

Alzheimer's Germ Quest Challenge Award

Final Summary

February 2021

1. Background

The cause of Alzheimer's disease has been unknown since it was first described in 1907. Many theories have been offered, but most of the attention and research funding in recent decades was given to the hypothesis which focused on amyloid plaques in the brain, which was later broadened to include tau protein tangles. Yet the disease remains one of the leading killers of senior citizens, as there is no curative drug.

However, evidence was also slowly accumulating that infectious agents of one type or another might be the cause.

Was it possible that one particular infectious agent, known or as yet undiscovered, was responsible for all or most cases of Alzheimer's, analogous to previously unrecognized *H. pylori* causing gastric ulcers and HIV causing AIDS?

To encourage and accelerate the search for this hypothetical villain, the private, independent group Alzheimer's Germ Quest (ALZgerm.org) in January 2018 announced a Challenge Award contest. It would be open for three years—until December 31, 2020. The item sought was persuasive evidence that a particular microorganism, dubbed for the contest "The Alzheimer's Germ", was the proximate cause of Alzheimer's disease. A grand prize of \$1 million was offered for evidence sufficient to convince even skeptics.

2. Review of Procedures

Interested parties had first to submit a "Preliminary Expression of Interest" form. Its purpose was to screen out possible entrants who did not seem to understand the rules, terms, and conditions, or who did not appear to be a good fit for the aims of the Challenge. Of 83 such submissions, 40 were approved to submit Official Entries. The closing date for receipt of these authorized entries was December 31, 2020.

3. Official Entries Received

By the deadline, eight authorized entries were received. The geographic distribution was as follows:

United States	5
United Kingdom	2
Sweden	1

Five of the submissions appeared to be from researchers currently active; two entrants appeared to be retired or less currently active.

The type of organization to which submitters belonged was:

University	4
Government	1
Biotech Company	1
Self (Retired, etc)	2

4. Microorganisms

a. Submitted

Herpes virus (3)

Toxoplasma

P. gingivalis

Borrelia

Mycobacteria

H. pylori

b. Not Submitted, though suspicious

Chlamydia

Bartonella

Prions

Fungi

c. Previously Unknown Organisms

None submitted

5. Evaluation and Judging

Following receipt, each submittal was carefully read. Questionable, unclear, or missing items, or other issues were identified in each one. The submitter was contacted and provided a chance to submit a brief additional clarification or supplement.

Chief Judge: The principal judge was Leslie Norins, MD, PhD, FIDSA (Emeritus). Dr. Norins is a graduate of Johns Hopkins University and Duke Medical School. He received his PhD from the University of Melbourne, where he was the postdoctoral fellow (immunology) of Sir Macfarlane Burnet, Nobel Laureate. Next, for nine years he directed a research laboratory at the Centers for Disease Control and Prevention (CDC). Then he transitioned to a 45-year entrepreneurial career in medical newsletter publishing, creating the world's largest endeavor in this niche. As his give-back project, he elected to encourage deeper determination of the role of microbes in Alzheimer's disease, and has been actively studying this subject for five years. He is administratively and financially responsible for the overall Challenge, including assessment and Awards.

When and as Dr, Norins felt additional expert viewpoints were necessary in judging, he consulted other scientists on an ad-hoc basis.

6. Results

It is important to note the variety of microbes submitted as contenders for "**The** Alzheimer's Germ" One main virus (nominated by two entrants), one parasite, and four bacteria. All submitters included direct and indirect evidence that their nominee organism was in the brain at some point, either prior to, or during, Alzheimer's disease. Also, several other organisms, not submitted in this Challenge, have also been indicted for similar behavior.

If there is but one causative organism for Alzheimer's, all these proposals of various microbes cannot be correct. However, each submission is made by a reputable scientist, convinced that their evidence supports their case.

What, then, can we conclude? There seem to be two main possibilities.

- a. All are correct. This means that there is not a single "Alzheimer's germ". That concept can fade, and we must begin to say that many organisms, each in its own way, can participate in causing Alzheimer's disease.

The practical implication of this is that the term “Alzheimer’s disease” will be henceforth regarded as not a specific term, but an umbrella label. It would become analogous to “diarrhea,” “hepatitis,” or “pneumonia”, each of which can be caused by a variety of microbes.

Namely, there would be clinically visible damage to the brain, but we would not be looking for the same causative organism in every case. Different organisms can produce similar end-stage harm to the organ, and what we are calling “Alzheimer’s disease” is the ultimate result of any of those invaders, and/or even other ones not yet suspected.

- b. None is correct. Yes, all are showing that microbes of many sorts can enter or influence the brain. This would be analogous to finding that the intestine is home to numerous types of bacteria, viruses, and even parasites but none, or only a few of them, cause disease in normal circumstances. However, among these many micro-inhabitants, occasionally there is an intruder which is the actual culprit of, say, serious diarrhea. Perhaps the cholera bacterium, the typhoid one, C. difficile, or norovirus, etc.

If that is also true for the brain, the several microorganisms proposed by entrants to this Challenge are merely telling us that the brain is open to trespassers. Yet, we have not yet found the single criminal among the many undocumented visitors.

Is it an organism difficult to detect or culture, such as prions or Bartonella? Or something totally unexpected and as yet unrecognized, such as was H. pylori? Or leprosy.

7. Conclusion

As of the closure of this Challenge, we cannot provide a definite answer. No microorganism has been persuasively identified as “THE” Alzheimer’s Germ. But on the other hand, we cannot rule out any of those proposed, and certainly not one as yet undetected and unrecognized. Clearly, fruitful fields of microbial exploration remain before us.

What we can and must do is to recognize and thank those often-lonely pioneers, who outside the fashions and dogmas of past decades, dared to continue investigating the quite plausible roles that infectious agents might be playing in the causation of Alzheimer's disease. It has been an honor for us to meet so many of them, and we thank them for their openness and stimulation.

8. Awards

No person has won the grand prize of \$1 million. However, the Judging Committee has decided on Awards of Merit of various dollar amounts to recognize excellent dedication and work in submittals. The higher amounts were given for superior evidence, reasoning, clarity, and organization of the entry,

They are as follows:

Dr. Ruth Itzhaki, Univ. of Manchester	\$35,000
Dr. Rima McCleod, Univ. of Chicago	\$35,000
Dr. Richard Lathe, Univ. of Edinburgh	\$25,000
Dr. May Bedoun, Nat'l Inst. on Aging, NIH	\$25,000
Dr. Steven Dominy, Cortexyme, Inc.	\$25,000
Dr. Hugo Lovheim, Umea Univ., Sweden	\$25,000
Dr. Allen Macdonald Florida (Ret.)	\$15,000
Dr. C. Tom Dow, Wisconsin (Ret)	\$15,000

Respectfully submitted by the Sponsor,

Alzheimer's Germ Quest (ALZgerm.org)

Leslie C. Norins, MD, PhD, FIDSA (Emeritus), CEO

Naples, Florida

February 26, 2021