

Research - Are We Getting Closer to A Cure?

by Carrie Radant Flynn



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Improving Care and Pursuing Cures at the Rocky Mountain Alzheimer's Disease Center



Memories are our links to the people we love and the experiences we have had. They give meaning to our lives and become essential parts of our identities; yet they can be fragile and fleeting. Alzheimer's disease is destroying memories in greater numbers of people. More than 5 million Americans are living with Alzheimer's today, and barring significant medical breakthroughs, the number of people 65 years and older with Alzheimer's will triple to almost 13.8 million by 2050. Alarmingly, this devastating disease is not just taking memories – it is taking lives. Alzheimer's is now the sixth leading cause of death in the United States.

In the midst of such staggering statistics, there is hope. At the Rocky Mountain Alzheimer's Disease Center (RMADC), innovative research and world-class clinical care combine to improve the lives of Alzheimer's patients and their families, and to develop the next set of breakthroughs in preventative strategies, better treatments, and ultimately a cure. Below are summaries of some of our key explorations and future directions.

Exploring the Hope of Leukine®

We have found that the FDA-approved drug Leukine® quickly reduces amyloid deposits responsible for Alzheimer's plaques and reverses cognitive impairment in an animal model of Alzheimer's. A Pilot Leukine® Safety trial progresses at RMADC with the goal of demonstrating the drug's safety in individuals with mild to moderate Alzheimer's. We recently added amyloid-PET imaging for the final stages of this trial in order to gain preliminary evidence of Leukine's® ability to reduce amyloid deposits in the human brain. Based on trial results to date, the RMADC was awarded a competitive Alzheimer's Association grant to cover one-fourth of our longer (six-month) Leukine® Safety/Efficacy trial. We aim to launch this trial in 2017 in order to move this potential new Alzheimer's therapy closer to market.



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Searching for Alzheimer's Biomarkers

A Longitudinal Biomarker and Clinical Phenotyping study is underway to identify predictors of dementia risk and onset. Data collected and analyzed over time will ultimately help us build effective early intervention programs for Alzheimer's and offer disease-modifying or preventative treatments as they become available. Information collected from the study will also offer new insights into the causes and progression of the disease, which will inform the development of novel therapies. Additionally, data from this study will be critical for identifying new biomarkers of the earliest stages of Alzheimer's before clinical symptoms are apparent and capable of predicting who will go on to develop Alzheimer's dementia, and for setting up human trials that target the disease process as early as possible.

Investigating New Drugs to Minimize Brain Cell Loss

In addition to losing many brain cells during the course of Alzheimer's, patients also show a decreasing ability to use blood sugar to feed the brain cells that remain. This defect has been termed "Type 3 Diabetes". However, the mechanisms underlying these problems remain relatively unexplored and largely unknown. Through our research at the RMADC, we have discovered that the key Alzheimer's protein (called A-beta) may be responsible for Type 3 Diabetes. Specifically, we have found that A-beta blocks the activity of an essential enzyme responsible for ensuring that the insulin receptor is properly located and functioning on the cell surface. As a result, neurons are unable to detect insulin and import blood sugar (glucose) for maintaining their essential functions. We are developing novel drugs that can reverse the Type 3 diabetes of Alzheimer's, with the goal of protecting against brain cell loss.

Charting a Path for the Future

Over the next five years, we envision the RMADC at the CU Anschutz Medical Campus becoming one of the premier Alzheimer's research and care destinations in the United States. We plan to increase our understanding of Alzheimer's while having a direct impact



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on improving patient care through innovative research that includes advancing our current pipeline of new and repurposed drugs and continuing to expand our knowledge of the pathogenic pathway to Alzheimer's, including studying the connections between Alzheimer's and Down syndrome. We also aim to offer life-changing care to increasing numbers of people living with Alzheimer's by growing our clinical provider team, and by adding key support resources for patients and families to help them navigate the difficult journey of this disease



Partnering to End Alzheimer's Disease

The pace at which the RMADC achieves growth and progress in research and clinical care is directly tied to our ability to sustain ongoing funding for high-priority projects and personnel, and the infusion of new funds to develop foundational data that will position us to attract competitive governmental and large-scale grant funding. We are thankful for the contributions of our many generous benefactors who have already fueled our momentum. Private support is the single best accelerator for pushing us ever closer to our goal of a world free of Alzheimer's.

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