

**BIOGRAPHICAL SKETCH**

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NAME <b>Mavis Agbandje-McKenna</b>	POSITION TITLE <b>Associate Professor</b>
eRA COMMONS USER NAME <b>MAMCKENNA</b>	

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 Hertfordshire, Hatfield, UK	B.Sc. (Hons)	1985	Human
University of London, ICR, UK	Ph.D.	1989	Biophysics
Purdue University, West Lafayette, Indiana, USA	Post doc	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**Professional Experience:

1992-1993 Research Associate, Dept. of Biological Sciences, Purdue University, Indiana, USA.  
 1993-1995 Assistant Research Scientist, Dept. of Biological Sciences, Purdue University, Indiana, USA.  
 1995-1997 Research Fellow, Dept. of Biological Sciences, University of Warwick, Coventry, UK.  
 1997-1999 Senior Research Fellow, Dept. of Biological Sciences, University of Warwick, Coventry, UK.  
 1999-2005 Assistant Professor, Dept. of Biochemistry and Molecular Biology, UF, USA.  
 2005-present Associate Professor, Dept. of Biochemistry and Molecular Biology, UF, USA.

**B. Selected peer-reviewed publications**Peer Reviewed Publications (Out of a Total of 56)

Llamas-Saiz, A., **M. Agbandje-McKenna**, J.S.L. Parker, A.T.M. Wahid, C. R. Parrish, M.G. Rossmann. 1997. Structural analysis of a mutation in canine parvovirus which controls antigenicity and host range. *Virology*, 255:65-71.

Bloom, M.E., D. Martin, M. Huntanen, F. Costello, J.B. Wolfenbarger, S. Perryman, **M. Agbandje-McKenna**. 1997. Expression of Aleutian mink disease parvovirus (ADV) capsid proteins in defined segments: Localization of immunoreactive sites and neutralizing epitopes to specific regions. *J. of Virol.*, 71:705-714

Llamas-Saiz, A., **M. Agbandje-McKenna**, W.R. Wikoff, M.G. Rossmann, J. Bratton, P. Tattersall. 1997. Structure determination of minute virus of mice. *Acta Crystallogr.*, D53:93-102.

Chipman P.R., **M. Agbandje-McKenna**, J. Renaudin, T.S. Baker, R. McKenna. 1998. Structural analysis of the spiroplasma virus, SpV4, implications for evolutionary variation to obtain host diversity among the *Microviridae*. *Structure*, 6:135-145.

**Agbandje-McKenna, M.**, A. Llamas-Saiz, J. Bratton, P. Tattersall, M.G. Rossmann. 1998. Functional implications of the structure of the murine parvovirus, minute virus of mice. *Structure*, 6:1369-1381.

McKenna, R., P.R. Chipman, N.H. Olson, T.S. Baker, T.F. Booth, J. Christensen, B. Aasted, M.E. Bloom, **M. Agbandje-McKenna**. 1999. The three-dimensional structure of Aleutian mink disease parvovirus: Implications for disease pathogenicity. *J. of Virol.*, 73: 6882-6891.

Hernando E., A. L. Llamas-Saiz, C. Foces-Foces, R. McKenna, I. Portman, **M. Agbandje-McKenna**, J. M. Almendral. 2000. Biochemical and physical characterization of parvovirus minute virus of mice virus-like particles. *Virology*, 267:299-309.

Lombardo E., J.C. Ramírez, **M. Agbandje-McKenna**, J.M. Almendral. 2000. A  $\beta$ -stranded motif drives capsid protein oligomers of the parvovirus minute virus of mice into nucleus for viral assembly. *J. of Virol.*, 74:3804-3814.

Wu, P., W. Xiao, T. Conlon, J. Hughes, **M. Agbandje-McKenna**, T. Ferkol, T. Flotte, N. Muzyczka. 2000. Mutational analysis of the adeno-associated virus type 2 (AAV2) capsid gene and construction of AAV2 vectors with altered tropism. *J. of Virol.*, 74:8635-8647.

