

Supplementary Appendix S1: The pathotype, gene of interest, gene product, primer sequence, amplified fragment size, and PCR run cycle parameters used for identification of target genes (*uid A*, *eaeEae*, *bfpBfp*, *ltLt*, *ipa H*, *daa E*, *stx 2*, *ibe A*, and *pap C*) for pathotyping.

Gene of interest	<i>E. coli</i> pathotype association	Gene product function	PCR Primers	Amplicon size (bp)	PCR cycling parameters
<i>uidA</i>	all <i>E. coli</i> (positive control)	Beta-D-glucuronidase	F: AAA ACG GCA AGA AAA AGC AG R: ACG CGT GGT TAA CAG TCT TGC G	147	5 min initial denaturation at 94 °C followed by 35 cycles of 95 °C for 30 s, 58 °C for 1 min, 72 °C for 1 min and final extension at 72 °C for 8 min
<i>eaeEae</i>	EPEC	Intimin, attaching and effacing	F: TCA ATG CAG TTC CGT TAT CAG TT R: GTA AAG TCC GTT ACC CCA ACC TG	482	15 min initial denaturation at 95 °C followed by 35 cycles of 94 °C for 45 s, 55 °C for 45 s, 68 °C for 2 min and final extension at 72 °C for 5 min
<i>bfpBfp</i>	EPEC	Type IV bundle-forming pili	F: GGA AGT CAA ATT CAT GGG GGT AT R: GGA ATC AGA CGC AGA CTG GTA GT	300	2 min initial denaturation at 94 °C followed by 40 cycles of 94 °C for 1 min, 55 °C for 1 min, 72 °C for 1 min and final extension at 72 °C for 5 min
<i>ltLt</i>	ETEC	Heat-labile toxin	F: GGC GAC AGA TTA TAC CGT GC R: CGG TCT CTA TAT TCC CTG TT	450	2 min initial denaturation at 94 °C followed by 35 cycles of 94 °C for 1 min, 55 °C for 1 min, 72 °C for 1 min and final extension at 72 °C for 5 min
<i>ipaH</i>	EIEC	Invasion plasmid antigen	F: CTC GGC ACG TTT TAA TAG TCT GG R: GTG GAG AGC TGA AGT TTC TCT GC	933	2 min initial denaturation at 94 °C followed by 35 cycles of 94 °C for 1 min, 55 °C for 1 min, 72 °C for 1 min and final extension at 72 °C for 5 min
<i>daaE</i>	DAEC	Unknown	F: GAA CGT TGG TTA ATG TGG GGT AA R: TAT TCA CCG GTC GGT TAT CAG T	542	2 min initial denaturation at 94 °C followed by 40 cycles of 92 °C for 30 s min, 59 °C for 30 s, 72 °C for 30 s and final extension at 72 °C for 5 min
<i>stx2</i>	EHEC	Shiga toxin 2	F: ATC CTA TTC CCG GGA GTT TAC G	584	2 min initial denaturation at 94 °C followed by 35 cycles of 94 °C for 1 min, 55 °C for 1 min, 72 °C for 1 min and

			R: GCG TCA TCG TAT ACA CAG GAG C		final extension at 72 °C for 5 min
<i>ibeA</i>	NMEC	Invasion of brain endothelium	F: TGG AAC CCC GCT CGT AAT ATA C R: CTG CCT GTT CAA GCA TTG CA	342	2 min initial denaturation at 94 °C followed by 30 cycles of 94 °C for 1 min, 55 °C for 1 min, 72 °C for 1 min and final extension at 72 °C for 5 min
<i>papC</i>	UPEC	P finbriae chaperone	F: GAC GGC TGT ACT GCA GGG TGT GGC G R: ATA TCC TTT CTG CAG GGA TGC AAT A	328	2 min initial denaturation at 94 °C followed by 30 cycles of 94 °C for 1 min, 55 °C for 1 min, 72 °C for 1 min and final extension at 72 °C for 5 min

Supplementary Appendix S2: Background information on the 19 conventional diets (canned and kibble) included in this study. Listed information includes manufacturer brand, diet type, reported feeding trials statement, main ingredient list, culture results, and pathotype results.

