

2/14/24

CURRICULUM VITAE

Jerrel Louis Yakel, Ph.D.

Address: National Institute of Environmental Health Sciences (NIEHS)
P.O. Box 12233
Research Triangle Park, N.C. 27709
Phone: (984) 287-3466
E-mail: yakel@niehs.nih.gov
Web: '<http://www.niehs.nih.gov/research/atniehs/labs/ln/pi/icp/>'
'<http://neuroscience.nih.gov/Faculty/Profile/jerrel-yakel.aspx>'

Biographical: Nationality- American (of Native American descent)

ORCID number: 0000-0001-5463-674X

Education: Ph.D. - University of California, Los Angeles, 1988.
Department of Biology. Thesis Advisor - Meyer B. Jackson
B.S. - Oregon State University, Corvallis, Oregon, 1982
Major: Developmental Biology

Positions Held:

7/93 to present	NIEHS/NIH Senior Investigator Lab Chief Ion Channel Physiology Group Leader Neurobiology Laboratory (NL) NIEHS, F2-08 P.O. Box 12233 Research Triangle Park, N.C. 27709
4/91 to 7/93	Postdoctoral Associate Vollum Institute, OHSU 3181 S.W. Sam Jackson Park Road Portland, OR 97201 Advisor- Thomas Soderling, Associate Director
9/88 to 4/91	Postdoctoral Associate Laboratoire de Neurobiologie Ecole Normale Supérieure 46 rue d'Ulm 75230 Paris Cedex 05 France Advisor- Hersch Gerschenfeld
9/83 to 9/88	Research Associate / Graduate Student UCLA Dept. of Biology 405 Hilgard Ave. Los Angeles, CA. 90024 Advisor- Meyer Jackson

Other appointment:

6/00 to 6/10	Adjunct Assistant Professor Department of Neurobiology Duke University Medical Center
02/13 to present	Adjunct Professor Department of Pharmacology UNC-Chapel Hill

Fellowships and Awards:

Andrea Marie Andrade Memorial Scholarship, 1977.
Dorothy Danforth Compton Fellowship, 1983-1987.
Graduate Affirmative Action Research Grant, 1985-1986.
Dissertation Year Fellowship, 1987-1988.
Otto Scherbaum Award for the most outstanding graduate student research,
UCLA Department of Biology, 1988.
NIH French CNRS Program postdoctoral fellowship, 1988.
NSF Long-Term Research Program postdoctoral fellowship, 1989.
NATO-NSF Postdoctoral Fellowships in Science, 1990.
FORD Foundation Postdoctoral Fellowship, 1991
Society for Neuroscience Travel Fellowship for Minorities, 1992
National Research Service Award, NIH (NRSA), 1992
Human Frontiers Short-Term Fellowship, 1995
Fellow of the American Association for the Advancement of Science (AAAS), 2008
E. E. Just Lecturer Award, American Society of Cell Biology, 2009
Senior Biomedical Research Service (SBRS), NIH, 2011-2013

Societal Memberships and Panels:

Advisory Committee Member for Society for Neuroscience's Minority Neuroscience Fellowship Program (MNFP)
Advisory Committee Member (Former) for Society for Neuroscience's Minority Education, Training, and Professional Advancement Committee (METPAC)
Advisory Committee Member (Former) for the Minority Fellowship Program, American Psychological Association
Society for Neuroscience
Serotonin Club
SACNAS- Society for the Advancement of Chicanos and Native Americans in Science
Panelist Chair for the Ford Foundation Predoctoral Fellowship Program administered by the National Research Council
Panelist for the Howard Hughes Medical Institute Fellowship Program administered by the National Research Council
Neuroscience Scholars Fellowship Committee of Society for the Advancement of Chicanos and Native Americans in Science (SACNAS)
Physiological Society (UK)
NIH Academy Selection Committee
Fellow of the American Association for the Advancement of Science (AAAS)
International Society for Neurochemistry (ISN)
Trans-NIH Alzheimer's Disease Working Group
Senior Biomedical Research and Biomedical Product Assessment Service (SBRBPAS)/NIH

Committee
National Academy of Sciences PLANNING COMMITTEE ON SLEEP DISTURBANCE
IN CENTRAL NERVOUS SYSTEM DISORDERS

Editorial Boards:

Journal of Physiology (Reviewing Editor, 2007-2009; Senior Editor, 2010-2014)
Journal of Molecular Neuroscience (2004-
Frontiers in Neuropharmacology, Associate Editor (2009-
Pflügers Archives (2013-2016)
Scientific Reports (2023-

Ad Hoc Reviewer:

Neuron, Nature Neuroscience, Nature Structural & Molecular Biology, Nature Communications, Nature Methods, Science, Journal of Neuroscience, Journal of Physiology, PNAS, TIPS, Journal of Neurophysiology, Physiological Reviews, British Journal of Pharmacology, European Journal of Neuroscience, Neuroscience, Molecular Pharmacology, Neuropharmacology, Hippocampus, Journal of Membrane Biology, Journal of Neurochemistry, Receptors and Channels, Biophysical Journal, Learning and Memory, Journal of General Physiology, Neuroscience Letters, Journal of Biological Chemistry, Progress in Neurobiology, Neurobiology of Aging, FASEB Journal, Cerebral Cortex, Journal of Clinical Investigations

