

## CURRICULUM VITAE

**Name:** **Kathy Ruth Magnusson**

**Date of Birth:** August 26, 1957

**Present Business Address:** Department of Biomedical Sciences  
College of Veterinary Medicine  
Oregon State University  
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**Education:**

B.S.	June 1980	University of Minnesota
D.V.M.	June 1982	University of Minnesota
Ph.D.	September 1989	University of Minnesota

**Ph.D. Thesis Title:** Immunohistochemical Localization of Taurine in the Rat Cerebellum and Localization and Release of Taurine in the Rat Hippocampus

**Graduate Major/ Minor:** Veterinary Anatomy / Neuroscience

**Present Title/ Position:** Professor

**Professional Positions:**

Veterinarian	Nordic Veterinary Service Hoffman, MN	1982-1984
VMA/TA	Dept. of Veterinary Biology University of Minnesota	1984-1986
Research Fellow	Dept. of Veterinary Biology University of Minnesota	1986-1989
Assistant Professor	Dept. of Anatomy & Neurobiology Colorado State University	1989-1995
Visiting Assistant Researcher	Dept. of Psychobiology University of California - Irvine	1990
Associate Professor	Dept. of Anatomy & Neurobiology Colorado State University	1995-2002
Visiting Scientist	Massachusetts General Hospital Neurology Research	1999
Associate Professor	Dept. of Biological Sciences WWAMI Medical School Program University of Idaho	2002 – 2005
Affiliate Assoc. Prof.	Dept. of Biological Structure University of Washington School of Medicine	2003 – 2005

Associate Professor	Dept. of Biomedical Sciences College of Veterinary Medicine Oregon State University	2005 – 2007
Professor	Dept. of Biomedical Sciences College of Veterinary Medicine Oregon State University	2007-present
Principal Investigator	Linus Pauling Institute Oregon State University	2012-present
Affiliate Faculty	School of Psychology Georgia Institute of Technology	2015-present

Professional Society Memberships:

American Association of Veterinary Anatomists  
World Association of Veterinary Anatomists  
Society for Neuroscience  
American Federation for Aging Research  
The Gerontological Society  
American Aging Association

Honor Societies:

Phi Zeta  
Gamma Sigma Delta  
Omicron Delta Kappa

Honors & Other Distinctions:

Finalist - 1986 Jan Langman Award for Outstanding Student Presentation - American Anatomists Association  
Louise T. Dodsall Fellowship for Women in Science - University of Minnesota Graduate School, 1986  
Who's Who in Veterinary Science and Medicine, 1987-1988  
Who's Who of American Women, 1991  
Pfizer Award for Research Excellence for Oregon State University's College of Veterinary Medicine, 2008  
National Pfizer Distinguished Teacher Award, 2010  
Linus Pauling Institute Principal Investigator, 2012

Research Interests:

Role of excitatory amino acid receptors in the aging brain  
Role of prefrontal cortex in memory declines during aging  
Role of microbiome and diet on cognitive function  
Species-specific differences in opiate and adrenergic receptor expression  
Interactions of metal mixture effects on learning and NMDA receptors  
Role of taurine in the mammalian CNS.

Neurotransmitters in the sensory trigeminal complex.

Research and Teaching Grants:

<b>Past</b>		<b>Direct costs</b>
Excitatory Amino Acids in Aging Brain NIH - NIA Physician Scientist Award	1986-91	\$258,261
The Role of Taurine in Development & Plasticity CSU Graduate School	1990-91	\$4,400
CSU Career Enhancement Award	1990-91	\$5,000
Excitatory Amino Acid Receptors in the Aging Brain BRSG - College of Veterinary Medicine, CSU	1991-92	\$17,550
Age-Related Changes in the Function of Excitatory Amino Acid Receptors American Federation of Aging Research	1992-93	\$11,060
CSU Diversity Career Enhancement Award	1993-94	\$5,000
Effects of Diet Restriction on Glutamate Receptor Aging NIH - NRSA sponsor	1993-95	\$89,700
The Effect of Age on the Responses to Inhalation Anesthesia: An Investigation Using Geriatric Beagle Dogs. CVMBS Miki Society Funds	1995-96	\$12,500
Effects of Aging on the NMDA Receptor Complex NIH - NIA FIRST award	1992-99	\$350,000
Age-Related Changes In Glutamate Receptors NIH - NIA Research Career Development Award	1995-99	\$340,442
The Influence Of Age And NMDA Receptors On Inhalation Anesthetic Safety Miki Society Funds – CVMBS/CSU	1999-00	\$6,200
Functional NMDA Receptor Changes In Prefrontal Cortex NIH – NIA RO3 Award	1999-01	\$50,000
Comparison of opioid and alpha-2 adrenergic receptor location and density in the horse and dog using radioligand binding.” Role: Co-PI Miki Society Funds – CVMBS/CSU	2000-01	\$11,500
Subunit Changes In Aging NMDA Receptors Affect Memory NIH – NIA RO1 Years 1-5	1999-03	\$579,258
Administrative supplement to above NIA RO1	2003-04	\$63,760
Memory Functions of NMDA Receptors in Prefrontal Cortex NIH / Idaho BRIN Seed Grant	2003-04	\$23,000
L.L. Stewart Faculty Development Award OSU Academic Programs and Academic Assessment	2006-07	\$2,200

