

Jennifer L. G. van de Ligt, Ph.D.

DIRECTOR

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PROFESSIONAL PROFILE

Jennifer van de Ligt, Ph.D., has an extensive background in animal feed and human food production, nutrition, safety, and regulations, with academic, industry, and global perspectives. Her research and industry experience span areas including development of novel food and feed ingredients, consumer packaged goods labeling compliance for global product launches, scientific substantiation of product claims, food defense and intentional adulteration vulnerability assessment and mitigation, basic research on the immunological impact of nutritional strategies, feed supply-chain risk management for viral pathogens, and more.

Prior to joining ToxStrategies, Dr. van de Ligt was a Professor at the University of Minnesota College of Veterinary Medicine and Director of the Integrated Food Systems Leadership program. As Director of the Food Protection and Defense Institute (FPDI), an Emeritus Homeland Security Center of Excellence, she was instrumental in building collaborations to ensure national nutritional security through advancing food and feed safety, defense, and supply-chain resiliency while transitioning solutions to the food industry.

Dr. van de Ligt previously held numerous leadership positions at a global food, agricultural, financial, and industrial products company operating in 70 countries where she provided nutrition and regulatory expertise for a variety of food and feed novel ingredient and claims innovations. Dr. van de Ligt also provided leadership to extended and interdisciplinary technical and regulatory teams to ensure ingredients met appropriate nutrition and safety standards through toxicological and nutritional efficacy evaluation. These development initiatives required collaboration with external researchers, interdisciplinary teams, industry trade associations, governmental officials, and private-sector customers and suppliers, as well as obtaining and coordinating project and research timeline, strategy, expectations, and work products.

Dr. van de Ligt developed an intellectual asset management program for a major division of the same global food company, which supported expansion of its global footprint with greater longevity, and the application of proprietary and profit-generating tools and technologies. Dr. van de Ligt has more than 130 global patents and patent applications, including for specialty ingredients, processing technology, packaging innovations, biology-based feed formulation systems, and animal virus mitigation strategies.

EDUCATION AND DEGREES EARNED

- 1999 University of Kentucky, Ph.D., Animal Nutrition—Monogastric
- 1995 University of Illinois, M.S., Animal Nutrition—Ruminant
- 1993 North Carolina State University, B.S., Animal Science, Nutrition minor (*summa cum laude*)

PROFESSIONAL ASSOCIATIONS

- Council for Responsible Nutrition
- Institute of Food Technologists
 - Global Food Traceability Center Advisory Council
- International Association for Food Protection
 - Food Defense Professional Development Group
 - Food Fraud Professional Development Group
- International Life Sciences Institute
 - Scientific Integrity Committee
 - Steering Committee Branded Foods Database Public-Private Partnership
 - Low Calorie Sweeteners Committee
- International Food Information Council
 - Food Ingredients Committee Co-chair
 - Low Calorie Sweetener Committee Co-chair
 - Nutrition Committee
- American Society of Nutrition
 - Public Policy Committee
- Grocery Manufacturers Association
 - Chemical Management Committee
 - Food Defense Committee
 - Nutrition, Health, and Labeling Committee
- American Association of Animal Science
- Phi Kappa Phi
- Gamma Sigma Delta

SELECTED PROFESSIONAL EXPERIENCE

Led research in food defense, including supply-chain vulnerability, dietary landscape, and economically motivated adulteration of food

Led development of Regulatory Affairs for Food Professionals Post-Baccalaureate Regents Certificate at the University of Minnesota

Directed and mentored regulatory team and enhanced regulatory strategic direction for global food, agricultural, financial, and industrial products company operating in 70 countries

Led cross-functional, multi-collegiate research team investigating transboundary animal disease mitigation through development and application of novel model systems

Served as steering committee representative for public-private partnership in collaboration with leading science foundation to launch the USDA Global Branded Food Products Database in FoodData Central

Partnered with targeted trade associations to proactively influence, communicate, and assess impact of public policy and regulatory modernizations across a major company's portfolio

Developed regulatory strategies for a variety of health, nutrition, and functional food ingredients, including extramural safety research and consultation with regulatory authorities to open markets for new food ingredients