Publications (Peer-Reviewed):

1. **Yakel, J.L.**, L.O. Trussell & M.B. Jackson (1988) Three serotonin responses in cultured mouse hippocampal and striatal neurons. *J. Neurosci.* 8:1273-1285.
2. **Yakel, J.L.** & M.B. Jackson (1988) 5-HT₃ receptors mediate rapid responses in cultured hippocampus and a clonal cell line. *Neuron* 1:615-621.
3. **Yakel, J.L.**, X.M. Shao & M.B. Jackson (1990) The selectivity of the channel coupled to the 5-HT₃ receptor. *Brain Res.* 533:46-52.
4. Gerschenfeld, H.M., D. Paupardin-Tritsch & **J.L. Yakel** (1991) Muscarinic enhancement of the voltage-dependent calcium current in an identified snail neuron. *J. Physiol.* 434:85-105.
5. Shao, X.M., **J.L. Yakel** & M.B. Jackson (1991) Differentiation of NG108-15 cells alters the channel conductance and desensitization kinetics of the 5-HT₃ receptor. *J. Neurophysiol.* 65:630-638.
6. **Yakel, J.L.**, X.M. Shao & M.B. Jackson (1991) Activation and desensitization of the 5-HT₃ receptor in a rat glioma X mouse neuroblastoma hybrid cell. *J. Physiol.* 436:293-308.
7. **Yakel, J.L.** (1991) The neuropeptide FMRFa both inhibits and enhances the Ca²⁺ current in dissociated *Helix* neurons via independent mechanisms. *J. Neurophysiol.* 65:1517-1527.
8. Kavanaugh, M.P., R.S. Hurst, **J. Yakel**, M.D. Varnum, J.P. Adelman & R.A. North (1992) Multiple subunits of a voltage-dependent potassium channel contribute to the binding site for tetraethylammonium. *Neuron* 8:493-497.

9. **Yakel, J.L.** (1992). Inactivation of the Ba²⁺ current in dissociated *Helix* neurons: Voltage-dependence and the role of phosphorylation. *Pflügers Arch.* 420:470-478.
10. Hurst, R.S., M.P. Kavanaugh, **J. Yakel**, J.P. Adelman & R.A. North (1992) Cooperative interactions among subunits of a voltage-dependent potassium channel: Evidence from expression of concatenated cDNAs. *J. Biol. Chem.* 267:23742-23745.
11. **Yakel, J.L.**, R.A. Warren, S.M. Reppert & R.A. North (1993) Functional expression of adenosine A_{2b} receptor in *Xenopus* oocytes. *Mol. Pharm.* 43:277-280.
12. **Yakel, J.L.**, A. Lagrutta, J.P. Adelman & R.A. North (1993) Single amino acid substitution affects desensitization of the 5-HT₃ receptor expressed in *Xenopus* oocytes. *P.N.A.S.* 90:5030-5033.
13. **Yakel, J.L.**, P. Vissavajjhala, V. Derkach, D. Brickey, & T.R. Soderling (1995) Identification of a CaM-Kinase II regulatory phosphorylation site in non-NMDA glutamate receptors. *P.N.A.S.* 92:1376-1380.
14. Gilon, P., G.St.J. Bird, X. Bian, **J.L. Yakel**, and J.W. Putney, Jr. (1995) The Ca²⁺-mobilizing actions of a Jurkat cell extract on mammalian cells and *Xenopus laevis* oocytes. *J. Biol. Chem.* 270:8050-8055.
15. Gilon, P., & **Yakel, J.L.** (1995) Activation of 5-HT₃ receptors expressed in *Xenopus* oocytes does not increase cytoplasmic Ca²⁺ levels. *Receptors and Channels* 3:83-88.
16. **Yakel, J.L.** (1996) Desensitization of the 5-HT₃ receptor expressed in *Xenopus* oocytes: Dependence on voltage and primary structure. *Behav. Brain Research* 73:269-272.
17. Andjus, P., Khiroug, L., **Yakel, J.L.**, Cherubini, E., & Nistri, A. (1996) Changes in intracellular calcium induced by NMDA in cultured hippocampal neurons require exogenous glycine. *Neurosci. Lett.* 210:25-28.
18. Gilon, P., **Yakel, J.**, Gromada, J., Zhu, Y., Henquin, J-C., & Rorsman, P. (1997) G-protein-dependent inhibition of L-type Ca²⁺ currents by acetylcholine in mouse pancreatic B-cells. *J. Physiology* 499:65-76.
19. **Yakel, J.L.** (1997) Calcineurin regulation of synaptic function: From ion channels to transmitter release and gene transcription. *Trends in Pharmacological Sciences* 18:124-134.
20. Zhu, Y., & **Yakel, J.L.** (1997) Modulation of Ca²⁺ currents by various G protein-coupled receptors in sympathetic neurons of male rat pelvic ganglia. *J. Neurophysiol.* 78:780-789.
21. Zhu, Y., & **Yakel, J.L.** (1997) Calcineurin modulates G protein-mediated inhibition of N-type calcium channels in rat sympathetic neurons. *J. Neurophysiol.* 78:1161-1165.
22. Jones, S., & **Yakel, J.L.** (1997) Functional nicotinic ACh receptors on interneurons in the rat hippocampus. *J. Physiology* 504:603-610.
23. Jones, S., & **Yakel, J.L.** (1998) Ca²⁺ influx through voltage-gated Ca²⁺ channels regulates 5-HT₃ receptor channel desensitization in rat glioma X mouse neuroblastoma hybrid NG108-15 cells. *J. Physiology* 510:361-370.

