Girish M. Ganjyal

Professor and Extension Food Processing Specialist
Washington State University, School of Food Science, Pullman, WA 99164
Program Website: http://www.foodprocessing.wsu.edu/

APPOINTMENT **Extension – 70%, Research – 30%**

EDUCATION

Ph.D. Food and Bioprocess Engineering May 2004
University of Nebraska-Lincoln, Lincoln, NE

MBA Technology Management May 2006
Benedictine College, Atchison, KS

M. E. Post-harvest & Food Process Engineering Aug 2000
Asian Institute of Technology, Bangkok, Thailand

B. E. Agricultural Engineering July 1998
University Agricultural Sciences, Dharwad, India

PROFESSIONAL WORK EXPERIENCE

Professor & Extension Food Processing Specialist July 2023 to present
School of Food Science, Washington State University, Pullman, WA

Associate Professor & Extension Food Processing Specialist July 2018 to June 2023
School of Food Science, Washington State University, Pullman, WA

Interim Director Jan 2020 to Dec 2022
School of Food Science, Washington State University, Pullman, WA

Assistant Professor February 2013 to June 2018
Bi-State School of Food Science, Washington State University, Pullman, WA

Adjunct Professor & Extension Food Processing Specialist February 2004 to present
Biological Systems Engineering, University of Nebraska-Lincoln, Lincoln, NE

Principal Engineer August 2009 to February 2013
PepsiCo Advanced Research, PepsiCo, Plano, TX

Principal Scientist February 2004 to August 2009
MGP Ingredients, Inc., Atchison, KS

HONORS AND AWARDS

1. **Sahlin Faculty Excellence Award - Outreach & Engagement.** WSU. 2023.
   In recognition of the highest level of excellence in the pursuit of the University's goals.
   https://www.youtube.com/watch?v=M-NNqSyEJFY
2. **Martin Luther King Jr. Distinguished Service Award (DSA).** WSU. 2022.
   In recognition of significant contributions to diversity, equity, and inclusion in Education.
3. **Stanley Watson Award.** Cereals and Grains Association International. 2021.
   In recognition of the significant contributions to the field of processing of cereal grains, specifically in extrusion processing.
4. **Faculty Excellence in Extension Award.** CAHNRS. WSU. 2017.
   In recognition of innovation, scope, the impact of extension programs, and leadership.
5. **Provost Featured Faculty.** WSU. 2016.
   In recognition of excellent services to the University.
6. **Team Interdisciplinary Award.** CAHNRS. WSU. 2015.
   In recognition of teamwork on quinoa projects.
7. **Young Scientist Research Award**. AACC International. 2012.
   For the meritorious recognition of young scientists in evidence of the strong contribution of cereal science and processing.
8. **Chairman's Recognition.** PepsiCo. 2012.
   For significant contributions to extrusion and frying processes.
9. **Pursue Great Science.** PepsiCo Advanced Research. 2010 & 2011.
   For uncovering major technical challenges through great science.
10. **Scientist of the Year.** MGP Ingredients, Inc. 2006.
    In recognition of significant contributions in the areas of Wheatex, Convergent Proteins, and Hydrolyzed Wheat Proteins.

INVENTION DISCLOSURES

1. Kowalski RJ, **Ganjyal GM**. and Morris CF. February 2014. Extrusion processing of waxy wheat flours with unique functionality. *Provisional Patent filed on 02/14/2014.*

AWARDED PATENTS

1. **Ganjyal GM**. 2011. Supercritical fluid extrusion method, apparatus and system for making a food product. US 13/306,634.
2. Barber KA, French J, **Ganjyal GM**, Koh CJ, Sullivan SL. 2011. Fried food product with reduced oil content. US 13/904,889.
3. **Ganjyal GM**, Maningat CC, Bassi S. 2008. Process for preparing hybrid proteins. US Patent # 7989592.
4. **Ganjyal GM**, Woo K, Maningat CC, Bassi S. 2006. Expanded products with high protein content. US Patent # 8741370 B2.
5. Woo K, Bassi S, Maningat CC, **Ganjyal GM**, Zhao, L. 2005. Mineral-bound starch compositions and methods of making the same.US Patent # US8753705 B.

SNAPSHOT OF INTERNATIONAL LEVEL PROFESSIONAL SERVICES:

1. USDA Grant Panel Reviewer (AFRI, EGP, and others) – 2016, 2019, 2020, 2021, 2022, 2023

2. International External Expert Reviewer for Large CAP Grants for the Singapore Food Story R&D Programme Office (A*STAR) – 2021

3. The Canadian Pulse Science Research Cluster (CPSRC) and other Canadian Agencies Grant Panel Reviewer – 2018, 2019, 2020, 2021, 2022

4. Board Member – Institute of Food Technologists (IFT) Higher Education Review Board – since 2020

5. Board Member – AOCS (American Oil Chemists Society) Pulse Processing Methods Review Board – since 2020

6. Committee Member – Association of Food and Drug Officials (AFDO) – International and Government Relations Committee – since 2020

7. Associate Editor for the Cereal Chemistry Journal (Cereals and Grains Association International) – since 2009

8. Editorial Board Member for the Journal of Food Science (IFT) – since 2021

9. Visiting Professor at KMUTT, Thailand, 2017 and was again invited in 2020/21 (Provided guidance and help with their research, extension, and teaching programs in the areas of food processing and food safety).

10. Served as an external reviewer for various P&T cases including for Assistant to Associate and Associate to Full Professor ranks:
    Kansas State University; Purdue University; University of Maine; University of Hawaii

11. Peer-reviewer for the following journals in the areas of extrusion and food ingredient technology (reviewed on average of 10 manuscripts per year):
    - American Chemical Society (ACS) Journals
    - Elsevier Journals an
    - Journal of Food Science & Critical Reviews in Food Science
    - International Journal of Food Properties
    - Journal of Cereal Science
    - Food Research International
    - Journal of Texture Studies
    - Carbohydrate Chemistry
    - Journal of Culinary Science & Technology
    - Innovative Food Science and Emerging Technologies

PROCESS AUTHORITY SERVICES (1860 commercial products evaluated since 2013)

I serve as a Process Authority, recognized by the Association of Food and Drug Officials of the United States, for Acid/Acidified shelf-stable foods.
https://www.afdo.org/directories/fpa/results/?loc=Washington

Through this service, I evaluate the products the companies submit and issue thermal process schedules and other food safety advice. Website:
https://foodprocessing.wsu.edu/extension/product-eval/

I have evaluated 1860 products that were released into commerce so far. This has direct economic impacts on society. The economic value of these products can be conservatively estimated to be over $2,232,000 (This is estimated at $ 6/product, and 40only 2000 samples are sold for each of the 1800 products).

A processing authority is a person who has expert knowledge of thermal processing requirements for low-acid foods packaged in hermetically sealed containers or has expert knowledge in the acidification and processing of acidified foods. Knowledge can be obtained by education or experience, or both. [21CFR113.83 and 113.89].

Process Authority letters **are written by a person deemed a "Process Authority," someone with expert knowledge of thermal processing requirements for food**. The letters are used to ensure that food products are created following guidelines put in place by the FDA and USDA.

Year	Total # of Products	Total # of Clients
2013	290	93
2014	185	67
2015	183	68
2016	167	53
2017	199	66
2018	214	88
2019	203	68
2020	136	52
2021	186	84
2022	57	43
2023	40	32
Total	**1860**	**714**

WORKSHOPS, SHORT COURSES, AND OTHER TRAININGS FOR THE PUBLIC

I take tremendous pride in providing Education and empowering the public to take their ideas to the markets and earn their livelihood, creating more jobs and opportunities for others.