Subunit Changes in Aging NMDA Receptors Affect Memory NIH – NIA RO1 renewal Years 6-9	2003-08	\$600,000
NIH grant 2R15-NS038444-03 to Nick Natale at University of Idaho Isoxazoles to explore the glutamate receptors My role – Collaborating Investigator		
Dietary Zinc levels influence NMDA Receptor properties in the Elderly Linus Pauling Institute Pilot Project Co-PI with Jane Ishmael	2008-09	\$25,000
Animal Model of Expansion of Brain Region Use for Cognition in Elderly OSU College of Veterinary Medicine	2008-09	\$8,000
Behavioral Tracking System for Mice and Rats. OSU RERF	2009	\$21,600
Vitamin D and its Role in Aging and Memory OSU College of Veterinary Medicine	2010-11	\$8,000
Efficacy and duration of action of morpholinos in the brain OSU College of Veterinary Medicine	2011-12	\$10,000
Effects of a prenylflavanoid, xanthohumol, on cognition and NMDA receptors during aging. OSU College of Veterinary Medicine	2013-14	\$10,000

#### **Current Grant Support**

Subunit Changes in Aging NMDA Receptors Affect Memory NIH – NIA RO1 Years 10-14	2008-15	\$919,125
Cross-training in human functional imaging for cognitive aging NIH - NIA K18 Career Development Award	2014-15	\$129,432
Prefrontal recruitment for spatial learning in aged humans OSU College of Veterinary Medicine	2014-15	\$10,000

## Publications:

### **Manuscripts**

1. Magnusson, K.R., A.A. Larson, J.E. Madl, R.A. Altschuler, and A.J. Beitz (1986) Co-localization of fixative-modified glutamate and glutaminase in neurons of the spinal trigeminal nucleus of the rat: An immunohistochemical and immuoradiochemical analysis. *J. Comp. Neur.*, 247:477-490.
2. Magnusson, K.R., J.R. Clements, J.E. Madl, A.A. Larson, and A.J. Beitz (1987) Localization of glutamate in trigeminothalamic projection neurons: A combined retrograde transport-immunohistochemical study. *Somatosensory Res.* 4:177-190.
3. Magnusson, K.R., J.E. Madl, J.R. Clements, J.-Y. Wu, A.A. Larson, and A.J. Beitz (1988) Co-localization of taurine- and cysteine sulfinic acid decarboxylase-like immunoreactivity in the cerebellum of the rat with the use of monoclonal antibodies against taurine. *J. Neurosci.* 8:4551-4564.
4. Magnusson, K.R., J.R. Clements, J.-Y. Wu, and A.J. Beitz (1989) Co-localization of taurine- and cysteine sulfinic acid decarboxylase-like immunoreactivity in the hippocampus of the rat. *Synapse* 4:55-69.
5. Clements, J.R., K.R. Magnusson, and A.J. Beitz (1989) An ultrastructural description of taurine-like immunoreactive cells and processes in the rat hippocampus. *Synapse* 4: 70-79.
6. Clements, J.R., K.R. Magnusson, and A.J. Beitz (1990) Ultrastructural description of glutamate-, aspartate-, taurine-, and glycine-like immunoreactive terminals from five rat brain regions. *J. Elect. Microscop. Tech.* 15:49-66.
7. Magnusson, K.R., J.F. Koerner, A.A. Larson, D.H. Smullin, S.R. Skilling, and A.J. Beitz (1991) NMDA-, Kainate- and Quisqualate-Stimulated Release of Taurine from Electrophysiologically-Monitored Rat Hippocampal Slices. *Brain Res.* 549:1-8.
8. Clements, J.R., K.R. Magnusson, J. Hautman, A.J. Beitz (1991) Rat tooth pulp projections to spinal trigeminal subnucleus caudalis are glutamate-like immunoreactive. *J. Comp. Neurol.* 309:281-288.
9. Clark, A., K.R. Magnusson and C.W. Cotman (1992) In vitro autoradiography of hippocampal excitatory amino acid binding in aged Fisher 344 rats: relationship to performance in the Morris water maze. *Behavioral Neuroscience* 106:324-335.
10. Magnusson, K.R. and C.W. Cotman (1993) Age-related changes in excitatory amino acid receptors in two mouse strains. *Neurobiol. Aging* 14:197-206.
11. Magnusson, K.R. and C.W. Cotman (1993) Effects of aging on the NMDA and MK801 binding sites in mice. *Brain Res.* 604:334-337.
12. Magnusson, K.R. (1995) Differential effects of aging on binding sites of the NMDA receptor complex in mice. *Mech Aging Dev.* 84: 227-243.
13. Magnusson, K.R. (1996) Glycine enhanced binding to the NMDA receptor complex in aged mice, but does not correct the aging change. *J. Gerontol. Biol. Sci.* 51A: B141-147.
14. Magnusson, K.R. (1997) Influence of dietary restriction on ionotropic glutamate receptors during aging in C57Bl mice. *Mech. Ageing Dev.* 95:187-202.
15. Magnusson, K.R. (1997) The effects of age and dietary restriction on metabotropic glutamate receptors. *J. Gerontol.* 52A:B291-B299.
16. Magnusson, K.R. (1998) The aging of glutamate receptors: Correlations between receptor binding and spatial memory performance in C57Bl mice. *Mech. Ageing Dev.* 104:227-248
17. Magnusson, K.R. (2000) Declines in mRNA expression of different subunits may account for differential effects of aging on agonist and antagonist binding to the NMDA receptor. *J. Neurosci.* 20:1666-1674.

