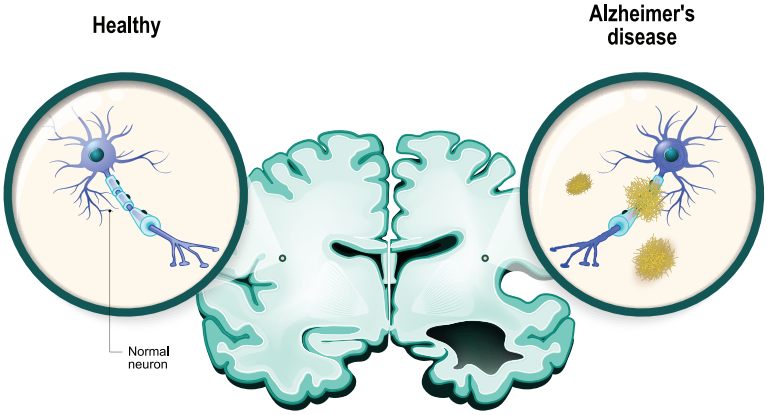
RESEARCHERS IDENTIFY PROMISING COMPOUNDS TO TREAT NEURODEGENERATIVE DISEASES

The study, "Target- and Mechanism-Based Therapeutics for Neurodegenerative Diseases: Strength in Numbers," published in the November issue of the renowned Journal of Medicinal Chemistry describes new compounds designed and synthesized in the lab of Paul Trippier, PhD, that show the effects of protecting human neurons in a dish from a form of cell death common in neurodegenerative diseases such as Alzheimer's disease and Parkinson's disease.

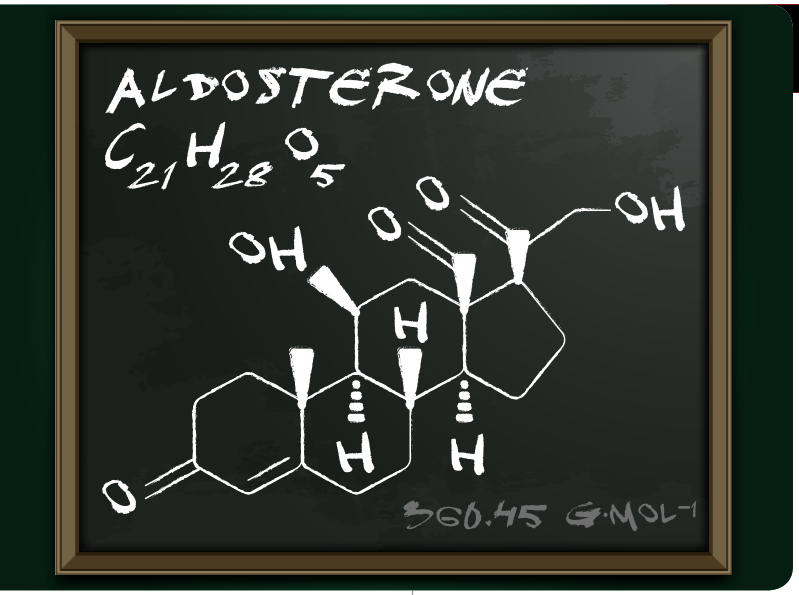
Trippier said the TTUHSC research team grew functional human neurons from stem cells and then treated them with the synthesized compounds. When cell death was induced, many more neurons that had been treated with the new compounds survived than did those that were not treated.

"These compounds are in the early stages of drug discovery, but they show promise for the treatment of many different types of neurodegenerative disease," Trippier said. "The advantage to this study is the use of stem cell-derived functional human neurons.

Many studies have identified compounds that can protect either neuron-like cells or mouse neurons, but they rarely carry forward to show effect in humans."



Paul Trippier, PhD, right, is an assistant professor for the School of Pharmacy at Amarillo Department of Pharmaceutical Sciences. He is collaborating with the lab of Abraham Al-Ahmad, PhD, an assistant professor in the same department.



Dylan J. Meyer, is a PhD candidate and Pablo Artigas, PhD, is an associate professor in the School of Medicine Department of Cell Physiology and Molecular Biophysics.

RESEARCHERS USE A PUMP-INDUCED DISEASE TO DEFINE UNDERLYING MOLECULAR MECHANISM

Dylan J. Meyer and his advisor, Pablo Artigas, PhD, presented, in collaboration with Craig Gatto, PhD, at Illinois State University, a study of the functional effects of specific mutations of the Na/K (sodium/potassium) pump found in tumors that induce primary aldosteronism, a condition known as Conn's syndrome. The study, "On the effect of hyperaldosteronism-inducing mutations in Na/K pumps," was published in the October issue of the Journal of General Physiology.