24. van Hooft, J.A., Spier, A.D., **Yakel, J.L.**, Lummis, S.C.R., & Vijverberg, H.P.M. (1998) Promiscuous coassembly of serotonin 5-HT₃ and nicotinic α 4 receptor subunits into Ca²⁺ permeable ion channels. *P.N.A.S.* 95:11456-11461.
25. Kriegler, S., Sudweeks, S., & **Yakel, J.L.** (1999) Communication: The nicotinic α 4 receptor subunit contributes to the lining of the ion channel pore when expressed with the 5-HT₃ receptor subunit. *Journal of Biological Chemistry.* 274: 3934-3936.
26. Jones, S., & **Yakel, J.L.** (1999) Inhibitory interneurons in the hippocampus: sites for rapid regulation of information flow by neurotransmitters. *Cell Biochem. Biophys.* 31:207-218.
27. Kriegler, S., Sudweeks, S., & **Yakel, J.L.** (1999) MTSEA potentiates 5-HT₃ receptors containing the nicotinic α 4 subunit. *Neuropharmacology* 38: 1913-1915.
28. Jones, S., Sudweeks, S. & **Yakel, J.L.** (1999) Nicotinic receptors in the brain: correlating physiology with function. *Trends in Neurosciences* 22: 555-561.
29. Sudweeks, S., & **Yakel, J.L.** (2000) Functional and molecular characterization of neuronal nicotinic ACh receptors in rat CA1 hippocampal neurons. *J. Physiology* 527: 515-528.
30. Shao, Z. & **Yakel, J.L.** (2000) Single channel properties of neuronal nicotinic ACh receptors in stratum radiatum interneurons of rat hippocampal slices. *J. Physiology* 527: 507-513.
31. Pettit, D.L., Shao, Z. & **Yakel, J.L.** (2001) β -Amyloid₁₋₄₂ peptide directly modulates nicotinic receptors in the rat hippocampal slice. *J. Neuroscience (Rapid Communication)* 21:RC120:1-5.
32. Khiroug, S.S., Harkness, P.C., Lamb, P.W., Sudweeks, S.N., Khiroug, L., Millar, N.S., & **Yakel, J.L.** (2002) Rat nicotinic ACh receptor α 7 and β 2 subunits co-assemble to form functional heteromeric nicotinic receptor channels. *J. Physiology* 540: 425-434.
33. Sudweeks, S.N., van Hooft, J.A., & **Yakel, J.L.** (2002) Serotonin 5-HT₃ Receptors in Rat CA1 Hippocampal Interneurons: Functional and Molecular Characterization. *J. Physiology* 544:715-726.
34. van Hooft, J.A. & **Yakel, J.L.** (2003) 5-HT₃ receptors in the CNS: 3b or not 3b? *Trends in Pharmacological Sciences* 24:157-160.
35. Jones, S., & **Yakel, J.L.** (2003) Casein kinase II (protein kinase CK2) regulates serotonin 5-HT₃ receptor channel function in NG108-15 cells. *Neuroscience* 119: 629-634.
36. Khiroug, L., Giniatullin, R., Klein, R.C., Fayuk, D. & **Yakel, J.L.** (2003) Functional mapping and Ca²⁺ regulation of nicotinic acetylcholine receptor channels in rat hippocampal CA1 neurons. *J. Neuroscience* 23: 9024-9031.
37. **Yakel, J.L.** & Shao, Z. (2004) Functional and Molecular Characterization of Neuronal Nicotinic ACh Receptors in Rat Hippocampal Interneurons. *Progress in Brain Research* 145: 95-107.
38. Khiroug, S., Khiroug, L., & **Yakel, J.L.** (2004) Rat nicotinic ACh receptor α 2 β 2 channels: Comparison of functional properties with α 4 β 2 channels in *Xenopus* oocytes. *Neuroscience* 124: 817-822.

