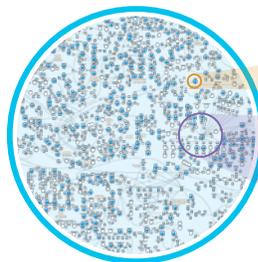




NEXT GEN INNOVATION DEMANDS NEXT GEN DATA

You're always on the search for innovative formulations to enhance animal health and well-being. As the demands for data to support claims increase, traditional research methods may not be enough. To get to market effectively, and with a differentiated position, you need next generation approaches in your research programs.

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- Identify biomarkers of nutrient intake
- Establish and support claims



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UNLEASH THE POWER OF METABOLOMICS

Metabolomics is uniquely suited to decode the complex relationship between nutrition and metabolism, and to investigate the role that dietary components play in health, health maintenance and disease.

In animal health and veterinary science and medicine, metabolomics is currently being applied to basic research, the discovery of biomarkers for treatment efficacy, and target discovery and validation.

Below are some publications that you may find interesting:



Feline Studies:

Allaway, D. *et al.* Metabolic Profiling Reveals Effects of Age, Sexual Development and Neutering in Plasma of Young Male Cats. *Plos One* 11, (2016).

Floerchinger, A. M. *et al.* Effect of feeding a weight loss food beyond a caloric restriction period on body composition and resistance to weight gain in cats. *Journal of the American Veterinary Medical Association* 247, 365-374 (2015).

Hall, J. *et al.* Comparison of serum concentrations of symmetric dimethylarginine and creatinine as kidney function biomarkers in healthy geriatric cats fed reduced protein foods enriched with fish oil, L-carnitine, and medium-chain triglycerides. *The Veterinary Journal* 202, 588-596 (2014).

Deng, P., Jones, J. C. & Swanson, K. S. Effects of dietary macronutrient composition on the fasted plasma metabolome of healthy adult cats. *Metabolomics* 10, 638-650 (2013).



Canine Studies:

Li, Q. *et al.* Veterinary Medicine and Multi-Omics Research for Future Nutrition Targets: Metabolomics and Transcriptomics of the Common Degenerative Mitral Valve Disease in Dogs. *OMICS: A Journal of Integrative Biology* 19, 461-470 (2015).

Hall, J. A. *et al.* Nutritional interventions that slow the age-associated decline in renal function in a canine geriatric model for elderly humans. *The Journal of Nutrition, Health & Aging* 20, 1010-1023 (2015).

Hall, J. A. & Jewell, D. E. Feeding Healthy Beagles Medium-Chain Triglycerides, Fish Oil, and Carnitine Offsets Age-Related Changes in Serum Fatty Acids and Carnitine Metabolites. *PLoS ONE* 7, (2012).

Hall, J. A., Brockman, J. A. & Jewell, D. E. Dietary fish oil alters the lysophospholipid metabolomic profile and decreases urinary 11-dehydro thromboxane B2 concentration in healthy Beagles. *Veterinary Immunology and Immunopathology* 144, 355-365 (2011).

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