Opened key international markets for a consumer tabletop sweetener through development of regulatory guidance, scientific substantiation for product claims, and management of regulatory risks, as well as post-market monitoring program for medical complaints

Established intellectual asset management strategy to enhance competitive advantage for global animal nutrition business in collaboration with senior leadership

Optimized strategic development of branded, novel, and patent-pending ingredients to meet nutritional composition, regulatory compliance, and processing conditions in cross-functional, cross-cultural, and multi-site extramural team environments

Developed novel *in vitro* analytical techniques and detection methods that strongly correlated with *in vivo* outcomes and ensured analytical accuracy for internal and contract laboratories

MANUSCRIPTS

Balestreri, Schroeder DC, Sampedro F, Marqués G, Palowski A, Urriola PE, **van de Ligt JLG**, Yancy HF, Shurson GC. 2024. Unexpected thermal stability of two enveloped megaviruses, *Emiliana huxleyi* virus and African swine fever virus, as measured by viability PCR. *Virol J* 21:1; [open access](#).

Sheppard AM, **van de Ligt JLG**, Padmakumar P, Crincoli CM, Faris RJ, McGhee ML, Frederick BR. 2023. Safety of dietary nitrate supplementation by calcium nitrate for finishing pigs as measured by methemoglobin and serum and tissue nitrate levels. 2024. *Translat Anim Sci* 8:txad135; [open access](#).

Raths R, Rodriguez B, Holloway JW, Waite A, Lawrence, **van de Ligt JLG**, Purvis H, Boering-Resch H, Casper DP. 2023. Comparison of growth performance and tissue cobalt concentrations in beef cattle fed inorganic and organic cobalt sources. *Translat Anim Sci* 7(1):txad120; [open access](#).

Palowski A, Balestreri C, Urriola PE, **van de Ligt JLG**, **Sampedro F**, Dee S, Shah A, Yancy HF, Shurson GC, Schroeder DC. 2022. Survival of a surrogate African swine fever virus-like algal virus in feed matrices using a 23-day commercial United States truck transport model. *Front Microbiol* 13; [open access](#).

Schambow R, Sampedro F, Urriola PE, **van de Ligt JLG**, Shurson GC, Perez AM. 2022. Rethinking the uncertainty of African swine fever virus contamination in feed ingredients and risk of introduction into the United States. *Transbound Emerg Dis* 69:157–175, <https://doi.org/10.1111/tbed.14358>.

Shurson GC, Palowski A, **van de Ligt JLG**, Schroeder DC, Balestreri C, Urriola PE, Sampedro F. 2022. New perspectives for evaluating relative risks of African swine fever virus contamination in global feed ingredient supply chains. *Transbound Emerg Dis* 69:31–56, <https://doi.org/10.1111/tbed.14174>.

van de Ligt JLG, Saddoris-Clemens KL, Norton SA, Davis MD, Doepker CL. 2021. Impact of calcium nitrate supplementation on the oxygen-carrying capacity of lactating sows and their offspring. *Trans Anim Sci* 5(4):txab217, <https://doi.org/10.1093/tas/txab217>.

Doepker CD, Heintz MM, **van de Ligt JLG**, Wikoff DS. 2021. Review of potential risks associated with supplementary dietary exposure to nitrate-containing compounds in swine — A paradox in light of emerging benefits. *Trans Anim Sci* 5(4):txab203, <https://doi.org/10.1093/tas/txab203>.

Shurson GC, Urriola PE., **van de Ligt JLG**. 2021. Can we effectively manage parasites, prions, and pathogens in the global feed industry to achieve One Health? *Transbound Emerg Dis* 69:4–30, <https://doi.org/10.1111/tbed.14205>.

van de Ligt, Jennifer LG. 2021. Testimony for the Record Submitted to the House Agriculture Committee Subcommittee on Livestock and Foreign Agriculture. Hearing: "State of the Beef Supply Chain: Shocks, Recovery, and Rebuilding." Retrieved from the US House of Representatives Committee Repository, <https://docs.house.gov/meetings/AG/AG29/20210728/113973/HHRG-117-AG29-Wstate-vandeLigtJ-20210728.pdf>.

