3R

Serum-based biomarkers for early detection of Alzheimer's disease

3R has developed extensive intellectual property in the use of redox-reactive autoantibodies (R-RAA), particularly as biomarkers for Alzheimer's disease (AD). R-RAA are a class of immune system components discovered in 2001 by John A. McIntyre PhD. and since confirmed by multiple studies in peer-reviewed publications. While R-RAA are a platform technology that may play important roles in diagnosing and/or treating a wide variety of diseases, **3R** is leading with a set of R-RAA-based AD **serum biomarkers**. To support its development and regulatory filing efforts, **3R** is **actively seeking collaborators**.

3R's serum-based AD biomarkers

3R's technology unmasks and re-masks autoimmune specificity of Immunoglobulins (Ig), as well as detects whether a person's immune system has spontaneously unmasked Ig *in vivo*. **3R** has demonstrated its biomarkers' ability to differentiate between persons with AD, mild cognitive impairment (MCI), and normal cognitive controls (Autoimmunity, 2015:1-8). **3R** believes its serum biomarkers can be a **substitute for current cerebrospinal fluid AD biomarkers**, and potentially can **identify AD years before symptoms occur** – when therapies are expected to be most effective.

Utility across multiple market segments

As an early "snapshot" diagnostic, **3R** believes its biomarkers may be useful in three market applications:

1. **Research/Drug Development**: Effectively stratify patient populations for clinical trial enrichment
2. **Screening**: Establish baseline levels in high-risk persons, then track progress against baseline to detect AD at its earliest development
3. **Therapy Selection**: Select therapies/stratify patient populations

As a dynamic disease-responsive assay, **3R**'s assay may be used to:

- Act as substitute endpoints in clinical trials
- Monitor Rx therapies and aid in establishing dosage

Using accepted factors associated with increased risk of developing AD, the patient population suitable for a monitoring program is expected to range from 5MM to 30MM (U.S. only), resulting in a $1B–$3B+ addressable market. The potential for discovering a novel AD therapeutic pathway from better understanding R-RAA behavior is an additional long-term "upside."

The path forward

3R, in collaboration with Arkley BioTek, is continuing development with the support of a $1.15MM fast-track SBIR grant from the NIH awarded in July 2015. To accelerate progress, the company is seeking a relationship with entities with complementary technologies or a business interest in serum AD biomarkers.

3R

Indianapolis, Indiana

Contact

Andrew Cothrel, 317-850-0442;
a.cothrel@bluemarblemedical.com

Technology

Unmasking of autoantibody activity

Applications

NDD, oncology, autoimmune, monoclonal therapies

Lead product

Biomarker panel for pre-symptomatic AD detection

Collaborations

- Arkley BioTek
- Indiana Alzheimer's Disease Center (IADC) & Indiana Memory and Aging Study (IMAS)
- Alzheimer's Disease Neuroimaging Initiative (ADNI I, ADNI GO, ADNI II)

Scientific Advisers

- Dawn Wagenknecht, MS. **3R** co-Founder, heads Vascular Biology Laboratory at Franciscan St. Francis Health
- Tom Grove, PhD. President/ CTO BioCentrex, VP ProteoGenix
- Ron Bowsher, PhD. CEO B2S Consulting/B2S Labs

Join our mission and be part of a true breakthrough in neurodiagnostic care.