

CURRICULUM VITAE

(Aug 11, 2020)

Edwin W Rubel, Ph.D.

Personal Data

Birth Date and location:

May 8, 1942
Chicago, Illinois

Marital Status:

Married, two children

Education

Michigan State University East Lansing, Michigan	B.S.	1964
Michigan State University	M.S.	1967
Michigan State University	Ph.D.	1969

Faculty/Academic Appointments

Emeritus Professor Department of Otolaryngology-Head and Neck Surgery Department of Physiology and Biophysics University of Washington Seattle Washington	July 1971-Present
Virginia Merrill Bloedel Professor of Hearing Science University of Washington Seattle, Washington	1991-July 2017
Professor Departments of Otolaryngology-Head and Neck Surgery, Physiology and Biophysics, and Psychology (Adjunct) University of Washington Seattle. Washington	1986-July, 2017
Professor Department of Otolaryngology, and Physiology University of Virginia Medical School Charlottesville, Virginia	1983-1986
Associate Professor Department of Otolaryngology, and Physiology	1977-1983

Director of Research, Otolaryngology
University of Virginia
Charlottesville, Virginia

Associate Professor 1974-1977
Department of Psychology
Yale University
New Haven, Connecticut

Assistant Professor 1971-1974
Department of Psychology
Yale University
New Haven, Connecticut

NIH Postdoctoral Fellow 1970
Department of Psychobiology
University of California
Irvine, California

Assistant Professor
Department of Behavioral Sciences
California State College
Dominquez Hills, California

NIH Predoctoral Fellow 1968-1969
Michigan State University
East Lansing, Michigan

Research Assistant 1966
Department of Biophysics
Michigan State University
East Lansing, Michigan

Teaching Assistant 1964-1966
Department of Psychology
Michigan State University
East Lansing, Michigan

Intramural Responsibilities

Chair of Faculty Council on Research 1994-1995
President's Committee on the State Ethics Law 1997-1998
Physiology and Biophysics Department Teaching
Evaluations Committee 1998- 2004
Chair of University Intellectual Property Management
Committee (IPMAC) 1998 - 2004
Speech and Hearing Sciences 10-Year Review Committee 2001

Search Committee for Chair of the new UW Biology Department	2001
Neurobiology and Behavior Graduate Program Steering Committee	2001-2005
Chair of Promotions Committee, Department of Neurological Surgery	2001
Research Advisory Board	2002-2005

Professional Societies

American Association for the Advancement of Science
Society for Neuroscience
Society for Neuroethology
IBRO
Collegium Oto-rhino-laryngologicum Amicitiae Sacrum
Association for Research in Otolaryngology

Editorial Boards

Journal of Experimental Psychology: Animal Behavior Processes	1977-1982
Developmental Psychobiology	1980-1986
Infant Behavior and Development	1980-1985
Hearing Research (Associate Editor)	2006-present
Associate Editor	2006 - 2009
Journal of Neuroscience	1987-1990
Journal of Comparative Neurology	1987-Present
Auditory Neuroscience (Associate Editor)	1994-1996
Journal of the Association for Research in Otolaryngology (Associate Editor)	2000-2004

Honors

NSF Biomedical Sciences Support Grant Fellow	1967
NIH Predoctoral Fellow	1968-1968
NIH Postdoctoral Fellow	1969-1970
Membership Committee, Society for Neuroscience	1975-1978
NIH Career Development Award	1977-1982
Consultant, Clinical Center Grant, Kresge Hearing Research Laboratory of the South, Louisiana State University Medical Center	1979-1983 & 1986-1992
Member, NIH Study Section, Communicative Sciences/Hearing Sciences	1981-1985
College of Pennsylvania/Eastern Pennsylvania Psychiatric Institute Research Review Board	1982-1984
Jacob Javits Neuroscience Investigator Award	1985-1992
Fellow of the American Association for the Advancement of Science	1989-present
Oasi Institute for Research on Mental Retardation and Brain Aging International Prize for Brain Dysfunction Research: Neural	1991