Fitch SE, Payne LE, **van de Ligt JLG**, Doepker C, Handu D, Cohen SM, Anyangwe N, Wikoff D. 2021. Use of acceptable daily intake (ADI) as a health-based benchmark in nutrition research studies that consider the safety of low-calorie sweeteners (LCS): A systematic map. *BMC Public Health* 21(1):956, <https://doi.org/10.1186/s12889-021-10934-2>.

van de Ligt JLG, Hoffman JT. 2020. COVID-19 near-term issues spotting in food supply chain – Update #41. Retrieved from the University of Minnesota Digital Conservancy, <https://hdl.handle.net/11299/220442>.

van de Ligt J, Borghoff SJ, Yoon M, Ferguson LJ, DeMaio W, McClanahan RH. 2019. Nondetectable or minimal detectable residue levels of N-(n-butyl) thiophosphoric triamide in bovine tissues and milk from a 28-d NBPT dosing study. *Translat Anim Sci* 3(4):1606–1616, <https://doi.org/10.1093/tas/txz153>.

Christine MC, Garcia-Campayo V, Rihner MO, Nikiforov AI, Liska D, **van de Ligt JLG**. 2016. Evaluation of the gastrointestinal tolerability of corn starch fiber, a novel dietary fiber, in two independent randomized, double-blind, crossover studies in healthy men and women. *Intl J Food Sci Nutr* 67(7):844–856.

Christine MC, Nikiforov AI, Rihner MO, Lambert EA, Greeley MA, Godsey J, Eapen AK, **van de Ligt JLG**. 2016. A 90-day oral (dietary) toxicity and mass balance study of corn starch fiber in Sprague Dawley Rats. *Food Chem Toxicol* 97:57–69.

van de Ligt JLG, Lindemann MD, Harmon RJ, Monegue HJ, Cromwell GL. 2002. Effect of chromium tripicolinate supplementation on porcine immune response during the periparturient and neonatal period. *J Anim Sci* 80:456.

van de Ligt JLG, Lindemann MD, Harmon RJ, Monegue HJ, Cromwell GL. 2002. Effect of chromium tripicolinate supplementation on porcine immune response during the postweaning period. *J Anim Sci* 80:449.

Gentry JL, Swinkels JWGM, Lindemann MD, Schrama JW. 1997. Effect of hemoglobin and immune status on energy metabolism of weanling pigs. *J Anim Sci* 75:1032.

Schrama JW, Schouten JM, Swinkels JWGM, **Gentry JL**, de Vries-Reilingh G, Parmentier HK. 1997. Effect of hemoglobin status on humoral immune response of weanling pigs differing in coping styles. *J Anim Sci* 75:2588.

Moon HK, Han IK, **Gentry JL**, Parmentier HK, Schrama JW. 1999. Impacts of host immunization on the translocation of intestinal bacteria and growth performance in weanling pigs. *Asian-Aus J Anim Sci* 12:180.

Moon HK, Han IK, **Gentry JL**, Parmentier HK, Schrama JW. 1999. Effects of chronic inflammation on energy metabolism and growth performance in weanling pigs. *Asian-Aus J Anim Sci* 12:174.

Gentry JL, Hussein HS, Berger LL, Fahey GC Jr. 1996. Spent cellulose casings as potential feed ingredients for ruminants. *J Anim Sci* 74:663.

BOOK CHAPTERS

Mitenius N, **van de Ligt J**. 2023. Food defense. Chapter 41 in: Andersen V, Lelieveld H, Motarjemi Y (eds), *Food Safety Management: A Practical Guide for the Food Industry*. Academic Press, pp. 887–903; ISBN 978-0-12-820013-1.

Mitenius N, **van de Ligt J**. 2023. Food factory design to prevent deliberate product adulteration. Chapter 11 in: Holah J, Lelieveld HLM, Moerman F (eds), *Hygienic Design of Food Factories*. Woodhead Publishing Series in Science, Technology and Nutrition, pp. 203–220, ISBN 978-0-12-822618-6.

PROTOCOL

Fitch S, **van de Ligt J**, Payne L, Doepker C, Kleinman R, Handu D, Cohen SM, Anyangwe N, Wikoff D. 2019. Systematic map protocol: A systematic map of the use of acceptable daily intake (ADI) as a health-based benchmark in nutrition research studies that consider the safety of low-calorie sweeteners (LCS). *Open Science Framework*, <https://osf.io/6x3ks/>.

