Paper No. 13

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MOTIF FOODWORKS, INC.,

Petitioner,

v.

IMPOSSIBLE FOODS INC.,
Patent Owner.

U.S. Patent No. 10,039,306

"METHODS AND COMPOSITIONS FOR CONSUMABLES"

Inter Partes Review No. 2023-00209

PETITIONER'S UPDATED EXHIBIT LIST

EXHIBITS

EX1001	U.S. Patent No. 9,943,096 to Fraser et al.
EX1002	Prosecution History of U.S. Patent No. 9,943,096 to Fraser et al.
EX1003	Declaration of Rodrigo Tarté, Ph.D.
EX1004	Curriculum vitae of Rodrigo Tarté, Ph.D.
EX1005	Declaration of Robert McGorrin, Ph.D.
EX1006	Curriculum vitae of Robert McGorrin, Ph.D.
EX1007	Declaration of Carl Batt, Ph.D.
EX1008	Curriculum vitae of Carl Batt, Ph.D.
EX1009	Declaration of Sylvia Hall-Ellis, Ph.D.
EX1010	Curriculum vitae of Sylvia Hall-Ellis, Ph.D.
EX1011	Exhibits to Declaration of Sylvia Hall-Ellis, Ph.D.
EX1012	International Pub. No. WO 2013/010042 A1 to Brown et al., published January 17, 2013
EX1013	U.S. Patent No. 4,818,557 to Conrad, issued April 4, 1989
EX1014	U.S. Patent Publication No. 2011/0287467 A1 to Crane et al., published November 24, 2011
EX1015	U.S. Patent No. 3,519,437 to Giacino, issued July 7, 1970
EX1016	Boye et al., *Pulse Proteins: Processing, Characterization, Functional Properties and Applications in Food and Feed*, 43 FOOD RESEARCH INT'L 414-31 (2010)
EX1017	Mottram, *Flavour Formation in Meat and Meat Products: A Review*, 62 FOOD CHEM. 415-24 (1998)

EX1019	Proulx & Reddy, *Iron Bioavailability of Hemoglobin from Soy Root Nodules Using a Caco-2 Cell Culture Model*, 54 J. AGRIC. & FOOD CHEM. 1518-22 (2006)
EX1021	U.S. Patent Publication No. 2008/0268112 A1 to Rolan et al., published October 30, 2008
EX1022	U.S. Patent Publication No. 2008/0026128 A1 to Yamaguchi et al., published January 31, 2008
EX1024	MacLeod et al., *Natural and Simulated Meat Flavors (with Particular Reference to Beef)*, 14 CRITICAL REVIEWS IN FOOD SCI. & NUTRITION 309-437 (1981)
EX1025	U.S. Provisional No. 61/751,816, filed January 11, 2013
EX1026	Dwivedi & Brockman, *Meat Flavor*, 5 CRITICAL REVIEWS IN FOOD SCI. & NUTRITION 487-535 (1981)
EX1027	Pearson & Gillett, PROCESSED MEATS Ch. 3 (3d ed. 1996)
EX1028	Calkins & Hodgen, *A Fresh Look at Meat Flavor*, 77 MEAT SCI. 63-80 (2007)
EX1029	Williamson et al., *Red Meat in the Diet*, 30 NUTRITION BULLETIN 323-55 (2005)
EX1030	Garrocho-Villegas et al., *Plant Hemoglobins: What We Know A Six Decades after Their Discovery*, 398 GENE 78-85 (2007)
EX1031	McGorrin, *The Significance of Volatile Sulfur Compounds in Food Flavors*, *in* VOLATILE SULFUR COMPOUNDS IN FOOD 3-31 (Qian et al., eds., 2011)
EX1032	Cerny & Davidek, *Formation of Aroma Compounds from Ribose and Cysteine during the Maillard Reaction*, 51 J. ARGRIC. FOOD CHEM. 2714-21 (2003)