I make every effort to subsidize these trainings, making them affordable for very small processors and growers. I do this through competitive grants.

I strongly believe in collaboration and sincerely try to bring different experts to train with me in all of these events.

The table below provides a summary of the events that I have conducted while at WSU:

#	Summary	# of Attendees	Revenue Generated ($)	Total Contact Hours
	Grand Total	**7,038**	**$1,581,840**	**99,571**
1	Food Safety Modernization Act (FSMA) - Preventive Controls for Human Food (PCHF)	1,011	$233,540	16,764
2	Food Safety Modernization Act (FSMA) - Foreign Supplier Verification Program (FSVP)	25	$8,725	280
3	Food Safety and Sanitation (FSS) Workshop	3,806	$779,450	54,232
4	Food Ingredient Technology (FIT)	392	$86,845	4,219
5	Extrusion	205	$119,950	3,016
6	Better Process Control School (BPCS)	291	$137,160	9,152
7	Current Good Manufacturing Practices (CGMPs)	84	$5,700	672
8	Basics of Sanitation	333	$30,085	3,724
9	Value-Added Food Product Development	440	$26,910	3,520
10	Developing a Food Safety Plan	59	$975	472
11	Third-Party Audits	88	Grant	528
12	Food Safety Modernization Act (FSMA) - Mixed Facilities	36	$29,700	288
13	Produce Safety Rule (PSR)	238	$108,550	2,224
14	Hazard Analysis Critical Control Points (HACCP)	30	$14,250	480

Collaborators: WSDA – Washington State Department of Agriculture; FSPCA – Food Safety Preventive Controls Alliance; WTFRC – Washington Tree Fruit Research Commission; NWFPA – Northwest Food Processor Association. (Food Northwest); SPA – Seafood Products Association; WSDA-Washington State Department of Agriculture; ODA – Oregon Department of Agriculture; NWFPA – North West Food Processors Association; OSU – Oregon State University; U*of*I – University of Idaho; PSIFT – Puget Sound Institute of Food Technologists; Mead Johnson Co.; Tate & Lyle Co.; Starbucks, Inc.; Ingredion, Inc.; TIC Gums; Bell Flavors & Fragrances; Bunge Oils, Inc.; Roha USA; Sea Food Processors Association; Lundberg Family Farms; Dairy Management, Inc.; GNT USA; J. Rettenmaier USA LP; DSM Food Specialties USA, Inc.; GNT USA, Inc.; CP Kelco; Richardson Oilseed Ltd. and many others.

GRANTS AND AWARDS

Grant Proposals Funded

Summary: Total Funding: $23,572,971; Total external funding as PI: $3,954,933; Total funding share of Dr. Ganjyal: $5,200,015.

External funding agencies: USDA, NSF, WSDA, WTFRC, U.S. Economic Development Administration (Department of Commerce), CIGI Canada, Washington Cherry Commission, Washington Grain Foundation, Path, USA Dry Pea and Lentil Council, The Good Food Institute (GFI), FFAR.

#	Funding Agency & Title	All PI(s)	PI/co-PI	Project Duration	PI/Co-PI
41	**Emerging Research Issues for Washington Agriculture (ERI)** Integrated biomimetic strategies: Advancing plant-based scaffold design for cultured meat through extrusion optimization and 3D tissue formation	GM Ganjyal (PI), NR Schiele, B Jeganathan	PI	2024-2026	$80,000
40	**The Good Food Institute** Novel plant proteins and insoluble fibers in the development of meat analogs	Ganjyal GM (PI), Zhao J, Smith B	PI	2024-2026	$249,997
39	**USDA-NIFA-Food Safety Outreach Program** Food Safety Training For Cottage Food Processors	S. Smith, Ganjyal GM (co-PI)	Co-PI	2023-2025	$150,000
38	**USDA-NACA** Biochemical Approach to Protein Processing, Texturization and Nutritionally Beneficial Plant-based Foods	G Ganjyal (PI)	PI	2022-2027	$272,976
37	**USDA-AFRI** Exploring the mechanisms of texturization of plant proteins during high moisture extrusion processing	G Ganjyal (PI), S Saunders	PI	2022-2025	$595,120
36	**WSDA-SCBGP** Educational Tools for the Small and Very Small Value-Added Specialty Crop Growers and Food Processors	G Ganjyal (PI)	PI	2022-2025	$246,363
35	**USDA-AFRI** Producing Biopolymers from Organic Wastes to Achieve Economic and Environmental Wins	S Chen, G Ganjyal (Co-PI), and Y Tang	Co-PI	2022-2025	$956,000

34	**USDA-SAS** Optimizing Human Health and Nutrition From Soil to Society	K. Murphy, G. Ganjyal, and others	Co-PI	2022-2026	$10,000,000
33	**USDA-AMS** Dairy Business Innovation Initiatives Non-competitive Application 2021 AM21DBICA1 (Subaward CSU Fresno)	M. Michael (co-PI) G Ganjyal (co-PI)	Co-PI	2022-2025	$200,078
32	**Western SARE** Diversifying Northwestern fields and palates for the 2021 Western SARE Research and Education	K. Murphy, G. Ganjyal (Co-PI), and others	Co-PI	2021-2024	$349,999
31	**USDA-Pulse Health Initiative (Year 2)** Effects of roasting parameters on the functional and organoleptic properties of lentil flours	G.M. Ganjyal (PI), R. McGhee	PI	2021-2024	$84,976
30	**FFAR** Enhancing Human Health and Nutrition from Soil to Society using Quinoa as a Model Crop Species	K. Murphy, G. Ganjyal (Co-PI), and others	Co-PI	2021-2024	$2,000,000
29	**USDA-Pulse Health Initiative (Year 1)** Effects of roasting parameters on the functional and organoleptic properties of lentil flours	G.M. Ganjyal (PI), R. McGhee	PI	2020-2024	$72,458
28	**USDA-NIFA-Food Safety Outreach Program** Innovative and supplementary food safety training, education, and outreach program for small and medium-sized food producers and processors	Ganjyal GM (PI), F. Critzer, S. Smith, Lane T., E. Pietrysiak	PI	2020-2024	$450,000
27	**The Good Food Institute** Novel plant proteins and insoluble fibers in the development of meat analogs	Ganjyal GM (PI), Pietrysiak E, Gu G.	PI	2020-2024	$249,828
26	**USDA-AFRI Foundational Program** Hyperspectral imaging: a potential novel tool in rapid microbial identification	Michael M, Ganjyal GM (Co-PI).	Co-PI	2020-2024	$401,645
25	**USDA-AFRI Foundational Program** Fiber and starch polymer interactions: a fundamental approach to improving the quality of high fiber extruded consumer food products	Ganjyal GM (PI), Joyner H, Ross CF, Saunders SR and Huber KC.	PI	2018-2024	$449,523
24	**WSDA-SCBGP** Addressing the technical gaps to increase the markets for dry peas	Ganjyal GM (PI) and Smith B.	PI	2018-2021	$243,247
23	**CIGI (Canada) Industry Development Program** Development of Unique Varieties of Quinoa	Marc Vincent and Ganjyal GM (Co-PI)	Co-PI	2019-2022	$2,203,025
22	**WTFRC** Increasing the efficacy of antimicrobial chemicals with surfactants	Ganjyal GM, Pietrysiak E.	PI	2019-2021	$100,723
21	**USDA-AFRI Research and Extension Experience for Undergraduates** Sustainable High-Value Horticulture and Processing Systems in Washington State: Research and Extension Experiences for Undergraduates	D.P. Collins, B. Ewing, L. Carpenter-Boggs, S. Smith, G. Ganjyal (co-PI), L. Lewis, and C. Kruger	Co-PI	2018-2021	$278,911

