Ian MacKinnon Purcell, M.D., Ph.D.
SENTA Medical Clinic
Department of Neurology and Otoneurology
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San Diego, CA 92111
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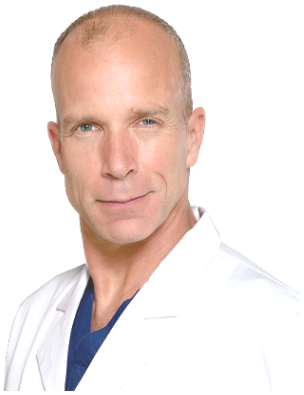
CURRICULUM VITAE



OBJECTIVE

MY CURRENT CAREER GOAL IS THE DEVELOPMENT OF A WORLD CLASS BALANCE INSTITUTE. I CURRENTLY PRACTICE CLINICAL OTONEUROLOGY WITH AN ADDITIONAL FOCUS IN NEUROLOGY AND HEADACHE MANAGEMENT. DURING MY CAREER, I PLAN TO CONTINUE RESEARCH ACTIVITIES IN BALANCE DISORDERS.

07/2004-Present

09/2004-09/2006

SENTA Medical Clinic
San Diego, California
Chief, Division of Neurology SENTA Clinic

Alvarado Balance Institute San Diego, California
San Diego, California
Medical Director of the Alvarado Balance Institute

The University of California *07/2001-07/2004*
San Diego, California
Residency PGY4 Department of Neurology

University of Texas Medical Branch *06/1989-06/2001*
Galveston, Texas
M.D., Ph.D. Program -- Dept. Anatomy and Neurosciences
Ph.D. training with Dr. Adrian A. Perachio
Recipient of NASA Graduate Training Grant as Principal Investigator
Ph.D. Neuroscience with a Focus in Vestibular Neurophysiology and Anatomy

Post-Doctoral research *01/2000-06/2000*
Internship Department of Internal Medicine *06/2000-06/2001*

07/1987-07/1989

The University of California
San Diego, California
Graduate Extension
Neuroscience Graduate Program

Southwestern University *07/1981-07/1985*
Georgetown, Texas
Bachelor of Science – Chemistry/Biology

Texas City High School
Texas City, Texas

1977-1981

Research Activities

1991-1997

University of Texas Medical Branch
Galveston, Texas
Department of Otolaryngology
Advisor: Adrian A. Perachio, Ph.D.

*Structural and Functional Studies of the Primary Vestibular **Afferent** and **Efferent** Neurons in the Gerbil.*
A: My research involves a continuing project designed to compare the functional and structural characteristics of the sensory neurons innervating the linear and angular acceleration sensitive receptor cells of the vestibular labyrinth in the gerbil (*Meriones unguiculates*). Neurons sampled from both canal as well as otolith sensory end organs are functionally classified according to their average discharge rate and pattern of activity under conditions of ***static*** head position and ***dynamic*** rotary and linear head acceleration. These neurons are then intracellularly labeled with a dye that allows anatomical studies to be performed including three-dimensional reconstruction of the cells peripheral and central processes, terminal distributions, and target sites in the vestibular nuclear complex and the cerebellum. The goal is to determine if any consistent structural/functional relationships exist that will provide insight to the determinants of the performance characteristics of these cells and how sensory information is distributed to subsystems of the central vestibular system.

B: The pattern of innervation of the brainstem ***group-e* efferent** neurons as they terminate within a single or multiple vestibular end organs is also being examined. Extracellular injections of the anterograde tracer biocytin, placed into the contralateral *group-e* of the medullary brainstem, is used to examine the terminal and preterminal projections in both the linear and angular acceleration sensitive vestibular neuroepithelium. We seek to determine if there is any consistent distribution of efferent innervation with respect to the location and class of the vestibular afferent neurons across the sensory neuroepithelia. These experiments made up the majority of the data culminating in my dissertation December, 1997.

