BIOGRAPHICAL SKETCH

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NAME	POSITION TITLE
Emeson, Ronald B.	Professor of Pharmacology, Molecular Physiology & Biophysics and Psychiatry
eRA COMMONS USER NAME emesonrb	

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
The Johns Hopkins University	B.A.	1980	Biology
University of Colorado Health Sciences Center	Ph.D.	1986	Physiology
The University of California, San Diego	Post-doc	1986-89	Molecular Neurobiology

A. Positions and Honors

Positions and Employment

1983-1986 The Johns Hopkins University School of Medicine, Department of Neuroscience
1989-1991 Research Associate, Howard Hughes Medical Institute, University of California, San Diego, CA
1991-1997 Assistant Professor, Departments of Pharmacology and Molecular Physiology & Biophysics, Vanderbilt University School of Medicine, Nashville, TN
1997-2007 Associate Professor, Departments of Pharmacology and Molecular Physiology & Biophysics, Vanderbilt University School of Medicine, Nashville, TN
2007-present Professor, Departments of Pharmacology and Molecular Physiology & Biophysics, Vanderbilt University School of Medicine, Nashville, TN
2008-present Professor, Departments of Pharmacology, Molecular Physiology & Biophysics and Psychiatry, Vanderbilt University School of Medicine, Nashville, TN

Other Experience and Professional Memberships

1998-2000 NIH Study Section, Molecular, Developmental and Cellular Neuroscience-6, *member reviewer*
1995-1998 NIH Study Section, Neurological Sciences-2, *member reviewer*
1997-2000 Pharmaceutical Research, Editorial Advisory Board
1998-present Joel G. Hardman Chair in Pharmacology
2003-2005 Scientific Director, Transgenic Mouse/ES Cell Shared Resource
2005-2008 Director, Transgenic Mouse/ES Cell Shared Resource
2007-present Deputy Director, Center for Molecular Neuroscience
2008-present Chair, Institutional Animal Care and Use Committee

Honors

1982, 1983 Upjohn Pharmaceutical Company Graduate Fellowship
1986-1989 Individual National Research Service Award (NRSA)
1995, 2003 Department of Pharmacology Teaching Award

B. Selected Peer-Reviewed Publications (in chronological order).

1. Rueter, S.M., C.M. Burns, P. Mookherjee, S.A. Coode and **R.B. Emeson**. (1995) Glutamate receptor RNA editing in vitro by enzymatic conversion of adenosine to inosine. *Science* 267:1491-1494, [PMID: 7878468]
2. Canton, H., **R.B. Emeson**, E.L. Barker, J.R. Backstrom, J.T. Lu, M.S. Chang and E. Sanders-Bush. (1996) Identification, molecular cloning, and distribution of a short variant of the 5-hydroxytryptamine2C receptor produced by alternative splicing. *Mol. Pharmacol.* 50: 799-807, [PMID: 8863824]
3. Simpson, L. and **R.B. Emeson** (1996) RNA editing. *Ann. Rev. Neurosci.* 19:27-52, [PMID: 8833435]

