



connecting the
dots

Dr. Rodrigo Bicalho's career pays tribute to one undisputable fact:

nothing happens in isolation

If a butterfly's wings can stir a hurricane thousands of miles away, just imagine what a cow's tail can do.

Dr. Rodrigo Bicalho has based his career on an approach that enables him to simultaneously embrace and exploit the concept of interdependence. Shining a spotlight squarely on all things bovine, his research and clinical portfolios investigate issues that range from post-partum challenges to digital dermatitis and bridge the worlds of teaching and discovery. This means that whether the newly minted professor is collecting a sample in the field, cruising along pasture-lined roads in an ambulatory truck with a couple of veterinary students alongside him, or diagnosing a sick cow, Dr. Bicalho is happiest—and most effective—when he is putting the pieces together.

“Nothing happens in isolation,” said Dr. Bicalho, who earned his veterinary degree in Brazil before completing a residency in 2005 and his PhD in 2008 at Cornell. “To effectively solve problems, we must know how systems work, as a single operation and in combination with other mechanisms. Nutrition, disease, physiology, biological processes all have affects at the local and systemic levels. My work looks at the animal—and the issues it faces—as a whole.”

At the top of his research list is a project exploring new technology that will empower producers to better meet the nutritional needs of bovine, although the results will likely be of interest to moms, too.

“The most common approach for preparing milk for consumption is heat pasteurization,” said Dr. Bicalho. “No question it kills bacteria and the milk won't hurt us. I'm not sure the milk is providing as many health benefits as it could, though, as the process of heating raw milk decreases the overall nutritional value.”

In a paradigm-shifting study, he is testing the ability of ultraviolet light to kill bacteria by comparing the biochemical and nutritional qualities of heat-pasteurized milk to that of UV-pasteurized milk. The study also involves careful analysis of the effects of milk pasteurized with both techniques on the health of the more than 1,000 calves enrolled in his study.

Dr. Bicalho is also developing a vaccine to prevent metritis (an inflammation of the uterus), investigating multiple causes for lameness in cows, studying the microbial diversity in the post-partum bovine uterus, and conducting a field trial to evaluate the effectiveness of four trace minerals (selenium, zinc, copper, and manganese) in a cow's overall health. A collaborator at heart, Dr. Bicalho frequently shares both the challenges and results of his work at international conferences. Before year's end, he will have offered keynote addresses at conferences in Spain, China, Argentina, Mexico, and across America. All of this, while

publishing nearly a dozen new papers this year and preparing tomorrow's crop of large animal veterinarians for their own fruitful careers.