ADDITIONAL TRAINING INFORMATION

A. The NASA Graduate Training Grant (1991-1995) provided an important opportunity for me to be trained directly by NASA scientists and to participate in research conducted at NASA facilities. The grant provided full stipend, travel, and M&O for the first four years of my training. I participated in collaboration with Dr. Murial Ross, Director and Senior Research Scientist of the Biocomputations Center, Life Sciences Division, **and NASA/Ames Research Center** in which I received instruction on ultra-structural tissue processing, the use of a transmission electron microscope (TEM), and data acquisition. I also received instruction on methods of graphic analysis including: contour extraction, registration (alignment of serial sections), as well as several filling and smoothing methods. All of the above are used to create the final ultra structural computer generated model of a population of macular hair cells and their intrinsic afferent and efferent connections. These anatomical reconstructions are used to generate a mathematical model describing the physiological characteristics of intracellularly labeled (with horseradish peroxidase or Biotinylated Dextran Amines) afferents supplied by our laboratory. I have also had the opportunity to spend time at the **Vestibular Research Facility** (VRF) at NASA/Ames where I gained additional insight into linear air bearing design, electrophysiological techniques, and alternative surgical techniques to gain access to mammalian vestibular afferent neurons as they enter the peripheral end organs. These opportunities have contributed to my understanding of the complexity of the space adaptation syndrome and have provided insights for my continuing interest to conduct related research.
B. I trained at the laboratory of Dr. Jay Goldberg in Chicago, November '94, to receive instruction on variations of single unit recording and labeling techniques. This was at the invitation of my thesis committee advisor.
C. I was awarded the Texas Space Grant Consortium Fellowship to continue work on the analysis of the regional patterns of innervation of the vestibular efferents to the vestibular labyrinths (1995 and 1996).

The University of California
San Diego, California
Department of Neurosciences
Advisor: Patricia Walicke, M.D., Ph.D.
1988-1989

I was involved in a one year project characterizing the receptor for basic fibroblast growth factor (bFGF) in enriched cultures of fetal hippocampal cells. Binding studies examined the location and percentage high and low affinity receptor. Cross-linking 125I-bFGF studies identified major 135 kDa and minor 85 kDa membrane proteins. The properties of the neuronal bFGF receptor was compared to those on mesenchymal cells. These and several other techniques including cross-linking, ELISA, Northern, Western blots, and protein assays were utilized in the laboratory.

SUMMARY OF DISSERTATION

Sensory information related to gravity and head movement is encoded and processed by the vestibular system to modulate and control postural and oculomotor reflexes, and spatial orientation. Semicircular canal and otolith related organs within the vestibular labyrinth contain a sensory neuroepithelia with hair cells sensitive to angular and linear accelerations, respectively. These cells provide direct excitatory input to primary afferent neurons projecting centrally to the brainstem and cerebellum. Vestibular efferent

neurons arising in the brainstem innervate the labyrinth, ostensibly to provide modulatory control over the hair cell afferent transduction process (Goldberg and Fernandez 1980).

Anterograde labeling techniques were used to examine peripheral innervation patterns of vestibular efferent neurons in the crista ampullares and otolith organs of the gerbil. Vestibular efferent neurons were labeled by extra cellular injections of biocytin or biotinylated dextran amine (BDA) into the contralateral or ipsilateral dorsal subgroup of efferent cell bodies (*group e*) located dorsolateral to the facial nerve genu. We have confirmed that efferent neurons innervate one or possibly more end organs in a divergent manner and that their terminal profiles consist mainly of boutons en-passant with fewer bouton terminals. Three-dimensional reconstruction and morphological analysis of the terminal fields from these cells located in the sensory neuroepithelium of the anterior, horizontal, and posterior cristae were performed. We determined the *central* zone of the crista is innervated preferentially by efferent neurons with cell bodies located in the ipsilateral dorsal *group e* and the *peripheral* and *planum* zones of the crista are innervated preferentially by efferent neurons with cell bodies located in the contralateral dorsal *group e*. The terminal fields of these neurons display three morphologically heterogeneous types: a) *Central*, b) *Peripheral*, and c) *Planum* associated with the sectors of the sensory end organs that they primarily innervate. A possible role for the vestibular efferent neurons in the modulation of semi-circular canal afferent response dynamics is proposed.

