

Can Alzheimer disease be prevented by amyloid- β immunotherapy?



Alzheimer's disease is the 6th leading cause of death in the United States, according to the most recent statistics released by the Alzheimer's Association. It is estimated that 43 percent of individuals over the age of 85 have Alzheimer's disease. These numbers will steadily increase as modern medicine keeps the average human alive for nearly a century. As the prevalence of Alzheimer's in the United States increases, researchers are searching for methods of treating the disease at the cellular level.

Currently, the most effective ways to treat the symptoms of Alzheimer's disease are the use of cholinesterase inhibitors such as

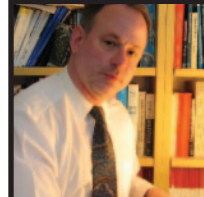
Aricept® (donepezil) and glutamate antagonists such as Namenda® (memantine). These medications work by stopping the breakdown of essential chemicals called neurotransmitters, chemicals that help the brain's neurons to communicate. They are marginally successful at treating the symptoms of the disease, but are unable to prevent or treat the underlying cause.

Unfortunately, these therapies all come with a myriad of side effects, including nausea, vomiting, loss of appetite, headache, dizziness and constipation or diarrhea.

Because of the limitations of current treatments, researchers are looking at the underlying causes of cell injury. For over a century, scientists have observed that patients with Alzheimer's have microscopic deposits in the brain known as plaques. The discovery that these plaques consist of a protein fragment called beta amyloid, lead to a hypothesis that

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From the Medical Director



Happy new year and welcome to the latest edition of the synapse. After taking a short

break, the Synapse has returned in several different mediums including email and PDF through our website. In case you forgot why our newsletter is called "the Synapse", here is a refresher: The synapse is the part of the nervous system where information is transferred from one brain cell to the next. In the same way brain cells communicate with each other, we want to communicate the latest and most exciting news about the brain, neuroscience research, and our center to you, our friends and colleagues. Check back each month to make sure that you are up to date on the latest research of neurological

James P. Sutton, MD

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Pacific Neuroscience Medical Group gets a Facelift!

PNMG underwent a major facelift these past few months – what was once a simple white canvas is now covered in an elegant champagne white and warm flower pot accent walls. The lobby and conference room are now sporting maple wood laminate flooring, while the front office has received some major re-design by creating a more open feel that brings the entire suite together. With the help of Mr. Chap-

man with Anacapa Office Furniture and Design, we were able to conceptualize a new layout for the lobby - one which we are hoping will not only accommodate our patients, but make them feel at home while they are waiting to receive Pacific Neuroscience's outstanding medical care. While the journey is not yet over, we expect to have everything in place by the time the new year hits.



Can Alzheimer disease be prevented by amyloid- β immunotherapy?



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this protein fragment played an important role in causing the cell injury and death characteristic of Alzheimer's disease. In the mid-1990s, scientists led by Dr. Beka Solomon at Tel Aviv University discovered deposits of beta amyloid could in essence be "dissolved" using an anti-body directed against the protein fragment. Dr. Solomon was able to show that antibodies could remove A β proteins. Another group of researchers in northern California at Elan pharmaceuticals conducted an experiment in mice showing that an active A β vaccination had the same effect on A β deposits in the brains of the mice.

After several successful trials in mice, the vaccine was brought to the human population. In a pioneer clinical trial, AN1792, researchers at Wyeth and Elan pharmaceuticals gave this vaccination to 80 patients with mild to moderate AD in hopes that their bodies would create antibodies against A β proteins. Although the results did not show a dramatic increase in cognitive function, it did show effectiveness in slowing the rate of cognitive decline. However, when the trial was expanded to include a larger number of patients, around 6 percent of them developed a serious autoimmune reaction, and the trial had to be discontinued.

Although the results of this landmark study were disappointing, scientists realized that safer approaches might still work, including a method called passive immunization. In passive immunization, antibodies against the protein are administered, in a

controlled manner, thereby reducing or eliminating some of the risks associated with active immunization. In 2008, Elan and Wyeth reported that a phase IIa trial of such an approach using a monoclonal antibody called bapinezumab demonstrated "significant cognitive benefits from this treatments in multiple tests for patients who did not carry APOE ϵ 4 - a major genetic risk factor". Although preliminary, this result provided the first evidence that immunotherapy could be effective as a treatment for Alzheimer's disease in humans.

As of today, there are several trials that are currently underway. Studies of bapinezumab have reached phase III trials, meaning they have been evaluated for safety and are currently being administered to 1,000-3,000 patients in hopes of confirming their effectiveness. However, current research goes far beyond passive immunization with monoclonal antibodies, and there are limitations to this approach. When antibodies are infused into a patient's blood, an immune response is not elicited. This being the case, patients will have to return to the doctor's office on a monthly basis to receive an infusion; a procedure that for many patients could become tiresome, and could also prove exceedingly expensive. Active immunization with periodic injections with improved vaccines could elicit a longer lasting immune response, eliminating the need for consistent visits to the doctor's office. Currently, such a vaccine, ACC-001 (vanutide cridificar) is in phase II clinical trials. Pacific Neuroscience Medical Group is one of fewer than 20 sites in the United States participating in one of these multi-

center clinical trials.