4. Bass, B.L., K. Nishikura, W. Keller, P.H. Seeburg, **R.B. Emeson**, M.A. O'Connell, C.E. Samuel and A. Herbert. (1997) A standardized nomenclature for adenosine deaminases that act on RNA. *RNA* 3:947-949, [PMID: 9292492, PMCID: 1369539].
5. Burns, C.M., H. Chu, S.M. Rueter, L.K. Hutchinson, H. Canton, E. Sanders-Bush and **R.B. Emeson** (1997) Regulation of serotonin receptor G-protein coupling by RNA editing. *Nature* 387: 303-308, [PMID: 9153397].
6. Breyer R.M., **R.B. Emeson**, L.S. Davis and M.D. Breyer (1997) Structure and localization of the rabbit prostaglandin EP3 receptor. *Adv Exp Med Biol.* 400A:261-8, [PMID: 9547567].
7. Niswender, C.M., E. Sanders-Bush and **R.B. Emeson** (1998) Identification and characterization of RNA editing events within the serotonin2c receptor. *Ann. NY Acad. Sci.* 861:38-48, [PMID: 9928237].
8. Rueter, S. and **R.B. Emeson** (1998) Adenosine to Inosine Conversion in mRNA. In: Modification and editing of RNA: the alteration of RNA structure and function. (H. Grosjean and R. Benne, eds.) ASM Press, East Norwalk, CT, pp. 343-361.
9. Lu, J.T., Y-J. Son, J. Lee, T.L. Jetton, M. Shiota, L. Moscoso, K.D. Niswender, A.D. Loewy, M.A. Magnuson, J.R. Sanes and **R.B. Emeson** (1999) Mice lacking α-calcitonin gene-related peptide exhibit normal cardiovascular regulation and neuromuscular junction development, *Mol. Cell. Neurosci.* 14:99-120, [PMID: 10532808].
10. Niswender, C.M., S.C. Copeland, K. Herrick-Davis, **R.B. Emeson** and E. Sanders-Bush. (1999) RNA editing silences serotonin 2C receptor constitutive activity, *J. Biol. Chem* 274:9742-9751, [PMID: 10092629]
11. Rueter, S., T.R. Dawson and **R.B. Emeson** (1999) Regulation of alternative splicing by RNA editing, *Nature* 399:75-80, [PMID: 10331303].
12. Liu, Y., **R.B. Emeson** and C.E. Samuel (1999) Differential editing of serotonin-2C receptor pre-mRNA by splice-site variants of interferon-inducible dsRNA-specific adenosine deaminase ADAR1. *J. Biol Chem.* 274:18351-18358, [PMID: 10373439].
13. Gott, J.M. and **R.B. Emeson** (2000) Functions and mechanisms of RNA editing. *Ann. Rev Genet.* 34:499-531, [PMID: 11092837].
14. Singh, M. and **R.B. Emeson**. (2000) Adenosine to Inosine RNA Editing: Substrates and Consequences. In: RNA Editing: Frontiers in Molecular Biology. (B.L. Bass, ed.) Oxford University Press, London, pp. 109-138.
15. Niswender, C.M., G.E. Dilley, H.Y. Meltzer, J.C. Overholser, C.A. Stockmeier, **R.B. Emeson** and E. Sanders-Bush (2001) RNA editing of the human serotonin 5-HT_{2C} receptor: alterations in suicide and implications for serotonergic pharmacotherapy. *Neuropsychopharmacology* 24:478-91, [PMID: 11282248].
16. Berg KA. Cropper JD. Niswender CM. Sanders-Bush E. **Emeson RB**. Clarke WP. (2001) RNA-editing of the 5-HT(2C) receptor alters agonist-receptor-effector coupling specificity. *British Journal of Pharmacology* 134:386-92, [PMID: 11564657, PMCID: 1572953].
17. Sansam, C.L., Wells, S and **R.B. Emeson** (2003) Modulation of RNA editing by functional nucleolar sequestration of ADAR2. *Proc. Natl. Acad Sci. USA* 100:14018-14023, [PMID: 14612560, PMCID: 283538].
18. Sansam, C.L. and **R.B. Emeson** (2003) Editing of human messenger RNAs, In: Encyclopedia of the Human Genome. *Nature Press*, London, www.ehgonline.net.
19. Maison, S., J.C. Adams, A.E. Luebke, **R.B. Emeson** and C. Lieberman (2003) Loss of αCGRP reduces sound-evoked activity in the cochlear nerve, *J. Neurophysiol.* 90:2941-2949, [PMID: 12904337].
20. Dawson, T.R., C.L. Sansam and **R.B. Emeson** (2004) Structure and sequence determinants required for the RNA editing of ADAR2 substrates, *J. Biol. Chem.* 279:4941-51, [PMID: 14660658].
21. Schinke, T., M. Priemel, M. Haberland, A.F. Schilling, P. Catala-Lehnen, J.M. Rueger, R.F. Gagel, R**.B. Emeson** and M. Amling (2004) Decreased bone formation and osteopenia in mice lacking α-calcitonin gene-related peptide, *J. Bone Miner. Res.*19:2049-56, [PMID: 15537449].
22. Stefl, R., L. Skrisovska, M. Xu, **R.B. Emeson** and F. Allain (2005) Resonance assignment of the double-stranded RNA-binding domains of adenosine deaminase acting on RNA 2 (ADAR2), *J. Biomol. NMR* 31:71-2, [PMID: 15692744]
23. **Emeson, R.B.** and M.V. Morabito (2005) Food fight: the NPY-serotonin link between aggression and feeding behavior. *Sci. STKE* 2005, pe12, [PMID: 15787100].