Analysis of the efferent neurons innervating one of the two otolith organs, the utricular macula, revealed terminal fields specifically restricted to the striolar or nonstriolar zones of the neuroepithelium. The terminal field distributions of a third group of neurons, the bilaterally projecting efferents, were labeled by extra cellular injections of BDA into the contralateral vestibular end organs. It was determined that those neurons innervated orthogonal canals and/or otolith organs within and between labyrinths. Their terminal fields were located in the central, peripheral, and planum zones of the cristae ampullares and the striolar and nonstriolar zones of the otolith organs and therefore these neurons are thought to play a more non-specific role in vestibular control.

Our data reveal a more complex pattern of efferent innervation of the vestibular periphery than previously suspected and suggests a differential role for separate classes of efferent neurons. We determined that there is a consistent distribution of efferent terminals with respect to the location and class of the vestibular afferent neurons across the sensory neuroepithelia that may relate to their modes of influencing afferent background discharge and dynamic responses.

In separate studies, with the use of retrograde transganglionic labeling techniques, we examined the regional patterns of terminal innervation from *afferent* neurons projecting to particular cerebellar target areas and identified possible parcellation and/or overlap into those areas from different classes (i.e. high-gain or low-gain) of afferent neurons. We have demonstrated regional patterns of innervation of the terminal fields of specific subpopulations of vestibular efferent neurons in the canal and otolith organs that overlap the terminal distribution of a population of vestibulo-cerebellar afferents. This arrangement may provide a means for the efferent neurons to selectively modify the spontaneous activity and response gains of these or other afferent neurons in preparation for intended head or body movements.

Scholarships, Awards, and honors

The Golden Neuron Award-Best resident instructor UCSD	*2002*
Texas Neurological Society: Scholarship and Travel Award – Most outstanding resident publication 2000. entitled "Peripheral patterns of terminal innervation of vestibular primary afferent neurons projecting to the vestibulo-cerebellum in the gerbil."	*2000*
The James E. Beall II Memorial Award for Excellence in Anatomy and the Neurosciences 5/98	*1998*
Cover of *Journal of Neurophysiology* November and December 1997 for work entitled: "Three-dimensional analysis of vestibular efferent neurons innervating the cristae ampullares of the gerbil"	*1997*

Society for Neuroscience travel award: Third place poster presentation entitled "Regional Innervation Patterns of Vestibular Efferent Neurons in the Otolith Organs of the Gerbil" at the 9th Annual Sigma Xi Research Forum 2/96	*1996*
President local chapter (1990) Phi Rho Sigma Medical Society and member 1989 to 2000	*1990*
Member of Sigma Xi Galveston Chapter	*1995-99*
Texas Space Grant Consortium Fellowship	*1995, 1996*
Sigma Xi Travel Award: First place overall poster presentation entitled "Regional distributions of efferent innervation in the utricular maculae of the gerbil" at the 8th Annual Sigma Xi Research Forum	*1995*
ARO-Association for Research in Otolaryngology: Travel Award to present at the midwinter research meeting.	*1995*
Sigma Xi Travel Award: First place poster presentation entitled " Structural and Functional Studies of Vestibular Afferent and Efferent Neurons in the Gerbil" at the 7th Annual Sigma Xi Research Forum	*1994*
Principal Investigator NASA Graduate Training Grant Awarded June, 1991 - June, 1995	*1991-95*
Graduate Magna Cum Laude Southwestern University Georgetown, Texas	*1985*
Dean's Honor List (cum laude-Summa Cum Laude Magna et Ampla)	*1982-85*
Phi Delta Chi French Honor Society	*1983-85*
Alpha Chi Academic Honor Society	*1982-85*
Premedical Scholarship Southwestern University	*1981-85*
Brotherhood status Order of the Arrow B.S.A.	*1979*
Eagle Scout (Boy Scouts of America)	*1978*

Teaching Experience

Teaching Assistant: Inorganic and Organic Chemistry and Physics Lab/Lecture. Southwestern University (1983-85).
Teaching Assistant for Medical School Course: Integrated Functional Laboratory U.T.M.B. (1991-93).
Teaching Assistant: Laboratory and classroom in the Neurosciences Graduate Program U.T.M.B. (1992-93).
Tutoring: Graduate and medical students in Neuroanatomy U.T.M.B. (1991-96).
Teaching Assistant: Vestibular Laboratory portion of the Medical School Neuroscience Course. U.T.M.B. (1995-2000).
Teaching Assistant: Laboratory classroom and practical sections: Medical school Neuroanatomy U.C.S.D. (2002).