ABSTRACTS

Crincoli CM, **van de Ligt JLG**, Pavel AT, Eapen AK. 2021. A decision tree supporting the use of regulatory frameworks in food ingredient safety: An industry perspective. *American College of Toxicology 42nd Annual Meeting*.

van de Ligt JLG. 2021. Transboundary risks of disease transfer in food and feed supply chains. *82nd Minnesota Nutrition Conference*.

van de Ligt JLG. 2019. Risk of ASF virus introduction in vitamins, soybean products, and other feed additives. In Allen D. *Leman Swine Conference*. College of Veterinary Medicine. Retrieved from the University of Minnesota Digital Conservancy, <https://hdl.handle.net/11299/216523>.

van de Ligt JLG, Lindemann MD, Harmon RJ, Monegue HJ, Cromwell GL. 1999. Effect of chromium tripicolinate supplementation on total immunoglobulin concentration in sows and their offspring. *J Anim Sci* 77(Suppl. 1):59 (Abstr).

van de Ligt JLG, Lindemann MD, Harmon RJ, Monegue HJ, Cromwell GL. 1999. Effect of maternal chromium tripicolinate supplementation on growth performance and immune status of weanling pigs. *J Anim Sci* 77(Suppl. 1):59 (Abstr).

Lindemann MD, Cromwell GL, **van de Ligt JLG**, Monegue HJ. 1999. Higher levels of selected B-vitamins improve performance and lean deposition in growing/finishing swine. *J Anim Sci* 77(Suppl. 1):58 (Abstr).

van de Ligt JLG, Lindemann MD, Monegue HJ, Cromwell GL. 1998. Effect of supplemental NaCl, Na, or Cl in a spray-dried porcine plasma (SDPP) containing diet on growth performance of weanling pigs. *J Anim Sci* 76(Suppl. 2):46 (Abstr).

Lindemann MD, **van de Ligt JLG**, Monegue HJ, Keller G, Cromwell GL. 1998. Evaluation of dried porcine solubles (DPS) as a feed ingredient for weanling pigs. J Anim Sci 76(Suppl. 1):181 (Abstr).

Lindemann MD, **Gentry JL**, Monegue HJ, Cromwell GL. 1997. Determination of the contribution of an enzyme combination to the growth performance of pigs. J Anim Sci 75(Suppl. 1):184 (Abstr).

Gentry JL, Schrama JW, Swinkels JWGM, Lindemann MD. 1996. Effect of Hb and immune status on energy metabolism and heat production of weanling pigs. J Anim Sci 74(Suppl. 1):181 (Abstr).

Swinkels JWGM, Schrama JW, Parmentier HK, Jetten CWJ, **Gentry JL**, Lindemann MD. 1996. Effects of an additional iron injection and immunization moment on growth and humoral immune response of weanling pigs. J Anim Sci 74(Suppl. 1):182 (Abstr).

Gentry JL, Hussein HS, Berger LL, Fahey GC Jr. 1995. Chemical composition and in vitro rate and extent of digestion of spent cellulose casings. J Anim Sci 73(Suppl. 1):96 (Abstr).

INVITED SPEAKER

Quantifying Cyber Security Risk and Possible Impact of a Cyber-Attack on Food Safety. 2022. BRCGS Connect Food Safety Americas 2022.

Blockchain: What Is It and Why Should I Care? 2021. 2021 Virtual Analyst Open House Event, Federal Bureau of Investigation. Virtual.

Cyber Security: The Next Big Ag Disrupter (moderator). 2021. Minnesota Ag & Food Summit. Minneapolis, MN.

Ask an Expert: Virtual Training Tips. 2021. Food Safety Preventive Controls Alliance 2021 Virtual Annual Conference. Virtual.

When Crime Threatens Food Safety Roundtable. 2021. International Association of Food Protection 2021 Annual Meeting. Virtual.

Global Coordination of the Food Supply During the Pandemic Roundtable (moderator). 2021. 125th AFDO Annual Educational Conference. Virtual.