20	**WTFRC** Compliance with the FSMA-PCHF	Ganjyal GM (PI).	PI	2017-2020	$98,971
19	**USADPLC** Evaluating the nutritional and processing qualities of dry pulses (lentils, peas and chickpeas) and finding applications based on processing properties	Ganjyal GM (PI), Smith D.	PI	2017-2020	$28,000
18	**USADPLC** Developing healthy snack food alternatives from byproducts of commercial pea protein isolation	Smith B, Ganjyal GM (Co-PI).	Co-PI	2017-2020	$17,500
17	**USDA-OREI** Breeding and Agronomy of Quinoa Organic Farming	Murphy KM, Crowder D, Ganjyal GM (Co-PI), Reganold JP.	Co-PI	2017-2020	$1,999,950
16	**USADPLC** Identifying High Value Pea Varieties and Improving Their Protein Solubility and Nutritive Value for Use in Sports Beverages	Ganjyal GM (PI), Smith DM, Li L.	PI	2016-2017	$20,983
15	WSDA-SCBGP Food safety training for small producers and food processors	Ganjyal GM (PI), Smith S, Rasco B.	PI	2016-2019	$229,733
14	**USDA-NIFA Foundational Program** Chemical and Toxicological Fate Of Ochratoxin A In Infant Cereals During Processing	Ryu D, Ganjyal GM (Co-PI), Paszczynski, AJ.	Co-PI	2016-2020	$474,864
13	**WTFRC** Strategies to reduce postharvest cracking and splitting of cherries by processing and packaging techniques	Ganjyal GM (PI), Sablani S, Wang Y, Ross C.	PI	2016-2018	$99,345
12	**Lamb Weston (ConAgra Foods., Inc.)** Understanding the Changes in Physico-Chemical and Structural Characteristics of Potato Strips during Frying and Freezing Unit Operations in French Fry Processing	Ganjyal GM (PI)	PI	2015-2015	$41,923
11	**Washington Wheat Foundation** Purchase of a Cyclone Mill for Wheat and Barley Research	Ganjyal GM (PI) and Morris CF.	PI	2015-2015	$6,000
10	**USDA-FSMIP** Enhancing the Markets for U.S. Grown Quinoa	Ganjyal GM (PI), Patzek L, Bauermeister D, Norris L, Murphy KM.	PI	2014-2016	$80,440
9	**WTFRC** Improving food safety of fresh apples by hot air impingement drying	Ganjyal GM (PI), Killinger K, Zhu, M.	PI	2016-2018	$227,647
8	**USADPLC** Understanding the Fundamental Varieties of Peas and Lentils and their Components	Ganjyal GM (PI), Li L.	PI	2014-2015	$20,983
7	**WTFRC** Improving food safety of fresh apples by hot air impingement drying.	Ganjyal GM (PI), Killinger K.	PI	2014-2015	$56,743
6	**WTFRC** Strategies to reduce postharvest cracking and splitting of cherries by processing and packaging techniques	Ganjyal GM (PI), Sablani S, Wang Y.	PI	2014-2015	$49,977

5	**Emerging Research Issues for Washington Agriculture (ERI)** Understanding of Food and Microbiological Properties at Elevated Temperatures to Improve Low-moisture Food Safety	Tang J, Zhu M, Sablani S, Ganjyal GM (Co-PI), Shah D.	Co-PI	2014-2015	$49,343
4	**U.S. Economic Development Administration** Investing in Manufacturing Communities Partnership Planning Grant	Fatland A, Ganjyal GM (Co-PI), Holzer A, Love C, Leachman J, Yadama V.	Co-PI	2014-2016	$136,000
3	**PATH (PGM APP Tech Health)** Program for Appropriate Technology in Health (PATH) - Brazil Services	Ganjyal GM (PI).	PI	2013-2013	$8,700
2	**New Faculty Seed Grant Competition (Washington State University)** Enhancing value of the Washington State's processed fruit and vegetable by-products through innovative processing techniques	Ganjyal GM (PI).	PI	2013-2014	$21,000
1	**NSF - Thermal Transport Division** Multiscale Transport in Expanding Biopolymers during Extrusion: Modeling and Experimental Verification	Takhar PS, Ganjyal GM (Co-PI) and Hanna M.	Co-PI	2008-2011	$300,000

TEXTBOOKS AND BOOK CHAPTERS

1. Extrusion Cooking: Cereal Grains Processing. **2020**. **(TEXTBOOK)**
   Elsevier and AACC International Publication.
   Editors: Girish M. Ganjyal
   ISBN-13: 978-0128153604
   ISBN-10: 0128153601
   Published Date: August 2020
   https://www.elsevier.com/books/extrusion-cooking/ganjyal/978-0-12-815360-4

2. Medina-Meza IG and Ganjyal GM. **2016**. Fruit Processing By-Products: A Rich Source for Bioactive Compounds and Value-Added Products. Chapter 2. Pages 11 to 26. Food Processing By-Products and their Utilization. Edition 1. **(BOOK CHAPTER)**
   Print ISBN: 9781118432884
   Online ISBN: 978111843292
   Published Date: August 2018
   https://onlinelibrary.wiley.com/doi/book/10.1002/9781118432921

PEER-REVIEWED RESEARCH PUBLICATIONS

Summary: Published (or accepted to publish) refereed research publications: **88 (+ 15 in review)**

As of March 5, 2024, total citations: 3081; h-index: 34; i10-index: 65;
(Source: https://scholar.google.com/citations?user=u3xuFpcAAAAJ&hl=en)
* Dr. Ganjyal as the corresponding author and major author
† Dr. Ganjyal's graduate student or Post-Doc

In Review (15)

103. Wagner C., Smith B., **Ganjyal GM***. 2024. The individual impact of extrusion processing parameters and protein type on high moisture meat analog texture, structure, and chemistry. *Food Chemistry*. (In Review).
102. Wagner C., Levine L., **Ganjyal GM***. 2024. Engineering considerations of extruded high moisture meat analog cooling dies. Part II: Heat transfer correlations for high moisture meat analogs made with rectangular linear cooling dies. *Food Research International*. (In Review).
101. Wagner CE†, Levine L, Saunders SR, Bergman R, Guo X, and **Ganjyal GM***. 2024. Engineering considerations of extruded high moisture meat analog cooling dies. Part I: The impact of temperature gradient, apparent shear rate, and inferred phase transition timing on the product textural quality, anisotropy, and thermal energy balance. *Food Research International*. (In Review).
100. Singh L†, Joyner HS, and **Ganjyal GM***. 2024. The combined impact of direct steam injection processing and pH adjustment on the functionality of milk protein concentrate and non-fat dry milk. *Food Research International*. (In Review).
99. Ikuse M†, Marchus CR, Schiele NR, and **Ganjyal GM***. 2024. Extruded plant protein scaffolds support myoblast cell growth for cultured meat. *Food Research International*. (In Review).
98. Bernin J†, Watanabe P†, Wagner CE†, and **Ganjyal GM***. 2024. Mung bean protein enhances the expansion of corn starch during twin-screw extrusion. *Journal of Food Science*. (In Review).
97. Uhdre R, Coyne CJ, Bourland B, Piaskowski J, Zheng P, **Ganjyal GM**, Zhang Z, McGee RJ, Main D, Bandillo N, Ma Y, Chen C, Thrash A, Warburton ML. 2024. Genetic study of crude seed protein concentration in an USDA pea diversity panel. *Agrosystems, Geosciences & Environment*. (In Review).
96. Allan E, Bajwa D, Ganjyal GM, Kim SH, McPhee, K, Obiri-Yeboah M, and Kuo WY. 2024. Exploring the use of Richlea lentil flour, lentil starch, and lentil protein concentrate in creating extruded lentil puffs. *Journal of Food Science*. (In Review).
95. Allan E, Bajwa D, Ganjyal GM, Ifeh C, Pirati, R and Kuo WY. 2024. Exploring the potential of lentil flour and lentil protein concentrate from Richlea lentils in the development of couscous with a pilot-scale twin-screw extruder. *Journal of Food Science*. (In Review).
94. Wagner CE†, Richter JK†, Ikuse M†, and **Ganjyal GM***. 2024. Classification of select commercially isolated insoluble dietary fibers based on physicochemical and microstructural properties. *Journal of Food Science*. (In Review).
93. Wagner CE† and **Ganjyal GM***. 2024. Impact of isolated insoluble fiber incorporation on the appearance and mechanical properties of extruded high moisture meat analogs. *Journal of Food Science*. (In Review).

