Tomoaki Shirao MD, Ph.D., and CEO, AlzMed Company.
“New Strategy for Drug Discovery in Alzheimer's Disease”

Alzmed stands for Alzheimer's medicines.

-New target and strategy for the Alzheimer disease drug discovery.

In Japan, the medical cost is very huge for Alzheimer's disease. It's about $10 billion dollars. Productivity loss by family care is more than that, almost $15 billion dollars. However, currently, there is no easy way to diagnose Alzheimer's disease in the early phase. And also, there are no effective therapeutic drugs that can cure dementia itself.

There are two strategies for medications. The first one is the removal of amyloid beta. Recently, the Aducanumab has been approved by the FDA and it inhibits the increase of the amyloid beta in the brain which seemed to stop the dementia progression. The other strategy is to protect synapses from the destruciton.

In the brain, the neuronal network, particularly the synapse, is important for its function. Memory is actually stored in the synapses. There are many molecules of interest related to Alzheimer's disease that are actually related to the synapses. TFunctionally, the synapse consists of the two parts; one is the CPU, and the other is the infrastructure. Both of the CPU and the infrastructures are important for learning something, memorizing them, and keeping the memories. Drebrin relates to the infrastructure of the synapses in association with actin filaments, and drebrin stabilizes actin filaments. They play a pivotal role in keeping memories.

[What is drebrin]

Drebrin was found about 35 years ago in Japan at Gunma University by me. Since then, the number of researchers is gradually, but continuously increasing, with more than 300 papers ready to publish every year. Amyloid beta is known to increase in Alzheimer's disease and has been known to occur 20 years before the actual dementia starts. Drebrin is the new marker for Alzheimer's disease, particularly for the early phase of dementia. If drebrin can be increased before the neurons are dead, dementia itself can be saved.

Last year, we found an amazing method for the concentrate of the blood drebrin. Also we have the world's first monoclonal antibodies that recognize specifically the brain drebrin. Therefore, we are now making a higher sensitivity ELISA kit, which is specific for the brain for brain disease into the blood. In five years, we will complete the world’s first diagnostic. In addition to the target screening, we have a very beautiful, high throughput phenotype screening method. Using this method, we will select the hit chemicals. Finally, in the clinical trials, quick and easy diagnostics will increase the fesibility of our drug discovery.

Because of these three points,we will not allow the other companies to follow. Finally our team consist of of neuroscience, clinical neurology, and drug development. Alzmed is the intersection of these speciallities.

[Q & A]

Q.

I have a couple of questions. But number one, so the by using the Drebrin for segment of Alzheimer patient, are you going to identify as a diagnostics?

A

Synapse destruction is occurred at an early phase of dementia. Such as the minor cognitive impairment (MCI).

So MCI and the early stage of the Alzheimer's disease dementia patient will be diagnosed by our quick and easy diagnostic way. First, we would like to focus on these patients.

Q.

Yeah, so in that case, maybe so you may want to put some of the slide. So they you're Drebrin right base or targeting to the early stage Alzheimer's disease patient. And thank you may have one more question. So the, it's I heard this long history about the delivery 35 years and congratulations on the progress. As far as I know that as a target, Drebrin is still kind of a minor target in Alzheimer's disease area. So what was the big challenge for Drebrin as a target the target over time of disease and what has changed recently?

A.

Thank you for your question. As a biomarker, drebrin is very good which everybody agrees.But for the target of the drug, somebody does not agree with it, because the CPU related molecule is very important for the memeory formation of the sunapses. And drebrin is infrastructures, which sounds like, not important. But actually to keep the memory and to memorize the memory and to keep the memory, tdrebrin is necessary. And we found that the drebrin binding actin filamets shows very specific characters, which has been elucidated by biophysics researchers. How important drebrin is for regulating the spine morphology! That's why these days some people or some companies are very interested in drebrin.

Q.

In the last part, you showed a screening plan, a small molecule perhaps? Are you going to use like University of Tokyo library?

A.

Yes. In addition to the library itself, we need of the talents of those people who belong to the University of Tokyo. We have already found several known drugs that have some effect on the synaptic drebrin content. So we would like to talk and collaborate with the university researchers and plan making a new molecules and then I try to the target screening or a phenotypicscreening.

Q.

Yes, generally speaking, pharma companies doesn't prefer University Libraries. I guess it's fair to say, see all the people laughing around here? I'm giving you an honest opinion, because this is going to help you grow earlier, faster. Maybe from the beginning, you tried to find a partner who can screen in their own library, big pharma company has much bigger library is bigger diversity of the compounds. I don't know about that there are Drebrin protein or not. If you are going to look for Protein interaction inhibitor, then for example, you can go to PeptiDream Inc. and do a screening together something like that.

A.

Yes, thank you very much for all your good comments.