

Getting Closer to the Cure

by kalene mccort



French physicist and chemist Marie Curie said, "Nothing in life is to be feared. It is only to be understood."

Dr. Karen Newell, professor and director of the CU Institute of Bioenergetics and Markert Endowed Chair of Biology, strives to comprehend the nature of the human body in order to make great strides in the world of medical science.

With a calm demeanor and a sense of compelling bravery, Newell jumps headfirst into an ocean of the unknown only to rise to the surface with innovative life-changing research. Offering hope for those dealing with diseases once deemed incurable, she speaks of her work with modesty akin to many great minds.

This self-described workaholic has authored several dozen peer-reviewed papers on immunology and cellular metabolism. Newell, who received her bachelor's degree



"Everybody does better work when they are happy and unencumbered," said Newell.

Recently, Newell has made a breakthrough that could dramatically change the face of AIDS and HIV treatment. While on sabbatical in Canada at the Montréal Neurology Institute she began to unravel a way to optimize VGV-1, a purified protein extracted from mammalian thymus tissue.

When returning to Colorado, she collaborated with Viral Genetics, a biotechnology company that discovers and develops immune-based therapies. Newell is now the head researcher for this pioneering company.

Newell advises those who want a career in immunology or any of the sciences to maintain a strong focus on "determination, open-mindedness and honesty. We speak truth for a living, so honesty is very important."

In August, at the 4th Annual Aspen Symposium on Brain Tumor Immuno- and Stem Cell Therapy, Newell had the opportunity to address her peers about her new research, which focuses on combining metabolic disruption with chemotherapy to fight cancer.

"We are working to revert cancers that are drug sensitive," said Newell.

in microbiology from the University of Texas in 1972 and a Ph.D. in microbiology and immunology from the University of Colorado Health Sciences Center, has created over 30 patents.

"It's rewarding to make a discovery that may make a difference in therapies used in treating disease that affect people," said Newell, who will celebrate her tenth anniversary at UCCS this summer.

Her interest in Bioenergetics, a field of biochemistry focusing on energy flow through living systems, was sparked while an assistant professor at the University of Vermont's College of Medicine.

"We were able to target the energy strategy of the tissue to be made more visible or less visible to the tissue. Every living thing produces what it needs to function. Each tissue cell has a different job to do to meet energy demands. We were working on tracking immune cells to kill tumors," said Newell.

She finds serenity in her work and admits that the best epiphanies usually happen when things are not in a chaotic state.

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Viral Genetics was missing the identity of the active component peptide. Her discovery provided the missing piece to their model. Presently, there is a preclinical study and initially following that, the FDA will conduct the first clinical study.

A test trial in South Africa showed that treatment of patients with VGV-1 resulted in a noteworthy antiviral effect three months after their last treatment. Successful pilot studies have been conducted in Mexico, China and Bulgaria as well.

The Viral Genetics' Web site reports that, "Results indicate statistically significant reductions in viral load (the amount of HIV in the blood) in some patients, only mild adverse events attributed to the drug, and a mechanism of action that appears to be markedly different than existing HIV therapies."

"I am really, really, really excited about this particular technology. It holds a lot of promise," said Newell.

The optimization of certain peptides has a vast area of diseases it can combat, explained Newell. Two Lyme disease organizations, Time for Lyme Inc. and Turn the Corner Foundation, have provided Newell and the rest of the team at Viral Genetics with funding in order to aid in making the tick-triggered disease more manageable. They are finishing the first stages of the research in order to decrease the inflammation commonly linked to the disease.

Viral Genetics is setting up a subsidiary, MetaCytolytics, to further develop approaches that aid in fighting cancer.

A supporter of stem-cell research, Newell is optimistic about the current presidential administration's decision to allow researchers to pursue further medical advancements.

"You can have stem cells that are not necessarily embryos," said Newell. "There are stem cells for every tissue... brain, skin, bone marrow."

She is hoping to see a more even distribution of funds so that new views will have an equal opportunity to be showcased.

While Newell enjoys conducting hands-on research she finds great joy inside the walls of a classroom teaching others.

"I love to share what we do, I love to share the field with students," said Newell, who has taught at Dartmouth Medical College and the National Jewish Center for Immunology and Respiratory Medicine. "It's very rewarding to see them get excited on their own about biological science."

Newell is laying down the foundation to ensure the ill a better tomorrow. A people-lover, who works behind the scenes to enrich and improve the health and well-being of humankind, she could aptly earn the title of laboratory vanguard.

"When you love what you are doing this tends to make you really successful," said Newell.