Diet brand	Diet name	Type	Feeding statement	First 10 ingredients	E coli Culture Positive	Pathotype Present
Solid Gold	Barking at the Moon	Kibble	Formulated to meet AAFCO All Life Stages	Beef, Ocean Fish Meal, Potato Protein, Potatoes, Dried Eggs, Chicken Fat (Preserved with Mixed Tocopherols), Peas, Tomato Pomace, Natural Flavors	Negative	NA
Rachael Ray	Nutrish - Real Beef, Pea & Brown Rice Recipe	Kibble	Formulated to meet AAFCO maintenance of adult dogs	Beef, Beef Meal, Dried Peas, Soybean Meal, Whole Ground Corn, Chicken Fat (Preserved with Mixed Tocopherols), Dried Plain Beet Pulp, Pea Starch, Corn Gluten Meal, Brown Rice	Negative	NA
Blue Buffalo	Wilderness - Rocky Mountain Recipe	Kibble	Formulated to meet AAFCO for maintenance	Deboned Beef, Chicken Meal, Peas, Pea Protein, Tapioca Starch, Menhaden Fish Meal, Pea Starch, Chicken Fat (Preserved with Mixed Tocopherols), Flaxseed, Natural Flavor	Negative	NA

Purina	Beyond - Grain Free Beef & Egg Recipe	Kibble	Animal feeding tests using AAFCO procedures substantiate complete and balanced nutrition for maintenance of adult dogs	Beef, Pea Starch, Canola Meal, Chicken Meal, Cassava Root Flour, Dried Egg Product, Beef Fat (Preserved with Mixed Tocopherols), Whole Lentils, Pea Fiber, Pea Protein	Negative	NA
Royal Canin	Small Indoor Adult	Kibble	Formulated to meet AAFCO for maintenance	Brewers Rice, Chicken By-Product Meal, Corn, Brown Rice, Chicken Fat, Wheat Gluten, Natural Flavors, Dried Plain Beet Pulp, Vegetable Oil, Pea Fiber	Negative	NA
Hill's	Science Diet - Small Paws Adult 11+	Kibble	Formulated to meet AAFCO maintenance of adult dogs	Chicken Meal, Cracked Pearled Barley, Brewers Rice, Whole Grain Wheat, Whole Grain Sorghum, Brown Rice, Soybean Meal, Dried Beet Pulp, Chicken Fat, Chicken Liver Flavor	Negative	NA
Hill's	Bioactive Recipe - Adult 7+ Small Breed Thrive + Vigor	Kibble	Formulated to meet AAFCO maintenance of adult dogs	Chicken, Brown Rice, Whole Grain Oats, Brewers Rice, Chicken Fat, Egg Product, Chicken Meal, Cracked Pearled Barley, Dried Beet Pulp, Yellow Peas	Negative	NA
Purina	Pro Plan - Focus Puppy Chicken & Rice Formula	Kibble	Animal feeding tests using AAFCO procedures substantiate complete and balanced nutrition for all life stages of dogs (current)	Chicken, Brewers Rice, Poultry By-Product Meal, Corn Gluten Meal, Whole Grain Wheat, Animal Fat (Preserved with Mixed Tocopherols), Whole Grain Corn, Corn Germ Meal, Brewers Dried Yeast, Fish Meal	Negative	NA
Purina	Pro Plan - Savor Adult Shredded Blend Chicken & Rice Formula	Kibble	Animal feeding tests using AAFCO procedures substantiate complete and balanced nutrition for all life stages of dogs, including	Chicken, Rice Flour, Whole Grain Wheat, Poultry By-Product Meal, Soybean Meal, Beef Tallow (Preserved with Mixed Tocopherols), Corn Gluten Meal, Whole	Negative	NA