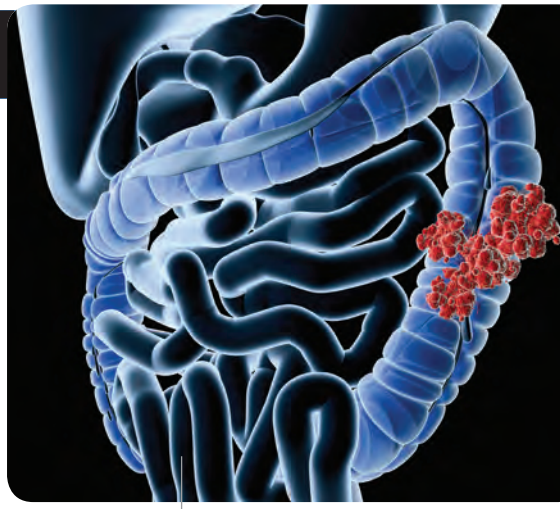
Aldosterone is a hormone made by the adrenal gland that helps control blood pressure by changing the levels of electrolytes such as sodium and potassium in the blood. Too much aldosterone causes the body to hold onto sodium and water and to get rid of potassium in unsafe amounts, increasing the amount of fluid in the body and, therefore, increasing a person's blood pressure.

"Primary aldosteronism is the most common cause of secondary hypertension and is often caused by a benign tumor in one adrenal gland, which continuously produces aldosterone in the absence of normal physiological triggers," Meyers said. "These tumors frequently have defective sodium potassium pumps."

Artigas said it's always important to understand why and how these and other mutations induce disease.

"The mechanisms uncovered here surely apply to other illnesses in which the Na/K pumps are mutated, including hemiplegic migraines and other neurological disorders," Artigas said. "Knowing the fundamental cause of an illness is the first step in order to one day improve the lives of the people with these mutations."

INTERVENTION INCREASES COLORECTAL CANCER KNOWLEDGE AMONG HISPANICS



When it comes to colorectal cancer, Hispanics have some of the lowest screening rates in the country. Recent reports suggest that only 47 percent of this group is up-to-date with colorectal cancer screening, compared to 60 percent of non-Hispanics.

Researchers at TTUHSC El Paso are learning how to improve Hispanics' awareness of the disease and their likelihood of getting screened.

In a new study of more than 750 patients—99 percent of whom identified as Hispanic—researchers found that educational material that is bilingual, literacy level-appropriate and culturally sensitive can significantly increase knowledge and testing rates. The study, "Impact of Targeted Education on Colorectal Cancer Screening Knowledge and Psychosocial Attitudes in a Predominantly HIspanic Population," was published in the December issue of the Family and Community Health journal.

Bilingual material may sound like an obvious solution, but Jennifer Molokwu, MD, MPH, who co-authored the study, says health education materials tailored for Hispanics are rare.

For the study, the research team first asked the participants to complete a questionnaire assessing their knowledge of colorectal cancer. Survey questions ranged from the warning signs and risk factors of colorectal cancer to treatment options and common myths.

The participants were then randomly assigned to four groups: one that received no education; one that watched a novela-style educational video; one that spoke with a *promotora* (a bilingual Latina trained to provide basic health education); and one that both watched the video and spoke to the *promotora*.

Six months after the initial intervention, the participants were contacted to repeat the questionnaire.

The results revealed that tailored educational materials, no matter the mode of delivery, led to a fourfold increase in knowledge scores among those who received the education, compared to the control group.

"It was very exciting to see that even six months after the intervention, participants still remembered what they had been taught," Molokwu said. "That shows our efforts had a long-term effect."

Similar research by the same team showed that tailored education can also significantly increase screening among uninsured Hispanics. In a separate study on the same cohort of individuals, 88 percent of those who received this education followed through with a colorectal cancer screening by receiving either a colonoscopy or fecal immunochemical test (FIT). In contrast, only 11 percent of those who did not receive the education moved forward with screening.

Jennifer Molokwu, MD, MPH, is an assistant professor and Navkiran Shokar, MD, is a professor and vice chair for research in the Paul L. Foster School of Medicine Department of Family and Community Medicine.

STUDY FINDS DISEASE-CAUSING MUTATIONS RARE IN IGF SYSTEM

Insulin-like growth factors (IGFs) are proteins that are essential for normal childhood growth and development. IGF mutations have been tied to dire health problems like growth failure, intellectual deficiencies and other developmental abnormalities.

The study, "Large-scale analysis of variation in the insulin-like growth factor family in humans reveals rare disease links and common polymorphisms," by Peter Rotwein, MD, published in the Journal of Biological Chemistry, shows that variations in IGF proteins are fairly common among individuals, but disease-linked mutations are rare. In fact, they occur in less than one in every 30,000 people. For the study, Rotwein single-handedly sifted through the genetic data of more than 60,000 individuals available in public databases, analyzing the similarities and differences among IGF genes and proteins.

"One bottom line is that disease-causing mutations are very, very rare in the IGF system," said Rotwein. "Another is that we have a lot of new information to understand about how different versions of the same proteins might function slightly differently. For example, they might subtly modify the growth rate of children and their final height as adults, or might alter susceptibility to certain illnesses."

Rotwein hopes to see other researchers investigate IGF proteins as well.

Peter Rotwein, MD, is vice president for research at TTUHSC El Paso.