Telocyte Newsletter
Q4 2018

The field of Alzheimer's research remains frustratingly unchanged, characterized by frequent claims of research breakthroughs, followed by predictable clinical failures. Results of the recent *Biogen/Eisai* study, announced at the Alzheimer's Association International Conference (the AAIC) in Chicago in July were, despite hopes and despite considerable "spin", unimpressive in any of the current clinical trials. Similar hopeful, but unimpressive results have surfaced from any number of global laboratories, academic centers, and pharmaceutical firms over the past decade. Media stories proliferate, averaging once a week, and announce a "breakthrough", but the details are scarcely worth enthusiasm. In every announcement, the claims are optimistic; the data is not. Whether looking at monoclonal antibodies against beta amyloid, attacks on tau protein, mitochondrial small molecular compounds, or senolytics, none of the data supports the current claims that we can slow the course of Alzheimer's, let alone that we might be able to stop or reverse the personal tragedies that make up Alzheimer's disease.

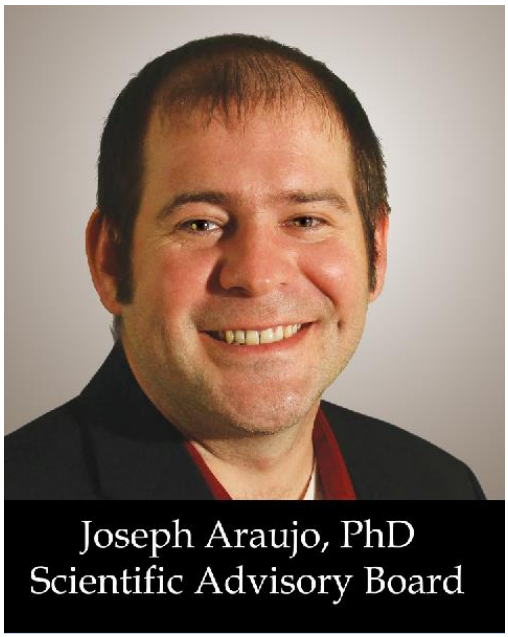
Our Scientific Advisory Board members met at the AAIC in July and, while we are eager to move ahead with our FDA study and human trials using telomerase gene therapy, we were pessimistic about other current trials, both those announced at the AAIC meeting and those still in progress. Despite a recent poll noting that most Alzheimer's researchers still pin their hopes on beta amyloid as the best place to intervene, there has never been any evidence that targeting beta Amyloid is even marginally effective. In short, most researchers continue to invest their time and their investor's money in a consistently-failing model. Oddly enough, even Dr. Alois Alzheimer, for whom the disease was named, warned against this 110 years ago, pointing out that amyloid plaques were a result, not a cause, of the disease.

Similar misplaced optimism is fashionable for the use of senolytics. These are drugs that are intended to kill senescent cells, thereby improving the cellular "neighborhood" for the remaining, non-senescent cells. The problem is that removing senescent cells hastens the process of senescence in the remaining cells, which must divide and replace the cells that have been removed. While we would expect a transient improvement, we would also expect that the pathology would then accelerate. Not surprisingly, the published data show just such an outcome: there is an acceleration in the course of disease. Senolytic therapy, like beta amyloid and other narrow approaches, fail on both theoretical grounds and in the face of animal data. Ironically, both the media and investors remain fascinated, despite the fact that "the emperor has no clothes."

Telocyte's approach is not only consistent with all clinical and animal data, as well as having proven predictively valid in predicting the results of clinical trials but telomerase gene therapy has consistently lived up to expectations when used in animal models. Aged animals with poor memory, poor learning ability, and other poor behavioral measures, consistently improve in all respects.

The next step remains clear: approval for a phase 1 FDA human trial.

Meet our Scientific Advisory Board:




Last quarter, we featured Dr. Russell Swerdlow, a neurologist who has been the primary investigator on numerous FDA human Alzheimer's disease trials, and who is the director of the Alzheimer's Disease Center at the University of Kansas. This quarter, we introduce Dr. Joseph Araujo.

Joseph Araujo is the President and CEO of *InterVivo Solutions*, which is focused on optimizing translational services to facilitate the development and approval of novel CNS drugs. His scientific background includes graduate training in pharmacology at the University of Toronto, more than 35 refereed publications and several invited presentations, which focus on natural aged canine models of human disease. Joseph has co-founded, held executive level positions and consulted for life science companies including *CanCog Technologies*, *Vivocore*, *Karyopharm Therapeutics*, *NPM Pharma*, *Ketogen*, and *Epione Animal Health*.

*InterVivo Solutions* is a preclinical *in vivo* CRO providing research services using translational animal models for efficacy, pharmacokinetics, early safety and toxicology, including bioanalytical and imaging support. *InterVivo's* core expertise is in CNS diseases and is unique in its focus on providing predictive animal models in appropriate species to improve the successful transition of new pharmaceuticals to the clinic, which include the canine model of Alzheimer's and knock-out rat models of Parkinson's disease.