B. Selected peer-reviewed publications (in chronological order).**

Publications (last THREE years – out of 68):

46. Lian W., Y. Gu, B. Pedersen, T. Kukar, L. Govindasamy, M. Agbandje-McKenna, S. Jin, **R. McKenna**, D. Wu. 2004. Crystallization and preliminary X-ray crystallographic studies on recombinant rat choline acetyltransferase. *Acta Cryst.*, D60: 374-375.
47. Casado, C.G., G.J. Ortiz, E. Padron, S. Bean, **R. McKenna**, M. Agbandje-McKenna, M. I. Boulton. 2004. Isolation and characterization of subgenomic DNAs encapsidated in "single" icosahedral particles of Maize streak virus. *Virology*, 323:164-171.
48. Reutzel, R., C. Yoshioka, L. Govindasamy, E. G. Yarmola, M. Agbandje-McKenna, M. R. Bubb, **R. McKenna**. 2004. Actin Crystal Dynamics: Structural Implications for F-actin Nucleation, Polymerization and Branching Mediated by the Anti-parallel Dimer. *J. Structural Bio.*, 146:291-301.
49. Govindasamy, L., T. Kukar, W. Lian, B. Pedersen, Y. Gu, M. Agbandje-McKenna, **R. McKenna**, D. Wu. 2004. Structural and mutational characterization of L-carnitine binding to human carnitine acetyltransferase. *J. Structural Bio.*, 146:416-424.
50. Govindasamy, L., R. Reutzel, M. Agbandje-McKenna, **R. McKenna**. 2004. Structural determination of a partial hemihedral twinned Actin crystal. *Acta Cryst.*, D60: 1040-1047.
51. Govindasamy, L., B. Pedersen, W. Lian, T. Kukar, M. Agbandje-McKenna, D. Wu, **R. McKenna**. 2004. Structural insights and functional implications of choline acetyltransferase. *J. Structural Bio.*, 148: 226-235.
52. Clemente, J.C., R. E. Moose, R. Hemrajani, L. R. S. Whitford, L. Govindasamy, R. Reutzel, **R. McKenna**, M. Agbandje-McKenna, M. M. Goodenow, B. M. Dunn. 2004. Comparing the accumulation of active site and non-active site mutations in the HIV-1 protease. *Biochemistry*, 43:12141-12151.
53. Padron, E., V. Bowman, N. Kaludov, L. Govindasamy, P. Nick, **R. McKenna**, J. A. Chiorini, T. S. Baker, M. Agbandje-McKenna. 2005. The Structure of Adeno-Associated Virus. *J. Gen. Virol.*, 79:5047-5058.

54. Fisher, S. Z., J. A. Hernandez Prada, C. Tu, D. M. Duda, C. Yoshioka, H. An, L. Govindasamy, D. N. Silverman, **R. McKenna**. 2005. Structural and kinetic characterization of active-site histidine as a proton shuttle in catalysis by human carbonic anhydrase II. *Biochemistry*, 44:1097-1105.
55. Beyer, B. B., J. V. Johnson, A. Y. Chung, T. Li, A. Madabushi, M. Agbandje-McKenna, **R. McKenna**, J. B. Dame, B. M. Dunn. 2005. Active site specificity of digestive aspartic peptidases from the four species of plasmodium that infect humans using chromogenic combinatorial peptide libraries. *Biochemistry*, 44: 1768-1779.
56. Madabushi, A., S. Chakraborty, S. Z. Fisher, J.C. Clemente, C. Yowell, M. Agbandje-McKenna, J. B. Dame, B. M. Dunn, **R. McKenna**. 2005. Crystallization and preliminary X-ray analysis of the aspartic protease plasmepsin 4 from the malarial parasite *P. malariae*. *Acta Cryst.*, F61:228-231.
57. Elder, I., C.K. Tu, L.-J. Ming, **R. McKenna**, D. N. Silverman, 2005. Proton transfer from exogenous donors in catalysis by human carbonic anhydrase II. *Archives of Biochemistry and Biophysics*, 437: 106-114.
58. Ketcham, C. M., S. Anai, R. Reutzel, S. Sheng, S. M. Schuster, R. B. Brenes, M. Agbandje-McKenna, **R. McKenna**, C. J. Rosser, S. K. Boehlein. 2005. P37 Induces tumor invasivity. *Molecular Cancer Therapeutics*, 4:1031-1038.
59. Bhatt, D., C. Tu, Z. S. Fisher, J. A. Hernandez Prada, **R. McKenna**, D. N. Silverman. 2005. Proton transfer from His200 in human carbonic anhydrase II. *PROTEINS Structure, Function, and Bioinformatics*, 61:239-245.
60. Lane, M.D., N. Hyun-Joo, E. Padron, B. Whitaker, E. Kohlbrenner, G. Aslanidi, B. Byrne, **R. McKenna**, N. Muzyczka, S. Zolotukhin, M. Agbandje-McKenna. 2005. Production, purification, crystallization, and preliminary X-ray analysis of adeno-associated virus serotype 8. *Acta Cryst.*, F61: 558-561.
61. Kontou, K., L. Govindasamy, H-J Nam, N. Bryant, A. L. Llamas-Saiz, C. Foces-Foces, E. Hernando, M.-P. Rubio, **R. McKenna**, J.M. Almendral, M. Agbandje-McKenna. 2005. Structural determinants of tissue tropism and in vivo pathogenicity for the parvovirus minute virus of mice. *J. of Virology*, 79:10931-10943.
62. Duda, D.M. C.K. Tu, S.Z. Fisher, H. An, C. Yoshioka, L. Govindasamy, P. J. Laipis, M. Agbandje-McKenna, D. N. Silverman, **R. McKenna**. 2005. Human carbonic anhydrase III: Structural and kinetic study of catalysis and proton transfer. *Biochemistry*, 44:10046-53.
63. DiMattia, M., L. Govindasamy, H. C. Levy, B. Gurda-Whitaker, A. Kalian, E. Kohlbrenner, J. A. Chiorini, **R. McKenna**, N. Muzyczka, S. Zolotukhin, M. Agbandje-McKenna. 2005. Production, Purification, Crystallization, and preliminary X-ray structural studies of Adeno-Associated virus serotype 5. *Acta Cryst. F.*, F61: 917-921.
64. Quint, P, R. Reutzel, R. Mikulski, **R. McKenna**, D. N. Silverman. 2006. Structure and catalytic inhibition of nitrated human Mn superoxide dismutase: Mechanism of inactivation in conditions of oxidative stress. *Free Radical Biology and Medicine*, 40:453-458.
65. Clemente, J. C., L. Govindasamy, A. Madabushi, R. E. Moose, C. A. Yowell, K. Hidaka, T. Kimura, Y. Hayashi, Y. Kiso, M. Agbandje-McKenna, J. B. Dame, B. M. Dunn, **R. McKenna**. 2006. X-ray crystal structure of the aspartic protease plasmepsin 4 from the malarial parasite plasmodium malariae bound to an allophenylnorstatine based inhibitor. *Acta Cryst.*, D62:246-252.
66. López-Bueno, A., M. P. Rubio, N. Bryant, **R. McKenna**, M. Agbandje-McKenna, J. M. Almendral. 2006. Host selection of subtle topological changes at the sialic acid binding pocket of the parvovirus capsid modulating cell binding affinity drastically determine virulence. *J. of Virology* 80:1563-1573.
67. Budayova-Spano, M., S. Z. Fisher, M.-T. Dauvergne, M. Agbandje-McKenna, D. N. Silverman, D. A. A. Myles, **R. McKenna**. 2006. Production and X-ray crystallographic analysis of fully deuterated human carbonic anhydrase II. *Acta Cryst.*, F62: 6-9.
68. Fisher, S. Z., L. Govindasamy, C. K. Tu, M. Agbandje-McKenna, D. N. Silverman, H. J. Rajaniemi, **R. McKenna**. 2006. Structure of human salivary  $\alpha$ -amylase crystallized in a C-centered monoclinic space group. *Acta Cryst.*, F62:88-93.