24. Feng, Y., C.L. Sansam, M. Singh and **R.B. Emeson** (2006) Increased editing of ADAR2 substrates in mice lacking ADAR2 autoregulation, *Mol. Cell Biol.* 26:480-88. [PMID: 16382140, PMCID: 1346902]
25. Stefl, R., M. Xu, L. Skrisovska, **R.B. Emeson** and F.H-T. Allain (2006) Structure and specific RNA-binding of ADAR2 double-stranded RNA-binding motifs, *Structure*, 14:1-11, [PMID: 16472753].
26. Xu, M., K.S. Wells and **R.B. Emeson** (2006) Differential contributions of dsRNA-binding domains in ADAR2 enzymatic activity and nucleolar localization, *Mol. Biol. Cell* **17**:3211-3220, [PMID: 16672376, PMCID: 1552048].
27. Huebner, A.K., A., T. Schinke, M. Priemel, S. Schilling, A.F. Schilling, **R.B. Emeson**, JM. Rueger and M. Amling (2006) Calcitonin deficiency in mice progressively results in high bone turnover, *J. Bone Miner. Res.*, 21:1924-1934, [PMID: 17002587].
28. Rula, E.Y. and **R.B. Emeson** (2007) Mouse Models to Elucidate the Functional Roles of Adenosine-to-Inosine Editing. *Methods Enzymol*. **424**:333-67, [PMID: 17662849].
29. Thompson, B.J., M.K. Washington, E.Y. Rula, M. Singh and **R.B. Emeson** (2007) Protective roles of α- and β-calcitonin gene-related peptide in spontaneous and experimentally-induced colitis, *Digestive Diseases and Sciences,* **53**:229-41, [PMID: 17530400].
30. Singh, M., R.A. Kesterson, J.M. Joers, J.C. Gore and **R.B. Emeson** (2007) Hyperphagia-mediated obesity in transgenic mice misexpressing the RNA editing enzyme ADAR2, *J. Biol. Chem.,* **282**:22448-59, [PMID: 17567573].
31. Rula, E.Y., Lagrange, A.H., Jacobs, M.M., Hu, N., MacDonald, R.L. and R.B. Emeson (2008) Developmental regulation of $GABA_A$ receptor function by RNA editing, *J. Neurosci.,* **28**:6196-6201, [PMID: 18550761].
32. Lanfranco, M.F., Seitz, P.K., Morabito, M.V., Emeson, R.B., Sanders-Bush, E. and K.A. Cunningham (2009) An innovative real-time PCR method to measure changes in RNA editing of the serotonin 2C receptor (5-HT_{2C}R) in brain, *J. Neurosci. Methods,* **179**: 247-257, [PMID: 19428534].
33. Jacobs, M.M., Fogg, R.L., Emeson, R.B. and G.D. Stanwood (2009) ADAR1 and ADAR2 expression and editing activity during forebrain development, Dev. Neurosci., 31: 223-37, [PMID: 19325227, PMCID: 2692045].
34. Morabito, M.V. and R.B. Emeson (2009) RNA editing as a therapeutic target for CNS disorders, *Neuropsychopharmacology* **34**:246, [PMID: 19079070]
35. Morabito, M.V., Abbas, A., Hood, J.L., Kesterson, R.A., Jacobs, M.M., Kump, D.S., Hachey, D.L., Roth, B.L. and R.B. Emeson (2009) Mice with altered serotonin 2C receptor editing display characteristics of Prader-Willi Syndrome, *submitted*.
36. Olaghere da Silva, U.B., Canal, C.E., Airey, D.C., Morabito, M.V., Emeson, R.B. and E. Sanders-Bush (2009) Impact of RNA editing on functions of the serotonin 2C receptor *in vivo*, *submitted*.
37. Stefl, R., Oberstrass, F., Hood, J.L, Jourdan, M., Peng, L., Emeson, R.B. and Allain, F.H.-T. (2009) The solution structure of the ADAR2 dsRBM-RNA complex reveals a sequence-specific read out of the RNA minor groove, *submitted*.
38. Morabito, M.V., Ulbricht, R.J., O'Neil, R.T. Airey, D.C., Lu, P., Zhang, B., Wand, L. and R.B. Emeson (2009) High-throughput multiplexed transcript analysis yields enhanced resolution of 5HT_{2C} receptor mRNA editing profiles, *submitted*.

