

# Veterinary Medicine – Today and Tomorrow

by Rolan Tripp, DVM



My favorite definition of "robot" is "a virtual agent guided by a computer program." Compared to today, tomorrow will undoubtedly see an increased use of robots in veterinary practice. For example, most of us will become desensitized to the sight and sound of robots vacuuming and cleaning surfaces.

Today, American Airlines has arguably the best available phone robot that can assist an unlimited number of people make their flight reservations. Tomorrow, that technology will migrate to all businesses that make appointments, including veterinary medicine. Also borrowed from air travel, tomorrow's vet hospitals will routinely have "check-in kiosks," where the pet owner can weigh the pet, then input history and other data to speed along the process.

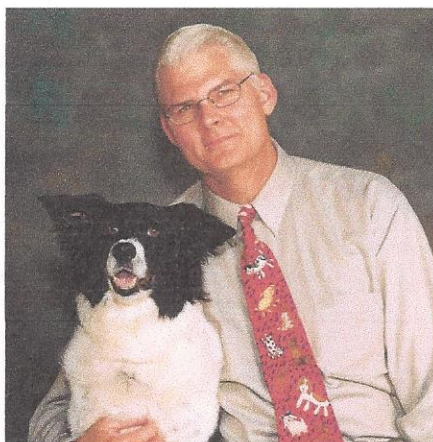
Outgoing phone calls for appointment reminders are robotic today at many practices. Tomorrow's "phone bots" will likely complete branching logic, Q&A health, nutrition and behavior interviews to optimize pet quality of life and longevity.

Tomorrow's subcutaneous chips in all animals will be more useful. Identification will be time/date-stamped and immediately imported into the practice computer when pet or herd animal pass through a portal. Then entry and exit through key portals will monitor pet patient or herd flow, leading to efficiency and profits.

Some chips will store a health record that is Wi-Fi-updated at the last portal. Other chip features may provide clinical data such as body temperature and possibly even blood glucose or other chemical values. Monitoring chips will send off an alarm if detecting anthrax or specified infectious diseases. A GPS feature will be an option, and the chip will likely recharge from a proximal charging station during cow milking or every

night as the pet lies on a specially equipped and comfortable pet bed.

One of the most intriguing uses of genetic engineering for tomorrow is the concept of medicines and vaccines grown organically inside crops. Consider the work of Henry Daniell, PhD, from the departments of biochemistry and pathology at Penn Dental Medical University. According to biographer Katherine Unger Baillie, "His method starts with modifying a single plant cell so that it will store the needed medicine. The cell multiplies and grows into a whole plant, such as lettuce, in which every cell stores the medicine. The human patient eats the plant and ingests the medicine with it — no needle needed ... Daniell estimates that one acre of genetically modified plants could produce enough anthrax vaccine to immunize every person in the United States." His research is now being supported by the Bill and Melinda Gates Foundation.



Regarding producing food for people, the future of veterinary food animal medicine is evolving. Today the focus is on efficiency, and incorporating technology. Consider the work of Carlos Piñeiro, director of Pig-CHAMP-Pro Europa, a Spanish consultancy company dedicated to data management, analytics and applied research in livestock (swine) business ([www.pigchamp-pro.com](http://www.pigchamp-pro.com)). He reports, "We have developed a system to collect and process data, delivering

information using interactive Web-based dashboards to monitor health and performance from farms worldwide. The system is based on a digital pen paired with a commercial cheap smartphone and is working currently in more than 20 countries. Besides this, we are collecting environmental data (temperature, water flow, humidity, gasses and electric power), using sensors that are sending data using Wi-Fi from farms, generating both early alerts for farm staff and data for scientific [and economic] purposes."

Tomorrow, the challenges to veterinary supervised food production will come from at least two fronts. The first is aquaculture, which "continues to be the fastest growing animal food-producing sector and to outpace [human] population growth" ([www.fao.org/fishery/topic/13540/en](http://www.fao.org/fishery/topic/13540/en)). The second is the development of artificial beef. "In vitro meat, also called cultured meat, cruelty-free meat, shmeat, and test-tube meat, is an animal-flesh product that has never been part of a living animal" ([en.wikipedia.org/wiki/In\\_vitro\\_meat](http://en.wikipedia.org/wiki/In_vitro_meat)). The muscle fiber based fake meat is "grown" from beef muscle cells in factories on plastic lattice sheets.

Today, most veterinarians limit their market to those animals they find a way to touch at some point. This model will surely continue for the foreseeable future. However, the really exciting possibilities for tomorrow are global. U.S. veterinarians have the best education in the world, and the United States is the planet's greatest innovation generator. Tomorrow promises the opportunity for forward-thinking U.S. veterinarians, networked with local veterinary technicians, to provide remote, high-definition video consulting to the emerging middle-class animal owners all over the Earth. 🐾

*Dr. Rolan Tripp has been a "veterinary futurist" since 1983, when he published an article called "Veterinary Telecommunications," which predicted many of the veterinary technologies in place today. At the 2014 ISVMA conference, Dr. Tripp will host a special breakfast meeting on how to take advantage of the fantastic opportunities ahead for veterinarians and veterinary technicians. He can be contacted at [drrolantripp@gmail.com](mailto:drrolantripp@gmail.com).*