

Tongue Drive: A Wireless Brain-Tongue-Computer Interface (#4537)

A device that allows users to accurately track their tongue movements in real time

Inventors at Georgia Tech have developed the Tongue Drive System (TDS), an unobtrusive, wireless, and wearable device that allows users to accurately track their tongue movements in real time, giving them the freedom to move around, talk, and be involved in physical and cognitive activity. Utilizing a small magnet attached to the tongue and magnetic sensors mounted to headgear, tongue movements are transmitted to a portable computing device and translated into commands. TDS thus enables the tongue to serve as a capable and flexible interface between the user's brain and the surrounding environment (Brain-Tongue-Computer Interfacing, BTCl).

Benefits/Advantages

- Allows individuals with disabilities to experience active, independent, and satisfying lives
- Allows wireless tracking of the voluntary tongue motion in the 3-D oral space, which can be utilized for command, control, and navigation applications
- Low-cost
- Noninvasive
- Unobtrusive
- Cosmetically acceptable
- Low power requirements

Potential Commercial Applications

- Adaptive wireless assistive technology (AT) for people severely disabled as a result of various causes—from spinal cord injuries to stroke, cerebral palsy, and other neuromuscular disorders—who generally find it extremely difficult to carry out everyday tasks without continuous help

Background/Context for This Invention

Assistive technologies can help individuals with significant disabilities communicate their intentions to others and effectively control their environments, enabling them to operate personal computers (PC), power wheelchairs (PWC), and interact with the surrounding environment. These technologies not only ease the individuals' need for receiving continuous help from caregivers, but also help them to be employed and experience active, independent, and satisfying lives.

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More Information

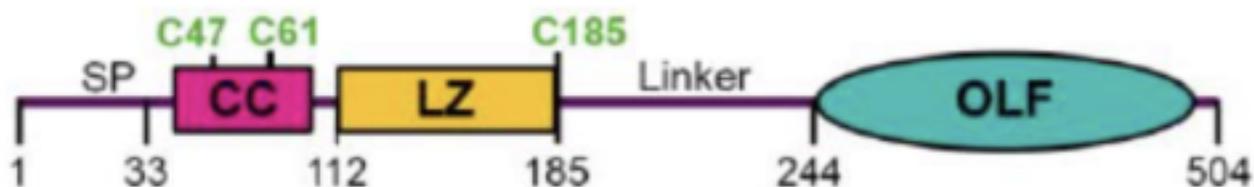
U.S. Number: 8,242,880

Publications

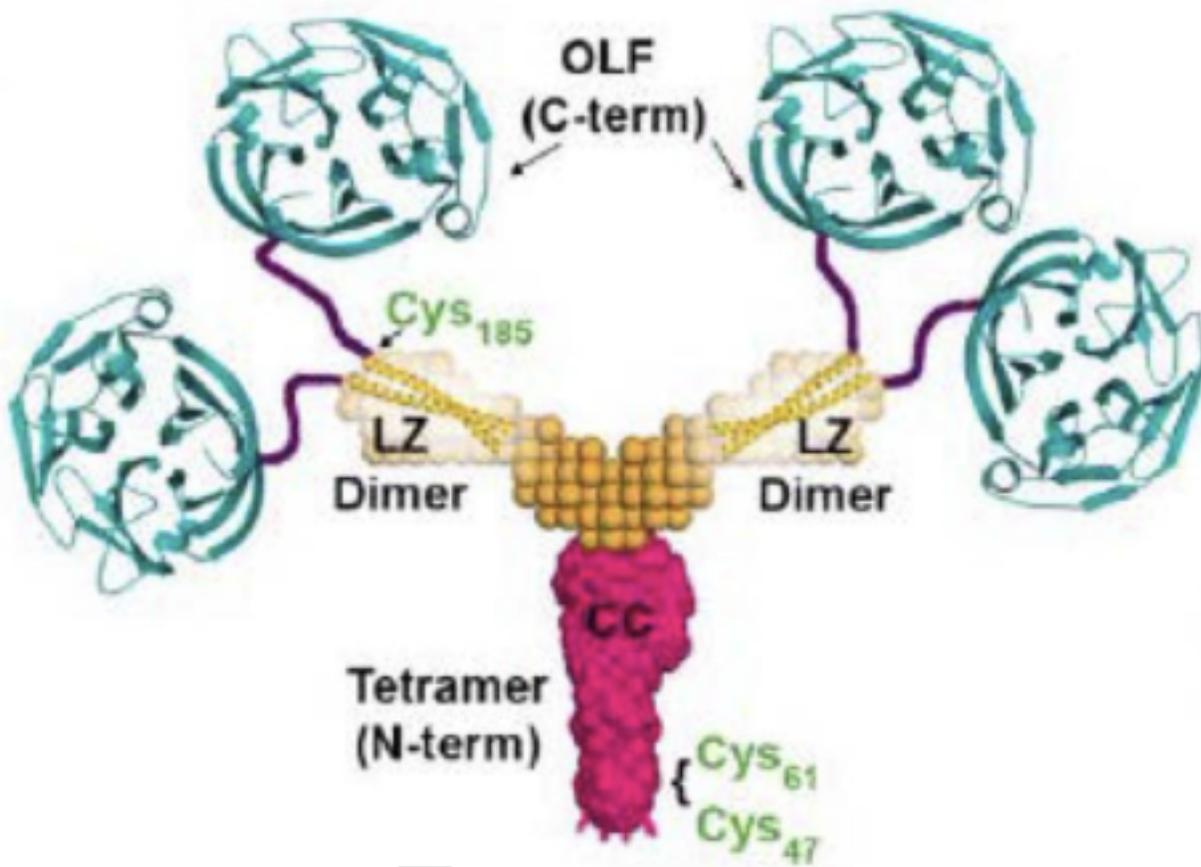
For more information about this technology, please visit:

<https://licensing.research.gatech.edu/technology/tongue-drive-wireless-brain-tongue-computer-interface>

Images:



The gene structure depicting the domains of myocilin, including signal peptide, location of key cysteine residues, and its coiled-coil, leucine zipper, and olfactomedin domains.



The myocilin quaternary structure based on solution X-ray scattering, X-ray crystallography, and chemical cross-linking experiments.