2020 Dairy Sustainability Alliance. 2020. Innovation Center for US Dairy. Virtual.

Hearing from a Diverse Panel for Women and Young Professionals in Food Safety: Panel Discussion. 2020. Food Safety Consortium. Virtual.

Synthesizing Food Defense Programs for FSMA and Third-Party Audits Roundtable. 2020. International Association for Food Protection. Virtual.

Food Safety Global Challenges of a Changing World. 2020. Food Safety Summit. Virtual.

The FSMA Intentional Adulteration Rule: Keys to Achieving Compliance. 2020. Alchemy. Virtual.

Intentional Adulteration in a Complex Global Food System. 2020. Food Research Institute Annual Meeting Program. Virtual.

Blockchain: What Is It and Why Should I Care? 2020, Minnesota Veterinary Medical Association Annual Meeting. Minneapolis, MN.

7 Factors Impacting Food Safety over the Next 7 Years. 2019. Healthy Futures Summit. Minneapolis, MN.

Protecting Your Lunch Keynote. 2019. American Dairy Association Indiana Annual Registered Dietician Conference. Indianapolis, MN

The Need for New Leaders in the Food Industry. 2019. Process Expo. Chicago, IL.

How the Global Food System Must Change. 2019. Process Expo. Chicago, IL.

Protecting Your Lunch and Food Safety Modernization Act. 2019. Alchemy Engage. Austin, TX.

Risk of ASF virus introduction in vitamins, soybean products, and other feed additives. 2019. Leman Conference. St. Paul, MN.

Geeks to Geeks Case study #1: Introduction of ASF via contaminated feed. 2019. Leman Conference. St. Paul, MN.

Food Safety and Shifting Global Pressures: Are We Ready? 2019. US China Health Bridge. Chicago, IL.

Protecting Your Lunch Keynote. 2019. Dairy Management Inc. Regional Dairy Industry Crisis Drill. Sacramento, CA.

Protecting Your Lunch and Food Safety Modernization Act. April 2019. 2019 Cheese Industry Conference. Wisconsin Dells, WI.

The Washington Post Live: Food for Thought - Bringing Truth to the Table: An Inside Look at Popular Myths. March 2019. Land O'Lakes Copernicus Project SXSW Panel. Austin, TX.

Food Safety and Shifting Global Pressures: Are We Ready? February 2019. 4th International Conference on One Medicine One Science (iCOMOS 2019). Chiang Mai, Thailand.

Food Defense: Lessons Learned from Recent Incidents + Keys Steps to Mitigating Risk & Being Prepared. November 2018. Food Safety Consortium. Schaumburg, IL.

Blockchain: What Is It and Why Should I Care? October 2018. 122nd Annual Meeting of the United States Animal Health Association. Kansas City, MO.

Heave Ho! Food Safety Investigation Exercise. September 2018. Leman Swine Conference College to Career Seminar. St. Paul, MN.

FSMA Intentional Adulteration Rule and You. Breakout Session. September 2018. Dairy Management Inc. Regional Dairy Industry Crisis Drill. Dallas, TX. Food Defense Update – Economically Motivated Adulteration. Mar 2017. Center for Food Safety Twenty-Fourth Annual Meeting. University of Georgia. Atlanta, GA.

Dietary Landscape and Big Data. Jan 2017. Food, Nutrition, and Safety Program Annual Meeting. International Life Sciences Institute. La Jolla, CA.

Food Defense Issues, Systems, and Preparedness from the Perspective of the United States. Sep 2016. The 3rd International Symposium on Food and Drug Safety Emergency Response. Ministry of Food and Drug Safety. Seoul, Korea.

Economically Motivated Adulteration. Aug 2016. International Food Safety Science and Technology Development Symposium. Chinese Academy of Inspection and Quarantine. Beijing, China.

PATENT FAMILIES

Long-term surrogate virus assays and methods

System and method for optimizing animal production

System and method for optimizing animal production based on dynamic nutrient information

System and method for optimizing animal production based on environmental nutrient inputs

System and method for optimizing animal production based on empirical feedback

Stabilized pancreas product

Mineral feed supplement

High fat/fiber composition

System and method for optimizing animal production based on a target output characteristic

System and method for optimizing animal production using genotype information

Reclosable animal feed container

Solvent-extracted corn

Corn-based feed product