EX1033	Reineccius, FLAVOR CHEMISTRY AND TECHNOLOGY CH. 5 (2d ed. 2006)
EX1034	Reineccius, FLAVOR CHEMISTRY AND TECHNOLOGY CH. 9 (2d ed. 2006)
EX1035	Verbeke & Viaene, *Ethical Challenges for Livestock Production: Meeting Consumer Concerns about Meat Safety and Animal Welfare*, 12 J. OF AGRIC. & ENV'T ETHICS 141-51 (2000)
EX1036	Pimentel & Pimentel, *Sustainability of Meat-Based and Plant-Based Diets and the Environment*, 78 AM. J. CLINICAL NUTRITION 660S-63S (2003)
EX1038	Manley, *Process Flavors*, *in* SOURCE BOOK OF FLAVORS 139-54 (G. Reineccius ed., 2d ed. 1999)
EX1039	McGorrin, *Character-Impact Flavor and Off-Flavor Compounds in Foods*, *in* FLAVOR, FRAGRANCE, AND ODOR ANALYSIS 207-62 (R. Marsili ed., 2d ed. 2012)
EX1041	Bailey, *The Maillard Reaction and Meat Flavor*, in THE MAILLARD REACTION IN FOODS AND NUTRITION 169-84 (Waller & Feather, eds., 1983)
EX1043	Dreher et al., *GC−Olfactometric Characterization of Aroma Volatiles from the Thermal Degradation of Thiamin in Model Orange Juice*, 51 J. AGRIC. FOOD CHEM. 3097-102 (2003)
EX1045	Hofmann & Schieberle, *Evaluation of the Key Odorants in a Thermally Treated Solution of Ribose and Cysteine by Aroma Extract Dilution Techniques*, 43 J. AGRIC. FOOD CHEM. 2187-2194 (1995)
EX1046	Goto et al., *Iron Fortification of Rice Seed by the Soybean Ferritin Gene*, 17 NATURE BIOTECH. 282-86 (1999)

EX1047	Zhu & Cadwallader, *Streamlined Approach for Careful and Exhaustive Aroma Characterization of Aged Distilled Liquo*rs, 3 Food Chem.: X 100038 (2019)
EX1048	Pearson & Gray, *Mechanism Responsible for Warmed-Over Flavor in Cooked Meat*, *in* THE MAILLARD REACTION IN FOODS AND NUTRITION 287-300 (Waller & Feather eds., 1983)
EX1049	Hofmann & Schieberle, *Quantitative Model Studies on the Effectiveness of Different Precursor Systems in the Formation of the Intense Food Odorants 2-Furfurylthiol and 2-Methyl-3-furanthiol*, 46 J. AGRIC. FOOD CHEM. 235-41 (1998)
EX1051	Hofmann et al., *Model Studies on the Oxidative Stability of Odor-Active Thiols Occurring in Food Flavors*, 44 J. AGRIC. FOOD CHEM. 251-55 (1996)
EX1052	GRAS Notice No. 737: GRAS Notification for Soy Leghemoglobin Protein Preparation Derived from Pichia Pastoris, submitted by Impossible Foods Inc. (Oct. 2, 2017), *available at* https://www.fda.gov/media/124351/download
EX1056	Klesk & Qian, *Aroma Extract Dilution Analysis of Cv. Marion (*Rubus spp. hyb*) and Cv. Evergreen (*R. laciniatus L.*) Blackberries*, 51 J. AGRIC. FOOD CHEM. 3436-41 (2003)
EX1060	Marchand et al., *Possible Mechanism for Involvement of Cysteine in Aroma Production in Wine*, 50 J. AGRIC. & FOOD CHEM. 6160-64 (2002)
EX1064	Splivallo et al., *Bacteria Associated with Truffle-Fruiting Bodies Contribute to Truffle Aroma*, 17 ENV'T MICROBIOLOGY 2647-60 (2015)
EX1084	Fellows, FOOD PROCESSING TECHNOLOGY: PRINCIPLES AND PRACTICE Ch. 6 (3d ed. 2009)