Membership in Scientific Societies

Member of Texas Neurological Society
Member Society for Neuroscience.
Member of Sigma Xi Scientific Society
Southwestern Science Society

LICENSER INFORMATION

Passed USMLE Step I 09/95
Passed USMLE Step II 12/99
Passed USMLE Step III 11/01
California License # A78322
DEA # BP7825459

U.S. F D A CLASS II MEDICAL DEVICE APPROVAL

Trade/Device Name: DizzyDoctor® System 1.0.0
Regulation Number: 21CFR 882.1460
Regulatory Name: Nystagmograph
Regulatory Class: Class II
Product Code: GWN
Dated: June 2, 2018

INTERNATIONAL UTILITY PATENTS

1. Patent Title: Drive Device of BPPV Diagnosis and Treatment System (granted)
Publication Number: 105030207A
International Classification: A61B5/00
Publication Date: 11/11/15

2. Patent Title: Gear Type Vertigo Diagnosis and Treatment System (pending)
Publication Number:

International Classification: A61B5/00, A61F11/00
Publication Date: 12/30/15

3. Patent Title: Computer Readable Medium Mounted in Moveable Visual Recording Equipment (pending)
Publication Number: 107595291A
International Classification: A61B5/11, A61B5/00, G06F19/00
Publication Date: 01/19/18

4. Patent Title: Method for Collecting Eye Movement, Head Positions and Stability Data in Real Time (pending)
Publication Number: 107661085A
International Classification: A61B3/113, A61B5/11
Publication Date: 02/06/18

5. Patent Title: System for Using Mobile Vision Recording Equipment to Collect Eye Movement Data Application (pending)
Publication Number: 107661086A
International Classification: A61B3/113, A61B5/11
Publication Date: 02/06/18

6. Patent Title: Transmission of BPPV System of Diagnosing (granted)
Publication Number: 204889950U

International Classification: A61B5/00
Publication Date: 12/23/15

7. Patent Title: Gear Formula Vertigo System of Diagnosing (granted)
Publication Number: 205197960U
International Classification: A61B5/00, A61F11/00
Publication Date: 05/04/16

8. Patent Title: System's Rotation Device Gear Formula to Diagnose Vertigo (granted)
Publication Number: 205234454U
International Classification: A61B5/00, A61F11/00
Publication Date: 05/18/16

9. Patent Title: System's Revolution Device Gear Formula to Diagnose Vertigo (granted)
Publication Number: 205322300U
International Classification: A61B5/00, A61F11/00
Publication Date: 06/22/16

10. Patent Title: Positioning System Device Gear Formula to Diagnose Vertigo (granted)
Publication Number:

International Classification: A61B5/00, A61F11/00
Publication Date: 08/03/16

INTERNATIONAL DESIGN PATENTS OR PATENTS PENDING

1. Patent Title: Vertigo Diagnosis System Eye Mask (authorized)
Publication Number: 303580310S
Application Date: 08/20/15
International Classification: 24-01(10)

2. Patent Title: Vertigo Diagnosis and Treatment System (large) (authorized)
Publication Number: 303580311S
Application Date: 08/20/15
International Classification: 24-01(10)

3. Patent Title: Vertigo Diagnosis and Treatment System (authorized)
Publication Number: 303510983S
Application Date: 07/03/15
International Classification: 24-01(10)

4. Patent Title: Eye Movement Detection Eye Mask (authorized)
Publication Number: 304704294S
Application Date: 12/01/17
International Classification: 10-05(11)

5. Patent Title: Eye Movement Detection Eye Mask (1) (authorized)
Publication Number: 304704296S
Application Date: 12/01/17
International Classification: 10-05(11)

6. Patent Title: Eye Movement Detection Eye Mask (2) (authorized)
Publication Number: 304704295S
Application Date: 12/01/17
International Classification: 10-05(11)

INVITED LECTURES

• November 4, 2002 Invited by Scripps Hospital La Jolla, Department of Neurology. Lecture entitled “Migraine Vertigo: A Model for Neuroinflammation of the Vestibular Labyrinth.”

