# Researcher develops drug to non-invasively diagnose infectious diseases

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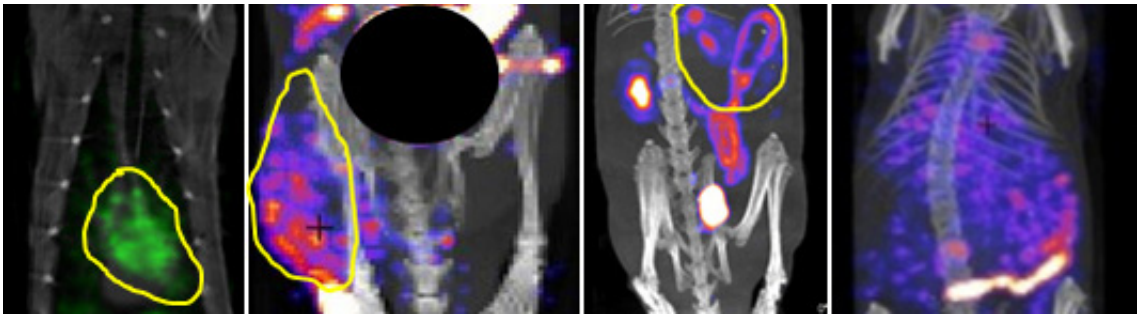

Targeting Leukocyte Function-Associated Antigen-1 Expression for Molecular Imaging and Therapy. Sample infections include (l. to r.): H1N1, Inflammatory Bowel, Irritable Bowel and Lymphoma. Credit: University of New Mexico

A professor at The University of New Mexico has developed a new, groundbreaking drug that that could revolutionize the diagnosis of infectious diseases.

Dr. Jeffrey P. Norenberg, a professor and director of the Radiopharmaceutical Sciences Program at UNM's College of Pharmacy, has invented a non-invasive way to detect infectious diseases.

"This drug may aid in the diagnosis and monitoring of many diseases in which inflammation plays an important role, such as heart disease, inflammatory bowel disease, lymphoma and leukemia and appendicitis," said Norenberg. "That is what we can measure with these tools."

The method of non-invasive molecular imaging involves injecting a patient with a drug which binds to receptors only found on the surface of patients' white blood cells. A radioisotope is used with the drug to allow nuclear medicine imaging so that doctors are able to diagnose the infection, view its extent, or monitor treatment of the infection within the patient.

"We can see white blood cells in the body, where they traffic, and their patterns of accumulation which can be recognized as normal or abnormal," said Norenberg. "For example, with appendicitis we can see an accumulation of white blood cells in an area of the body where we wouldn't expect to see them. That maybe an indication of an infection, and could help doctors diagnose appendicitis"

Norenberg said diagnosis of infectious diseases using this molecular-targeted drug significantly advances the currently available diagnostic strategies. The new technology may also be used to diagnose and treat cardiovascular diseases, gastrointestinal inflammatory conditions, degenerative joint diseases, urinary tract infections, parasitic diseases, respiratory tract infections, and many other conditions.

"This is a technology that could allow us more immediate and very prompt visualization of the infection to distinguish bone and soft tissue infection without having to do any blood handling," Norenberg said. "It gives information very quickly, 5 to 30 minutes after being injected. Its very easy compared to the standard of care today, which involves the collection and radiolabelling of each of patient's own blood."

Norenberg has a personal and emotional connection to this effort. He started his research into the drug after his sister died of Acute Myeloid Leukemia in 1994. He now hopes his invention will help treat patients suffering from diseases like cancer, and perhaps help save lives. The drug will require 3-5 years of clinical research and approval by the Food

& Drug Administration prior to widespread use in the clinic.

"I started working on this about 10 years ago and we have done a tremendous amount of preclinical research to evaluate the safety and efficacy of this drug," he said. "We are now to the point where we have about half a dozen patents and we need a sponsor that is willing to support clinical trials which are estimated to cost about 1 million dollars."

Another advantage of the new detection method over the current methods is cost. Norenberg said the drug would be less expensive than traditional white blood-cell imaging, which currently costs about $3,000-4,000 per use.

STC.UNM (STC), the University's technology-transfer and economic-development organization, is supporting Norenberg in his research, said CEO Lisa Kuuttila. "This technology has a strong IP portfolio consisting of several issued and pending patents and, as Dr. Norenberg mentioned, we are actively seeking a commercialization partner to bring the technology to patients who would really benefit. This could be a great advancement in non-invasively diagnosing and treating diseases."

Provided by University of New Mexico