18. Magnusson, K.R., C. Rinehart, A. Wagner and C. Dunlop (2000) Changes in anesthetic sensitivity and glutamate receptors in the aging canine brain. *J. Gerontol. Biol. Sci.* 55A: B448-B454.
19. Kuehl-Kovarik, M.C., K.R. Magnusson, L.S. Premkumar, and K.M. Partin (2000) Electrophysiological analysis of NMDA receptor subunit changes in the aging mouse cortex. *Mech. Ageing Dev.* 115:39-59.
20. Magnusson, K.R. (2001) Influence of diet restriction on NMDA receptor subunits and learning during aging. *Neurobiol. Aging* 22: 613-627.
21. Sheehy, J.G., P.W. Hellyer, G.E. Sammonds, K.R. Mama, B.E. Powers, D.A. Hendrickson, K.R. Magnusson (2001) Intra-articular analgesia – Are opioid receptors present in equine synovial membrane? *J. Vet. Res.* 62:1408-1412.
22. Newman, H.M., R.S.H. Yang, and K.R. Magnusson (2001) Developmental exposure to lead, magnesium and zinc mixtures alters spatial memory capabilities and expression of NMDA-receptor subunit mRNA in Fischer 344 rats. *Toxicol. Lett.* 126:107-119.
23. Magnusson, K.R., S.E. Nelson, and A.B. Young (2002) Age-related changes in the protein expression of subunits of the NMDA receptor. *Mol. Brain Res.* 99:40-45.
24. Noonan, C.W., J.S. Reif, J.B. Burch, and K.R. Magnusson (2002) Relationship Between Amyloid Beta Protein and Melatonin Metabolite in a Study of Electric Utility Workers. *J. Occ. Env. Med.* 44: 769-775.
25. Magnusson, K.R., B. Scruggs, J. Aniya, K.C. Wright, T. Ontl, Y.Xing, L. Bai (2003) Age-related deficits in mice performing working memory tasks in a water maze. *Behav. Neurosci.* 117:485-495.
26. Hellyer, P.W., Bai, L., Supon, J., Quail, C., Wagner, A.E., Mama, K.R., Magnusson, K.R. (2003) Comparison of opioid and alpha-2 adrenergic receptor binding in the horse and dog brain using radioligand binding. *Veterinary Anesthesia & Analgesia* 30:172-182.
27. Kuehl-Kovarik, M.C., K.M. Partin, and K.R. Magnusson (2003) Analyses of NMDA responses from acutely dissociated cortical neurons during aging. *J. Neurosci. Tech.* 129:11-17.
28. T. Ontl, Y.Xing, L. Bai, E. Kennedy, S. Nelson, M. Wakeman, and K. Magnusson. (2004) Development and aging of N-methyl-D-aspartate receptor expression in the prefrontal / frontal cortex of mice. *Neuroscience* 123:467-479.
29. Bai, L., P.R. Hof, D.G. Standaert, Y. Xing, S.E. Nelson, A.B. Young, and K.R. Magnusson (2004) Changes in the expression of the NR2B subunit during aging in macaque monkeys. *Neurobiol. Aging* 25:201-208.
30. Burkhart, D.J., A.R. McKenzie, J.K. Nelson, K. I. Myers, X. Zhao, K.R. Magnusson, and N.R. Natale (2004) The catalytic asymmetric synthesis of glutamate analogues. *Org. Lett.* 6, 1285-8.
31. Magnusson, K.R., L. Bai, and X. Zhao (2005) The Effects of Aging on Different C-Terminal Splice Forms of the  $\zeta$ 1(NR1) Subunit of the N-methyl-D-aspartate Receptor in Mice. *Mol. Brain Res.* 135:141-149, PubMed PMID: 14749138
32. Magnusson, K.R., D. Kresge, and J. Supon, (2006) NMDA receptors are more affected by aging in intermediate hippocampus than in dorsal. *Neurobiol. Aging* 27: 324-333, PubMed PMID: 16399215
33. Magnusson, K.R., B. Scruggs, X. Zhao, and R. Hammersmark (2007) Age-related declines in a two-day reference memory task are associated with changes in NMDA receptor subunits in mice. *BMC Neuroscience* 8:43. PMC1919384
34. Das, S. and K.R. Magnusson (2008) Relationship between mRNA expression of splice forms of the zeta1 subunit of the N-methyl-D-aspartate receptor and spatial memory in aged mice. *Brain Res.* 1207:142-154. PMID: PMC2440642.

