

Elmar Thorwaldt Schmeisser, Ph.D.

Voice phone: 919/380-2999

Work e-mail: elmar.schmeisser@us.army.mil

Internet: <http://ejconsult.tripod.com>

Mailing address available on request

Educational Background:

1. 1972 - B.A., University of California, San Diego CA (Major: Biology)
2. 1974 - M.S., University of Massachusetts, Amherst MA (Major: Zoology)
3. 1980 - Ph.D., University of Florida, Gainesville, FL (Major: Physiology/Vision)
4. 1981 - AMEDD Officer Basic Course, Academy of Health Sciences, San Antonio, TX
5. 1985 - AMEDD Officer Advanced Course, Academy of Health Sciences, San Antonio, TX
6. 1986 - Combat Casualty Care Course with Advanced Trauma Life Support (C4-ATLS), Academy of Health Sciences, San Antonio, TX
7. 1992 - Command and General Staff Officer Course (completed by correspondence: 1990-1992), U.S. Army Command & General Staff College, Ft. Leavenworth, KS

Immediate Past Position

Physiologist (DB-0413-IV, US Civil Service), Physical Sciences Directorate, Life Sciences Division, U.S. Army Research Office, Research Triangle Park, NC. Program manager for the areas of neural control, perception and cognition sub-fields of neurophysiology and cognitive neuroscience, involving electrophysiology, psychophysiology, sensory and perceptual physiology, computational neurobiology, psychophysics, neuropsychology, brain-machine interfaces and integrative neurobiology. (2001 – 2012)

Description of Immediate Past Position Principle Duties:

Directed and managed an approx. \$11 million annual budget extramural and customer funded basic research program in Life Sciences focusing on Neurophysiology and Cognitive Neurosciences, aimed at investigating the scientific bases of neural control, perception and cognition, including initiating new research projects in response to Army needs, stimulating proposals to respond to those needs, analyzing and evaluating proposals, communicating with grantees and contractors, reviewing and analyzing research reports insuring their effective distribution, stimulating technology transfer to both Army and civilian users, evaluating contractor performance, disseminating program policies and research results, maintaining awareness of Army in-house R&D programs, developing and giving briefings and presentations on Neurophysiology and Cognitive Neuroscience projects, objectives, progress, accomplishments and opportune areas to Army management and scientific community, initiating and orchestrating workshops, conferences, and symposia on pacing research issues, and serving

as principal Army advocate and representative for basic research activities and needs in Cognitive Neurosciences and Neurophysiology.

Administrative Background:

Past responsibilities have included technical supervision of a nuclear medicine research laboratory, which also encompassed teaching biochemical analysis procedures to medical students working on special projects. Additional responsibilities included the development of lesson plans and laboratory exercises, teaching and testing of students at both undergraduate and graduate levels, including medical school. In various departments, I was responsible for development and implementation of new and/or experimental electrodiagnostic, psychophysical, and echographic test procedures in Ophthalmology, and integration of the lab's facilities with other ongoing research projects. This included responsibility for supervision, training and quality control of technical performance of ophthalmologic testing and visual functions monitoring. As Research Physiologist and principal investigator, responsibilities included development and implementation of research protocols, supervising a research laboratory and technical staff, conducting research involving all phases of data collection, analysis, and writing of final reports in visual physiology, visual perception, psychophysics and laser bioeffects. On an ongoing basis I have acted as consultant and/or coinvestigator on projects requiring electrophysiological or neurophysiological expertise and/or bioelectric signal analysis, including computer programming. In addition, I have served on Human Use and Protocol Review Committees, as a congressional Armed Services Biomedical Research, Evaluation and Management (ASBREM) committee team member on laser bioeffects coordinating DOD triservice research programs. Academically, I have served on various University *ad hoc* committees as well as on a select committee of the American Academy of Optometry designing the Diplomate evaluation and certification program in visual sciences, specializing in research and clinical ophthalmic electrodiagnosis.