EX1087	Williams, *Nutritional Composition of Red Meat*, 64 NUTRITION & DIETETICS: J. OF THE DIETITIANS ASSOC. OF AUSTL. S113 (2007)
EX1093	Vauthey et al., *Structured Fluids as Microreactors for Flavor Formation by the Maillard Reaction*, 48 J. AGRIC. & FOOD CHEM. 4808-16 (2000)
EX1094	Suman & Joseph, *Myoglobin Chemistry and Meat Color*, 4 ANN. REV. FOOD SCI. & TECH. 79-99 (2013)
EX1095	Withycombe & Mussinan, *Identification of 2-Methyl-3-Furanthiol in the Steam Distillate from Canned Tuna Fish*, 53 J. FOOD SCI. 658 (1988)
EX1096	Kerscher & Grosch, *Quantification of 2-Methyl-3-furanthiol, 2-Furfurylthiol, 3-Mercapto-2-pentanone, and 2-Mercapto-3-pentanone in Heated Meat*, 46 J. AGRIC. FOOD CHEM. 1954-58 (1958)
EX1098	Zyzak et al., *Investigation into the Sensorial and Analytical Differences of Traditional Hamburgers Versus the Plant-Based Analogues*, presentation at ACS Fall 2021, *available at* https://acs.digitellinc.com/acs/sessions/169689/view
EX1099	Mottram, *The Maillard Reaction: Source of Flavour in Thermally Processed Foods*, *in* FLAVOURS AND FRANGRANCES 269-83 (Berger ed., 2007)
EX1100	Ulrich et al., *Investigation of the Boiled Potato Flavor by Human Sensory and Instrumental Methods*, 77 AM. J. POTATO RSCH. 111-17 (2000)
EX1107	*What Gives Meat its Color?*, EXPLORATORIUM: SCIENCE OF COOKING, https://www.exploratorium.edu/cooking/meat/INT-what-meat-color.html

EX1108	*Cysteine,* PUBCHEM, https://pubchem.ncbi.nlm.nih.gov/compound/5862
EX1109	*Maltodextrin*, PUBCHEM, https://pubchem.ncbi.nlm.nih.gov/compound/Maltodextrin-dextrose-equivalent-10-15
EX1110	*Thiamine*, PUBCHEM, https://pubchem.ncbi.nlm.nih.gov/compound/1130
EX1111	*Ribose*, PUBCHEM, https://pubchem.ncbi.nlm.nih.gov/compound/D-Ribose
EX1112	*Sucrose*, PUBCHEM, https://pubchem.ncbi.nlm.nih.gov/compound/Sucrose
EX1113	*Organoleptic*, COLLINS, https://www.collinsdictionary.com/us/dictionary/english/organoleptic
EX1114	*Sniffing Out which Plant-Based Burgers Smell the Most Like Real Beef*, AM. CHEM. SOC'Y, https://www.acs.org/content/acs/en/pressroom/newsreleases/2021/august/sniffing-out-which-plant-based-burgers-smell-the-most-like-real-beef.html
EX1115	d'Estries, *Science Reveals Which Plant-Based Burger Smells Closest to the Real Thing*, TREEHUGGER, https://www.treehugger.com/science-reveals-plant-based-burger-smells-5200260
EX1116	Second Amended Complaint for Damages and Injunctive Relief, *Impossible Foods Inc. v. Motif Foodworks, Inc.*, Case No. 1:22-cv-00311-CFC, D.I. 22 (D. Del. Sept. 7, 2022)
EX1118	Wang et al., *Reinvestigation of 2-acetylthiazole Formation Pathways in the Maillard Reaction*, 345 FOOD CHEM. 128761 (2021)

EX1119	Boelens & Gemert, *Volatile Character-Impact Sulfur Compounds and Their Sensory Properties*, 18 PERFURMER & FLAVORIST 29-39 (1993)
EX1120	Adam McQueen, *Beyond Meat vs. Impossible Foods: The Very Real Battle Between the Biggest 'Fake-Meat' Competitors*, KLUE, https://klue.com/blog/beyond-meat-vs-impossible-foods-the-very-real-battle-between-the-biggest-fake-meat-competitors
EX1121	Pat Brown, *Heme, Health, and the Plant-Based Diet*, IMPOSSIBLE, https://impossiblefoods.com/blog/heme-health-the-essentials
EX1123	*Meat Consumption*, OECD (2022), https://data.oecd.org/agroutput/meat-consumption.htm
EX1125	U.S. Patent No. 3,930,044 to van de Rovaart et al., issued December 30, 1975
EX1126	*Flour, soy, defatted*, FoodData Central, U.S. DEP'T OF AGRIC., https://fdc.nal.usda.gov/fdc-app.html#/food-details/1104705/nutrients
EX1129	Mottram, *Volatile Compounds from the Reaction of Cysteine, Ribose, and Phospholipid in Low-Moisture Systems*, 43 J. AGRIC. FOOD CHEM. 984-88 (1995)
EX1133	Hargrove et al., *Characterization of Recombinant Soybean Leghemoglobin a and Apolar Distal Histidine Mutants*, 266 J. MOLECULAR BIOLOGY 1032-42 (1997)
EX1135	Nicola & Leach, *Structural Rearrangements Due to Ligand Binding and Haem Replacement in Myoglobin and Leghaemoglobins*, 78 EUROPEAN J. BIOCHEM. 133-40 (1977)
EX1137	Batt et al., *Expression of Recombinant Bovine β-Lactoglobulin in* Escherichia coli, 54 AGRIC. & BIOLOGICAL CHEM. 949-55 (1990)
EX1138	Jamieson et al., *Cloning and Nucleotide Sequence of the Bovine β-Lactoglobulin Gene*, 61 GENE 85-90 (1987)