C. Research Support

ACTIVE

5R01 MH034007-28 (Bush, E.) 12/08/2006-11/30/2009
NIH/NIMH $229,298
Characterization of central serotonin receptors

The goal of these studies is to evaluate the *in vivo* function of editing events in transcripts encoding the 2C-subtype of serotonin receptor (5-HT_{2C}R) using genetically modified mice solely expressing the non-edited (INI) and fully-edited (VGV) isoforms of the receptor under basal conditions and in response to pharmacological manipulation. The last aim will take advantage of prominent variations in RNA editing of the 5-HT_{2C}R in six common inbred mouse strains to evaluate changes in anxiety.

Role: Co-investigator

5R01 NS033323-11 (Emeson, R.) 02/01/2007-01/31/2011
NIH/NINDS $214,594
Regulation of RNA editing in the CNS

The goal of these studies is to define the regulatory mechanisms modulating ADAR2 expression in the central nervous system and to define the relevance of RNA editing events within Alu repetitive elements contained within the 3'-untranslated regions of numerous mRNA transcripts. These studies will take advantage of animal model systems in which ADAR2 is overexpressed as a result of transgene expression or conditional ablation of ADAR2 autoediting.

Role: Principal Investigator

5P50 MH078028-02 (Blakely, R.) 07/01/2007-06/30/2012
NIH/ NIMH $1,289,136
Genes controlling assembly and function of serotonin systems

The long term objectives of the proposed research are to define the cellular mechanisms involved in the regulation of $5HT_{2C}R$ signaling, the physiologic relevance of edited $5HT_{2C}R$ isoforms and possible relationships between $5HT_{2C}R$ editing and affective disorders. These studies will more fully elucidate the region-specific pattern of $5HT_{2C}R$ editing in the developing nervous system, to examine genetic and epigenetic modulation of $5HT_{2C}R$ editing patterns and to take advantage of genetically-modified mouse strains that solely express single, edited isoforms of the $5HT_{2C}R$ to define the physiologic relevance of multiple 5-$HT_{2C}R$ receptors.

Role: Principal Investigator (Project 5)

1R21 DA026880-01 (Deutch, A.) 05/01/2009-04/30/2011
NIH/NIDA $100,000
The role of claustrum in substance abuse and cognition
The proposed studies will evaluate the behavioral functions of the claustrum and its role in substance abuse by taking advantage of a cell-specific ablation strategy to selectively lesion the claustrum. We will generate transgenic mice in which a cytotoxic transgene encoding a truncated ataxin-3 gene with an expanded polyglutamine stretch (Q_{77}) will be expressed under the control of the guanine nucleotide binding protein gamma 2 (Gng2) promoter.

Role: Co-investigator