This century's biggest Alzheimer's breakthrough finally floats up to the surface

By Alicia Potee

I've been following this story for months now—about nine, to be exact. It was late last year that I first heard about it: A single, sea-bound substance that just might be the biggest advance we've seen in Alzheimer's protection yet. But just as intriguing as its promise (and maybe even *more* so) is the origin of this aquatic cure…

Jellyfish.

That's right. Those dreaded clear blobs that terrorize beaches in the hottest months of summer have actually been hiding the key to a youthful brain for millennia. It's called aequorin. And only now—thanks to twelve years of research now spearheaded by Quincy Bioscience—are you finally able to put this amazing natural miracle to work.

A scientific breakthrough that started with a sting

My own personal fascination with jellyfish may have only begun in the past year, but Mark Underwood (Quincy Bioscience's President) has been hunting down this neuroprotective miracle ever since his days as an undergraduate student at the University of Wisconsin. As a psychology/pre-medicine major, he had stumbled across research that linked the venomous stings of jellyfish to the symptoms of multiple sclerosis—a disease his own mother had suffered with for years.

You see, a jellyfish conquers its prey by means of "calcium-mediated cell death." You already know that calcium is essential to healthy teeth and bones. But not everyone realizes that this mineral—along with other charged minerals like sodium and potassium—also plays a vital part in your nervous system. I've discussed the role of "ion channels" in nerve impulses before—and calcium is essential to this process, too, being ushered in and out in order to create the bioelectrical discharge that's necessary for all of your thoughts and movements.

Much like other natural predators (think scorpions, spiders, and snakes), a jellyfish's venom directly attacks its prey's nervous system. Its venom opens up pores in your cells' membranes where there weren't any before, while its tentacles also inject a flood of calcium (Ca+) into your body. This process leaves neuronal cells in your nervous, respiratory and vascular systems vulnerable to excessive influx of this mineral.

As a result, a dangerous cascade of biochemical events takes place. Some stings are even capable of causing physical reactions as severe as paralysis, muscle spasms, difficulty breathing, and cardiac arrest.

So now you know *where* Underwood's pursuit began—but in case the *why* isn't so clear yet, let me explain. The object of his later research would be aequorin—the very protein that jellyfish use to protect themselves against, well…*themselves*. In fact, you may have

heard of aequorin before—most notably because of its bioluminescence (that is, its ability to glow in the dark) when bound to calcium. Molecular biologists have used it for decades to track levels of this mineral within human and animal cells in the laboratory.

"Jellyfish are essentially nothing more than a simple nervous system," Underwood explained. "This protein aequorin," he continued, "contributes to ionic and electrical balance by acting like a surge protector." In other words, it naturally binds with the free calcium inside jellyfish (which they use against their predators and prey) in order to keep that calcium from short-circuiting the creatures' own vital functions.

But what does this have to do with protection against Alzheimer's, MS, Parkinson's, and other neurological diseases?

Well, until recently, nothing. But the connection between calcium regulation and brain health has been the goal of volumes worth of emerging research—the whole of which takes a closer look at the chemistry of your aging brain. And it looks like the key to fighting the deadliest neurodegenerative diseases may have been under researchers' noses all along.

Calcium dysregulation spells death for your brain

Just like jellyfish use aequorin to preserve the function of their nervous systems and to maintain bioelectrical balance, you and I also have calcium-binding proteins at work in our bodies.

Our neuronal cells rely on these proteins for survival—without them, these cells would be unable to adequately control the influx of calcium, which would ultimately lead to their death. And scientists have directly implicated this loss of calcium balance to neuronal cell death in patients with Alzheimer's and Parkinson's, and even stroke patients.

This degenerative effect has proved especially prominent in the case of Alzheimer's. As you probably already know, Alzheimer's is characterized primarily by clumps of a different kind of protein called amyloid-beta in your brain tissue—but until recently, the role that this clumping played in the disease remained a mystery.

Today, however, the loss of calcium homeostasis in the central nervous system has become one of the more popular theories. The most recent research has shown that these clumps cause a significant rise in calcium concentrations within neurons—particularly in the hippocampus, the part of your brain responsible for learning and memory.[1] This directly leads to the brain atrophy, synapse loss, and cell death that are associated with the disease.