Previous positions (in reverse chronological order):

- 1997 - 2001: Senior Research Physiologist - Vision (Senior MTS), TASC, Inc. San Antonio, TX. Contractor to the United States Air Force Research Laboratory (AFRL/HEDO), Brooks Air Force Base, San Antonio, TX. Laser eye protection (LEP) psychophysics team leader responsible for preparing, documenting and executing psychophysical evaluation plans and schedules for various proposed LEP technologies to include publication of original research results and supervision of the research laboratory. Senior research visual physiologist responsible for the development, implementation and quality control of both established and novel evaluation methods to determine the impact of LEP and laser irradiation on vision and visual performance in both clinical and operational contexts to include psychophysical, electrophysiological and human factors survey methodologies. Principal investigator developing non-linear dynamical (chaos) analytic techniques of eye movements for use in modeling laser damage effects.
- 1987 - 1997: Associate Professor, Dept. of Ophthalmology, Chandler Medical Center, University of Kentucky, Lexington, Kentucky. Director of the Visual Functions Laboratory and Electrodiagnostic Service for the department. Consultant in Ophthalmic Electrodiagnostics and Ultrasound, Veteran's Administration Hospital, Cooper Drive Division, Lexington, KY. Director of a clinical human visual functions testing unit including

electroretinography, visual evoked potential measurement, electro-oculography, color vision testing, dark adaptometry, and ophthalmic ultrasound billing over \$588,000.00 from 3,543 tests on 2,420 patients. Director of an independent research program in visual physiology that was funded by over \$400,000 in grant support for the principal investigator and \$280,000 as co-investigator. Invited lecturer on special topics in the resident education program.

- 1985-1987: Captain, Medical Service Corps, United States Army; Research Physiologist (Principal Investigator) in the Laser Bioeffects Laboratory, Radiation Sciences Division, United States Air Force School of Aerospace Medicine. US Army Biotechnology Liaison Officer to the USAF School of Aerospace Medicine for Lasers Bioeffects. Consultant to military ophthalmologists on specialized visual electrodiagnostic procedures. Projects included the development of methodology and instrumentation in laser flash and lesion effects on ground and aircrews, coordination of results databases and cross-validation of experiments between the Army and Air Force laboratories. Research programs involved establishment of new pattern specific electrophysiological measures to determine the locus of laser flash effects (retina vs cortex), short pulse visible laser effects on chromatic discrimination, and quantification of pattern masking by intense laser sources.
- 1981-1984: Captain, Medical Service Corps, United States Army; Research Physiologist (Principal Investigator) in the Division of Ocular Hazards, and Officer in Charge of the Visual Functions Laboratory, Letterman Army Institute of Research, Presidio of San Francisco, CA. Research topics involved projects to quantitate both ophthalmic and visual function hazards from laser radiation in primates, develop psychophysical and electrophysiological measures of laser induced visual deficits, evaluate ocular ballistic damage susceptibility, and develop and extend the clinical ophthalmic electrodiagnostic tools.
- 1979-1980: Consultant (Special Appointment), Veterans Administration Hospital, Gainesville, FL for digital Fourier analysis of patient pattern visual evoked responses for diagnostic use in cases of multiple sclerosis and other visual system diseases.
- 1976-1980: Predoctoral Graduate Research Assistant, Departments of Ophthalmology and Physiology, College of Medicine, University of Florida, Gainesville, FL. Research projects included an electrode materials study of chronic cortical stimulating electrodes in cat, the electrophysiology of cat and mudpuppy visual systems, examination of the dolphin eye (pupil and eye movements), and pattern and laser speckle evoked cortical responses in humans, dogs, and cats. Developed programs for a general-purpose small computer (the Nicolet MED-80) for automated data acquisition and analysis, both for research purposes and clinical diagnostic use.
- 1975-1976: Life Sciences Research Assistant, Division of Nuclear Medicine, Department of Radiology, Stanford University Medical Center, Stanford, CA. Developed procedures for the isolation and characterization of thyroglobulin-antithyroglobulin immune complex receptors from extraocular muscle membranes (both human and animal) to elucidate this aspect of Grave's Ophthalmopathy. Other projects included developing and performing assays for thyroid stimulating immunoglobulin and thyroglobulin immune complex.

- 1975: Life Sciences Technician, Department of Psychiatry and Behavioral Sciences, Stanford University Medical Center, Stanford, CA. Assisted in the development and performance of radioimmunoassays of steroid and protein hormones in human and chimpanzee serum using radioactive tracers.
- 1972-1974: Research Assistant, University of Massachusetts, Amherst, MA. Conducted research on the control of the pharyngeal pump by the frontal ganglion of the American cockroach, and its relationship to ecdysis related behavior. Other projects included neurochemical analysis of peripheral nerve tissue for acetylcholine receptor proteolipids in dogs, and computer analysis of respiratory cardiac cycle synchrony in the common crab.
- 1970-1972: Undergraduate Student, University of California, San Diego, CA. Conducted research on the correlation between cell cycle and reproductive capability in a single celled dinoflagellate (*Chlamydomonas reinhardtii*).