39. Klein, R.C. & **Yakel, J.L.** (2004) Inhibition of nicotinic acetylcholine receptors by Apolipoprotein E-derived peptides in rat hippocampal slices. *Neuroscience (Rapid Report)* 127: 563-567.
40. Fayuk, D. & **Yakel, J.L.** (2004) Regulation of nicotinic acetylcholine receptor channel function by acetylcholinesterase inhibitors in rat hippocampal CA1 interneurons. *Mol. Pharm.* 66: 658-666.
41. Lamb, P.W., Melton, M.A. & **Yakel, J.L.** (2005) Inhibition of neuronal nicotinic acetylcholine receptor channels expressed in *Xenopus* oocytes by β -amyloid₁₋₄₂ peptide. *J. Mol. Neuroscience* 27: 13-22.
42. Giniatullin, R., Nistri, A. & **Yakel, J.L.** (2005) Desensitization of Nicotinic ACh Receptors: Shaping Cholinergic Signaling. *Trends in Neurosciences* 28: 371-378.
43. Fayuk, D. & **Yakel, J.L.** (2005) Ca²⁺ permeability of nicotinic acetylcholine receptors in rat hippocampal CA1 interneurons. *J. Physiology* 566: 759-768. PMID:PMC1464780
44. Klein, R.C. & **Yakel, J.L.** (2005) Paired-pulse potentiation of α 7-containing nAChRs in rat hippocampal CA1 stratum radiatum interneurons. *J. Physiology* 568: 881-889.
45. Gay, E.A., Klein, R.C. & **Yakel, J.L.** (2006) Apolipoprotein E-derived peptides block α 7 neuronal nicotinic acetylcholine receptors expressed in *Xenopus* oocytes. *J. Pharm. Exp. Ther.* 316: 835-842.
46. Klein, R.C. & **Yakel, J.L.** (2006) Functional somato-dendritic α 7-containing nicotinic acetylcholine receptors in the rat basolateral amygdala complex. *J. Physiology* 576: 865-872.
47. Fayuk, D. & **Yakel, J.L.** (2007) Dendritic Ca²⁺ signaling due to activation of α 7-containing nicotinic acetylcholine receptors in rat hippocampal neurons. *J. Physiology* 582: 597-611. PMID:PMC2075347
48. Gay, E.A., Bienstock, R. J., Lamb, P.W. & **Yakel, J.L.** (2007) Structural determinates for apolipoproteinE-derived peptide interaction with the α 7 nicotinic acetylcholine receptor. *Mol. Pharm* 72:838-849.
49. Gay, E.A. & **Yakel, J.L.** (2007) Gating of nicotinic ACh receptors; new insights into structural transitions triggered by agonist binding that induce channel opening. *J. Physiology (Topical Review)* 584: 727-733.
50. Gay, E.A., Giniatullin, R., Skorinkin, A. & **Yakel, J.L.** (2008) Aromatic residues at position 55 of rat α 7 nAChRs are critical for maintaining rapid desensitization. *J. Physiology* 586:1105-1115.
51. Poisik, O.V., Shen, J., Jones, S. & **Yakel J. L.** (2008) Functional α 7-containing Nicotinic Acetylcholine Receptors Localize to Cell Bodies and Proximal Dendrites in the Rat Substantia Nigra pars Reticulata. *J. Physiology* 586: 1365-1378.
52. Gay, E.A., Klein, R.C., Melton, M.A., Blackshear, P.J. & **Yakel, J.L.** (2008) Inhibition of Native and Recombinant Nicotinic Acetylcholine Receptors by the Myristoylated Alanine-Rich C Kinase Substrate Peptide. *J. Pharm. Exp. Ther.* 327: 884-890.

53. Shen, J., Tu, B. & **Yakel, J.L.** (2009) Inhibition of $\alpha 7$ -containing nicotinic ACh receptors by muscarinic M₁ ACh receptors in rat hippocampal CA1 interneurons in slices. *J. Physiology* 587: 1033-1042.
54. Eddins, D., Klein, R.C., **Yakel, J.L.** & Levin, E.D. (2009) Hippocampal infusions of apolipoprotein E peptides induce long-lasting cognitive impairment. *Brain Res. Bull.* 79:111-115.
55. Tu, B., Gu, Z., Shen, J., Lamb, P.W. & **Yakel, J.L.** (2009) Characterization of a nicotine-sensitive neuronal population in rat entorhinal cortex. *J. Neuroscience* 29:10436 –10448. PMID: PMC2765695
56. Shen, J.X. & **Yakel, J.L.** (2009) Nicotinic acetylcholine receptor-mediated calcium signaling in the nervous system. *Acta Pharmacol Sin.* 30:673-680.
57. Timofeeva, O.A., Eddins, D., **Yakel, J.L.**, Blackshear, P.J. & Levin ED. (2010) Hippocampal infusions of MARCKS peptides impair memory of rats on the radial-arm maze. *Brain Res.* 1308:147-152.
58. **Yakel, J.L.** (2010) Gating of nicotinic ACh receptors: latest insights into ligand binding and function. *J. Physiology* 588:597-602.
59. McCormack, T., Petrovich, R.M., Mercier, K.A., DeRose, E.F., Cuneo, M.J., Williams, J., Johnson, K.L., Lamb, P.W., London, R.E. & **Yakel, J.L.** (2010). Identification and Functional Characterization of a Novel Acetylcholine-binding Protein from the Marine Annelid *Capitella teleta*. *Biochemistry* 49:2279-2287.
60. Seipel, A.T. & **Yakel, J.L.** (2010). The frequency-dependence of the nicotine-induced inhibition of dopamine is controlled by the $\alpha 7$ nicotinic receptor. *J. Neurochemistry* 114: 1659-1666.
61. McCormack, T.J., Melis, C., Colón, J., Gay, E.A., Mike, A., Karoly, R., Lamb, P.W., Molteni, C. & **Yakel, J.L.** (2010). Rapid Desensitization of the Rat $\alpha 7$ nAChR is Facilitated by the Presence of a Proline Residue in the Outer β -Sheet. *J. Physiology* 588:4415-4429.
62. Brams, M., Gay, E.A., Colón Sáez, J., Guskov, A., van Elk, R., van der Schors, R.C., Peigneur, S., Tytgat, J., Strelkov, S.V., Smit, A.B., **Yakel, J.L.** & Ulens, C. (2011). Crystal structures of a cysteine-modified mutant in loop D of acetylcholine binding protein. *Journal of Biological Chemistry* 286:4420-4428.
63. Johnstone, T.B., Gu, Z., Yoshimura, R.F., Villegier, A.S., Hogenkamp, D.J., Whittemore, E.R., Huang, J.C., Tran, M.B., Belluzzi, J.D., **Yakel, J.L.** & Gee, K.W. (2011). Allosteric modulation of related ligand-gated ion channels synergistically induces long term potentiation in the hippocampus and enhances cognition. *J. Pharm. Exp. Ther.* 336:908-915.
64. Brams, M., Pandya, A., Kuzmin, D., van Elk, R., Krijnen, L., **Yakel, J.L.**, Tsetlin, V., Smit, A.B., & Ulens, C (2011). A Structural and Mutagenic Blueprint for Molecular Recognition of Strychnine and *d*-Tubocurarine by Different Cys-Loop Receptors. *PLoS Biology* 9: e1001034. PMID: PMC3066128