35. Stratmann, G., J.W. Sall, L.d.V. May, J.S. Bell, K.R. Magnusson, K.H. Visrodia, R.S. Alvi, B. Ku, M.T. Lee, R. Dai (2009) Isoflurane differentially affects neurogenesis and long-term neurocognitive function in 60-day old and 7-day old rats. *Anesthesiology* 110(4):834-848, PubMed PMID: 19293705
36. Wong, C.P., Y. Song, V. Elias, K.R. Magnusson, and E. Ho (2009) Zinc supplementation improved impaired zinc status and thymopoiesis in aged mice. *J. Nutrition* 139: 1–5, PMC2696991
37. Zhao, X., R. Rosenke, D. Kronemann, B. Brim, S.R. Das, A.W. Dunah, and K.R. Magnusson (2009) The effects of aging on N-methyl-D-aspartate receptor subunits in the synaptic membrane and relationships to long-term spatial memory. *Neuroscience* 162 (4): 933-945, PMC2769499.
38. Wong, C.P., K.R. Magnusson, and E. Ho (2009) Aging is associated with altered dendritic cells subset distribution and impaired proinflammatory cytokine production. *Experimental Gerontology* 45(2):163-9, PMID: 19932744.
39. Magnusson, K.R., S.R. Das, D. Kronemann, A. Bartke, and P.R. Patrylo (2011) The Effects of Aging and Genotype on NMDA Receptor Expression in Growth Hormone-Receptor-Knockout (GHRKO) mice. *J. Gerontol.* 66(6): 607-19. PMC3110907.
40. Das, S.R and K.R. Magnusson (2011) Changes in expression of splice cassettes of NMDA receptor GluN1 subunits within the frontal lobe and memory in mice during aging. *Behav. Brain Res.* 222(1): 122-33. PMC3099138
41. Das, S.R., R. Jensen, R. Kelsay, M. Shumaker, R. Bochart, B. Brim, D. Zamzow, and K.R. Magnusson (2012) Reducing expression of GluN1<sub>0xx</sub> subunit splice variants of the NMDA receptor interferes with spatial reference memory. *Behav. Brain Res.* 230 (2):317-324. PMC3355246
42. Wong, C.P., E. Ho, and K.R. Magnusson (2012) Increased inflammatory response with age is associated with age-related zinc deficiency and zinc transporter dysregulation. *J. Nutr. Biochem.* 24:353-9. PMC3586240
43. Brim, B.L., R. Haskell, R. Awedikian, N.M. Ellinwood, L. Jin, A. Kumar, T.C. Foster, K.R. Magnusson (2013) Memory in aged mice is rescued by enhanced expression of the GluN2B subunit of the NMDA receptor. *Behav. Brain Res.* 238:211-222. PMC3540206
44. Zamzow, D.R., V. Elias, M. Shumaker, C. Larson, and K.R. Magnusson (2013) An increase in the association of GluN2B containing NMDA receptors with membrane scaffolding proteins was related to memory declines during aging. *J. Neuroscience* 33(30):12300 –12305. PMC3721840
45. Zamzow, D.R., V. Elias, L.L. Legette, J. Choi, J.F. Stevens, and K.R. Magnusson (2014) Xanthohumol improved cognitive flexibility in young mice. *Behav. Brain Res.* 275:1-10. PMC25192637

## Reviews

1. Magnusson, K.R. (1998) The aging of the NMDA receptor complex. *Front. Biosci.* 3:e79-80. (<http://www.bioscience.org/1998/v3/e/magnusso/list.htm>)
2. Natale, N.R., K.R. Magnusson, and J. K. Nelson (2006) Can selective ligands for glutamate binding proteins be rationally designed? *Curr. Topics Med. Chem.* 6:823-846, PubMed PMID: 16719820
3. Magnusson, K.R., B.L. Brim, and S.R. Das (2010) Selective vulnerabilities of N-methyl-D-aspartate (NMDA) receptors during brain aging. *Frontiers in Aging Neuroscience* 2:11. doi:10.3389/fnagi.2010.00011. Invited Review, PMC2874396
4. K.R. Magnusson (2012) Aging of the N-methyl-D-aspartate receptor - from a mouse's point of view. *Future Neurol.* 7:627-637. PMC3540203

## Chapters

1. Magnusson, K.R. (1994) Changes in the localization of taurine-like immunoreactivity during development and regeneration in the rat brain. In *Taurine in Health and Disease*, R. Huxtable and D.V. Michalk, eds., Plenum Pub. Co. pp. 235-243.

2. Magnusson, K.R. (1996) Distributions of taurine, glutamate, and glutamate receptors during post-natal development and plasticity in the rat brain. In: *Taurine: Basic and Clinical Aspects*, R. Huxtable, J. Azuma, M. Nakagawa, K. Kuriyama, and A. Baba, eds., Plenum Pub. Co. pp. 435-444.
3. Magnusson, K.R. and B.L. Brim (2015) Aging Brain (Overview). *Reference module in Biomedical Sciences*, Michael Caplan (Editor-in-Chief), D.J. Holmes (Section Editor), Elsevier, Inc. (in Press)

