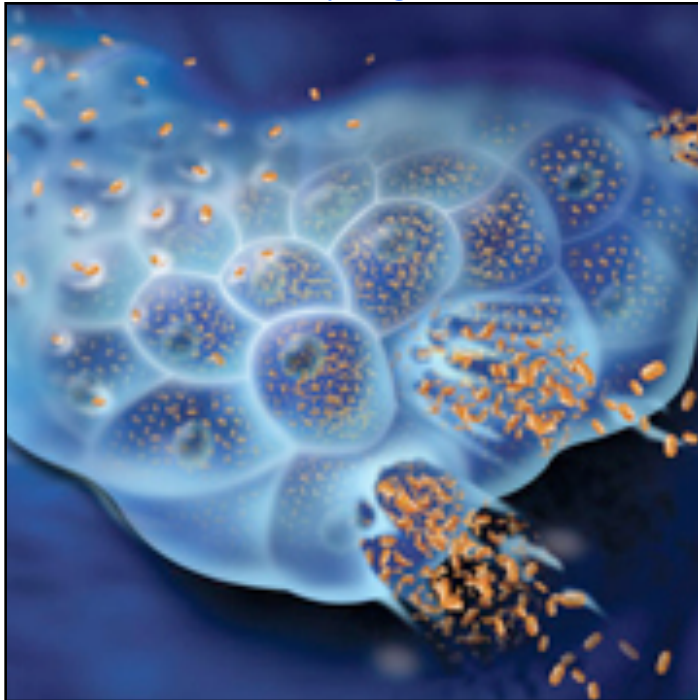


# Alphabet Soup of Health

## abc's of the Immune System

*“Immune cells: “B”, “T”, NKC” Protect US but They Age Too”*



Infectious disease has threatened survival throughout evolution. Strong immune responses and inflammation in early life plays a major role in human survival.

Lifelong exposure to a variety of infectious agents for a longer period than encountered in

human history is a major influence driving the aging of the immune system. The consequence is a range of diseases of aging are becoming epidemic, including Alzheimer's disease.

Testing, measuring, and augmenting the immune system is critical to healthy aging.

### Physical vs Physiology

Humans have physical limitations as does our physiology. Specifically, the human immune system has limitations. As we age, our physical and our physiological strength diminishes and we become more susceptible to disease.

The Alzheimer's Association recognizes that many factors contribute to AD. Many of the factors that impact the burden on, or the deterioration to, the immune system also lead to Alzheimer's.

Patient history and testing is crucial to determining cause / effect.



Periodontal disease, for example, may not directly cause AD, but it can “tie up” the immune system. When this happens some other “cause” may develop, multiply, and lead to the disease.

### What is the Limitation to Our Immune Defenses?

The decay of the immune system with aging, immunosenescence, is a complex cascade of physiological events that ultimately impact cell function and longevity. T cells of the immune system are impacted by the thymus shrinking with age and long, continuous exposure to microorganisms. The result is an immune system that is hyper-activated and defective.



The proliferation of cancer, dementia, frailty, auto-immune disease, and susceptibility to infection later in life is proof of an aging immune system.

The immune system may be tested using a clearly defined set of parameters. It can also be augmented with medicines and nutrition.