- Zhang, W., N.H. Olson, T.S. Baker, L. Faulkner, **M. Agbandje-McKenna**, M. I. Boulton, J.W. Davies, R. McKenna. 2001. Structure of the maize streak virus geminate particle. *Virology*, 279:471-477.
- Bloom, M.E., P. Yaciuk, S. F. Hayes, S. M. Best, J. Lukszo, J. B. Wolfinger, R. McKenna, **M. Agbandje-McKenna**. 2001. Identification of Aleutian mink disease parvovirus capsid sequences mediating antibody-dependent enhancement of infection, virus neutralization and immune complex formation. *J. Virol.*, 75: 11116-11127.
- Kaludov, N., E. Padron, L. Govindasamy, R. McKenna, J. A. Chiorini, **M. Agbandje-McKenna**. 2003. Production, purification and preliminary X-ray crystallographic studies of Adeno-associated virus serotype 4. *Viol.* 306:1-6.
- Opie, S. R., K. H. Warrington, Jr. **M. Agbandje-McKenna**, S. Zolotukhin, N. Muzyczka. 2003. Identification of amino acid residues in the capsid proteins of Adeno-associated virus type 2 that contribute to heparin sulfate proteoglycan binding. *J. Virol.* 77:6995-7006.
- Hueffer, K, L. Govindasamy, **M. Agbandje-McKenna**, C.R. Parrish. 2003. Combinations of two capsid regions control host range and specific transferrin receptor binding by canine parvovirus. *J.Virol.* 77:10099-10105.
- Govindasamy, L., Hueffer, K, C.R. Parrish, **M. Agbandje-McKenna**. 2003. The structures of host range controlling regions of the capsids of canine and feline parvoviruses and mutants. *J. Virol.* 77:12211-12221.
- Walters, R, **M. Agbandje-McKenna**, V.D. Bowman, T. O. Moninger, N. H. Olson, M. Seiler, J.A. Chiorini, T. S. Baker, J. Zabner. 2004. Structure of adeno-associated virus 5. *J. Virol.* 78:3361-3371.
- 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.
- 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. *Viol.* 323:164-171.
- Padron, E., V. Bowman, N. Kaludov, L. Govindasamy, H. Levy, P. Nick, R. McKenna, N. Muzyczka, J. A. Chiorini, T. S. Baker, **M. Agbandje-McKenna**. 2005. Structure of Adeno-associated virus type 4. *J. Virol.* 79: 5047-5058
- Lane, M. D., H.-J. Nam, E. Padron, B. Gurda-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.
- Kontou, M. L. Govindasamy, H-J. Nam, N. Bryant, A.L. Llamas-Saiz, C. Foces-Foces, E. Hernando, M-P. Rubio, Robert 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. Virol.* 79: 10931-10943.
- DiMattia, M., L. Govindasamy, H.C. Levy, B. Gurda-Whitaker, A. Kalina, 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.* F61, 917-921.
- Alberto López-Bueno, A, M-P. Rubio, N. Bryant, R. McKenna, **M. Agbandje-McKenna**, J. M. Almendral. 2006. Host-selected amino acid changes at the sialic acid binding pocket of the parvovirus capsid modulate cell binding affinity and determine virulence. *J. Virol.* 80: 1563-1573.
- Sitharam, M., **M. Agbandje-McKenna**. 2005. Modeling virus self-assembly pathways: Avoiding dynamics using geometric constraint decomposition. *J. Computational Chemistry*, in press

Contributions to compiled volumes (out of 9):

- Agbandje, M.**, C.R. Parrish, M. G. Rossmann. 1995. The structure of parvoviruses. *Sem. in Virology*, 6:299-309.
- Agbandje, M.**, C.R. Parrish, M. G. Rossmann. 1995. The recognition of parvovirus capsids by antibodies. *Seminars in Virology*, 6:219-231.
- Agbandje-McKenna, M.**, M. G. Rossmann. 1997. The structure of human parvovirus B19. *Monogr Virology.*, Vol. 20, pp. 3-15.
- Chapman, M.S., **M. Agbandje-McKenna**. 2006. Atomic structure of Viral particles. In *Parvoviruses*. J. R. Kerr, S. F. Cotmore, M. E. Bloom, R. M. Linden, C. R. Parrish (Eds). pp 107-123.
- Agbandje-McKenna, M.**, M. S. Chapman. 2006. Correlating structure with function in the viral capsid. In *Parvoviruses*. J. R. Kerr, S. F. Cotmore, M. E. Bloom, R. M. Linden, C. R. Parrish (Eds). pp 124-139.

## C. Research Support.

### Ongoing Research Support

P01 HL51811 Guggino (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-PI

PO1 HL59412 Muzyczka (PI)

09/01/02 - 08/31/07

NIH/NHLBI

Studies of AAV capsid assembly, viral entry, and viral tropism (Project 1).

The aim of our studies are to determine the structure of the AAV2 capsid in complex with heparin sulfate and a monoclonal antibody or antibody fragments in an effort to elucidate regions on the capsid that are required for receptor attachment and capsid assembly.

Role: Co-PI

R01 DK52356 Bungert (PI)

08/01/02 - 07/31/06

NIH

Structure and Function of the Human  $\beta$ -globin LCR.

Role in this project involves analysis of the Human  $\beta$ -globin LCR by electron microscopy.

Role: Co-PI

MCB-0212846 Agbandje-McKenna (PI)

07/01/02 - 06/30/06

NSF

(no cost extension)

Structural Analysis of Virulence Determinants and Genomic DNA packaging Constraints in a ssDNA Virus

The aim of this project is to elucidate the structural determinants of viral host cell tissue tropism and pathogenicity and identify a possible genomic recognition motif for the ssDNA parvoviruses.

Role: PI

NER 00051444 Sitharam (PI)

07/01/04 – 06/30/06

NSF- Nanoscale Exploratory Research

(no cost extension)

NER: Geometry and Tensegrity based computational modeling of virus assembly pathways.

This project is aimed at the development of computational and mathematical models of virus assembly to be validated by wet lab experiments.

Role: Co-PI

EIA-0218435 Sitharam (PI)

09/01/02 - 08/31/06

NSF – EIA – Revolutionary Computing

(no cost extension)

Virus-Inspired Declarative Geometric Computation.

This project is aimed at isolating the components of viral capsid assembly, using the unique geminivirus capsid as a model, utilizing the combined disciplines of computational biology and biochemistry.

Role: Co-PI

### Completed Research Support (within the last three years)

None