65. Colón-Sáez, J. & **Yakel, J.L** (2011). The $\alpha 7$ nAChR function in hippocampal neurons is regulated by the lipid composition of the plasma membrane. *J. Physiology* 589: 3163-3174. PMID:PMC3145932
66. Gu, Z. & **Yakel, J.L** (2011). Timing-dependent septal cholinergic induction of dynamic hippocampal synaptic plasticity. *Neuron* 71: 155-165. PMID:PMC3134790
67. Pandya, A. & **Yakel, J.L** (2011) Allosteric modulators of the $\alpha 4\beta 2$ subtype of neuronal nicotinic acetylcholine receptors. *Biochem Pharmacol.* 82: 952-958. PMID:PMC3162104
68. Pandya, A. & **Yakel, J.L** (2011) Allosteric modulator desformylflustrabromine relieves the inhibition of $\alpha 2\beta 2$ and $\alpha 4\beta 2$ nicotinic acetylcholine receptors by β -Amyloid1-42 peptide. *J. Mol. Neuroscience* 45: 42-47. PMID:PMC3235685
69. Shen, J.X. & **Yakel, J.L.** (2012) Functional $\alpha 7$ nicotinic ACh receptors on astrocytes in rat hippocampal CA1 slices. *J. Mol. Neuroscience* 48:14-21. PMID:PMC3530828
70. Billen, B., Spurny, R., Brams, M., van Elk, R., Valera-Kummer, S., **Yakel, J.L.**, Voets, T., Bertrand, D., Smit, A.B. & Ulens, C. (2012) Molecular actions of smoking cessation drugs at $\alpha 4\beta 2$ nicotinic receptors defined in crystal structures of a homologous binding protein. *P.N.A.S.* 109:9173-9178. PMID: PMC3384148
71. **Yakel, J.L** (2012) Nicotinic ACh Receptors in the Hippocampus: Role in Excitability and Plasticity. *Nicotine Tob Res* 14:1249-1257. PMID:PMC3482011
72. Gu, Z., Lamb, P.W. & **Yakel, J.L** (2012) Cholinergic coordination of presynaptic and postsynaptic activity induces timing-dependent hippocampal synaptic plasticity. *J. Neuroscience* 32: 12337-12348. PMID: PMC3474164
73. **Yakel, J.L** (2013) Cholinergic Receptors: Functional Role of Nicotinic ACh Receptors in Brain Circuits and Disease. *Pflügers Arch.* 465:441-450. PMID: PMC3633680
74. Pandya, A. & **Yakel, J.L** (2013) Activation of the $\alpha 7$ nicotinic ACh receptor induces anxiogenic effects in rats which is blocked by a 5-HT1a receptor antagonist. *Neuropharmacology* 70; 35-42. PMID: PMC3640667
75. Pandya, A. & **Yakel, J.L** (2013) Effects of neuronal nicotinic acetylcholine receptor allosteric modulators in animal behavior studies. *Biochem Pharmacol.* 86:1054-1062. PMID: PMC3797251
76. Colón-Sáez, J. & **Yakel, J.L.** (2014) A mutation in the extracellular domain of the $\alpha 7$ nAChR reduces calcium permeability. *Pflügers Arch.* 466:1571-1579. PMID: PMC4007412

