Editorial

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Fifty years' fascination with FIP culminates in a promising new antiviral

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Feline infectious peritonitis (FIP) has been my fascination for the past 50 years. Although caused by a virus, FIP most closely resembles mycobacterial infections that cause human and feline tuberculosis and leprosy. The disease has yielded its secrets grudgingly and each new discovery has led to yet more questions. As the famous poem by Robert Frost proclaims: 'We dance round the ring and suppose, but the secret sits in the middle and knows.' I am fortunate to have reached a final landmark in my career having identified a safe and effective treatment for FIP. This stage was made possible by a lot of work and great collaborations with teams of people in the US at places like Kansas State and Wichita State Universities, and Gilead Sciences.

We now know that small molecules targeting specific proteins involved in RNA virus replication are capable of curing various forms of FIP with a high degree of safety. These small molecules include a protease inhibitor GC376 and a nucleoside analog GS-441524. Both are based on drugs currently used to treat common human diseases such as hepatitis C and HIV/AIDS, and undergoing testing for exotic infections with names like MERS (Middle East respiratory syndrome), SARS (severe acute respiratory syndrome) and Ebola.

It is important to state that small field trials of the types we have completed and published, the most recent in this issue of *JFMS* (Figure 1),[1] are primarily for proof-of-concept and not rapidly translated into approved and commercially available products. Some researched drugs may be pre-empted or delayed by human applications and all will require a lengthy process to obtain final approval, even for animals. Ultimately, private veterinary pharmaceutical companies will have responsibility for marketing them. Is the demand for such drugs and the willingness of owners to bear the cost a sufficient incentive for these companies?

Unfortunately, initial reports of successful treatment have only stimulated efforts by desperate owners to access these drugs immediately and have created a growing black market. Therefore, I suspect that the next couple of years will test both our patience and ethics. None of this should take away from the fact that over 50 years of research has gotten us to this eventful point. However, much more is left to discover. How does virus replication in macrophages lead to immunity in many

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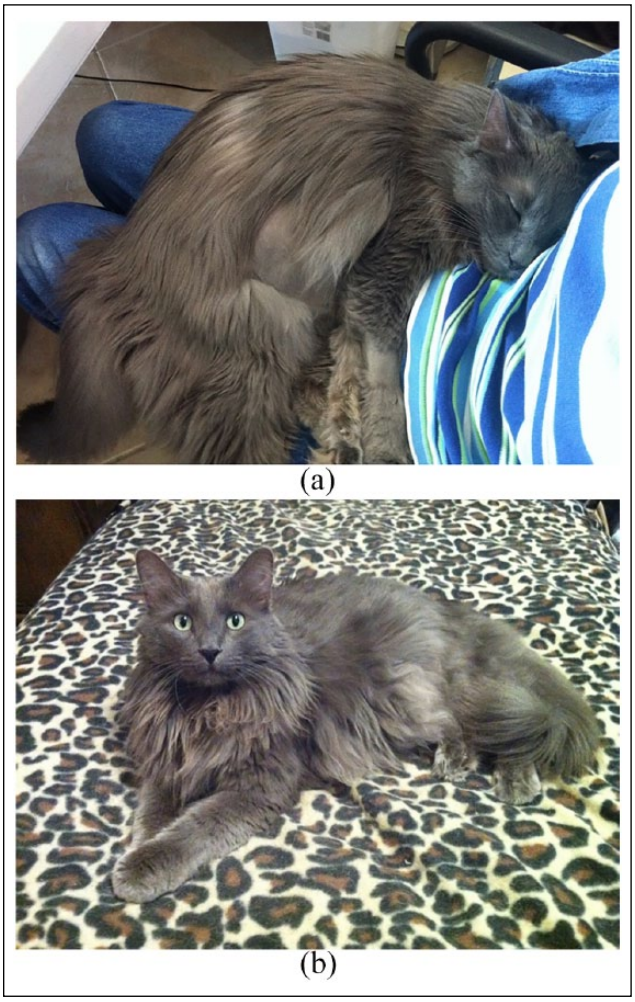

Figure 1 Bubba was originally found as an abandoned 3-week-old kitten by his owner in Florida, USA. He was diagnosed with abdominal non-effusive FIP at 7 years of age, and enrolled in the GS-441524 treatment study.[1] (a) In May 2017, just before treatment commenced, Bubba weighed 6 kg (13.5 lb). One week into the 12-week treatment course his owner reported he was 'eating on his own, alert, energetic and playful.' (b) Bubba, pictured in January 2018, weighing 9.3 kg (20.5 lb). *Credit: Adel Gastle*

cats and disease in an unfortunate few? Can this knowledge finally lead to effective vaccines? What is the best way to care for kittens in catteries, shelters and rescues to minimize FIP losses? Are there even better drugs awaiting discovery? Can small molecule inhibitors synergize with each other and with entirely different treatment modalities?

I will leave these questions, and more, to my fellow FIP researchers.

Niels C Pedersen DVM, PhD
Centre for Companion Animal Health,
School of Veterinary Medicine,
University of California, Davis, USA

Reference

1 Pedersen NC, Perron M, Bannasch M, et al. **Efficacy and safety of the nucleoside analog GS-441524 for treatment of cats with naturally occurring feline infectious peritonitis**. *J Feline Med Surg* 2019; 21: 271–281.