• August 28, 2007 Invited by the Lions Club. Lecture entitled “Benign Paroxysmal Positional Vertigo.”

• November 15, 2007 Invited by DO Society. Lecture entitled “Diagnosis and Treatment of Complex Forms of Benign Paroxysmal Positional Vertigo and Other Vestibular Conditions.”

• March 19, 2008 Invited by St. Paul’s Hospital, Vancouver, BC. Lecture entitled “Diagnosis and Treatment of Complex Forms of Benign Paroxysmal Positional Vertigo.”

• July 16, 2008 Invited by Tassinari Balance Conference. Lecture entitled “Identification of Balance Disorders and the Treatment of Vertigo.”

• August 27, 2009 Invited by Beach Area Health, Fitness, and Wellness Workshop, hosted by Tassinari Balance Conference. Lecture entitled “Dealing with Dizziness and Improving Balance.”

• March 27, 2010 Invited by Scripps La Jolla Hospital Brain Injury Rehabilitation Conference. Lecture entitled “Diagnostics for Vestibular Impairments: Vertigo and Imbalance in the TBI Patient.”

• July 27, 2010 Invited by Scripps Mercy Hospital, Medical Grand Rounds Lecture. Lecture entitled “Evaluation and Treatment of Vertigo Patients.”

• August 26, 2010 Invited by Tassinari Balance Conference. Lecture entitled “Myth: Nothing Can Be Done to Improve Balance and Dizziness, Fact: There Are Treatment and Rehabilitation Options, Learn: Vestibular Conditions and Diagnoses.”

• October 27, 2010 Scripps Green Hospital Grand Rounds. Lecture entitled “Evaluation and Treatment of Vertigo Patients.”

• April 21, 2011 Invited by Scripps Memorial Encinitas Grand Rounds. Lecture entitled “Treatment of Complex Vertigo and Vestibulopathies.”

• January 31, 2012 Invited by Howell Foundation Health Lecture Series. Lecture entitled “Migraine and Dizziness in Women.”

• April 13, 2015 Invited by the Director (Jiang Luyun) of Affiliated Hospital of Chengdu University of Traditional Chinese Medice. Lecture entitled “ Vertigo Diagnosis and Treatment.” Director Jiang Luyun.

• April 16, 2015 Invited by Tianjin People Hospital. Lecture entitled “Diagnosis and Treatment for Patient.” Guest Lecturer Huang Yongwang, Conference Host: Liu Jixiang.

• April 17, 2015 Invited by Shandong Province-owned Hospital. Participation in Otolaryngology Summit, and speech about Diagnosis and Treatment for the Dizzy Patient. Directors Fan Zhaomin and Zhang Daogong.

• April 18, 2015 Invited by No.1 People’s Hospital of Hangzhou. Lecture entitled “The Comprehensive Introduction to the Theory of Vertigo and the Diagnosis and Treatment for the Dizzy Patient.”

• April 19, 2015 Invited by China Medical (Suzhou) Development Co., LTD. Speech about Diagnosis and Treatment for Patient to E.N.T. Directors in Jiangsu Province. Participants: Xiao Gensheng, Yang Xiaoling, Cao Zhongsheng, Deng Jianhua, Guo Jianlin, Wei Tingwen, Gu Li’an, Jin Jianping, Lu Zhongliang, Wu Jiandong, Yao Binfeng, Zhou Xiaotang, Zhu Juanfen, Feng Yong, Song Yonglin, Xu Rui, Zhang Xuekang, Huang Wenhua, Xu Jianguo, Wang Guoqing.

• March 10, 2017 Invited by 12th Annual Brain Injury Rehabilitation. Lecture entitled “Diagnosis of Vertigo in Post-Concussive Patients.”

• August 7, 2018 invited by Zhongshan Hospital of Dalian University, China.
Lecture entitled “Differential Diagnosis and Treatment of Vestibular Migraine and Meniere’s Disease.”

•August 9, 2018 Invited by First Hospital of Qiqihaer City china.

Lecture entitled “Differential Diagnosis and Treatment of Vestibular Migraine and Meniere’s Disease.”