			growth of large size dogs (current)	Grain Corn, Fish Meal, Natural Liver Flavor		
Natural Balance	Natural Balance Ultra Premium Chicken Formula	Canned	Formulated to meet the nutritional levels established by AAFCO Dog Food nutrient profiles for All Life Stages, including growth of large breed dogs	Chicken, Chicken Broth, Chicken Liver, Carrots, Oat Bran, Brown Rice, Potatoes, Dehydrated Potatoes, Chicken Meal, Canola Oil	Negative	NA
Natural Balance	Natural Balance Ultra Premium Beef Formula	Canned	Formulated to meet the nutritional levels established by AAFCO Dog Food nutrient profiles for All Life Stages, including growth of large breed dogs	Beef, Beef Broth, Beef Liver, Carrots, Oat Bran, Brown Rice, Potatoes, Dehydrated Potatoes, Canola Oil, Calcium Carbonate	Negative	NA
Blue Buffalo	Homestyle Recipe Senior Chicken Dinner with Garden Vegetables	Canned	Formulated to meet AAFCO for maintenance	Chicken, Chicken Broth, Chicken Liver, Carrots, Peas, Brown rice, Barley, Oatmeal, Sweet Potatoes, Guar Gum	Negative	NA
Blue Buffalo	Blue's Stew Hearty Beef Stew	Canned	Formulated to meet AAFCO for maintenance	Beef, Beef Broth, Water, Chicken Liver, Potatoes, Dried Egg, Carrots, Potato Starch, Peas, Pea Flour	Negative	NA
Royal Canin	Royal Canin Breed Health Nutrition Boxer Loaf In Sauce	Canned	Formulated to meet AAFCO for maintenance	chicken by-products, pork by-products, pork liver, chicken liver, chicken, corn flour, powdered cellulose, fish oil, carrageenan, sodium silico aluminate	Negative	NA
Rachael Ray	Natural Hearty Beef Stew Natural Grain-Free	Canned	Formulated to meet AAFCO maintenance of adult dogs	Chicken Broth, Beef, Chicken, Dried Egg Product, Egg White, Pea Protein, Natural Flavor, Potato, Carrots, Green Pea	Negative	NA
Hill's	Savory Stew with Beef and Vegetables (Adult 1-6)	Canned	Formulated to meet AAFCO maintenance of adult dogs	Water, Beef, Pork Liver, Brown Rice, Carrots, Rice Starch, Wheat Flour, Potato Starch, Dried Beet Pulp, Pork Plasma	Negative	NA
Hill's	Chicken and Barley	Canned	Formulated to meet AAFCO	Water, Chicken, Cracked Pearled Barley,	Negative	NA

	Entrée (Adult 7+)		maintenance of adult dogs	Whole Grain Corn, Pork Liver, Dried Whey, Dried Beet Pulp, Soybean Oil, Corn Gluten Meal, Chicken Liver Flavor		
Purina	ProPlan Savor Classic Adult Chicken and Rice Entrée	Canned	Animal feeding tests using AAFCO procedures substantiate complete and balanced nutrition for all life stages of dogs (current)	Chicken, Water Sufficient For Processing, Liver, Meat By-Product, Rice, Guar Gum, Potassium Chloride, Salt, Carrageenan, Added Color	Negative	NA
Purina	Chunks in Gravy Beef and Rice Entrée (adult large breed)	Canned	Animal feeding tests using AAFCO procedures substantiate complete and balanced nutrition for all life stages of dogs (current)	Water Sufficient For Processing, Beef, Liver, Wheat Gluten, Chicken, Rice, Meat By-Product, Corn Starch-Modified, Added Color, Potassium Chloride	Negative	NA

Supplementary Appendix S3: Background information on the 21 RMBD diets included in this study. Listed information includes manufacturer brand, name, diet type, reported feeding trials statement, main ingredient list, manufacturer disclosed processing methods, culture results, and pathotype results.