### Abstracts

1. Magnusson, K.R., A.J. Beitz, A.A. Larson, J.E. Madl, and R.A. Altschuler (1985) Immunohistochemical localization of glutamate, glutaminase and aspartyl aminotransferase neurons in the spinal trigeminal nucleus. *Soc. Neurosci. Abstr.* 11:172.11.
2. Magnusson, K.R., A.J. Beitz, A.A. Larson, and J. E. Madl (1986) Combined retrograde transport-immunohistochemical localization of glutamatergic trigeminothalamic and trigeminospinal projection neurons. *Anat. Rec.* 214:81A.
3. Magnusson, K.R., J.E. Madl, A.A. Larson, and A.J. Beitz (1986) Immunohistochemical localization of taurine in the rat cerebellum using monoclonal antibodies. *Soc. Neurosci. Abstr.* 12:127.4.
4. Magnusson, K.R., J.E. Madl, A.A. Larson, J.-Y. Wu, and A.J. Beitz (1987) Immunohistochemical co-localization of taurine-like and CSAD-like immunoreactivity in the hippocampus of the rat. *Neuroscience, Suppl.* 22:S122.
5. Clements, J., K. Magnusson, M. Mullett, and A. Beitz (1987) An ultrastructural description of glutamate- and taurine-like immunoreactive elements in the rat hippocampus. *Neuroscience, Suppl.* 22:S123.
6. Magnusson, K.R., J.F. Koerner, and A.J. Beitz (1989) NMDA-stimulated release of taurine from electrophysiologically-monitored rat hippocampal slices. *Soc. Neurosci. Abstr* 15:373.6.
7. Magnusson, K.R. and C.W. Cotman (1990) Autoradiographic localization of decreases in NMDA binding sites occurring with age in two different mouse strains. *Soc. Neurosci. Abstr.* 16:19.10.
8. Magnusson, K.R. and C.W. Cotman (1991) Excitatory amino acid receptors in the aging brain. *Proc. Am. Assoc. Vet. Anat.*, p. 23.
9. Magnusson, K.R. and C.W. Cotman (1991) MK801 binding sites do not change significantly with age in most cortical regions, in contrast to NMDA binding sites. *Soc. Neurosci. Abstr.* 17:155.3.
10. Magnusson, K.R. (1992) Changes in taurine-like immunoreactivity during development of the hippocampus and cerebellum of the rat. *Soc. Neurosci. Abstr.* 18:621.1.
11. Tannert, C., Tim D. Hassinger, and K.R. Magnusson (1992) Changes in taurine- and glutamate-like immunoreactivity during regeneration in the dentate gyrus of the rat. *Soc. Neurosci. Abstr.* 18:621.2.
12. Magnusson, K.R. (1993) The Aging of the NMDA Receptor Complex. *Soc. Neurosci. Abstr.* 19:371.16.
13. Magnusson, K.R. (1994) The effect of glycine on the aging of the NMDA receptor complex. *Soc. Neurosci. Abstr.* 20:368.4.
14. Bane, A.J. and K.R. Magnusson (1994) The effects of aging on metabotropic glutamate receptor function in C57Bl mice. *Soc. Neurosci. Abstr.* 20:368.6.
15. Shiarella, K.T. and K.R. Magnusson (1994) The effect of calorie restricted diet on glutamate receptor binding in the aging C57Bl mouse. *Soc. Neurosci. Abstr.* 20:368.5.
16. Magnusson, K.R. (1995) Differential effects of aging on three different binding sites on the NMDA receptor complex. *IBRO Abstr.* 4:C5.12.