Plasticity in Brain Development	
Member, Advisory Council for the National Institute of Deafness and Other Communicative Disorders	1991-1995
Member, Psychological and Physiological Acoustics Technical Committee, Acoustical Society of America	1993-1996
Member, Collegium Oto-rhino-laryngologicum Amicitiae Sacrum	1992-present
President-elect, Association for Research in Otolaryngology	1997-1998
President, Association for Research in Otolaryngology	1998-1999
Fellow of the Acoustical Society of America	1998-present
Member, Advisory Board for the Reeve-Irvine Research Center	1999-present
Carhart Memorial Lecture Award, AAS Meeting	2001
Hallowell David Lecture Award, IERASG Symposium	2003
SHBT "Distinguished Lecture," MIT	2004
"Award of Merit", Association for Research in Otolaryngology	2005
Member, Advisory Board for The Center for Structural and Functional Neuroscience, University of Montana	2000-present
Member, Advisory Board for The Center for the Navigation and Communication Sciences (CNCS), University of Rochester	2002-present
Member, Advisory Board for the Comparative and Evolutionary Biology of Hearing (C-CEBH), Univ. of Maryland	2002-present
Ted Evans Lecture; British Society For Audiology	September 2005
Hugh Knowles Center Advisory Board, Northwestern Univ.	2005-present
Keynote Speaker, Widex Meeting on Pediatric Audiology	May, 2008
Keynote Speaker, Beyond Newborn Hearing Screening	June 2008
Keynote Speaker, CNUP Retreat, University of Pittsburgh	Sept, 2009
Keynote Speaker, 7th Australasian Auditory Neuroscience Workshop	Jan, 2010
Guest of Honor, American Otologic Society	May, 2010
Fred Minifie Endowed Lecture, Univ. of Washington	Dec., 2011
Robert Galambos Endowed Lecture, UCSD	Jan., 2013
Roxelyn and Richard Pepper Lecture, Northwestern Univ.	April, 2015
American Auditory Society (AAS) Life Achievement Award	March 2019
Annual Chu Distinguished Lectureship Award, Idaho State University College of Pharmacy	April 2019
William and Christine Hartmann Prize in Auditory Neurosci. (ASA)	May 2020

Research Interests

Developmental Neurobiology
Experiential Influences on Brain and Behavior Development
Ontogeny of Sensory Systems
Comparative Neurobiology of the Auditory System
Hair cell regeneration in the inner ear
Hair cell death and survival

Research Support

NIH; NINCDS, NIDCD, NINDS
NSF
Grant Foundation
Deafness Research Foundation

Lions of Virginia Hearing Foundation
Phillippe Foundation
National Organization for Hearing Research
Oberkotter Foundation

Teaching Experience

Introductory Psychology; Physiological Psychology; Intelligence: Genes and Experience; Brain Mechanisms and Behavior; Mechanisms Underlying Behavioral Plasticity; Seminar in Neurobiology; Topics in Development Psychology; Field Ethology; Comparative Psychology; Neuroembryology; Medical Neuroscience; Histology; Neurophysiology of Sensory Systems.

Patents (Granted/Pending)

Rubel, Edwin, Ou, Henry; Raible, David; Santos, Felipe; Simon, Julian. Drugs to prevent drug-induced hair cell death. Issued 7/31/2012, US Patent No. 8,232,314.

Simon, Julian; Johnson, Graham; **Rubel, Edwin**; Chowdhury, Sarwat; Herr; R. Jason; Jiang, Qin; Chen, Xinchao; Owens, Kelly N; Raible, David. Compounds and methods for preventing, treating and/or protecting against sensory hair cell death. Issued 8/16/2016. Patent # 9,416,141

Simon, Julian, Johnson, Graham; **Rubel, Edwin**, Raible, David, Gonzalez; Mario D., Meltzer, Peter C.; Miao, Weishi. Compounds and methods for preventing or treating sensory hair cell death. Issued 11/15/2016. Patent # 9,493,482.