Chapters (last THREE years – out of 6):

5. Agbandje-McKenna, M., A. Edison, **R. McKenna**. 2003. Biophysical techniques. pp 269-290. In Davey, J., Lord, M. (ed.). *Essential Cell Biology Volume I: A Practical Approach*.
6. Duda, D. M., **R. McKenna**. 2004. Carbonic anhydrase  $\alpha$  class, pp 249-263. In Messerschmidt, A. (ed.). *Handbook of metalloproteins*. John Wiley & sons, Ltd, New York. USA.

**C. Research Support.** List selected ongoing or completed (during the last three years) research projects (federal and non-federal support). Begin with the projects that are most relevant to the research proposed in this application. Briefly indicate the overall goals of the projects and your role (e.g. PI, Co-Investigator, Consultant) in the research project. Do not list award amounts or percent effort in projects.

Ongoing Research Support

P01 HL51811 Muzyczka (PI)

05/01/04 - 04/30/09

NIH/NHLBI

Gene and Pharmacological Therapies for Cystic Fibrosis -Biology of Adeno-Associated Viral Vectors (Project 4).

Project 4 is aimed at structure-function studies of the AAV4 and AAV5 capsids. Information obtained from this project could aid the proposed use of three-dimensional structure information for analyzing subunit interfaces.

Role: Co-investigator

P01 DK58327 Flotte (PI)

07/01/05 - 06/30/08

NIH/DK

Recombinant AAV for Correction of Genetic Abnormalities

My role on this project is the expression, purification, crystallization and structure determination of human  $\alpha$ -glucosidase.

Role: Co-PI

RO1 GM25154 Silverman (PI)

05/01/04 - 04/30/08

NIH/GM

Catalytic Mechanism of Carbonic Anhydrase

The unifying goal of this proposal is to expand our use of the carbonic anhydrases to understand the rate-limiting proton transfer steps in a way that can be extended to other proteins.

Role: Co-PI

Shiverick (PI)

01/01/06 -12/31/06

American Cancer Society

UF Experimental Therapeutics/Carbonic Anhydrase IX Drug Design Working Group

The goal of this project is to determine the three-dimensional structure of CA IX using X-ray crystallographic methods.

Role: Co-PI

Completed Research Support

McKenna (PI)

06/20/02 - 06/19/05

Thomas H. Maren Foundation

Proton mapping the active site of human carbonic anhydrase II.

This project goal is to initiate ultra-high resolution X-ray and neutron diffraction studies of wild type human carbonic anhydrase II.

Role: PI

McKenna (PI)

01/01/04 - 12/31/04

American Cancer Society

Structural Studies of the tumor metastasis factor p37.

The goal of this project is to determine the three-dimensional structure of p37 using X-ray crystallographic methods.

Role: PI