17. Magnusson, K.R. (1995) The effect of aging on the NMDA receptor complex in C57Bl mice assessed by homogenate binding. Soc. Neurosci. Abstr. 21:237.4.
18. Bane, A.J., K.T. Shiarella, and K.R. Magnusson (1995) The effect of dihydrolipoic acid administration on glutamate receptor binding in young and aged C57Bl mice. Soc. Neurosci. Abstr. 21:237.6.
19. Shiarella, K.T. and K.R. Magnusson (1995) Glutamate receptor binding correlates with spatial memory performance in the aging C57Bl mice. Soc. Neurosci. Abstr. 21:237.5.
20. Magnusson, K.R. and G. Sammonds (1996) The aging of the NMDA receptor in C57Bl mice involves changes in agonist affinity. Soc. Neurosci. Abstr. 22:491.7.
21. Rinehart, C.D., C. Dunlop, A. Wagner, and K.R. Magnusson (1996) Age related changes in glutamate receptors in the canine brain correlate with changes in anesthetic potency. Soc., Neurosci. Abstr. 22:492.2.
22. Smeraski, C.A., T.V. Dunwiddie, L.H. Diao, K.R. Magnusson, and T.E. Finger (1996) Glutamate receptors mediate synaptic responses in the primary gustatory nucleus in goldfish. Soc. Neurosci. Abstr. 22:718.6.
23. Magnusson, K.R. and G.E. Sammonds (1997) Age-related changes in mRNA expression of different NMDA receptor subunits exhibit regional heterogeneity. Soc. Neurosci. Abstr. 23:315.2.
24. Magnusson, K.R. and G.E. Sammonds (1998) Age-related changes in the expression of NMDA receptor subunits. The FASEB J. Abstr. #4365.
25. Magnusson, K.R. and G.E. Sammonds (1998) Dietary restriction induces partial sparing of NMDA subunit expression during aging. Soc. Neurosci. Abstr. 24:584.8
26. Kuehl-Kovarik, M.C., K.M. Partin, G.E. Sammonds, and K.R. Magnusson (1998) Protein and mRNA expression of different NMDA receptor subunits exhibit decline during aging. Soc. Neurosci. Abstr. 24:865.5.
27. Newman, H.M., K.R. Magnusson, and R.S.H. Yang (1999) Effects of lead, magnesium and zinc mixture on spatial learning capability and NMDA-receptor subunit composition in F344 rats. Soc. Tox. Abstr 48:1-S:1697.
28. Magnusson, K.R., and G.E. Sammonds (1999) Differential effects of aging on agonist and antagonist binding to the NMDA receptor may be related to changes in different subunits. Soc. Neurosci. Abstr. 25:326.7.
29. Kuehl-Kovarik, M.C., K.M. Partin, and K.R. Magnusson (1999) Two-electrode voltage clamp electrophysiology detects NMDA receptor subunit changes in the aging mouse frontal cortex. Soc. Neurosci. Abstr. 25:326.8.
30. Kinney, J.W., K.R. Magnusson, and D.D. Avery (1999) The effects of transcriptional inhibition on spatial learning in rat hippocampus. Soc. Neurosci. Abstr. 25:862.5.
31. Hellyer, P.W., J.G. Sheehy, G.E. Sammonds, K.R. Magnusson, D.A. Hendrickson, K.R. Mama, A.E. Wagner, J.S. Gaynor (2000) Identification of opioid receptors in equine synovial membranes. Vet. Anaesth. Analg. 27:108.
32. Mama, K.R., A.E. Golden, E. Monnet, K. Magnusson, C. Kollias-Baker, A.E. Wagner (2000) Plasma and cerebrospinal fluid (CSF) concentrations and NMDA receptor binding activity associated with intraoperative administration of low-dose ketamine in dogs. Proc. 7<sup>th</sup> World Cong. .Vet. Anaesth., pg 78.
33. Magnusson, K.R., T. Ontl, Y. Xing, M.C. Kuehl-Kovarik, and A.B.Young (2000) Age-related changes in protein expression of NMDA receptor subunits in C57Bl/6 mice. Soc. Neurosci. Abstr. 26:194.10.
34. Kuehl-Kovarik, M.C., A.D. Fails, K.R. Magnusson, and K.M. Partin (2000) Kinetic analysis of NMDA responses from acutely dissociated cortical neurons during aging. Soc. Neurosci. Abstr. 26:194.8.
35. Magnusson, K.R., K.M. Partin, K.Beam, and M.C. Kuehl-Kovarik (2001) Increased ifenprodil sensitivity at NMDA receptors in dissociated cortical neurons during aging. Soc. Neurosci. 27: 100.6

36. Bai, L., P.R. Hof, D.G. Standaert, S.E. Nelson, Y.Xing, A.B. Young, and K.R. Magnusson (2001) Effects of aging on the mRNA expression of NMDA receptor subunits in primates. *Soc. Neurosci.* 27: 327.16.
37. Magnusson, K.R., R.E. Lee, T. Linnenbrink, P. Cuddon and L.R. Whalen (2001) Computer interactive instruction in veterinary neuroanatomy teaching. *Anatomia Histologia Embryologia* (in Press).
38. Magnusson, K.R. (2001) Diet restriction enhances learning ability and differentially affects the expression of NMDA receptor subunits in aged mice. *Neurobiol. Aging* (in Press).
39. Scruggs, B., J. Aniya, K.C. Wright, and K.R. Magnusson. (2002) Age-related working memory deficits detected in mice performing water maze tasks. Presented at the 31<sup>st</sup> Annual meeting of the American Aging Association, San Diego, June, 2002.
40. Magnusson, K.R., L. Bai, D. Kresge, and J. Supon (2002) Regional differences in age-related changes in NMDA receptor expression within the prefrontal cortex and hippocampus. Presented at the 31<sup>st</sup> Annual meeting of the American Aging Association, San Diego, June, 2002.
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69. S.Das, B. Brim and K. Magnusson (2010) The GluN1<sub>0XX</sub> (NR1-a) splice variant of the NMDA receptor is involved in spatial reference but not working memory. Proceedings of the 2010 Oregon Chapter Meeting of the Society for Neuroscience, McMinnville, OR, March, 2010.
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72. S.R. Das, B. Brim, K.R. Magnusson (2010) GluN1<sub>0XX</sub> (NR1-a) splice variant of the NMDA receptor is involved in spatial reference but not working memory. Proceedings of the 39<sup>th</sup> annual meeting of the American Aging Association, Portland, OR, #146.
73. K.R. Magnusson, D. Zamzow, K. Zittel, Y. Campbell, R. Jensen (2010) Asymmetrical activation of the immediate early gene Arc in the prefrontal cortex in young mice and recruitment of the opposite hemisphere in old. *2010 Abstract Viewer/Itinerary Planner*. San Diego: Society for Neuroscience, Online 509.5.
74. B. L. Brim, R. Haskell, R. Awedikian, M. Ellinwood, L. Jin, K.R. Magnusson (2010) Increased expression of the GluN2B (NR2B) subunit of the NMDA receptor in the hippocampus improves flexibility in aged mice. *2010 Abstract Viewer/Itinerary Planner*. San Diego: Society for Neuroscience, Online 202.22.
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78. B. Brim, V. Elias, K.R. Magnusson (2011) Morpholinos designed to inhibit the translation of the cyclin dependent kinase 5 (CDK5) protein improve object recognition memory in mice. *2011 Abstract Viewer/Itinerary Planner*. Washington, D.C.: Society for Neuroscience, Online 834.24.
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80. B. L. Brim, R. Haskell, R. Awedikian, M. Ellinwood, L. Jin, K.R. Magnusson (2012) Increased expression of NMDA receptor GluN2B subunit within CNS regions enhances memory in aged mice. 22<sup>nd</sup> Annual Neuropharmacology Conference on Cognitive Enhancers. (in Press).
81. A.M. Marquez-Loza, B. Brim, A. Hsiao, D. Khaw, K.R. Magnusson (2012) Influences of an anti-inflammatory drug, ibuprofen, on spatial memory and NMDA receptor subunit expression during aging. *2012 Abstract Viewer/Itinerary Planner*. New Orleans, LA: Society for Neuroscience, Online 157.12.
82. D.R. Zamzow, C.M. Depner, D.B. Jump, K.R. Magnusson (2012) The palmitoylation state of NMDA receptor-associated proteins in the aged mouse brain. *2012 Abstract Viewer/Itinerary Planner*. New Orleans, LA: Society for Neuroscience, 105.23.

