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# EMSL In Brief

Environmental Molecular Sciences Laboratory

## Two EMSL Users on Prestigious 2007 Scientific American 50 List

*Researchers use proteomics to understand the human brain in health and disease*

Desmond Smith and Dick Smith, frequent users at the Environmental Molecular Sciences Laboratory, shared the honor of being named to the 2007 Scientific American 50 list in January 2008. Assembled by *Scientific American's* Board of Editors, the list honors 50 outstanding people or teams for their achievements and leadership in shaping established and emerging technologies. Previous honorees include Nobel prize-winning neurobiologist Roderick MacKinnon, former World Health Organization Secretary General Gro Harlem Brundtland, and Google founders Larry Page and Sergey Brin. Desmond Smith and Dick Smith were honored for their work developing new methods for rapid mapping of gene and protein expression patterns in the mammalian brain.

Using resources at EMSL and other laboratories, these two scientists and their collaborators are developing analytical methods and technologies, including voxelation and gene expression tomography, to detect patterns in the transcriptome and proteome—the complete set of RNA that creates the chemical "blueprint" for producing proteins and the complete set of proteins produced—in the brain. Using high-throughput mass spectrometers and other instruments available at EMSL, they are decoding the conceptual wiring diagram of the genome, which gives rise to proteins that are responsible for the neuronal wiring diagram of the brain.

Eventually, this research may help to identify patterns that indicate the early stages of brain impairment, such as Alzheimer's, Parkinson's, and other neurological diseases. Many biomedical researchers believe that detecting disease states before symptoms occur is key to reversing many as-yet-incurable diseases.

Desmond Smith is an Associate Professor at the University of California at Los Angeles, and Dick Smith is a Battelle Fellow and Chief Scientist at Pacific Northwest National Laboratory.

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