92. Richter JK†, Smith B, Saunders SR, Finnie S, and **Ganjyal GM***. 2024. Protein Functionality is Critical for the Texturization Process During High Moisture Extrusion Cooking. ACS *Food Science & Technology*. (In Review).
91. Pietrysiak E†, Wagner C†, Lobeda K†, Gu BJ†, and **Ganjyal GM***. 2024. Split faba bean (Vicia faba L.) flour exhibited greater direct expansion than whole faba bean flour during twin-screw extrusion. *LWT*. (In Review).
90. Habiyaremye C, Wagner C†, Kowalski RJ†, Gu BJ†, Aluwi N†, Murphy KM, and **Ganjyal GM***. 2024. Whole Grain Proso Millet (*Panicum miliaceum* L. var. Huntsman) Flour had relatively Low Expansion Characteristics during Twin-screw Extrusion. *International Journal of Food Properties*. (In Review).
89. Dey D†, Gu BJ†, Ek P†, Ross CF, Saunders SR, and **Ganjyal GM***. 2024. Sugar inclusion influences the expansion characteristics of corn starch extrudates. *Journal of Food Science*. (In Review).

Published (88)

88. Ek P†, Gu BJ†, JK Richter†, Saunders SR, and **Ganjyal GM***. 2024. Cellulose interferes with the transformation of starch melt during extrusion processing. *ACS Food Science & Technology*. (In Press).
87. Ikuse M†, Richter JK†, and **Ganjyal GM***. 2024. Talc and calcium carbonate inclusions in direct expanded pea starch extrudates exhibit different behavior under increasing screw speeds. *Journal of Food Science*. http://doi.org/10.1111/1750-3841.16951.
86. Nalbandian E†, Karkle E, and **Ganjyal GM***. 2024. Physicochemical properties of buckwheat flours and their influence on focaccia bread quality. *Cereal Chemistry*. 101: 220 - 230. https://doi.org/10.1002/cche.10734
85. Rezaey M†, Heitholt J, Miles C, and **Ganjyal GM***. 2024. Physicochemical Characteristics and Popping Efficiencies of Nuña Beans from Different Breeding Lines. *Cereal Chemistry*. 101:166 - 178. https://doi.org/10.1002/cche.10733
84. Richter JK†, Montero ML, Ikuse M†, Wagner C, Ross CF, Saunders SR, and **Ganjyal GM***. 2024. Plant protein sources and their chemistry significantly influence the final chemical and sensory characteristics of extruded high moisture meat analogs. *Journal of Food Science*. 89:104 - 120. http://doi.org/10.1111/1750-3841.16815
83. Sekhon AS, Unger P, Singh B, Chen X, **Ganjyal GM**, Michael M. 2024. Hyperspectral imaging of foodborne pathogens at colony and cellular levels for rapid identification in dairy products. Food Science & Nutrition. 12(1):239 - 254. https://doi.org/10.1002/fsn3.3766
82. Breslauer RS, Nalbandian E, Reinman T, Rezaey R, **Ganjyal GM**, Murphy KM. 2023. Buckwheat Production and Value-Added Processing: A Review of Potential Western Washington Cropping and Food System Applications. *Sustainability* MDPI Journal. Sustainability 2023, 15(20), 14758. https://doi.org/10.3390/su152014758

81. Mugabe D, Frieszell C†, Marilyn L. Warburton 1, Coyne CJ, Sari H, Uhdre R, Wallace L, Ma Y, Zheng P, McGee RJ, **Ganjyal GM**. Kabuli Chickpea Seed Quality Diversity and Preliminary GWAS. *Agrosystems, Geosciences & Environment*. 6(4): 1-11. https://doi.org/10.1002/agg2.20437
80. Ek P†, Gu BJ†, Richter JK †, Dey D†, Richter JK†, Saunders SR and **Ganjyal GM***. 2023. High methoxyl pectin can improve the extrusion characteristics and increase the dietary fiber content of starch-cellulose extrudates. *Journal of Food Science*. 88:4156–4168. http://doi.org/10.1111/1750-3841.16742
79. Downs B†, Skrzypczak K†, Krajka T†, Richter J†, Ikuse M†, Bernin J†, Zak A†, Cholmatri C†, Watanabe P†, Rezaey M†, and **Ganjyal GM***. 2023. Influence of legume-derived proteins with varying natural solubility on the direct expansion of corn starch during twin-screw extrusion processing. *Journal of Food Science*. 88:4169–4179. http://doi.org/10.1111/1750-3841.16730
78. Wagner C†, Richter JK†, Dey D†, Finne S, and **Ganjyal GM***. 2023. Impact of tamarind seed gum on the viscosity behavior, thermal properties, and extrusion characteristics of native corn starch. *Journal of Food Science*. 1–15. https://doi.org/10.1111/1750-3841.16513
77. Dey D†, Gu BJ†, Ek P†, Ross CF, Saunders SR, and **Ganjyal GM***. 2023. Influences of modified fiber inclusion with varying particle size on corn starch-based extrudate expansion. *Journal of Food Science*. https://doi.org/10.1111/1750-3841.16432
76. Richter JK†, Pietrysiak E†, Ek P†, Dey D†, Gu BJ†, Ikuse M †, Bitar-Nalbandian E†, Zak A†, and **Ganjyal GM***. 2022. Extrusion Characteristics of Ten Novel Quinoa Breeding Lines. *Journal of Food Science*. 87(12): 5349-5362. https://doi.org/10.1111/1750-3841.16360
75. Nalbandian E†, Pietrysiak E†, Murphy KM, and **Ganjyal GM***. 2022. Different breeding lines of quinoa significantly influence the quality of the baked cookies and cooked grains. *Journal of Food Science*. https://doi.org/10.1111/1750-3841.16354
74. Richter JK†, Gu BJ†, Ek P†, Dey D†, Saunders SR, and **Ganjyal GM***. 2022. Potential interactions between starch and fruit pomace may impact the expansion ratio of direct expanded products. *Journal of Food Science*. 2222: 1-15. https://doi.org/10.1111/1750-3841.16240
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1. **Ganjyal GM** & Hanna MA. 2002. A review on residence time distribution (RTD) in food extruders and study on the potential of neural networks in RTD modeling. *Journal of Food Science.* Vol. 67(6): 1996-2002. https://doi.org/10.1111/j.1365-2621.2002.tb09491.x