	Diet name	Feeding statement	First 10 ingredients	Manufacturer-disclosed processing methods	E coli Culture Positive	Pathotype Present
Raw K9	Beef Complete Mix	None	Beef, Green Tripe, Heart, Bone, Liver, Kidney, Spleen, Sweetbreads, Lung, Trachea	USDA-tested at slaughter	Positive	DAEC, EHEC, UPEC
Raw K9	Beef Green Tripe Ground	None	Beef Green Tripe	USDA-tested at slaughter	Positive	UPEC
My Pet Carnivore	Fine-Ground Whole Chicken	Intended for intermittent or supplemental feeding	Whole Chicken (Includes Head, Feet, and Giblets)	Testing for pathogens	Positive	NA
My Pet Carnivore	Fine-Ground Whole Young Beef	Intended for intermittent or supplemental feeding	Ground Beef, Beef Bones, Beef Heart, Beef Liver, Beef Kidney, Beef Lungs	Testing for pathogens	Positive	EPEC, EHEC

Darwin's	Natural Selections - Chicken	Formulated to meet AAFCO All Life Stages, including growth of large size dogs	Chicken, Chicken Necks, Chicken Gizzards, Chicken Livers, Organic Yams, Organic Lettuce, Organic Squash, Organic Zucchini, Organic Carrots, Chicken Hearts	Meat tested on arrival; lactic acid wash	Positive	NA
Darwin's	Natural Selections - Beef	Formulated to meet AAFCO All Life Stages, including growth of large size dogs	Beef, Beef Heart, Beef Liver, Organic Yams, Organic Lettuce, Organic Squash, Organic Cabbage, Organic Zucchini, Beef Kidney, Organic Parsley	Meat tested on arrival; lactic acid wash	Positive	NA
Aunt Jeni's Home-Made	Chicken Raw Frozen Dinner	Formulated to meet AAFCO All Life Stages	Chicken (Contains Chicken & Chicken Bones), Chicken Heart, Chicken Liver, Chicken Gizzard, Apples, Broccoli, Cabbage, Carrots, Sweet Potatoes, Whole Eggs	Regular internal testing; third-party testing	Positive	EPEC, NMEC
Aunt Jeni's Home-Made	Beef Raw Frozen Dinner	Formulated to meet AAFCO All Life Stages	Beef (Contains Beef Meat & Beef Heart), Beef Liver, Apples, Celery, Whole Eggs, Collard Greens, Kale, Acorn Squash, Butternut Squash, Pumpkin	Regular internal testing; third-party testing	Negative	NA
Oma's Pride	Woof! Complete Canine Chicken Meal	Exceeds AAFCO standards for All Life Stages	Chicken & Bone, Chicken Necks, Broccoli, Butternut Squash, Kale, Chicken Hearts, Gizzards, Liver, Dried Poultry Liver, Choline	Bacteriophage processing (poultry only)	Positive	NA

Oma's Pride	Beef and Veggie Mix Patties	Intended for intermittent or supplemental feeding	Beef Heart, Beef Meat, Broccoli, Butternut Squash, Beef Kidney, Bone Meal, Beef Liver, Kale	Bacteriophage processing (poultry only)	Negative	NA
Oma's Pride	Performance Dog	None	Beef, Tripe, Trachea, Finely Ground Bone, Salt, Dical - 18.5, Trace Minerals, Egg	Bacteriophage processing (poultry only)	Positive	EHEC
Stella & Chewy's	Chewy's Chicken Dinner Patties	Formulated to meet AAFCO All Life Stages, including growth of large size dogs	Chicken with Ground Bone, Chicken Liver, Chicken Gizzard, Pumpkin Seed, Organic Cranberries, Organic Spinach, Organic Broccoli, Organic Beets, Organic Carrots, Organic Squash	High-pressure processing; third-party test-and-hold	Negative	NA
Stella & Chewy's	Stella's Super Beef Dinner Patties	Formulated to meet AAFCO All Life Stages	Beef, Beef Liver, Beef Kidney, Beef Heart, Beef Tripe, Beef Bone, Pumpkin Seed, Potassium Chloride, Organic Cranberries, Organic Spinach	High-pressure processing; third-party test-and-hold	Negative	NA
Answers	Detailed Chicken Formula for Dogs	Provides complete and balanced nutrition for all life stages and is comparable in nutritional adequacy to a product which has been substantiated using AAFCO feeding tests	Chicken, Chicken Heart, Chicken Liver, Ground Chicken Bone, Chicken Eggs, Organic Carrots, Organic Green Beans, Fermented Cod Liver, Organic Yellow Squash, Butter	Fermentation (competitive inhibition with manufacturer inoculation)	Positive	EHEC, DAEC