77. Cheng, Q. & **Yakel, J.L.** (2014). Presynaptic $\alpha 7$ nicotinic acetylcholine receptors enhance hippocampal mossy fiber glutamatergic transmission via PKA activation. *J. Neuroscience* 34:124-133. PMID: PMC3866480
78. **Yakel, J.L.** (2014). Nicotinic ACh receptors in the hippocampal circuit; functional expression and role in synaptic plasticity. *J. Physiology* 592: 4147-4153. PMID: PMC4215767
79. Hernandez, C.M., Cortez, I., Gu, Z., Colón-Sáez, J.O. , Lamb, P.W., Wakamiya, M, **Yakel, J.L.** & Dineley, K.T. (2014). Research tool: Validation of floxed $\alpha 7$ nicotinic acetylcholine receptor conditional knockout mice using in vitro and in vivo approaches. *J. Physiology* 592: 3201-3214. PMID: PMC4146370
80. Dineley, K.T., Pandya, A.A. & **Yakel, J.L.** (2015). Nicotinic ACh receptors as therapeutic targets in CNS disorders. *Trends in Pharmacological Sciences* 36: 96-108. PMID: 25639674
81. Cheng, Q. & **Yakel, J.L.** (2015) Activation of $\alpha 7$ nicotinic acetylcholine receptors increases intracellular cAMP levels via activation of AC1 in hippocampal neurons. *Neuropharmacology* 95: 405-414. PMID: 25937212
82. Cheng, Q. & **Yakel, J.L.** (2015) The effect of $\alpha 7$ nicotinic receptor activation on glutamatergic transmission in the hippocampus. *Biochem Pharmacol.* 97:439-444. PMID: 26212541
83. Wu, J., Liu, Q., Tang, P., Mikkelsen, J.D., Shen, J, Whiteaker, P. & **Yakel, J.L.** (2016) Heteromeric $\alpha 7\beta 2$ nicotinic acetylcholine receptors in the brain. *Trends in Pharmacological Sciences* 37:562-574. PMID:27179601
84. Gu, Z. & **Yakel, J.L.** (2017). Inducing theta oscillations in the entorhinal hippocampal network *in vitro*. *Brain Structure and Function* 222: 943-955. PMID: 27369465
85. Damborsky, J.C., Smith, K.G., Jensen, P. & **Yakel, J.L.** (2017) Local cholinergic-GABAergic circuitry within the basal forebrain is modulated by galanin. *Brain Structure and Function* 222: 1385-1400. PMID: 27496091
86. Lewis, J.A., **Yakel, J.L.** & Pandya AA. (2017) Levamisole: A positive allosteric modulator for the $\alpha 3\beta 4$ nicotinic acetylcholine receptors prevents weight gain in the CD-1 mice on a high fat diet. *Current Pharmaceutical Design* 23: 1-4. PMID:27908269
87. Haam, J. & **Yakel, J.L.** (2017). Cholinergic modulation of the hippocampal region and memory function. *J. Neurochemistry* 142 Suppl 2:111-121. PMID: 28791706
88. Gu, Z., Alexander, G., Dudek, S.M. & **Yakel, J.L.** (2017). Hippocampus and entorhinal cortex recruit cholinergic and NMDA receptors separately to generate hippocampal theta oscillations. *Cell Reports* 21:3585-3595. PMID: 29262336
89. Haam, J., Zhou, J., Cui G. & **Yakel, J.L.** (2018) Septal Cholinergic Neurons Gate Hippocampal Output to Entorhinal Cortex via Oriens Lacunosum Moleculare Interneurons. *P.N.A.S.* 115: E1886-E1895. PMID: 29437952

90. Fitch, R.W., Snider, B.B., Zhou, Q., Foxman, B.M., Pandya, A.A., **Yakel, J.L.**, Olson, T.T., Al-Muhtasib, N., Xiao, Y., Welch, K.D. & Panter KE. (2018) Absolute Configuration and Pharmacology of the Poison Frog Alkaloid Phantasmidine. *J Nat Prod.* 81:1029-1035. PMID: 29671588
91. Chen, Y-W., Das, M., Oyarzabal, E.A., Cheng, Q., Plummer, N.W., Smith, K.G., Jones, G.K., Malawsky, D., **Yakel, J.L.**, Shih, Y-Y. I. & Jensen, P. (2019) Genetic identification of a population of noradrenergic neurons implicated in attenuation of stress-related responses. *Molecular Psychiatry* 24: 710-725. PMID:30214043
92. Otto, S.L. & **Yakel, J.L.** (2019) The $\alpha 7$ nicotinic acetylcholine receptors regulate hippocampal adult-neurogenesis in a sexually dimorphic fashion. *Brain Structure and Function* 224: 829-846. PMID:30515567
93. Zhao, Z., Wang, Y., Zhou, R., Li, Y., Gao, Y., Tu, D., Wilson, B., Song, S., Feng, J., Hong, J-S., & **Yakel, J.L.** (2020) A novel role of NLRP3-generated IL-1 β in the acute-chronic transition of peripheral lipopolysaccharide-elicited neuroinflammation: implications for sepsis-associated neurodegeneration. *Journal of Neuroinflammation* 17: 64. PMID: 32070376
94. Gu, Z., Smith, K.G., Alexander, G.M., Guerreiro, I., Dudek, S.M., Gutkin, B., Jensen, P., & **Yakel, J.L.** (2020) Hippocampal interneuronal $\alpha 7$ nAChRs modulate theta oscillations in freely moving mice. *Cell Reports* 31:107740. PMID: 32521265
95. Nacer, S.A., Letsinger, A.C., Otto, S., DeFilipp, J.S., Nikolova, V.D., Riddick, N.V., Stevanovic, K.D., Cushman, J.D. & **Yakel J.L.** (2021) Loss of $\alpha 7$ nicotinic acetylcholine receptors in GABAergic neurons causes sex-dependent decreases in radial glia-like cell quantity and impairments in cognitive and social behavior. *Brain Structure and Function* 226: 365-379. PMID: 33398432
96. Damborsky, J.C. & **Yakel, J.L.** (2021) Regulation of Hippocamposeptal Input within the Medial Septum/Diagonal Band of Broca. *Neuropharmacology* 191: 108589. PMID: 33933476
97. Cheng Q, Lamb P, Stevanoic K, Bernstein B, Fry S, Cushman J & **Yakel JL.** (2021) Differential signaling induced by $\alpha 7$ nicotinic acetylcholine receptors in hippocampal dentate *in vitro* and *in vivo*. *J Physiology* 599: 4687-4704. PMID: 34487349
98. Letsinger, A.C, Gu, Z. & **Yakel, J.L.** (2022) $\alpha 7$ nicotinic acetylcholine receptors in the hippocampal circuit: taming complexity. *Trends in Neurosciences* 45: 145-157. PMID: 34916082
99. Guerreiro I, Gu Z, **Yakel JL**, Gutkin BS. (2022) Recurring Cholinergic Inputs Induce Local Hippocampal Plasticity through Feedforward Disinhibition. *eNeuro* 9. PMID: 36028329
100. Gu Z, **Yakel JL.** (2022) Cholinergic Regulation of Hippocampal Theta Rhythm. *Biomedicines* 10:745. PMID: 35453495
101. Goral RO, Harper KM, Bernstein BJ, Fry SA, Lamb PW, Moy SS, Cushman JD, **Yakel JL.** (2022) Loss of GABA co-transmission from cholinergic neurons impairs behaviors related to hippocampal, striatal, and medial prefrontal cortex functions. *Frontiers in Behavioral Neuroscience* 16:1067409. PMID: 36505727

