

## Tarynn Madysyn Witten, PhD, LCSW, FGSA



Prof. Tarynn M. Witten earned her PhD in Theoretical Biology and Mathematical Physics under Prof. Robert Rosen at the Center for Theoretical Biology, SUNY Buffalo. She holds additional degrees in Mathematics, Physics, Mathematical Physics & Social Work. Following post-graduate work in Biostatistics (Medical University of South Carolina) and Biomedical Engineering (University of Southern California), she spent time in both academics and the supercomputing industry. She currently holds simultaneous appointments as Professor of Biological Complexity at the Center for the Study of Biological Complexity, Associate Professor of Emergency Medicine, and Adjunct Associate Professor of Gerontology and Social Work. In addition, she serves as Senior Fellow and Director of Research and Development at the Center for the Study of Biological Complexity, Virginia Commonwealth University.

Tarynn is the recipient of the 2005 Apple Computer Corporation Distinguished Educator of the Year Award, is a Fellow of the Gerontological Society of America and holder of the Inaugural Nathan W. and Margaret Shock New Investigator Research Award for her work on the use of supercomputing algorithms to study the effects of sample size estimation on mortality patterns in different animal species. Her current research focuses on applications of complexity theory and network dynamics/topology to aging and longevity research. She is the co-developer of the Bonchev-Witten algorithm for determining potential longevity extension genes in an aging gene/protein network. In the past, Dr. Witten has served as the mentor for the winning ETA Systems SuperQuest team and has been received a number of "most valuable mentor awards" for her mentoring of women mathematicians. She served as a Boston Museum of Science Scientist-by-Mail mentor since the inception of the program, a University of Michigan mentor, a San Antonio Anchors Science Program Mentor, a Texas Science and Math Hotline mentor, a Virginia Governor's School Science Program mentor, Boston University Children's Science Book Review Committee, as well as numerous other science fair judging and mathematics competition judging positions. She has been nominated for four distinguished teaching awards from four different universities for her mathematics teaching.

Dr. Witten is a futurist who has presented over 200 international scientific talks on aging-related issues, mathematical modeling and simulation, and the role of high performance computation in medicine and has written over 100 papers on mathematical modeling and computer simulation of aging processes, high performance computing in medicine, and mathematical models of biomedical processes. She is the ongoing author of the Encyclopedia of Computer Science entry on Computational Biology and Medicine and has worked for such companies as ETA Systems, Control Data Corporation and served as a consultant for Amgen, Eli Lilly, Merck, Smith Kline French, Amdahl, Cray Computing, Thinking Machines, and numerous other corporate high performance computing-related companies. She was the former Director of Applications Research and Development and Associate Director of the University of Texas System Center for High Performance Computing where she founded the GenTools Project™ (the first public domain, multi-platform, transparent computing, genomic analysis environment), initiated collaborative efforts with Los Alamos for the first internet-based automated download of GenBank, served as one of the original NSF/NIH Supercomputer Center reviewers, and currently serves as a grant reviewer for both NIH and the MRC (England). She has also served as a consultant to the NSF/DOE Collaboratories Project. Since the 1990's, she has organized numerous sessions at the various Supercomputing World conferences as well as Supercomputing 1991. In 1994 she organized and chaired the First World Congress on Computational Medicine, Public Health, and Biotechnology at which the Affymetrix Chip group had its first meeting.

Her work has appeared in *Supercomputing World*, *Unix Today*, *Computer Graphics*, *SunWorld*, and numerous other computer trade magazines. She was an active member of MacSciTech. She was one of the first supercomputing futurists to talk about grid computing for the development of ultra-large scale simulation models of the human. She coined the term "*bionanoids*" as a descriptor of nano-scale biocompatible robots, and is currently the conceptual designer and project leader of the first "*in silico experimental laboratory*," the Virtual Parasite Project at the VCU. Dr. Witten also serves as editor-in-chief of the new Springer-Verlag series on mathematics and computers for bioinformaticians. Her interests lie in multi-scale models of biological systems for the purposes of understanding the dynamics of aging processes.