



# RESEARCH2REALITY

Shining a light on research & innovation.

## Battling Illness from the Inside Out

| An interview with Professor John Valliant  
| Pharmaceutical Chemist, McMaster University

### What is disease imaging?

What we try to do is find new ways to build molecules that allow you to better detect disease. Right now when there's a suspicion that you have a particular type of disease like a cancer, you go and you get an image, like an MRI or a CT, and it shows you the structure of the disease – a picture of the disease. What we try to do is go a little bit further and actually look inside the disease: make molecules, which we call probes, that deliver medical isotopes inside the disease, and from the images you get out of that, you can understand how aggressive the disease might be, what's the best treatment for the patient for that disease, and how effective is the treatment that you have working? And so it's a new way to understand and detect disease. New treatments are really targeted to specific types of disease, so not all treatments work for all types of prostate cancers. But these treatments are actually very expensive, but work effectively on maybe 20% of the patients. So the idea is, can you use imaging to direct the right drug to the right patient?

### What does the future look like?

Personalized medicine has many different definitions, but I think the real goal is to try and get the right treatment to the right patient, at the right time, for the right cost. And so the idea is that globally, people are looking at how do you connect, now that we understand the genetics of disease, with these targeted treatments. It used to be that we knew that two different patients' lung cancers were different, but now within one patient, two different tumors in the same patient can be completely different. You have to understand each site of disease and really personalize it.