• August 10, 2018 invited by Neusoft Medical System Ltd., Shenyang city, China. Lecture entitled “Introduction of The DizzyDoctor System, a New Remote Diagnosis Device for the Acute Vertiginous Patient.”

PUBLICATIONS

(IN PEER-REVIEWED JOURNALS)

Purcell I.M.and Perachio A.A. Regional Distributions of Efferent Neurons in the Semicircular Canals in the Gerbil. In: *New Directions in Vestibular Research. Annals of the New York Academy of Sciences. Editors: Highstein, Cohen, and Buttner-Ennever* 781:608-683,1996

Marshburn T.H., Kaufman G.D., **Purcell I.M**., Perachio A.A. Saccule contributions to immediate early gene induction in the gerbil brainstem with posterior canal galvanic or hypergravity stimulation. *Brain Res*. 13:264,1997.

Purcell I.M. and Perachio A.A. Three-dimensional analysis of vestibular efferent neurons innervating the cristae ampullares of the gerbil. *J. Neurophysiol*. 78 6: 3234-3248, 1997.

Purcell I.M. and Perachio A.A. Three Dimensional Analysis and Patterns of innervation of Vestibular Efferent and Afferent Terminal Endings in the Semi-circular Canals and Otolith Organs of the Gerbil. *Dissertation.* 1997.

Purcell I.M. and Perachio A.A. Peripheral patterns of terminal innervation of vestibular primary afferent neurons projecting to the vestibulo-cerebellum in the gerbil. *J. comp. neurol.* 433 (1):48-61, 2001

Shinder M.E., **Purcell I.M.**, Kaufman G.D., and Perachio A.A. Vestibular efferent neurons project to the flocculus. *Brain Research*. 889(1-2):288-294, 2001

Newlands S.D., **Purcell I.M**., Kevetter G.A., Perachio A.A. Central Projections of the utricular nerve in the gerbil. *J. Comp. Neurol.* 452:11-23, 2002.

Purcell I.M.and Perachio A.A. Three-dimensional analysis of vestibular efferent neurons innervating the Utricular and Saccular Maculae of the gerbil. *J. Neurophysiol*. (Submission) 2003.

Purcell I.M., Newlands S.D., Perachio A.A. Responses of gerbil utricular afferents to translational motion. *Exp. Brain Res.* 152:317-322, 2003.

Newlands S.D., Arabic J.T., **Purcell I.M.,** Stewart C.M., Zimmerman B.E., Perachio A.A. Central Projections of the secular and auricular nerves in the macaque. *J. Comp. Neurol.* 452:11-23, 2002.

Purcell I.M., O’Leary M.J., Viirre E.S. Complicated Migraine Related Vertigo: A Case Report. *Headache*. (submission) 2004.

Viirre E.S., **Purcell I.M.**, Baloh R.W. How I Do It. The Dix-Hallpike Test and The Canalith Repositioning Maneuver *Laryngoscope*. 115(1): 184-187, 2005.

Purcell I.M., Newlands S.D., Hwang S, Perachio A. Patterns of Innervation of Bilaterally Projecting Vestibular Efferent Neurons in the Gerbil. *Comp. Neurol.* (submission) 2007.

ABSTRACTS

(Published)

Purcell, I.M. and Perachio, A.A. Structural and Functional Studies of Afferent and Efferent vestibular neurons in the gerbil. *Soc. Neurosci. Abstr*. November 11-16, 1994.

Purcell, I.M. and Perachio, A.A. Structural and Functional Studies of Vestibular Otolith Neurons in the Gerbil. National Student Research Forum, Galveston, Texas 1995.

Purcell, I.M. and Perachio, A.A. Three-dimensional analysis of biocytin labeled vestibular efferent neurons in the semicircular canals of the gerbil. ARO-*Association for Research in Otolaryngology Midwinter Meeting Abstr*., St. Petersburg, Fl, February 4-9, 1995.

Purcell, I.M.and Perachio, A.A. Regional Distributions of Efferent Neurons in the Semicircular Canals in the Gerbil. *NY Acad. Sci. Mtg. Abstr*., New York June 25-27, 1995.

Purcell, I.M. and Perachio, A.A. Regional distributions of efferent innervation in the utricular maculae of the gerbil. *Soc. Neurosci. Abstr*. November 11-16, 1995.