83. A.M. Márquez Loza, B. Brim, V. Elias, and K. R. Magnusson (2012) Effects of an Anti-inflammatory Drug on Memory During Aging. Presented at 2012 National MANRRS Conference in Atlanta, Georgia.
84. A.M. Márquez Loza, B. Brim, A. Hsiao, D. Khaw and K.R. Magnusson (2013) Ibuprofen enhances working memory in aged mice, but reduces mRNA expression of N-Methyl D-Aspartate receptor subunits in frontal cortex across ages. Proceedings of the Oregon Society for Neuroscience Annual Meeting in Troutdale, OR. April, 2013.
85. E. Escobedo and K.R. Magnusson (2013) A pro-inflammatory agent, lipopolysaccharide, can mimic the effects of aging on spatial reference memory. Proceedings of the Oregon Society for Neuroscience Annual Meeting in Troutdale, OR. April, 2013.
86. K.R. Magnusson, A.M. Marquez Loza, V. Elias (2013) Effects of an anti-inflammatory drug, ibuprofen, on NMDA receptors and memory during aging. *2013 Abstract Viewer/Itinerary Planner*. San Diego, CA: Society for Neuroscience, Online abstract 770.12.
87. D.R Zamzow, L.L. Legette, J.F. Stevens, and K.R. Magnusson (2013) The prenylated chalconoid Xanthohumol is able to improve spatial reference memory in aged mice. *2013 Abstract Viewer/Itinerary Planner*. San Diego, CA: Society for Neuroscience, Online abstract 770.01.
88. O. Lafaix, B.L. Brim, C. Lehmann, and K.R. Magnusson (2013) Use of a mouse model with up-regulated GluN2B subunits in hippocampus for the study of the role of NMDA receptors in ageing rodents. Proceedings of the 12th Annual FELASA (Federation of European Laboratory Animal Science Associations) SECAL Congress in Barcelona, Spain.
89. K.R. Magnusson, V. Elias, L. Hauck, R. Nath, and L.E. Bermudez (2014) Effects of high sucrose and high fat diets on memory, cognitive flexibility and gut microbiota. *2014 Abstract Viewer/Itinerary Planner*. Washington, D.C.: Society for Neuroscience, Online abstract 6834.

Teaching:

VM611	Functional Anatomy - Laboratory only	1989-90
VM616	Functional Anatomy Autonomic nervous system lectures and labs Problem Based Learning Facilitator Neural development	1993-2002 1992-2002 2000
VM612	Organ Systems - Laboratory only	1989
VM618	Organ Systems Urinary and respiratory anatomy lectures and lab Cardiac anatomy & development lectures	1990-91 1994
VM618	Histology / Physiology Autonomic Nervous System function & transmitters	1997-2001
VM619	Veterinary Neurobiology Cranial nerves, sensory systems, ANS, neurohistology, CSF, ventricles, and blood lectures and labs	1991-2002
VM722	Veterinary Pharmacology ANS, analgesics, anesthetics, anticonvulsant lectures	1992-2001
AY325	Cellular Neuroscience Neural plasticity – LTP, LTD	2000-2001
AY545	Human Neuroanatomy Basal ganglia, Parkinson's and Huntington's diseases, limbic system, ANS, and hypothalamus	2000-2002

AY500	Histology Neurohistology	2001
	Alzheimer's disease, aging and stroke lectures in several courses	1992-2002
	Independent study with undergraduate and graduate students	1990-2002
Biol 120	Human Anatomy Lectures for whole course	2003
Biol 405	Human Anatomy Teaching Practicum	2003
Biol 121	Human Physiology Human CNS	2003
Biol 504	Topics in Neuroscience	2002-2005
Med Sci 532	Nervous System Hypothalamus, limbic system, memory, cerebral dominance	2003-2004
MedSci 531	Head & Neck Anatomy Neck, larynx, nasal cavity	2004-2005
VM714	Microscopic Anatomy / Embryology	2005-present
VM715	Microscopic Anatomy / Embryology	2005-present