102. Letsinger AC, Ward JM, Fannin RD, Mahapatra D, Bridge MF, Sills RC, Gerrish KE, **Yakel JL**. (2023) Nicotine exposure decreases likelihood of SARS-CoV-2 RNA expression and neuropathology in the hACE2 mouse brain but not moribundity. *Scientific Reports* 13: 2042. PMID: 36739463
103. Letsinger AC, Nacer SA, Stevanovic KD, Larson GJ, DeFilipp JS, Cushman JD, **Yakel JL**. (2023) Genetic deletion of $\alpha 7$ nAChRs reduces hippocampal granule and pyramidal cell number in both sexes but impairs pattern separation in males only. *Frontiers in Neuroscience* 17:1244118 PMID: 37746145
104. Haam J, Gunin S, Wilson L, Fry S, Bernstein B, Thomson E, Noblet H, Cushman J, **Yakel JL**. (2023) Entorhinal cortical delta oscillations drive memory consolidation. *Cell Reports* 42: 113267. PMID: 37838945
105. Gu Z, Stevanovic KD, Cushman JD, **Yakel JL**. (2024) Cholinergic-sensitive theta oscillations in memory encoding in mice. *J. Neuroscience (in press)*. PMID: 38331584

Publications (Book Chapters):

1. **Yakel, J.L.**, L.O. Trussell & M.B. Jackson (1988). Cytoplasmic modulation of transmitter gated K channels in cultured mammalian central neurons. In *Calcium and Ion Channel Modulation*, A.D. Grinnell, D.L. Armstrong & M.B. Jackson, eds., pp. 291-302, Plenum Press, New York, NY.
2. **Yakel, J.L.** (1992). 5-HT₃ receptors as cation channels. In *Central and Peripheral 5-HT₃ Receptors*, M. Hamon, ed., pp. 103-128, Academic Press, London, England.
3. Jackson, M.B. & **J.L. Yakel** (1995). The 5-HT₃ receptor channel. *Annu. Rev. Physiol.* 57:447-468.
4. Jones, S., & **Yakel, J.L.** (1998) Functional study of glutamate receptor channels in brain slices. In *Neurodegeneration Methods and Protocols*, J. Harry & H.A. Tilson, eds., pp. 247-256, Humana Press, Totowa, NJ.
5. Jones, S., & **Yakel, J.L.** (1998) Calcium influx through voltage-gated calcium channels regulates 5-HT₃ receptor channel desensitization in NG108-15 cells. *Ann N Y Acad Sci.* 861:253-254.
6. **Yakel, J.L.** (2000) The 5-HT₃ receptor channel: Function, activation and regulation. In *Pharmacology of Ionic Channel Function: Activators and Inhibitors*, M. Endo, ed., pp. 541-560, Springer-Verlag, Berlin, Germany.

Invited Presentations (since 2000): (*Symposia in italics*)

