

Researchers discover a new protein family implicated in inflammatory diseases

March 10 2008

A University of Central Florida research team has discovered a new protein family that may play an important role in preventing inflammatory diseases such as arthritis, some forms of cancer and even heart disease.

The findings that in the future may aid the body's defense system are published in the March 7 edition of the *Journal of Biological Chemistry*. The research is partially funded by the National Institutes of Health.

“What we found is a family of proteins that control macrophage activation,” researcher Mingui Fu said from a laboratory in the Burnett School of Biomedical Sciences at UCF.

Macrophages are the body's self-cleaners. They live in the bloodstream and are called to action when bacteria or other foreign objects attack. Scientists have been studying what triggers them, but no one has come up with a step-by-step process yet. Once triggered, macrophages travel to the infection site and gobble up the invader, helping the body heal. The attack is manifested by inflammation at the infection site.

When everything works right, the inflammation goes away and the person's health improves. But when macrophages go awry, they can cause more harm than good. Sometimes the macrophages mistake the body's own organs for invaders and attack, and that can cause arthritis or some forms of cancer. Sometimes the cleaners fail to detect threats, such as malignant cancer cells, which then go unregulated and can turn into

fatal tumors.

When Fu arrived at UCF in 2007, he teamed up with Pappachan Kolattukudy, the director of the Burnett School of Biomedical Sciences. Kolattukudy's laboratory has been studying for two decades how a small protein called MCP, produced at the site of injury, infection or inflammation, attracts macrophages to the site to clean up. Last year his team published the discovery of a novel gene called MCPIP that is turned on by MCP. They showed that MCPIP is involved in the development of ischemic heart failure, the leading cause of death. This team has been exploring how this new gene works.

MCPIP turns out to be the first member of a small, newly discovered gene family called CCCH-Zinc finger proteins. This family appears to switch the macrophages on and off. The researchers continue to study different aspects of the proteins because of the possibility that they will be critical in treating and curing inflammatory diseases.

Kolattukudy said the new protein holds a lot of promise, but more studies are needed.

“Because this novel protein has key roles to play in the major inflammatory diseases such as cardiovascular disease, cancer and obesity-induced type2 diabetes, it is a promising drug target,” Kolattukudy said. “We have a patent application filed on this protein for that purpose.”

Source: University of Central Florida

Citation: Researchers discover a new protein family implicated in inflammatory diseases (2008, March 10) retrieved 19 April 2024 from <https://phys.org/news/2008-03-protein-family-implicated-inflammatory-diseases.html>

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