

Bio: Randal A. Koene



“Competition is an inescapable occurrence in the animate and even in the inanimate universe. To give our minds the flexibility to transfer and to operate in different substrates bestows upon our species the most important competitive advantage.”

Randal A. Koene is heading up Analysis at nanotechnology company Halcyon Molecular in Silicon Valley. Previously, Randal A. Koene, Ph.D., was Director of the [Department of Neuroengineering](#) at [Tecnia](#), third largest private research organization in Europe. He is a former Prof. at the Center for Memory and Brain of Boston University, and co-founder/owner of the Neural Engineering Corporation of Massachusetts. His research objective is whole brain emulation, creating the large-scale high-resolution representations and emulations of activity in neuronal circuitry that are needed in patient-specific neuroprostheses.

Koene has professional expertise in computational neuroscience, psychology, information theory, electrical engineering and physics. He organizes neural engineering efforts to obtain and replicate function and structure information that resides in the neural substrate for use in neuroprostheses and neural interfaces. And based on NETMORPH ([netmorph.org](#)), Koene's computational framework for the simulated morphological development of neuronal circuitry, his lab is creating a Virtual Brain Laboratory to give neuroscientists, neuroengineers and clinicians large-scale high-resolution quantitative tools analogous to the computational tools that have become essential in fields such as genetics, chemistry or the aero-space industry. This effort bridges scales and will help determine how significant functions are encoded robustly in neural ensembles, and how those functions can nevertheless depend in specific ways on the detailed biophysics of particular component physiology.

Koene earned his Ph.D. in Computational Neuroscience at the Department of Psychology at McGill University, and his M.Sc. in Electrical Engineering with a specialization in Information Theory at Delft University of Technology. He is a member of the Oxford working group that convened in 2007 to create a first roadmap toward whole brain emulation (a descriptive term for the technological accomplishment of mind transfer to a different substrate that was first coined by Koene on his [MindUploading.org](#) website).

Visit Koene's personal web site [rak.minduploading.org](#), [carboncopies.org](#), [MindUploading.org](#) or watch Koene present and discuss “[Scope and Resolution in Neural Prosthetics and Special Concerns for Emulation of a Whole Brain](#)”.