Congestion Control and Power Conservation in Wireless Networks (#7900)

A method for data collection from a wireless network, to reduce congestion and power consumption

Georgia Tech and King Fahd University inventors have developed a method to collect data from a wireless network, reducing transmission control protocol (TCP) congestion and power consumption. This method offers each sensor device a direct link between a communication station (STA), and a common access point (AP), which coordinates data collection from a device. A group of STAs operate on the same AP and essentially "wait in line" for data collection. While a single STA is in operation with the AP an unbounded amount of data is exchanged between the sensing device and the STA. When one STA has completed all data transfer, a low-power state is entered for a specified duration of time while the process cycles through the other STAs. The STA can adjust the time spent in low-power based on its operation. This method can be applied to a wireless system in a standards-compliant manner.

Benefits/Advantages

- **Energy Efficient** – Components enter low-power mode when not actively in operation
- **Reduced Network Congestion** – Cycles process prevents access points from becoming clogged with multiple data transfer processes
- **Higher Throughput** – Unlimited amount of data can be transferred

Potential Commercial Applications

- Oil and Gas Exploration
- Agriculture
- Meteorological Studies
- Earthquake Detection

Background/Context for This Invention

As monitoring systems for applications such as, oil and gas exploration, agriculture, meteorological studies, and earthquake detection continue to advance in size and data quality, the process of such a large collection of data becomes equally challenging. Wireless systems for such monitoring applications are required to transfer data in a time-sensitive manner while conserving power in order to extend the life of monitoring sensors and devices. A large-scale data-intensive wireless network presents various challenges, wherein a large area is mapped by a dense network of devices each having constrains on power consumption and storage capabilities.

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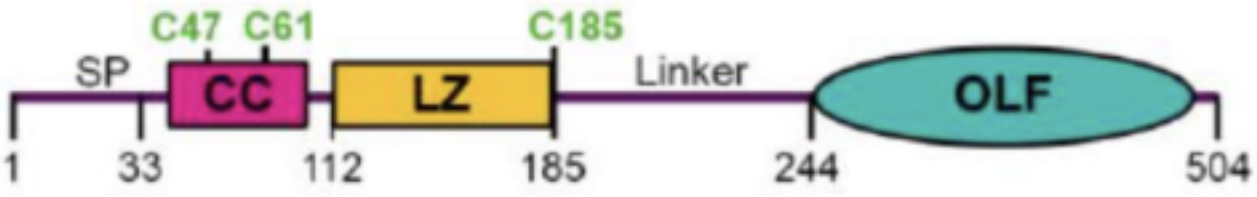
More Information

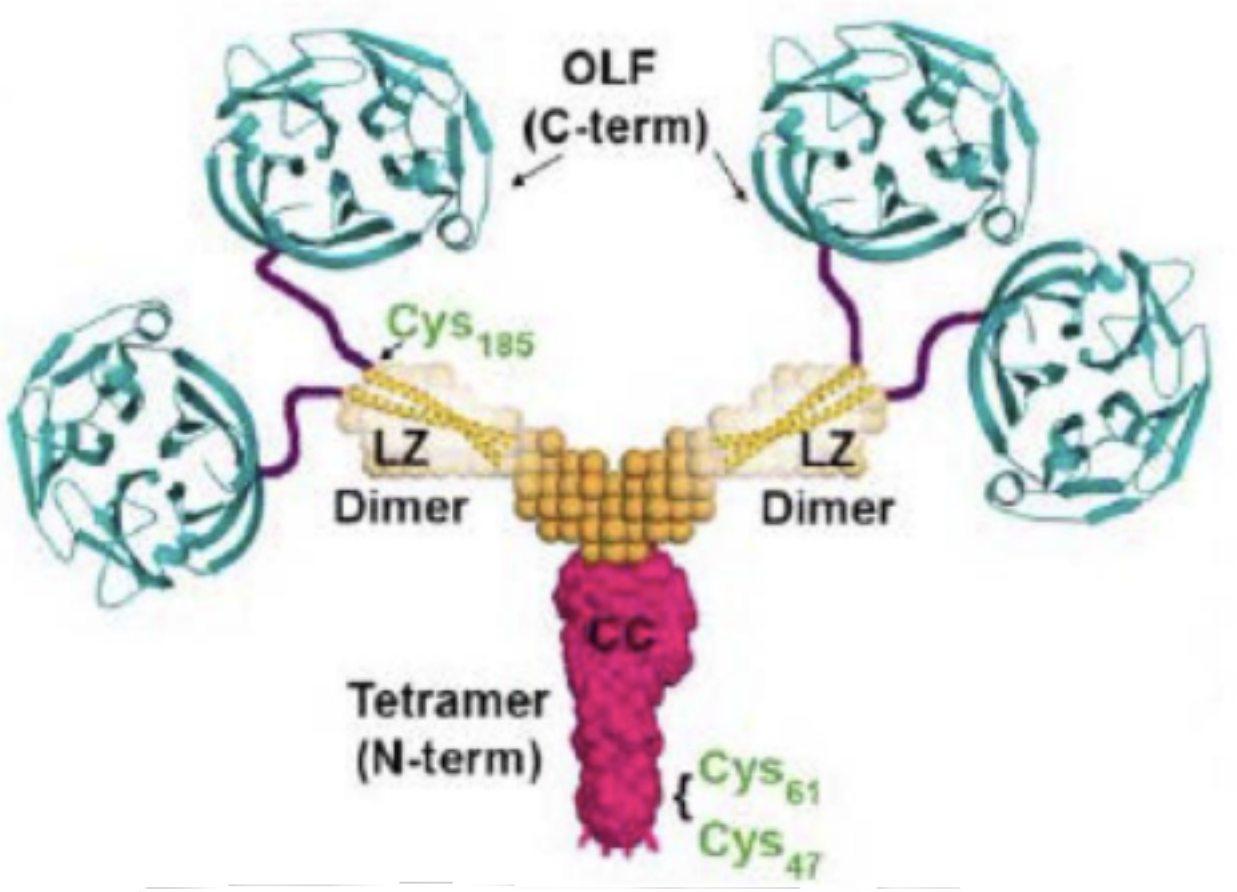
Publications

For more information about this technology, please visit:
https://licensing.research.gatech.edu/technology/congestion-control-and-power-conservation-wireless-networks

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.