LIST OF PEER REVIEWED EXTENSION PUBLICATIONS (total of 11)

* Dr. Ganjyal as the corresponding author and major author

† Dr. Ganjyal's graduate student or Post-Doc

11. Pietrysiak E† and **Ganjyal GM***. 2022. Developing a Food Safety Plan: An Overview. FS363E. https://pubs.extension.wsu.edu/developing-a-food-safety-plan-an-overview.
10. Pietrysiak E† and **Ganjyal GM***. 2020. Food Safety Hazards: An Overview. WSU Extension. FS351E. https://pubs.extension.wsu.edu/food-safety-hazards-an-

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9. Pietrysiak E† and **Ganjyal GM***. 2020. Current Good Manufacturing Practices: An Overview. WSU Extension. FS350E. https://pubs.extension.wsu.edu/current-good-manufacturing-practices-an-overview.
8. Pietrysiak E†, Smith D, **Ganjyal GM***. 2020. Washington State Very Small Food Processors: An Overview of What You Need to Know about FSMA…. *WSU Extension Publication*. FS343E. https://pubs.extension.wsu.edu/washington-state-very-small-food-processors-an-overview-of-what-you-need-to-know-about-fsma.
7. Pietrysiak E† and **Ganjyal GM***. 2020. Foreign Supplier Verification Programs (FSVP): An Overview. WSU Extension. *WSU Extension Publication*. FS341E. https://pubs.extension.wsu.edu/foreign-supplier-verification-programs-fsvp-an-overview.
6. Pietrysiak E†, Rasco B, **Ganjyal GM*** and Coles CG. 2019. Preventive Controls Qualified Individual: Roles and Responsibilities. *Cereal Foods World*. 64(2). https://doi.org/10.1094/CFW-64-2-0018
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Extension Publications (Referred or Peer-Reviewed) – **In Review/Preparation (3)**
3. Kallu S† and **Ganjyal GM***. 2023. Fiber inclusion in direct expanded extruded products. WSU Extension. (In preparation).
2. Aluwi NA† and **Ganjyal GM***. 2023. Varietal Differences in Quinoa. *WSU Extension*. (In Preparation).
1. Masli MDP† and **Ganjyal GM***. 2023. Inclusion of fiber in direct expanded extruded products. *WSU Extension*. (In Preparation).

INVITED, FEATURED, AND INTERNATIONAL LECTURES/FORUMS (84)
84. **Ganjyal GM.** 2024. Value-Added Processing and Safety of Shelf-Stable Foods. January 23rd. Alaska Department of Environmental Conservation. Division of Environmental Health. Fairbanks, AK. Online.
83. **Ganjyal GM.** 2023. Building a Cohesive Scientific Field. September 18th to 20th. The Good Food Conference. San Francisco, CA.

82. **Ganjyal GM.** 2023. Career in the Food Industry. September 1st. FS 110. Introduction to Food Science Class – Food Science. Pullman, WA.
81. **Ganjyal GM.** 2023. Why do Potato Chips have different Textures?. September 1st. Science on your Plate Class – Food Science. Pullman, WA.
80. **Ganjyal GM.** 2023. How are Puffed Snacks made?. August 30th. Science on your Plate Class – Food Science. Pullman, WA.
79. **Ganjyal GM.** 2023. Extrusion Processing: Protein Products. July 15th. IFT Proteins Short Course.
78. **Ganjyal GM.** 2023. Importance of Ingredient Functionality in Product Development. July 13th. Good Food Institute - India.
77. **Ganjyal GM.** 2023. Exploring the Functional Ingredients from Pulses. June 8th. USA Dry Pea and Lentil Council. JW Marriott, Aerocity, New Delhi, India.
76. **Ganjyal GM.** 2023. Exploring the Functional Ingredients from Pulses. June 5th. USA Dry Pea and Lentil Council. The Quorum, Lower Parel, Mumbai, India.
74. **Ganjyal GM.** 2023. Exploring the Functional Ingredients with Pulses. May 5th. IFT Webnair.
73. **Ganjyal GM.** 2023. Extrusion Innovations with Plant Based Foods. April 19th. A Webnair for Mexico and Central America organized by Mercalimentos Mexico.
72. **Ganjyal GM.** 2023. Extrusion Processing in the Development of Direct Expanded Snacks and Plant-based Protein Products. March 13th. Invited Lecture for Graduate Courese (AGSC 5520). Tennessee State University. via Zoom.
71. **Ganjyal GM.** 2023. Functional Ingredients from Dry Beans. February 16th. BeanCon23. Medelin, Columbia.
70. **Ganjyal GM.** 2023. Role of extrusion processing in the development of plant-based protein products. January 20th. NC1023 Multi-Institutional Food Engineering Seminar 2023. Module 1: Innovations in Product Development & Manufacturing Focused on Plant Proteins.
69. **Ganjyal GM.** 2022. An Effort to Make Puffed Snacks more Nutritious. December 9th. NEP 505 Class – Elson S. Floyd College of Medicine. WSU. Spokane, WA.
68. **Ganjyal GM.** 2022. Food Processing and Product Development. Nov 14th. AFS 201 Class – Crop and Soil Sciences Department. Pullman, WA.
67. **Ganjyal GM.** 2022. Unlocking the Power of Pulses. October 17th. USA Dry Pea and Lentil Council. Indian Chambers of Commerce & Industry (FICCI), Good Food Institute (GFI), and Indian Pulses and Grains Association (IPGA), New Delhi, India.
66. **Ganjyal GM.** 2022. Unlocking the Power of Pulses. October 15th. USA Dry Pea and Lentil Council. Chef Training Session at IHM PUSA, New Delhi, India.
65. **Ganjyal GM.** 2022. Careers in Food Processing. October 15th. National Institute of Food Technology Entrepreneurship and Management (NIFTEM), New Delhi.
64. **Ganjyal GM.** 2022. Scientific Forum: Scientific Road Mapping for Plant-based Foods. October 14th. Smart Protein Summit, New Delhi, India.
63. **Ganjyal GM.** 2022. Scientific Forum Roundtable: Training the next generation talent pool. October 14th. Smart Protein Summit, New Delhi, India.
62. **Ganjyal GM.** 2022. Scientific Forum Roundtable: Developing Next Generation Products. October 13th. The Good Food Institute-India, Smart Protein Summit, New Delhi, India.
61. **Ganjyal GM.** 2022. Unlocking the Power of Plant-based Foods. October 10th. USA Dry Pea and Lentil Council. The Quorum, Mumbai, India.

