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A Strong Advocate for Laboratory Animal Medicine

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Over the course of his distinguished career, **Hilton J. Klein, V'80**, has accomplished much in the fields of critical research and human and animal drug and vaccine discovery and development. During its Annual Convention in July 2003, the American Veterinary Medical Association recognized Klein's contributions to the field of laboratory animal science by honoring him with the Charles River Prize, which is awarded by the Charles River Foundation.

Currently the senior director of comparative medicine and director of the Department of Laboratory Animal Resources for Merck Research Laboratories in West Point, Pa., Klein provides strategic planning and direction for Merck's animal care and use programs and is the lead auditor for all animal care programs for Merck worldwide. As Merck's representative, Klein also played an important part in establishing a conservation program for neotropical primates in collaboration with the Pan American Health Organization.

Klein credits his education at Penn's Veterinary School, with its emphasis on basic science, for pointing him in the direction of a research career. In fact, Klein notes, because of Penn's continued research-focused curriculum, "Penn graduates are better equipped than ever before to understand what's going on in research." In 1977, as the very first Penn student to participate in the Merck Summer Research Fellowship Program, where he was mentored by two laboratory animal veterinarians, Klein found his initial desire to practice large animal medicine gradually giving way to a growing interest in research.

After graduating from Penn in 1980, "an opportunity to do research on human infectious diseases presented itself," recalls Klein. As manager of veterinary sciences at Whitaker M.A. Bioproducts in Walkersville, Md., Klein, in addition to his duties as clinical veterinarian and laboratory animal care supervisor, helped research and develop diagnostic tests for infectious animal diseases, including ELISA (Enzyme-Linked ImmunoSorbent Assay), a fundamental tool of clinical immunology used as an initial screen for HIV detection, and the FA (Fluorescent Antibody) Test, which for many years has been used to detect influenza virus infection in frozen sections of lung. His comparative infectious disease research

encompassed toxoplasmosis, herpes, and cytomegalovirus.

In 1985, Klein joined Merck Research Laboratories as a staff veterinarian, where he collaborated with researchers in developing animal models to establish "proof of concept" and safety for human medicines and vaccines. During his 18 years at Merck, the number of animals has more than and the professional staff tripled.

Klein was recently honored with Merck's



2002 Animal Alternatives Award, along with Thomas E. Nolan, D.V.M., recently retired from Merck's Department of Laboratory Animal Resources. The award recognizes Merck employees worldwide whose research and published work support the animal-alternatives concept of "3 Rs"—replacing, reducing, or refining animal models used in laboratory research. Klein and Nolan's award-winning paper, "Methods in Vascular Infusion Biotechnology in Research with Rodents," appeared in 2002 in the *ILAR Journal*, the publication of the Institute for Laboratory Animal Research. The paper describes innovative techniques (with animal welfare in mind) that use miniaturized animal models to facilitate drug discovery and development. This novel technology is now being used in Merck research areas—including obesity, diabetes, cancer, and vaccines—and will ultimately benefit both human and animal health.

Because veterinarians trained to conduct basic biomedical research are in short supply across the country, many career opportunities

are available for veterinarians to enter the research arena. Klein states, "We as veterinarians shouldn't consider research as an 'alternative' career; it's a good primary career that offers lots of opportunities for vets—in agricultural research, biomedical research, human medicine research—for which Penn graduates are uniquely qualified."

Research veterinarians can help shape animal welfare policies and practices at the local, national, and global levels. Klein has worked with international agencies like the World Health Organization, regulatory agencies like the United States Department of Agriculture, accrediting agencies like the Association for Assessment and Accreditation of Laboratory Animal Care—International (where he served as president of its Council on Accreditation), and professional/scientific groups like ILAR. He has traveled extensively throughout the world—including places as diverse as Canada, Italy, France, the Philippines, Taiwan, and Cuba, where he actually met Fidel Castro. At each stop, no matter how distant or unfamiliar, the common thread was always animals and research.

Klein points to the emerging field of "translational medicine" as another type of research career available to graduates. Knowledge and technology are being improved today at an increasing pace—and with them, our desire to see a rapid progression, or "translation," of information from laboratory to hospital, from theoretical to practical. This desire generates the need for a whole new range of trained professionals to perform the critical task of moving medical research closer to commercially ready medical technology. Animals play an integral part in the two main steps of this "bench-to-bedside" research (first proving a concept, and then ensuring its safety)—and where there are laboratory animals, of course, there is a need for veterinarians. "This is a chance to help both humans and animals by developing drugs and vaccines," states Klein.

An adjunct associate professor of laboratory animal medicine at Penn, the author or coauthor of more than 30 scientific articles, and a diplomate of the American College of Laboratory Animal Medicine, Klein is uniquely qualified to serve as an advocate for a field that strives to advance the health and welfare of humans and animals.