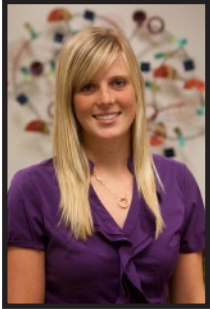
The future of Alzheimer's research is exceedingly promising. In recent years, new imaging techniques have accompanied the search for new treatment options, including a method to directly image the amount of A β in the human brain. Researchers are now able to essentially measure the amount of A β in patients with Alzheimer's disease over a period of time. New diagnostic procedures and the promise of new medications will lead to earlier detection and earlier prevention in the years to come.

in a nutshell

- Scientists believe that Alzheimer's is caused in part by protein fragment called beta amyloid
- Clinical research of immunotherapies intended to remove beta-amyloid from the brain are currently in phase II and Phase III clinical trials.
- In at least one instance this approach has shown a trend toward effectiveness.

new faces at pacific neuroscience

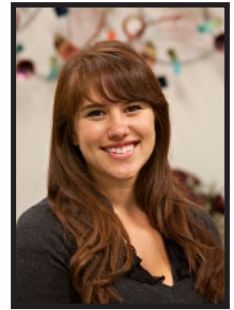
Ashley Florian



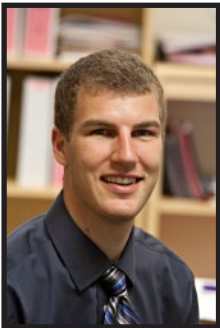
Ashley graduated from Westmont College in Montecito in 2011 with a Bachelor of Science degree in Psychology. As an undergraduate, she served as a research assistant in Westmont's neuropsychology lab, administering neuropsychological test batteries to older adults in addition to conducting research on the relationship between marital status and cognitive functioning among older adults. In June of 2011, Ashley became a psychometrician at Pacific Neuroscience Medical Group. Her primary role includes neuropsychological testing for the clinic as well as the research side of the practice.

Mikaela Akuna

Mikaela is the newest member at Pacific Neuroscience Medical Group. An Oxnard native and a journalism major from California Polytechnic Institute in San Luis Obispo, she is our new Administrative Assistant and Receptionist. With her previous experience in customer service she represents the commitment of Pacific Neuroscience Medical Group to providing excellence in all aspects of patient care. She has a passion and talent for journalism and marketing, and has been highly involved in arranging our off-site events. When she is not busy answering calls, scheduling your appointments, or making you feel at home, Mikaela actively participates as a part of our education and outreach program.



Trent Fowler



Trent, also a Westmont College alumnus, initially joined our team as an intern in February of 2011. After successfully completing his internship, he joined us as a full-time Research Assistant where he demonstrated an excellent aptitude and passion in his work. Trent provides excellent care to our research patients, while also helping out other areas of the practice. He is an active member of our education and outreach program and is currently redesigning our practice website.

upcoming events

January 18, 2012: Pacific Neuroscience Open House (Physicians Only).

January 25, 2012: Cypress Place hosts "Health and Wellness Expo".

February 21, 2012: Dr. Sutton to speak at the Goebel Senior Center.



latest happenings at pacific neuroscience

An Evening to Remember



Our fall 2011 quarterly neuroscience round table was held at the beautiful and historic 71 Palm Restaurant in Ventura this past October. The focus of the evening was a lively discussion of immunotherapy as a potential treatment for Alzheimer's Disease. In addition, Dr. Sutton answered questions concerning the diagnosis of, treatment of, and research into Alzheimer's Disease.

We would like to extend our gratitude to Chef Didier and his staff, as well as our guests, for truly making

the night "an evening to remember".

Our next quarterly neuroscience discussion and dinner will be held February 22nd at the Watermark restaurant in Ventura, and will feature a presentation by Dr. James Sutton on the latest advances in parkinsons research. This event is open to physicians and their guests, by invitation only.

Walk for a Cure

Also in October, Pacific Neuroscience attended two Alzheimer's walks put on by the Alzheimer's Association. The Camarillo walk was a great way to meet many people affected by the disease in our area and proved to be a great way to reach out to our own community.

The Thousand Oaks walk is known year after year for its large turn out. There, the PNMG team got to talk to a variety of people, from patients, to spouses, to family members who were out for the day to support. We showed

attendees a variety of displays, including a "brain training" app and an interactive brain model on the company iPads. We also conducted mini-mental status exams on site for those who were interested.



Dr. Sutton at Aegis Living



This month, Dr. Sutton spoke at Aegis Living regarding Alzheimer's Disease as a way to help educate patients and family members. Quite a few people joined us in learning about the hypothesized causes and latest treatment options in Alzheimer's disease.

If you are interested in obtaining a copy of the powerpoint presentation Dr. Sutton created for the event, it is available on our website under the education section. Be on the lookout

for up and coming presentations and events as we are eager to reach out to the community.



Happy New Year! We look forward to a variety of exciting events coming up in the new year!