Ou, Henry; Owens, Kelly; Raible, David; **Rubel, Edwin**; Simon, Julian; Thomas, Andrew. Small molecule inhibitors of cisplatin-induced hair cell death. Pending 2/7/2013, Application No. 61/762,241.

Publications

Raskin, D.C., Hattle, M., Rubel, E.W. The Effects of Electric Shock Isolation in Serial Learning. Psychonomic Science, 1967, 8:413-414.

Raskin, D.C., Boice, C., Rubel, E.W., Clark, D. Transfer Tests of the Frequency Theory of Verbal Discrimination Learning. Journal of Experimental Psychology, 1968, 76:521-529.

Rubel, E.W. Effects of Early Experience on Fear Behavior of *Coturnix coturnix*. Animal Behavior, 1970, 18:427-433.

Rubel, E.W. Opossum Atlas. Contemporary Psychology, 1970, 15:582.

- Rubel, E. W. A Comparison of Somatotopic Organization in Sensory Neocortex of Newborn Kittens and Adult Cats. Journal of Comparative Neurology, 1971, 143:447-480.
- Rubel, E.W. Man's Animals. Contemporary Psychology, 1971, 16:502-503.
- Mayers, K.S., Robertson, R.T., Rubel, E.W., Thompson, R.F. Development of Polysensory Responses in Association Cortex of Kitten. Science, 1971, 171:1038-1040.
- Johnson, J.E., Rubel, E.W., Hatton, G.E. Mechanosensory Projections to Cerebral Cortex of Sheep. Journal of Comparative Neurology, 1974, 158:81-108.
- Rubel, E.W., Rosenthal, M. The Ontogeny of Auditory Frequency Generalization in the Chicken. Journal of Experimental Psychology: Animal Behavior, 1975, 1:287-297.
- Rubel, E.W., Parks, T.N. Organization and Development of Brain Stem Auditory Nuclei of the Chicken: Tonotopic Organization of N. magnocellularis and N. laminaris. Journal of Comparative Neurology, 1975, 164:411-434.
- Parks, T.N., Rubel, E.W. Organization and Development of Brain Stem Auditory Nuclei of the Chicken: Organization of Projections from N. magnocellularis to N. laminaris. Journal of Comparative Neurology, 1975, 164:435-448.
- Thompson, R.F., Rubel, E.W. Evolution and Behavior. In: R.F. Thompson, Introduction to Physiological Psychology, Harper and Row: New York, Chapter 1, 1975, pp. 5-30,
- Thompson, R.F., Rubel, E.W. Genetic and Development Bases of Behavior. In: R.F. Thompson, Introduction to Physiological Psychology, Harper and Row: New York, Chapter 2, 1975, pp. 31-64,.
- Rubel, E. W , Smith, D.J., Miller, L.C. Organization and Development of Brain Stem Auditory Nuclei of the Chicken: Ontogeny of N. magnocellularis and N. laminaris. Journal of Comparative Neurology, 1976, 166:469-490.
- Benes, F.M., Parks, T.N., Rubel, E.W. Rapid Dendritic Atrophy Following Deafferentation: An EM Morphometric Analysis. Brain Research, 1977, 122:1-13.
- Rubel, E.W. Ontogeny of Structure and Function in the Vertebrate Auditory System. In: Handbook of Sensory Physiology, Vol. IX, Development of Sensory Systems. M. Jacobson (Ed.), Springer-Verlag, Chapter 5, 1978, pp. 135-237.
- Jackson, H., Rubel, E.W. Ontogeny of Behavioral Responsiveness to Sound in the Chick Embryo as Indicated by Electrical Recordings of Motility. Journal of Comparative & Physiological Psychology, 1978, 92:682-696.