Professional and Scientific Societies:

- American Academy of Optometry (Fellow)
- Sigma Xi

Other Appointments:

- 1998- 2001: Select committee member of the American Academy of Optometry for the diplomate evaluation and certification program in visual sciences, specializing in research and clinical ophthalmic electrodiagnosis.
- 1998 – 2001: Adjunct Associate Research Professor, Department of Ophthalmology, University of Texas Health Science Center, San Antonio, TX. Consultant and co-investigator on investigative projects involving ophthalmic electrodiagnostic and visual psychophysical techniques.
- 2002 – 2007: Adjunct Associate Research Professor, Department of Ophthalmology, Duke University, Durham, NC. Duties included acting as a consultant and co-investigator on scientific projects involving ophthalmic electrodiagnostic and visual psychophysical techniques as well as visual neurophysiology. Additional duties included acting as clinical advisor on patient visual functions testing.
- Colonel, US Army Reserve, Retired. (commissioned 1981, served to 2009)
- DV-IV-03, US Civil Service, Retired (appointed 2001, served to 2012)
- Reviewer, Clinical Vision Sciences, 1992 - 1993.
- Reviewer, Documenta Ophthalmologica, 1992 - 2012.
- Reviewer, Optometry and Vision Science, 1994 - 1997.
- Reviewer, Vision Sciences, 1996 – 2012.

Honors and Awards:

- Army Service Ribbon (1981)
- Expert Field Medical Badge (1982)
- Army Achievement Medal (1982)
- Meritorious Service Medal (1985)
- Air Force Commendation Medal (1989)
- Armed Forces Reserve Medal (1991)
- Army Commendation Medal (1992)
- National Defense Service Medal (1993)
- Army Reserve Components Achievement Medal (1991,1995)
- Surgeon General's "A" Designator (1999)
- Nominated for the ARL 16th Annual Honorary Awards Program - 2010 in the category of Publication for the editing work done in the book Helmet Mounted Displays (published 2009)
- Commander's Award for Civilian Service (2011)
- Superior Civilian Service Award (2012)

Grants and Fellowships Received:

- Predoctoral Fellowship, NIH MN10 320-14 Research Training/ Biological Sciences, University of Florida, 1979-1980. [PI: \$8,000]
- Visual Functions Clinical Laboratory Equipment Grant. Kentucky Lions Eye Club, 1987. [PI: \$34,000].
- "Chromatic Flicker ERG in Diabetic Retinopathy". Biomedical Research Support Grant #RR05374 (NIH), 1987-1989. [PI: \$15,000]
- "Acuity Verification by Cognitive Evoked Potentials". University of Kentucky Medical Center Small Research Projects Grant (UKMC Research Fund), 1987-1989. [PI: \$6,300]
- "Naka-Rushton Parameterization of ERG Oscillatory Potentials". University of Kentucky Physician's Service Plan (PSP Research Fund), 1988-1989. [PI: \$5,250]
- "Laser flash and lesion effects on acute visual functions". Subcontract via Krug International from USAF School of Aerospace Medicine, Brooks Air Force Base, TX, 1989-1992. [PI: \$125,000]

- "Discrete Flicker Detection Perimetry in Glaucoma". American Health Assistance Foundation, 1989-1990; renewed 1990-1991. [PI: \$43,000]
- "Nonlinear Dynamic Analysis of Visual Functions". University of Kentucky Center for Computational Sciences, 1992-1993, renewed 1993-1994. [PI: \$27,468]
- "Intravitreal Drug Delivery". NIH/NEI 1R01EY09973-01, 1993-1995. [Co-I: \$265,000]
- "Prospective Analysis of Monoptic Beat Visual Evoked Potentials in Children with Strabismic and Anisometropic Amblyopia". Knight's Templar Eye Foundation, 1993-1994. [Co-I: \$19,792]
- Visual Functions Clinical Laboratory Equipment Grant. Kentucky Lions Eye Club, 1993. [PI: \$6,500].
- "Fractal Dimensionality of Ocular Motor Behavior". University of Kentucky Center for Computational Sciences, 1994-1995. [PI: \$13,734]
- "Wide Field Functional Profile Mapping of Retinal Lesions". AFOSR/ILIR via The Analytical Sciences Corp., contractor to the USAF Armstrong Laboratories, Brooks Air Force Base, TX, 1995-1996. [PI: \$25,000]
- "Perimetric Mapping of Hyperacuity: Effects of retinal laser scars". U.S. Army Medical Research & Materiel Command, Ft. Detrick, MD, 1995-1997. [PI: \$113,307]

Publications list available on request

Citizenship: U.S. (naturalized 1966, cert. # A-533182)

Clearance: Secret (various agencies, 1981 – 2012)