Purcell, I.M. and Perachio, A.A. Regional innervation patterns of vestibular efferent neurons in the saccular macula of the gerbil. ARO-*Association for Research in Otolaryngology Midwinter Meeting Abstr*., St. Petersburg, Fl, February 4-8, 1996.

Purcell, I.M. and Perachio, A.A. Peripheral terminals of vestibular primary afferent neurons projecting to the uvula and the nodulus of the cerebellum. *Barany Soc. Mtg.,* Sydney, Australia, August 12-14, 1996.

Purcell, I.M. and Perachio, A.A. Bilaterally projecting vestibular efferent neurons in the gerbil. ARO-*Association for Research in Otolaryngology Midwinter Meeting Abstr*., St. Petersburg, Fl, February 2-6, 1997.

J.T. Vrabec, A.A. Perachio, **I.M. Purcell** Transganglionic Labeling of Utricular Primary Afferent Neurons Projecting to the Brainstem and Cerebellum in the Macque. ARO-*Association for Research in Otolaryngology Midwinter Meeting Abstr*., St. Petersburg, Fl, February 2-6, 1997.

Purcell, I.M. Kaufman, G.D., Shinder, M.E., and Perachio, A.A. Retrograde double-labeling studies of vestibular efferent neurons projecting to the flocculus. *Soc. Neurosci. Abstr*. October 25-30, 1997.

Vrabec, JT, Perachio, AA and **Purcell IM**. Central projections of the saccule in the macaque. ARO-AAOHNS Research forum, American Academy of Otolaryngology-Head and Neck Surgery Annual Meeting, San Francisco, CA, September 1997.

Purcell, I.M. and Perachio, A.A. Structural and Functional Studies of Vestibular Afferent and Efferent Neurons in the Gerbil. at the 7th Annual Sigma Xi Research Forum February, 1994.
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Purcell, I.M. and Perachio, A.A. Regional Distributions of efferent innervation in the utricular maculae of the gerbil. at the 8th Annual Sigma Xi Research Forum February, 1995.

Purcell, I.M. and Perachio, A.A. Structural and Functional Studies of Vestibular afferent Neurons in the Gerbil. Texas Medical Association Conference, Austin, Texas Aug 1995.

Purcell, I.M. and Perachio, A.A. Regional Innervation Patterns of Vestibular Efferent Neurons in the Otolith Organs of the Gerbil" at the 9th Annual Sigma Xi Research Forum February, 1996.

Shinder, M.E., **Purcell, I.M**., Kaufman, G.D., and Perachio, A.A. Vestibular efferent neurons projecting to the flocculus in gerbil. Neuroscience abstracts: Nov. 2000.

S.D. Newlands, J.T. Vrabec; **I.M. Purcell**; C.M. Stewart; B. Zimmerman; AA Perachio. Central Projections of the utricular and saccular nerves in the macaque. Neuroscience abstracts: 298.13, PP153: Nov 10-15, 2001.

Biographical Information

Ian MacKinnon Purcell was born in San Francisco, California on January 4, 1963, the son of Elizabeth Stuart Rubey and Albert Purcell. After completing his work at Texas City high school, Texas City, Texas, in 1981, he attended Southwestern University, Georgetown, Texas. He received the degree of Bachelor of Science in Chemistry in May 1985. He was a residential building and electrical contractor in the state of Texas and subsequently enrolled in the Neuroscience Graduate Program as an extended student at the University of California, San Diego from August 1987 to May 1989. In September 1989 he enrolled in the combined M.D. / Ph.D. program in Neuroscience at the University of Texas Medical Branch, Galveston. In September 1991 he entered the Vestibular Neurophysiology Laboratory of Adrian A. Perachio, Ph.D. and received a total of six years of funding from the NASA Graduate Training Grant and The Texas Space Grant Consortium as a principal investigator. As a neurophysiologist, aviator, and Russian jet war bird enthusiast, he is very interested in providing insight as to how sensory information related to gravity is encoded and processed by the vestibular system to control oculomotor and postural reflexes as well as spatial orientation of the human body moving through a complex three-dimensional environment.

Languages

English, Spanish (minimal)