- Parks, T.N., Rubel, E.W. Organization and Development of the Brain Stem Auditory Nuclei of the Chicken: Primary Afferent Projections. Journal of Comparative Neurology, 1978, 180:439-448.
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- Rubel, E.W., Parks, T.N., Smith, D.J., Jackson, H. Experiential Afferent Influences and Development in the Avian N. magnocellularis and N. laminaris. Proc. XVII International Congress of Ornithology, 1980, 701-709.
- Lippe, W.R., Steward, O., Rubel, E.W. The Effect of Unilateral Basilar Papilla Removal upon Nuclei Laminaris and Magnocellularis of the Chick Examined with [³H] 2-Deoxy-D-Glucose Autoradiography. Brain Research, 1980, 196:45-58.
- Rubel, E.W., Smith, Z.D.J., Steward, O. Sprouting in the Avian Brain Stem Auditory Pathway: Dependence on Dendritic Integrity. Journal of Comparative Neurology, 1981, 202:397-414.
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- Rubel, E.W. Pathophysiology of Hearing Loss: Functional Anatomy. In: G. Gates (Ed.), Clinical Auditory Evaluation, American Academy of Otolaryngology: Rochester, Minnesota, 1981, pp. 18-22.
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- Jackson, H., Hackett, J.T., Rubel, E.W. Organization and Development of Brain Stem Auditory Nuclei in the Chick: Ontogeny of Postsynaptic Responses. Journal of Comparative Neurology, 1982, 210:80-86.
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- Lippe, W., Rubel, E.W. Development of the Place Principle: Tonotopic Organization. Science, 1983, 219:514-516.
- Smith, Z.D.J., Gray, L., Rubel, E.W. Afferent Influences on Brain Stem Auditory Nuclei of the Chicken: N. laminaris Dendritic Length Following Monaural Conductive Hearing Loss. Journal of Comparative Neurology, 1983, 220:199-205.
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- Gray, L., Rubel, E.W. Development of Auditory Thresholds and Frequency Difference Limens in Chicks. In: G. Gottlieb and N. A. Krasnegor (Eds.), Measurement of Audition and Vision During the First Year of Postnatal Life: A Methodological Overview, 1985, 145-165.
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- Born, D.E., Rubel, E.W. Afferent Influences on Brain Stem Auditory Nuclei of the Chicken: Neuron Number and Size Following Cochlea Removal. Journal of Comparative Neurology, 1985, 231:435-445.
- Durham, D., Rubel, E.W. Afferent Influences on Brain Stem Auditory Nuclei of the Chicken: Changes in Succinate Dehydrogenase Activity Following Cochlea Removal. Journal of Comparative Neurology, 1985, 231:446-456.
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- Tucci, D.L., Rubel, E.W. Afferent Influences on Brain Stem Auditory Nuclei of the Chicken: Effects of Conductive and Sensorineural Hearing Loss on N. magnocellularis. Journal of Comparative Neurology, 1985, 238:371-381.