Answers	Detailed Beef Formula for Dogs	Provides complete and balanced nutrition for all life stages and is comparable in nutritional adequacy to a product which has been substantiated using AAFCO feeding tests	Beef, Beef Heart, Beef Liver, Beef Kidney, Ground Beef Bone, Chicken Eggs, Organic Carrots, Fermented Cod Liver, Organic Broccoli, Organic Green Squash	Fermentation (competitive inhibition with manufacturer inoculation)	Positive	EHEC
Primal Pet Foods	Chicken Formula Nuggets	Provides complete and balanced nutrition for dogs of all life stages and is comparable in nutritional adequacy to a product which has been substantiated using AAFCO feeding tests	Chicken, Chicken Necks, Chicken Gizzards, Organic Kale, Organic Carrots, Organic Squash, Chicken Livers, Organic Broccoli, Organic Apples, Organic Cranberries	High-pressure processing; test-and-hold	Negative	NA
Primal Pet Foods	Beef Formula Nuggets	Provides complete and balanced nutrition for dogs of all life stages and is comparable in nutritional adequacy to a product which has been substantiated using AAFCO feeding tests	Beef Hearts, Beef Livers, Ground Beef Bones, Organic Kale, Organic Carrots, Organic Squash, Organic Broccoli, Organic Apples, Organic Cranberries, Organic Blueberries	High-pressure processing; test-and-hold	Positive	EHEC, NMEC, UPEC

Tucker's	Complete & Balanced Formula - Chicken-Pumpkin Formula	Formulated to meet AAFCO All Life Stages, including growth of large size dogs	Chicken, Chicken Organ, Pumpkin, Chicken Bone and Marrow, Taurine, Zinc Amino Acid Complex, Vitamin E Supplement, Calcium Carbonate, Manganese Amino Acid Complex, Copper Amino Acid Complex	High-pressure processing; independent laboratory test-and-hold for <i>Salmonella</i> and <i>E. coli</i> O157:H7	Positive	NMEC
Tucker's	Complete & Balanced Formula - Pork-Beef-Pumpkin Formula	Formulated to meet AAFCO All Life Stages, including growth of large size dogs	Pork, Beef Heart, Pumpkin, Pork Marrow and Bone, Taurine, Zinc Amino Acid Complex, Vitamin E Supplement, Calcium Carbonate, Manganese Amino Acid Complex, Copper Amino Acid Complex	High-pressure processing; test-and-hold; "tested for Trichina, E-Coli and Salmonella prior to packaging"	Positive	EPEC, NMEC
Vital Essentials	Frozen Chicken Patties	Formulated to meet AAFCO All Life Stages	Ground Chicken with Bone, Chicken Heart, Chicken Liver, Herring Oil, D-alpha Tocopherol	Proprietary; test-and-hold	Negative	NA
Vital Essentials	Frozen Beef Patties	Formulated to meet AAFCO All Life Stages	Beef, Beef Tripe, Beef Lung, Ground Beef Bone, Beef Liver, Beef Heart, Beef Kidney, Beef Blood, Beef Fat, Herring Oil	Proprietary; test-and-hold	Negative	NA