

UNDER DEVELOPMENT

Challenging Arkansas to invest in research (and a better tomorrow)

By AMP Staff

Innovation can seem to come out of nowhere. Like ChatGPT. In reality, the AI program was developed over years or decades with incremental advancements and a variety of victories and failures/false starts, both behind the scenes and quite public.

Research is a long-term investment governed by a system of safety and ethics. Like most investments, there is a high degree of forward vision required to see research cross from theory into practicality. Vision may be the research lab's most valuable asset.

Arkansas Research Alliance Academy Member Dr. John Imig of the University of Arkansas for Medical Sciences (UAMS) understands the power of a clear research vision. He has launched several biotech companies founded on intellectual property developed by his team. He has seen and navigated the barriers that prevent science from reaching the market.

"There is plenty of investment for basic research," explained Imig, who serves as chair of the UAMS Department of Pharmaceutical Sciences. "The challenge is funding the developmental research that brings science to the public."

Basic research is defined as "the pursuit of new scientific knowledge or understanding that does not have specific immediate commercial objectives." A study to discover the components making up human DNA would be considered basic research. Federal funding for such projects is readily available. In fact, Imig has secured more than \$35 million in grant support as a principal investigator or co-investigator.

Developmental research is defined as "the systematic use of the knowledge or understanding gained from research or practical experience directed toward the production or significant improvement of useful products, services, processes, or methods, including the design and development of prototypes, materials, devices and systems." Acquiring funding for developmental research can require scientists to reach out to the private sector – who often want guarantees or rapid results.

"Developmental research is the most important step in bringing science to market," said Imig, whose research centers on therapeutic treatments for metabolic diseases, such as diabetes and hypertension. "There is a huge need to bring basic science to the clinic for development, but the vision to invest is not always there. This is why so much promising basic science ends up shelved. In the research community, we call it 'The Valley of Death.' To avoid this scenario, we must build bridges of opportunity."

How does one build a "bridge of opportunity" so that basic science be rescued from the Valley of Death? According to Imig,

the key is collaboration. "It's not about one agency or community getting involved. We need private philanthropy, state and federal agencies working in concert and focused on bringing research to the finish line."

Imig, who recently joined UAMS from the Medical College of Wisconsin, said that it is important for state agencies like the Arkansas Economic Development Commission to take an active role in supporting developmental research. Not only can Arkansas see financial impact in securing rights to valuable intellectual property (IP), but it could also enjoy a vast improvement in quality of life through improved therapies for diseases that have negatively impacted the state.

"One in three Americans suffer from hypertension," Imig said. "The statistics for diabetes are also alarming. The cost of treating the symptoms of the diseases is a drain on our resources. Investing in developmental research to combat these diseases can lead to healthier outcomes for the state – physically and financially."

As a vascular and renal biologist, Imig and his laboratory are dedicated to understanding the mechanisms by which certain fatty acids, called eicosanoids, influence kidney and cardiovascular function. He and his team have developed novel eicosanoid-based drugs to treat hypertension, stroke, heart attacks, diabetes and kidney diseases.

Imig hopes to launch a biotech company in Arkansas once his lab at UAMS produces licensable research. Until then, he imagines a Natural State fully vested in development research. "I'd like to see us moving basic research to startup companies to create life-changing drugs and treatments. If you want to make discoveries and really improve public health, you must do that development work." 

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