- Ryals, B.M., Rubel, E.W. Differential Susceptibility of Avian Hair Cells to Acoustic Trauma. Hearing Research, 1985, 19:73-84.
- Ryals, B.M., Rubel, E.W. Ontogenetic Changes in the Position of Hair Cell Loss after Acoustic Overstimulation in Avian Basilar Papilla. Hearing Research, 1985, 19:135-142.
- Lambert, P.R., Palmer, P., Rubel, E.W. The Interaction of Noise and Aspirin in the Chick Basilar Papilla. Archives of Otolaryngology. Head & Neck Surgery, 1986, 112:1043-1049.
- Lippe, W.R., Ryals, B.M., Rubel, E.W. Development of Place Principle. In: R.N. Aslin (Ed.), Advances in Neural and Behavioral Development. Ablex Pub. Co: Norwood, NJ, 1986, 155-203.
- Young, S.R., Rubel, E.W. Embryogenesis of Arborization Pattern and Topography of Individual Axons in N. Laminaris of the Chicken Brain Stem. Journal of Comparative Neurology, 1986, 254:425-459.
- Ruben, R.J., van de Water, T.R., Rubel, E.W. (Eds.): The Biology of Change in Otolaryngology. Excerpta Medica: Amsterdam, Netherlands, 1986.
- Tucci, D.L., Born, D.E., Rubel, E.W. Changes in Spontaneous Activity and CNS Morphology Associated with Conductive and Sensorineural Hearing Loss in Chickens. Annals of Otolaryngology, Rhinology & Laryngology, 1987, 96:343-350.
- Born, D.E., Carman, C.S., Rubel, E.W. Correcting Errors in Estimating Neuron Area Caused by the Position of the Nucleolus. Journal of Comparative Neurology, 1987, 255:146-152.
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- Cruz, R.M., Lambert, P.R., Rubel, E.W. Light Microscopic Evidence of Hair Cell Regeneration after Gentamicin Toxicity in Chick Cochlea. Archives of Otolaryngology- Head & Neck Surgery, 1987, 113:1058-1062.
- Sanes, D.H., Rubel, E.W. The Ontogeny of Inhibition and Excitation in the Gerbil Lateral Superior Olive. Journal of Neuroscience, 1988, 8:682-700.
- Born, D.E., Rubel, E.W. Afferent Influence on Brain Stem Auditory Nuclei of the Chicken: Presynaptic Action Potentials Regulate Protein Synthesis in Nucleus Magnocellularis Neurons. Journal of Neuroscience, 1988, 8:901-919.
- Ryals, B.M., Rubel, E.W. Hair Cell Regeneration after Acoustic Trauma in Adult Coturnix Quail. Science, 1988, 240:1774-1776.

- Rubel, E.W. and Parks, T.N. Organization and Development of the Avian Brain-Stem Auditory System. In: G.M. Edelman, W.E. Gall and W. M. Cowan (Eds.), Auditory Function: Neurobiological Bases of Hearing. John Wiley, 1988, 3-92.
- Flint, P., Duckert, L.G., Dobie R.A., Rubel, E.W. Chronic Perilymphatic Fistula. Otolaryngology- Head & Neck Surgery, 1988, 99:380-388.
- Sanes, D.H., Rubel, E.W. The Development of Stimulus Coding in the Auditory System. In: A.F. Jahn and J.R. Santos-Sacchi (Eds.), Physiology of the Ear. Raven Press, New York, 1988, 431-455.
- Sanes, D.H., Merickel, M., Rubel, E.W. Evidence for an Alteration of the Tonotopic Map in the Gerbil Cochlea During Development. Journal of Comparative Neurology, 1989, 279:436-444.
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- Rubel, E.W., Dobie, R.A. The Auditory System: Central Auditory Pathways. In: H.D. Patton, A.F. Fuchs, B. Hille, A.M. Scher, R. Steiner (Eds.) Textbook of Physiology, W.B. Saunders: Philadelphia, 1989, 386-411.
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- Code, R.A., Burd, G.D., Rubel, E.W. Development of GABA Immunoreactivity in Brainstem Auditory Nuclei of the Chick: Ontogeny of Gradients in Terminal Staining. Journal of Comparative Neurology, 1989, 284:504-518.
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- Code, R.A., Rubel, E.W. Glycine-Immunoreactivity in the Auditory Brain Stem of the Chick. Hearing Research, 1989, 40:167-172.
- Von Bartheld, C.S., Code, R.A., Rubel, E.W. GABAergic Neurons in Brainstem Auditory Nuclei of the Chick: Distribution, Morphology, Connectivity. Journal of Comparative Neurology, 1989, 287:470-483.
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- Von Bartheld, C.S., Cunningham, D.E., Rubel, E.W. Neuronal Tracing with Dil: decalcification, cryosectioning, photoconversion for light and electron microscopic analysis. Journal of Histochemistry and Cytochemistry, 1990, 38:725-733.
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