OAKLAND UNIVERSITY

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OU-Beaumont Team Studies Alzheimer's Disease

A team of **Oakland University** and **William Beaumont Hospital** scientists published a **scientific paper** in the January 2010 issue of the journal **International Immunopharmacology** (Volume 10, Pages 115-119) about their research on **Alzheimer's Disease**. This degenerative disease is responsible for memory loss and dementia in over five million people in the United States; a number that will certainly increase as our population ages. Doctors cannot find a cure for Alzheimer's disease until biomedical research allows them to better understand its cause and improve its treatment.

One promising treatment for Alzheimer's is to give the patient **intravenous immunoglobulin** (IvIg), a blood product containing **antibodies** that are a key constituent of the body's **immune system**. Researchers suspect that improvements caused by this treatment arise from a specific antibody to the **amyloid beta** peptide, which forms the **plaques** littered throughout the brains of Alzheimer's patients. One particular type of amyloid beta peptide, called Abeta1-24, may play a key role in the disease, and comes in two forms: **monomer** (individual free peptides) and soluble oligomer (peptides that stick together to form a clump). The OU-Beaumont team studied the amount of Abeta1-24 antibodies in different intravenous immunoglobulin preparations, hoping to determine which contained the most antibodies and might therefore be best for the treatment of Alzheimer's disease. Interestingly, they found that when they dissociated the antibody from its **antigen**, the amount of antibodies present increased. The final sentence in their paper concludes that

> "Our finding that antibody–antigen complex dissociation tended to increase the available levels of anti-Aβ antibodies in IvIg preparations suggests that this procedure might increase the ability of IvIg preparations to reduce brain Aβ and/or neutralize its neurotoxic actions, particularly those of Aβ soluble oligomers."

Translated from the scientist's jargon into English, they may have found a way to improve this particular treatment of Alzheimer's disease. Of course, with any basic research there is still much work to be done before a treatment can be applied in the clinic. Yet, medicine often advances through such small incremental improvements in our understanding and treatment of disease, a process that may be key to finding an eventual cure.

This research was supported in part by an Oakland University-Beaumont Multidisciplinary Research Award to David Loeffler, head of the **Neurology Research Laboratory** at the Beaumont Research Institute, and **John Finke**, Assistant Professor of **Chemistry** at OU. These awards are meant to increase the level of collaboration between researchers at the two institutions in anticipation of the **Oakland University William Beaumont School of Medicine**, scheduled to enroll its first class of medical students in fall 2011. The lead author on the paper was Andrea Klaver, a research assistant in Loeffler's laboratory. Other co-authors were Mamtha Balasubramaniam, a biostastititian at Beaumont, and Jyothi Digambaranath, a graduate student mentored by Finke in OU's **PhD program in Biomedical Sciences: Health and Enviromental Chemistry**.

SUMMARY

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