EX1139	Weed et al., *Is Hemoglobin an Essential Structural Component of Human Erythrocyte Membranes?*, 42 J. CLINICAL INVESTIGATION 581-88 (1963)
EX1140	U.S. Patent Publication No. US 2008/0008815 A1 to Cho, published January 10, 2008.
EX1141	Evers et al., *Furan Substituted at the Three Position with Sulfur*, *in* PHENOLIC, SULFUR, AND NITROGEN COMPOUNDS IN FOOD FLAVORS SYMPOSIUM 184-93 (1976)
EX1146	*Sniffing Out which Plant-Based Burgers Smell the Most Like Real Beef* (Video), AM. CHEM. SOC'Y, *available at* https://www.youtube.com/watch?v=3W_0GqGnsN4&list=PPSV
EX1147	T.L. Stanley, *Impossible Foods Hires a Veteran of Apple Ads to Beef Up its Creative Marketing*, ADWEEK, https://www.adweek.com/brand-marketing/impossible-foods-hires-a-veteran-of-apple-ads-to-beef-up-its-creative-marketing/#:~:text= Impossible%20Foods%20Hires%20a %20Veteran%20of%20Apple%20Ads,record.%20Impossible%20By%20T.L.%20Stanley%20April%2013%2C%202021
EX1148	Prosecution History of U.S. Patent No. 10,039,306 to Vrljic et al.
EX1149	Prosecution History of U.S. Patent No. 11,013,250 to Vrljic et al.
EX1150	Prosecution History of U.S. Patent No. 11,224,241 to Fraser et al.
EX1151	Ames, *Control of the Maillard Reaction in Food Systems*, 1 TRENDS IN FOOD SCI. & TECH. 150-54 (1990)
EX1152	*Methionine*, PUBCHEM, https://pubchem.ncbi.nlm.nih.gov/compound/Methionine
EX1156	U.S. Patent No. 9,943,096 to Fraser et al.
EX1158	U.S. Patent No. 11,013,250 to Vrljic et al.

EX1159	U.S. Patent No. 11,224,241 to Fraser et al.
EX1160	PCT/US2014/011347
EX1161	U.S. Application No. 13/941,211
EX1162	Redline Comparison between PCT/US2014/011347 and U.S. Application No. 13/941,211
EX1163	PCT/US2014/011361
EX1164	Redline Comparison between PCT/US2014/011361 and U.S. Application No. 13/941,211
EX1165	Certificate of Correction dated May 2018 for U.S. Patent No. 9,943,096
EX1166	85 Fed Reg 12222: Clarification of the Practice for Requiring Additional Information in Petitions Filed in Patent Applications and Patents Based on Unintentional Delay
EX1167	U.S. Provisional Application No. 61/572,205
EX1168	Decision on Patent Owner's petition under 37 C.F.R. 1.78(c) and (e) for U.S. Application No. 14/797,006
EX1169	Decision on Patent Owner's petition under 37 C.F.R. 1.78(c) and (e) for U.S. Application No. 15/912,763
EX1170	Decision on Patent Owner's petition under 37 C.F.R. 1.78(c) and (e) for U.S. Application No. 17/081,922
EX1171	Decision on Patent Owner's petition under 37 C.F.R. 1.78(c) and (e) for U.S. Application No. 17/531,442

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), the undersigned hereby certify that Petitioner's Updated Exhibit List was served on Patent Owner on May 4, 2023 by e-mailing copies to:

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