60. **Ganjyal GM.** 2022. Science behind Making Tasty and Crispy Corn Puffs. September 12th. FS 201. Science on your Plate Class – Food Science. Pullman, WA.
59. **Ganjyal GM.** 2022. Career in the Food Industry. September 7th. FS 110. Introduction to Food Science Class – Food Science. Pullman, WA.
58. **Ganjyal GM.** 2022. Value-added Food Products Concept to Commercialization. June 30th. REEU Internships Seminar – CAHNRS, WSU. Online.
57. **Ganjyal GM.** 2022. Overview and Resources for FSMA PCHF and FSVP. April 13th. Alaska Food Protection Task Force Meeting. Food Safety and Sanitation Program - State of Alaska. Online.
56. **Ganjyal GM.** 2022. Economics of Food Products. March 2nd. FS 489 Class – Department of Animal, Veterinary, and Food Sciences. Univ. of Idaho, Moscow, ID.
55. **Ganjyal GM.** 2021. Extrusion Processing: A Look at the Transformation of the Major Components of Ingredients. October 19th. Graduate Courese (AGSC 5520) Tennessee State University. Via Zoom.
54. **Ganjyal GM.** 2021. Structure and Function Relationship between Pulse Protein Isolates and Textured Vegetable Proteins for the making of Meat Analogues. March 3 – 4. Science and Technology for Meat Analogues. Wageningen University, Netherlands. Via Zoom.
53. **Ganjyal GM.** 2021. Economics of Food Products. February 1st. FS 489 Class – School of Food Science. Pullman, WA.
52. **Ganjyal GM.** 2021. Texturized Protein Product Development with Extrusion Processing. January 22nd. Agrisource Ltd., Bangkok Thailand, for companies in Philippines and Thailand. Via Zoom.
51. **Ganjyal GM.** 2020. Food Processing: An Overview. Nov 17th. AFS 201 Class – Crop and Soil Sciences Department. Via Zoom.
50. **Ganjyal GM.** 2020. Food Safety Highlights on the WSU Food Systems HUB. November 13th. WSU Extrusion HUB. Via Zoom.
49. **Ganjyal GM.** 2020. Virtual discussion panel on the benefits and best practices in working with the private sector. November 12th. Working with Industry 101 Workshop – WSU office of Research. Via Zoom.
48. **Ganjyal GM.** 2020. Science behind the Development of Food Products. October 26th. FS 110. Introduction to Food Science Class – Food Science. Via Zoom.
47. **Ganjyal GM.** 2020. Extrusion Processing for the Texturization of Plant-Based Proteins. October 8th. Virtual 1st Global Plant-Based Foods & Proteins Research Conference 2020, 7-8 October. Via Zoom.
46. **Ganjyal GM.** 2020. Extrusion Processing: A Look at the Transformation of the Major Components of Ingredients. August 4th. University of Agricultural Science, Raichur, India. Via Zoom.
45. **Ganjyal GM.** 2020. Virtual discussion panel on the benefits and best practices in working with the private sector. May 21st. Working with Industry 101 Workshop – WSU office of Research. Via Zoom.
44. **Ganjyal GM.** 2020. Expansion of Markets for food processors. March 17th. APLU Rural Engagement for Resilient Communities webinar. Via Zoom.
43. **Ganjyal GM.** 2019. Utilization of the Pulses in Extruded Products. October 8th and 9th. USADPLC Workshop. Monterrey, Mexico.
42. **Ganjyal GM.** 2018. Building Successful Extension Programs to Meet the Food Industry Needs. September 10th. Conference of Food Engineering. Minneapolis, MN.

41. **Ganjyal GM.** 2018. Career in the Food Industry. March 21st. FS 418. Seminar Class – Food Science. Pullman, WA.
40. **Ganjyal GM.** 2018. Twin-Screw Extrusion: Laboratory to Production Scale. March 14th. Snaxpo. Atlanta, GA.
39. **Ganjyal GM.** 2018. Extrusion Processing for Healthy Snack Development. March 7th. USDA-FAS Chinese Borlaug Fellows Meeting. Seattle, WA.
38. **Ganjyal GM.** 2017. Hot Air Impingement Drying of Apples for Food Safety. December 5th. Washington Horticultural Council. Richland, WA.
37. **Ganjyal GM.** 2017. Snack Extrusion with Pulse Ingredients. September 29th at USA Dry Pea and Lentil Annual Meeting. Palm Springs, CA.
36. **Ganjyal GM.** 2017. Value-Added Food Product Development. September 13th at USDA/ASA WISHH Conference and Exhibition Trade, Food Technology and Nutrition: USA and AFRICA Dialogue. Dakar, Senegal.
35. **Ganjyal GM.** 2017. Impacts of Inclusion of Pomace on Starch Expansion during Extrusion. August 3rd. 11th CRDC Conference, Bangkok, Thailand.
34. **Ganjyal GM.** 2017. Value Added Food Processing: An Overview. August 9th. King Mongkut University of Technology Thonburi, Bangkok, Thailand.
33. **Ganjyal GM.** 2017. Food Ingredient Technology: An Overview. August 9th. King Mongkut University of Technology Thonburi, Bangkok, Thailand.
32. **Ganjyal GM.** 2017. Process Authority for Acidified Foods. April 18th. Montana Department of Public Health and Human Services, FDA. Online Seminar.
31. **Ganjyal GM.** 2017. IFT Virtual Summit - Career Transitions Panel Discussion. April 6th. Institute of Food Technologists. Virtual Panel.
30. **Ganjyal GM.** 2017. Value-Added Food Product Development. April 17th. Colville, WA.
29. **Ganjyal GM.** 2017. Career in the Food Industry. March 27th at School of Food Science, Washington State University. Pullman, WA.
28. **Ganjyal GM.** 2017. Extrusion Processing of Pulses. March 22nd. US & Canada Pulse Growers Association. Minneapolis, MN.
27. **Ganjyal GM.** 2017. Value-Added Food Production for Small Businesses. February 21st. Sustainable Connections. Bellingham, WA.
26. **Ganjyal GM.** 2017. Texturization of Plant Protein. January 30th. UC-Berkeley. Berkeley, CA.
25. **Ganjyal GM.** 2017. Mitigation of Cherry Cracking. January 20th. Washington Cherry Institute. Yakima, WA.
24. **Ganjyal GM.** 2016. FSMA – Preventive Controls for Human Food. December 6th. Washington Tree Fruit Association. Wenatchee, WA.
23. **Ganjyal GM.** 2016. Your First Job. October 6th. Seminar Class – Biological Systems Engineering – WSU. Pullman, WA.
22. **Ganjyal GM.** 2016. Process Authority for Small Businesses. September 22nd at FDA Regional Retail Meeting. Reno, Nevada.
21. **Ganjyal GM.** 2016. Food Product Development: Ingredient Functionalities and Process Relationships. September 5th to September 9th at USDA/ASA WISHH Conference and Exhibition Trade, Food Technology and Nutrition: USA and AFRICA Dialogue. Dakar, Senegal.
20. **Ganjyal GM.** 2016. Extrusion Processing of Pulse Ingredients. July 17th. Institute of Food Technologists Annual Meeting. Chicago, IL.

