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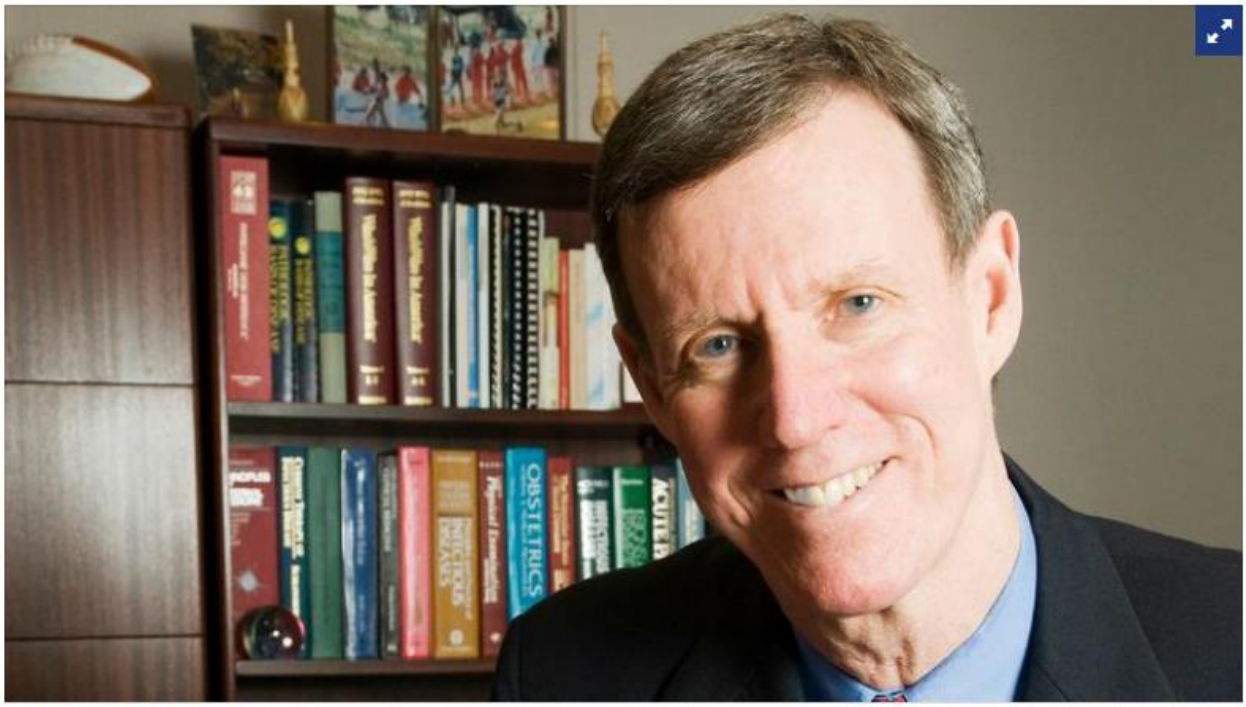
Opinion: The rapid pace of medical research benefits everyone



Paul Ramsey, CEO of UW Medicine
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The pace of medical research continues to accelerate, and innovative advances are enabling rapid translation of basic discoveries to improvements in human health. Until recently, the time between a seminal scientific discovery and the application to improve clinical care was estimated to be 30 years. Multiple technological advances are dramatically accelerating the application of medical research, and the benefits of "translational medicine" have the potential to impact all areas of human disease. An example of translational medicine is an experiment currently underway with NASA. On May 4, NASA launched a rocket from Cape Canaveral to the International Space Station that carried a kidney-on-a-chip experiment designed by scientists from the University of Washington's school of medicine and pharmacy. Kidney-on-a-chip is a tiny,

Washington's school of medicine and pharmacy. Kidney-on-a-chip is a tiny, human-cell-filled scaffold that recreates some of the organ's activities and enables scientists to test environmental effects – gravity, toxins, drugs – on kidney function. The kidney-on-a-chip should help determine how microgravity affects the kidney and why kidney problems occur often and quickly among astronauts. In addition, there should be broad application of the findings to gain insights about preventing and treating kidney-related problems on Earth, such as changes in vitamin D metabolism and the formation of kidney stones. The kidney-on-a-chip experiment was supported by the National Institutes of Health, in conjunction with the Center for Advancing Science in Space to speed the study of aging-related conditions and the development of treatments for them. Translational medicine is the hallmark of our nation's academic health systems, which include medical schools, teaching hospitals and research institutes. As we pursue this work, our search for discovery contributes to a vibrant local community. We also benefit from our collaborations with many business partners and supporters. For instance, the kidney-on-the-chip experiment would not have been possible without the commercial shuttle that took it to the International Space Station and the specialized packaging needed to withstand launch and re-entry. The United States is leading the world in reaping the benefits of translational medicine to help people worldwide. With new, precise approaches to prevention, diagnosis and treatment, we are giving hope to many patients with serious diseases, including heart disease, cancer, diabetes, kidney disease and multiple conditions that affect the brain. The acceleration of medical discovery is helping the population enjoy not just longer, but healthier, lives. Kidney disease is a good example. In 2008, UW Medicine established the Kidney Research Institute at Harborview Medical Center in collaboration with the Northwest Kidney Centers to improve the early detection, prevention and treatment of this disease and its complications. Under the leadership of Dr. Jonathan Himmelfarb, professor of medicine in our Division of Nephrology, and with strong support from Joyce Jackson, president and CEO of Northwest Kidney Centers, the institute has become one of the nation's foremost programs in applying research findings to clinical care. This institute was one of the

leaders on the kidney-on-a-chip space experiment. When I consider how medicine has changed during my professional career, I am most excited by the shortening of the time from research discoveries to clinical applications. And I am not the only one. At a Congressional hearing earlier this year, National Institutes of Health director Dr. Francis Collins cited the kidney-on-a-chip as an example of how translational medicine is accelerating the development of new drugs by testing their potential toxicology without risk to human subjects. As we continue to explore new frontiers, on Earth and in space, I believe that the fast-moving pace of medical research will have dramatic benefits for human health. I am also proud that we are contributing to the Puget Sound region's well-deserved reputation as a global center for business and medical innovation.