But it's not just patients with a confirmed Alzheimer's diagnosis who are at risk. Recent research has shown that even younger neurons are significantly more vulnerable to excess calcium loads than previously thought before—meaning that the beginnings of these

deadly diseases may actually be taking root well before we ever begin to see the trademark symptoms.[2]

A non-toxic, natural way to turn your brain's clock back

The research community has experimented with different treatments to block this deterioration—and therapies that help to block these calcium channels have proven only modestly effective. But while we're still a long way off from any real cures, Underwood thinks that aequorin may prove to be the next big step forward in the search for a serious neuroprotective solution.

According to Underwood, blocking new calcium channels from opening is only one possible approach to fighting Alzheimer's. An even better solution would be to restore your brain cells to the condition that they were in *before* the damage took place. And replacing calcium-binding proteins in your brain would help to do just that—consider it "anti-aging" medicine for your mind.

Just as your body becomes depleted in crucial substances like collagen and growth factor as you age, you also gradually begin to lose these vital calcium-binding proteins. But while the aging effects of sagging skin and lower muscle mass become glaringly apparent from the outside, your brain is also deteriorating with age—though you may not begin to notice these changes until the damage is already beyond repair.

But Underwood and his team have found a way to replenish these proteins and turn back your brain's biological clock with Prevagen. And you don't have to worry—no jellyfish were harmed to bring it to you. Quincy Bioscience uses a secret, controlled biofermentation process to produce the aequorin necessary to manufacture their breakthrough product. (According to Underwood, it would take 2 tons of jellyfish to yield 125mg of protein using older methods)

The benefits are clear: With nearly half a century of use in human subjects as a bioluminescent substance, we already know that it's completely non-toxic. But more importantly, this protein is virtually identical to your own calcium-binding proteins—and preliminary studies suggest that it protects mammals in precisely the same way, too.

Preliminary studies deliver proof of <u>real</u> protection

In an animal study presented last year at the *Society for Neuroscience* annual conference, researchers at the University of Wisconsin at Milwaukee injected either aequorin or a control substance into the hippocampus of two groups of rats. Twenty four hours after the injections, coronal brain slices were cut and removed, and subjected to five minutes of artificial ischemia (the deprivation of blood flow to brain tissue)—long enough to lead to substantial neuron death.

The results of five experiments showed that the brain samples that had been treated with aequorin showed significantly fewer changes when compared with controls—suggesting

that treatment with aequorin could be a crucial protective therapy against ischemic brain damage.[3]

This study is only the beginning—and according to Underwood, there are more pending publication, including one which directly assesses aequorin's effect on memory and learning in animal models. If this study is any indication, a natural cure for some of the most hopeless neurodegenerative conditions could be right around the corner.

For now, though, we'll just have to wait and see what the future brings. Human studies haven't been launched yet—but Quincy Bioscience plans on taking their product as far as it can go, hoping eventually to carry out the exhaustive battery of clinical studies required for FDA approval.

In the meantime, they've already debuted PrevagenPro—their stronger professional version of aequorin—to natural health practitioners who don't want to have to wait another ten years to put this natural miracle to work. And fortunately, you won't have to wait much longer, either. While you can't get it just yet, Prevagen will be available to consumers as soon as September 2007.

Until then, Quincy Bioscience is taking orders for HSI members with an exclusive free shipping offer, which they'll fulfill as soon as stock becomes available. Check the Member Source Directory for details on how you can be the first to benefit from one of the century's biggest natural breakthroughs.

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[1] Resende R, Pereira C, Agostinho P, et. al. "Susceptibility of hippocampal neurons to Abeta peptide toxicity is associated with perturbation of Ca(2+) homeostasis." Brain Res. 2007 Apr 27; 1143:11-21. Epub Jan 27.

[2] Raza M, Deshpande LS, Blair RE, et. al. "Aging in associated with elevated intracellular calcium levels and altered calcium homeostatic mechanisms in hippocampal neurons." *Neurosci Lett.* 2007 Mar 12