Pasteur Institute, Paris, France, 2000

Department of Neurobiology, Duke University, 2000

University of Texas-Austin, Neurobiology, 2000

Division of Neuroscience, Baylor College of Medicine, 2000

Memory Pharmaceuticals, New York, 2000

Department of Molecular Physiology, Baylor College of Medicine, 2000

Synaptic transmission 100 years after Luigi Luciani: A symposium in honour of Ricardo Miledi, Session Speaker, 2000
Nicotinic Receptor Conference, Erl Wood/Eli Lilly, Surrey, United Kingdom, Session Speaker, 2000
Neuronal Nicotinic Receptors- 10th Neuropharmacology Conference, New Orleans, Session Speaker, 2000
National Institute of Aging, NIA/NIH, 2001
Pharmacia and Upjohn, 2001
University of Amsterdam, Swammerdam Institute, 2001
Biophysics Sector, SISSA, Trieste, Italy, 2001
Department of Pharmacology, University of Florence, Florence, Italy, 2001
European Society for Neurochemistry, Perugia, Italy, 2001
XXIVth International Symposium, Centre for Research in Neurological Sciences, University of Montreal, Canada, 2002
Ion Channels in Drug Discovery & Development, Princeton, NJ., 2002
Duke University, Department of Neurobiology, Synapse Club, 2002
Marine Biological Laboratories, Woods Hole, Mass., 2003
Ion Channels in Drug Discovery & Development, Philadelphia, PA., 2003
Brigham Young University, Department of Physiology and Developmental Biology, 2003
Texas A&M University, Neuroscience Seminar Series, 2003
Serotonin EPHAR Satellite Meeting, Porto, Portugal, Speaker and Session Chair, 2004
Ion Channel Drug Targets, San Diego, CA., 2004
Barrows Neurological Institute, Phoenix, AZ., 2005
Albert Einstein College of Medicine, Department of Neuroscience, 2005
Duke University, Integrated Toxicology Program, 2005
Department of Biology, University of N. Carolina-Pembroke, 2005
St. Augustine's Biology Department, Raleigh, North Carolina, 2005
Ion Channels in Drug Discovery & Development- 5th Annual, Philadelphia, PA, 2005
Society for Neuroscience Satellite Symposium: The 5-HT₃ Receptor: A Model Cys-Loop Ligand-Gated Ion Channel, Washington DC, 2005
University of Helsinki, Neuroscience Center, Helsinki, Finland, 2005
Ion Channels in Drug Discovery & Development- 6th Annual, Philadelphia, PA, 2006
Serotonin IUPHAR Satellite Meeting, Sapporo, Japan, Session Co-Chair, 2006
Brody School of Medicine, East Carolina University, 2007
St. Augustine's Biology Department, Raleigh, North Carolina, 2007
Nicotinic Acetylcholine Receptors 2008, Wellcome Trust Conference, Cambridge, UK, 2008
UCLA, Dept. of Physiological Sciences, 2008
Targacept, 2008
Aurora Biomed 6th Annual Ion Channel Retreat, Vancouver, BC, 2008
Society for Neuroscience, Session Chair, 2008
University of Montana, Biomedical and Pharmaceutical Sciences, Missoula, MT, 2009
University of Southern California, Molecular and Computational Biology, LA, Calif., 2009
Journal of Physiology symposium, 'Advances and hold-ups in the study of structure, function and regulation of Cys-loop ligand-gated ion channels and receptors', Organizer and speaker, 2009
E.E. Just Lecturer, American Society of Cell Biology meeting, 2009
Brown University, Providence, RI, 2010
Duke University, Department of Neurobiology, Synapse Club, 2010
SACNAS annual meeting, Anaheim, Calif., 2010
Nicotinic Acetylcholine Receptors 2011, Wellcome Trust Conference, Cambridge, UK, 2011
NIAAA/NIH, Rockville, MD, 2011
SFN Satellite Symposium: nAChR 2011: Emerging Frontiers in Basic Research & Clinical Science, Washington DC, 2011

University of North Carolina, Neuroscience Program, Chapel Hill, NC, 2012
Northwestern University, Chicago, IL, 2012
National Institute of Aging, NIA/NIH, 2012
UNC-Chapel Hill, Department of Pharmacology, 2012
University of California-San Diego, Neurobiology Seminar, Division of Biological Sciences, 2012
Keynote Speaker, Tenth Annual STEM Research Day, Saint Augustine's University, 2013
Nicotinic Acetylcholine Receptor-Based Therapeutics: Emerging Frontiers in Basic Research & Clinical Science- 4th Satellite Meeting to the Society for Neuroscience, San Diego CA, 2013
Society for Neuroscience Symposium entitled "Synaptic Properties and Functional Consequences of Cholinergic Transmission in the CNS", Co-Chair and Speaker, San Diego, 2013
UCLA Integrative Biology Program, 2014
University of California- Irvine, Department of Pharmacology, 2014
Georgetown University School of Medicine, Department of Physiology and Biophysics, 2014
Duke University, Integrated Toxicology and Environmental Health Program, 2015
American Society for Neurochemistry session entitled "Cys -loop Receptors in Neurotransmission: Structural Aspects of Regulation by Exogenous and Endogenous Compounds", Co-Chair and Speaker, Atlanta, Georgia, 2015
University of Victoria, Department of Biology, Victoria, British Columbia, Canada, 2015
Keynote Speaker; NINDS Summer Internship Program (SIP) Career Symposium, Bethesda (July 2015)
Keynote Speaker; Initiative for Maximizing Student Diversity (IMSD) Research Symposium, Chapel Hill (November 2015)
National Institute of Aging, NIH, 2016
University of Maryland School of Medicine, Maryland Psychiatric Research Center, 2017
ASPET 2017 symposium, Chicago Illinois, 2017
Duke University, Neurobiology Training Program, 2018
5th Annual Triangle SfN Spring Meeting, 2019
University of Iowa, 2020
Georgetown University, 2020
NC Central University, Biological and Biomedical Sciences, 2022
National Institute of Aging, NIH, 2022
Exploring Sleep Disturbance in Central Nervous System Disorders: A Workshop of and National Academy of Sciences, Planning Committee, 2022