Advising:

Andrew Bane	Ph.D. graduate (Psychology)	1993-1996
	Co-Advisor – supported dissertation research and advised on molecular studies	
Michael Brown	Ph.D graduate (Anatomy)	1995-1999
	Major Advisor – Departmental Advisor	
Heike Newman	M.S. graduate (Environmental Health)	1998-2000
	Co-Advisor – Overseeing behavioral and molecular studies for her thesis	
Jefferson Kinney	Ph.D. graduate (Psychology)	1998-2000
	Co-Advisor - Overseeing behavioral and molecular studies for his dissertation	
Brandi Scruggs	M.S. & Ph.D. graduate (Psychology)	1999-2003
Cathleen Kuehl-Kovarik	Post-doctoral fellow	1998-2001
Mindy Wakeman	M.S. graduate (Biomedical Sciences)	2002-2003
Ismael Concha	M.S. graduate (Comparative Veterinary Medicine)	2008-2010
Siba Das	Ph.D. graduate (MCB)	2004-2011
Brenna Brim	Ph.D. student (MCB)	2007-2013
Daniel Zamzow	Ph.D. student (MCB)	2009-present

Service on 29 Graduate Committees

Service:

**University**

Academic Hearing Board	2003-2005
Search Committees	
LPI – 1 position	2007-2008
IACUC Administrator position	2007-2008
School of Life Sciences – 2 positions	2010-2011
IACUC alternate	2010-2013

**College**

Scholarships and Awards committee	1991-93
Commencement committee	1992-1998, 2000-01
Ad hoc Readmissions committee	1992
Anatomy/Physiology Merger committee	1997-98
Safety Committee	2004-2005
Search Committee for College Business Manager	
Chair	2006
College Personnel Committee	2007
College Research Committee	2007- 2009, 2011-present
Chair	2008-2009
College Promotion & Tenure Committee	2007-present
Chair	2008-present
Large Animal Medicine Faculty Search Committee	2010

**Departmental**

Cryostat overseer	1991-2001	
United Way representative	1991	
Graduate committee	1992-1998	
Chair	1996-1998	
Faculty Search committee -	3 positions	1995-96
	1 position	1997
	2 positions	2007-2008
Chair	1 position	2007-2008
Reappointment Evaluation Committee	1996	
Advisory committee	1996-98, 2000-2002	
Curriculum committee Chair	2000-2002	
Chair Search committee	2001	
Strategic Planning committee	2001-2002	
Merger advisory committee	2001-2002	
Education and Research Infrastructure committee	2002-2005	
Chair	2003-2005	

Undergraduate Affairs committee	2002-2003
Advisory committee	2003-2004
Curriculum Committee	2006-present
<b>CSU Molecular, Cellular, &amp; Integrative Neurosciences Program</b>	
Admissions & Academics committee	1992-94, 1995-97, 2000-02
Chair	2001-2002
<b>University of Idaho Neuroscience Program</b>	
Curriculum committee	2003-2005
<b>Society Committee Memberships</b>	
Biological Sciences Section Program Committee	2011-2012
<b>Editorial Board:</b> Pathobiology of Aging and Age-related Diseases	2012-present
<b>Review Editor for:</b> Frontiers in Aging Neuroscience	2009-present
<b>Manuscript reviews for:</b>	
Age	
Aging Cell	
Anesthesiology	
Brain Research	
Behavioural Brain Research	
Experimental Neurology	
European Journal of Neuroscience	
Frontiers in Aging Neuroscience	
Journal of the American Aging Association	
Journal of Comparative Neurology	
Journal of Gerontology	
Journal of Neuroscience	
Life Science	
Neurobiology of Aging	
Neuroscience	
Nutritional Neuroscience	
Pharmacology, Biochemistry, and Behavior	
Physiology & Behavior	
Perceptual and Motor Skills	
PLOS One	
Anesthesiology & Analgesia	



**Book reviews:**

The Quarterly Review of Biology on “Taurine 3: Cellular and Regulatory Mechanisms”.

**Grant reviews:**

Special Emphasis Panel grant review of training grants for NIA/NIH

Puerto Rico Dept. of Defense-EPSCoR program

Pilot grant program for The Aging Research & Education Center at The University of Texas Health  
Science Center at San Antonio.

Program Project Grant Site Visit reviewer for the National Institute on Aging/ National Institutes of Health  
– service on 6 panels

Veterans Administration grants

NSF grant reviews

Alzheimer’s Association

Ad hoc reviewer for NIH Learning and Memory Study Section

Member of NIH Learning and Memory Study Section 2004-2008

NIH ARRA grant reviews – 2009

NIH Special Emphasis Panel reviews

American Federation for Aging Research’s National Scientific Advisory Council 2008-present

NIH Fellowships: Biophysical, Physiological, Pharmacological, and Bioengineering Neuroscience - 2014