19. **Ganjyal GM.** 2016. Development of Extruded Products with Dry beans. April 19th. USDA Conference on Dry Beans. Antigua, Guatemala.
18. **Ganjyal GM.** 2016. Introduction to Pulses, Nutrition, Ingredients and Applications. March 23 to 25. Food Ingredients China Conference, Shanghai, China.
17. **Ganjyal GM.** 2016. Extrusion Processing: Impact of Ingredients. January 25th at School of Food Science, Washington State University. Pullman, WA.
16. **Ganjyal GM.** 2016. Career in the Food Industry. January 13th at School of Food Science, Washington State University. Pullman, WA.
15. **Ganjyal GM.** 2015. Extrusion Processing of Pulse Ingredients. October 21st at AACC International Annual meeting. Minneapolis, MN.
14. **Ganjyal GM.** 2015. Low Moisture Foods. September 29th at WSDA Food Safety Training meeting. Wenatchee, WA.
13. **Ganjyal GM.** 2015. Snack Extrusion with Pulse Ingredients. September 11th to 13th at Culinary Institute of America-Hyde Park campus. Hyde Park, NY.
12. **Ganjyal GM.** 2015. Food Product Development: Ingredient Functionalities and Process Relationships. August 29th to September 4th at USDA/ASA WISHH Conference and Exhibition Trade, Food Technology and Nutrition: USA and AFRICA Dialogue. Accra, Ghana.
11. **Ganjyal GM.** 2015. Value-Added Processing & Applications of Specialty Grains. January 10 at Cascadian Grain Conference. Olympia, WA.
10. **Ganjyal GM.** 2014. Building an Integrated Food Processing Extension and Research Program. October 17th 2014, Department of Food and Human Nutrition at the Texas A&M University. College Station, TX.
9. **Ganjyal GM.** 2014. Extrusion Processing: Research and Applications. October 12th 2014, Biological Systems Engineering Department at the Washington State University.
8. **Ganjyal GM.** 2014. Dairy Processing: Evaporation and Drying. For Class FS429/FS529. October 3rd 2014 at the Washington State University. Pullman, WA.
7. **Ganjyal GM.** 2014. Extrusion processing of pulses. September 9th to 11th at Culinary Institute of America-Greystone campus. St. Helena, California.
6. **Ganjyal GM.** 2014. Peas: Processing into Value-Added Products. August 4 to 8. Beijing, China.
5. **Ganjyal GM.** 2014. Food processing and quality of foods: An industry perspective. For Class FS220. April 25th 2014 at the Washington State University. Pullman, WA.
4. **Ganjyal GM.** 2014. Panel member for Industry & Economic Development Panel. Provided the perspective on the value-added processing for economic development of the region. April 18th 2014 at the Columbia Gorge Community College. The Dalles, OR.
3. **Ganjyal GM.** 2013. Evaporation and Drying in the Dairy Industry: Condensed milk, sweetened condensed milk and powdered milks. November 13th 2013 at the Washington State University. Pullman, WA.
2. **Ganjyal GM.** 2013. Overview of Food Industry and Product Development Process. November 5th 2013 at the University of Wisconsin-Stout. Menomonie, WI.
1. **Ganjyal GM.** 2013. Value added processing of Agricultural Commodities and By-products. September 19th 2013 at the University of Nebraska-Lincoln. Lincoln, NE.

CONFERENCE PRESENTATIONS AND POSTERS (31)

31. Nalbandian E†, Karkle E, & **Ganjyal GM***. 2023. Physicochemical properties of buckwheat

flours and their influence on focaccia bread quality. Cereal & Grains 23. 18-20 October 2023, Chicago, Illinois, U.S.A.

30. Wagner C† and **Ganjyal GM***. 2023. Impact of isolated insoluble fiber incorporation on the appearance and mechanical properties of extruded high moisture meat analogs. Good Food Conference 2023. 18-20 September 2023, San Francisco, California, U.S.A.
29. Richter JK†, and **Ganjyal GM***. 2023. Protein Functionality is Critical for the Texturization Process During High Moisture Protein Extrusion Cooking. WSU internal GPSA Research Exposition 2023. 30 March 2023, Pullman, Washington, U.S.A.
28. Wagner C†, Richter JK†, Dey D†, and **Ganjyal GM***. 2022. Tamarind seed gum improves the extrusion expansion characteristics of corn starch at low inclusion levels. IFT annual meeting 2022. 10-13 July 2022, Chicago, Illinois, U.S.A.
27. Wagner C†, Richter JK†, Dey D†, and **Ganjyal GM***. 2022. Tamarind seed gum improves the extrusion expansion characteristics of corn starch at low inclusion levels. WSU internal GPSA Expo 2022. 24 March 2022, Pullman, Washington, U.S.A.
26. Dey D†, Ek P†, Gu BJ†, & **Ganjyal GM***. 2021. Rheological characterization of microcrystalline cellulose-corn starch blends and its impact on the expansion of extrudates. Cereals and Grains Association Annual Meeting 2021. 18 November 2021.
25. Dey D†, Gu BJ†, & **Ganjyal GM***. 2021. Influence of different sugars on the expansion characteristics of corn starch extrudates. IFT 21 2021.14 July 2021.
24. Dey D† & **Ganjyal GM***. 2020. Quantification of starch and fiber interactions in direct-expanded snacks manufactured using corn starch and acid-treated apple pomace using FTIR spectroscopy. Cereals and Grains Association Annual Meeting 2020. 25 October 2020.
23. Ek P†, Gu B-J†, and **Ganjyal GM***. 2020. Whole lentil flours exhibit their highest puffing ability at low processing temperature during extrusion. WSU-GPSA research exposition 2020, Pullman, WA, USA.
22. Dey D†, Gu B†, and **Ganjyal GM***. 2020. Exploring the formation of molecular bonds between starch and fiber during production of cereal-based puffed snacks using infrared spectroscopy. Academic Showcase, Washington State University, 2020 April, Washington, U.S.A.
21. Ek P†, Gu B†, and **Ganjyal GM***. 2019. Understanding the physical and molecular changes in the mixtures of cellulose and corn starch during extrusion processing using Fourier Transform- Infrared Spectroscopy (FTIR). Cereals and Grains Association Annual Meeting 2019. 03-05 November 2019, Denver, Colorado, U.S.A.
20. Wang S†, Gu BJ†, Graham T, Saunders SR, and **Ganjyal GM***. Impacts of the Chemical and Physical Characteristics of Fruit Pomace on the Expansion Characteristics of Corn Starch Extrudates. June 28, 2017. IFT Annual Meeting & Food Expo. Las Vegas, NV.
19. Medina-Meza IG†, Frieszell CF†, Aluwi NA†, Murphy KM, Saunders RS, **Ganjyal GM***. Impacts of Extrusion on Saponin Content of Quinoa. June 2017. Institute of Food Technologists Annual Meeting. Las Vegas, NV.
18. Kowalski RJ, **Ganjyal GM***. October 2016. Physical and Chemical Changes Experienced by Waxy Wheat Flour Inside a Twin-Screw Extruder. *AACCI Annual Meeting*. Oral Presentation.
17. Frieszell C, Medina-Meza IG, Aluwi NA, Murphy KM, Saunders RS, **Ganjyal GM***. Impacts of Extrusion on Saponin Content of Quinoa. January 26, 2017. Lewis & Clark Institute of Food Technologists Meeting. Moscow, ID.

