

# TRANSLATIONAL MEDICINE

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HEALTH

The term “translational medicine” has become a catch-all phrase used in clinical medicine and science alike. Unfortunately, there is misunderstanding of exactly what this term means. For example, many define it as the extrapolation of medical breakthroughs from a model organism to the human. This is more rightly termed “comparative medicine” and is not what the term “translational medicine” means. Translational medicine is defined, in a colloquial manner, as “bench to bedside.” What this means in practical terms is this: Findings resulting from basic research need to be more quickly developed into tools for use by human and veterinary clinicians. The goal, then, of translational medicine is to accelerate the transition from basic discoveries to clinical practice, *i.e.*, the diagnosis, and treatment of human and veterinary patients.

The importance of translational medicine is exemplified by recent efforts of the National Institutes of Health (NIH). For example, Duke University recently established the Duke Translational Medicine Institute (<http://www.dtmi.duke.edu/>) with a \$52.7 million grant from the NIH. Its stated goal is to “make personalized medicine a reality . . . by shaping scientific discoveries into technologies or therapies that can be tested, ensuring that they are useful and not harmful, and then using the new knowledge to improve health.”

Clearly, the above-stated objective is laudable, but it is a daunting task to coordinate the translation of basic discovery to clinical solution. Nevertheless, there are outstanding examples of how this is changing medicine. One such example is in the field of oncology—something that is of obvious

## ***Medicine is changing.***

importance to humans and dogs. Many academic and industrial laboratories wish to develop new drugs to treat the many different cancers but 80% of drugs are never used because they fail in some phase of clinical trials. This is costly in terms of time and financial resources. Thus, a more efficient and faster mechanism for assessing the potential therapeutic value of potential anti-cancer drugs is needed. We now know more about the progression of tumors and by using new imaging techniques and assaying biomarkers (two approaches that have resulted from basic research) we can now better assess the effect of drugs on tumors in experimental animals long before we proceed into clinical trials. That is, by being better able to assess the mammalian response to drugs we quickly can determine whether it is worth putting a drug in costly and time-consuming clinical trials. The bottom line is this: Many drugs are in development and it is often not until clinical trials that

we learn a drug is not appropriate for use in patients. By using imaging to assess cellular responses and looking for biomarkers that may be indicative of toxicity, we can quickly eliminate drugs that are destined for failure and concentrate efforts and resources on those drugs that are more promising.

In summary, translational medicine is the marriage of basic science and clinical medicine, something enthusiastically supported by the Canine Health Foundation, pharmaceutical and pet food companies and breed clubs. At the same time, by using comparative medicine approaches, the medical and scientific communities can better understand diseases common to the dog and human. Understanding the bases for diseases fosters research into potential treatment regimens. When such experimental regimens appear promising, the concept of translational medicine must be in play. Because of ongoing efforts by scientists, clinicians and industrial partners, we are now poised to make “bench to bedside” a reality and that surely will benefit the human and dog alike. 

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