16. Medina-Meza IG, Aluwi NA, Saunders S and **Ganjyal GM***. Triterpenoid Saponins quantification from Quinoa (Chenopodium Wild) by UV-Vis/GC-MS. October 2016. AACC International Annual Meeting. Savannah, GA. Oral presentation.
15. Medina-Meza IG, Aluwi NA, Saunders S and **Ganjyal GM***. Triterpenoid Saponins quantification from Quinoa (Chenopodium Wild) by UV-Vis. GPSA Research Exposition 25th March 2016. Pullman, WA Poster presentation.
14. Aluwi NA† and **Ganjyal GM***. 2016. Processing characteristics and potential end use of quinoa. Jan 9, 2016. Cascadia Grains Conference. Oral Presentation.
13. Li C†, Kowalski RJ†, **Ganjyal GM***. October 2015. Extrusion processing of pulse ingredients. *AACCI Annual Meeting.* Oral Presentation.
12. Kowalski RJ†, Meldrum A, Wang S†, Constantinescu S, Joyner H, Morris C, **Ganjyal GM***. October 2015. Rheological stability of waxy wheat flour and its potential as a unique freeze-thaw stable ingredient. *AACCI Annual Meeting.* Oral Presentation.
11. Gu BJ†, **Ganjyal GM***, Wang J, Wolcott MP. 2015. Effects of different milling processes on properties of douglas-fir forest residuals. Sep 15-17, NARA Annual Meeting. Spokane, WA.
10. Wang S†, **Ganjyal GM***. July 2015. Impacts of particle sizes and levels of inclusions of cherry pomace on physical and structural properties of extruded corn starch. IFT Annual Meeting & Food Expo. Chicago, IL.
9. Blaylock J†, Kallu S†, Kowalski RJ†, Thapa B†, **Ganjyal GM***. March 2015. Effects of oat fiber particle size and inclusion level on the extrusion properties of direct expanded regular corn starch. *SURCA (Showcase for Undergraduate Research and Creative Activities).* Poster Presentation.
8. Blaylock J†, Kallu S†, Kowalski RJ†, Thapa B†, **Ganjyal GM***. February 2015. Effects of oat fiber particle size and inclusion level on the extrusion properties of direct expanded regular corn starch. *Wiley Research Exposition.* Poster Presentation.
7. Kallu S†, Munoz N, Sablani SS, **Ganjyal GM***. July 2015. Strategies to reduce post-harvest cracking and splitting in cherries. *IFT Annual Meeting,* Chicago, IL. Poster Presentation.
6. Kallu S†, Munoz N, Sablani SS, **Ganjyal GM***. Jan 2015. Strategies to reduce post-harvest cracking and splitting in cherries. *Wiley Research Exposition,* Pullman, WA. Oral Presentation.
5. Kowalski RJ†, Morris C, and **Ganjyal GM***. 2014. Waxy soft white wheat: Extrusion characteristics, thermal and rheological properties. Oct 4-8, AACC International Annual Meeting. Providence, RI.
4. Kowalski RJ†, Morrow CD, McDonald AG and **Ganjyal GM***. 2014. X-Ray density scanning as a technique for the characterization of extruded food products. Oct 4-8, AACC International Annual Meeting. Providence, RI.
3. Kowalski RJ†, Morrow CD, McDonald AG and **Ganjyal GM***. 2014. X-Ray density scanning as a technique for the characterization of extruded food products. March 29th, 2014. Lewis & Clark IFT Annual Meeting. Pullman, WA.
2. Millin TM† and **Ganjyal GM***. 2014. Physicochemical and structural development in French fries during processing. March 29th, 2014. Lewis & Clark IFT Annual Meeting. Pullman, WA.
1. **Ganjyal GM***, Biglione N and Farrington T. 2013. Supercritical CO_2 Extrusion process for the making of shelf stable snacks with inclusion of fruits and vegetables. Presented at the 9th World Congress of Chemical Engineering. August 18th-23rd, Coex, Seoul, South Korea.

PROFESSIONAL SERVICES

1. Board Member, Institute of Food Technologists (IFT) - High Education Review Board (HERB). September 2020 through August 2023.

2. Board Member – AOCS (American Oil Chemists Society) Pulse Processing Methods Review Board – March 2020 to-date.

3. Associate Editor (2008-to date) for Cereal Chemistry Journal at Cereals and Grain Association. Served as the editor and peer-review of manuscripts on processing.

4. Editorial Board Member (2021-to-date) for Journal of Food Science at Institute of Food Technologists.

5. USDA- NIFA – Federal Grant Peer Review Panelist – Food, Agricultural, Natural Resources, and Human Sciences Grant Programs (2016, 2018, 2020, 2021, 2022).

6. International External Expert Reviewer for Large CAP Grants for the Singapore Food Story R&D Programme Office (A*STAR) – 2021.

7. Visiting Professor at KMUTT, Thailand, 2017 and was again invited in 2020/21. (Provided guidance and help with their research, extension, and teaching programs in the areas of food processing and food safety).

8. CIGI and other Canadian Agencies Grant Panel Reviewer – 2018, 2019, 2020, 2021.

9. Chair, Umbrella Hatch Project, "Food Processing, Quality, Safety and Supply". CAHNRS, WSU, 2017-2021.

10. Peer Reviewer for:
    - American Chemical Society (ACS) Journals
    - Elsevier Journals
    - Journal of Food Science & Critical Reviews in Food Science
    - International Journal of Food Properties
    - Journal of Cereal Science
    - Food Research International
    - Journal of Texture Studies
    - Carbohydrate Chemistry
    - Journal of Culinary Science & Technology
    - Innovative Food Science and Emerging Technologies

11. Membership and Participation in Professional Organizations:

2001-present	Cereal and Grains Association International, Professional Member
2004-present	Institute of Food Technologists Professional Member
2016-present	American Chemical Society
2016-present	International Association of Food Protection

2013-present	Puget Sound, Institute of Food Technologists
2013-present	Intermountain Section, Institute of Food Technologists
2013-2019	Lewis and Clark Section, Institute of Food Technologists

12. Served as an external reviewer for various P&T cases including for Assistant to Associate and Associate to Full Professor ranks:
    - Kansas State University
    - Purdue University
    - University of Maine
    - University of Hawaii

DEPARTMENTAL SERVICES

1. Interim Director, School of Food Science, January 2020 – December 2022.
   A few significant accomplishments include -
   - Successfully reintegrated the Creamery back into the SFS. This is a big win for us and for all our future SFS family members.
   - Organized the first-ever Food Industry Expo for the SFS in 2022, which was a huge success. This has attracted more students to our program. We are hoping this continues as an annual SFS event.
   - Fully staffed the front business office in the areas of purchasing, personnel, communications, post-award grant support, and undergraduate student advising. This has been fantastic.
   - Established the MOU and relationship with the University of Idaho that has helped us continue delivering our teaching program.
   - Balanced the budget; the negative balance of over $650k was cleared and brought the budget into the positive.
   - Successfully implemented the 10% budget cut in 2020/21, per the direction of the college, without losing any FTEs from the school.
   - Enhanced the facilities, including the classrooms and teaching laboratories, with new equipment for better undergraduate experiences.
   - We raised $100,000 cash to improve the undergraduate programs.
   - For the first time in the school's history, we established a new endowment for hiring a teaching instructor dedicated to the undergraduate program.
   - Enhanced relationships with the industry stakeholders.
   - Completed a strategic planning session for the department in 2021.
   - Increased efforts in undergraduate student recruitment through in-person visits to high schools in the state, facilitating visits for prospective students on campus. This has resulted in a 30% increase in enrollment for Fall 2022 relative to last year.
   - Started a new online Food Safety Proficiency Certificate program.
   - Completely revamped the school website and reactivated the social media accounts.
   - Started different social activities as the pandemic restrictions eased. We organized an event or two per month to help bring people together in 2022.
   - Reopened the undergraduate study lounge for our students.
   - Negotiated various faculty lines (two tenured track and one teaching instructor) that will be hired over the next 2 to 3 years.

- Hired a new permanent director for our program.

and many others…

Along with the above, successfully completed all the other regular duties of a Director, including conducting the annual reviews for all faculty and staff; managing the day to day issues in the department as they arise, mentoring the tenure track and junior faculty; various projects for the improvement of the school facilities, and others.

2. Search Committee Chair. SFS Food Safety Specialist Faculty position. 2016-17.
3. Mentoring Committee Member (between 2016 – 2020)
   a. Bri Ewing, Clinical Assistant Professor
   b. Faith Critzer, Associate Professor
   c. Minto Michael, Assistant Professor
4. Faculty Advisor. Food Product Development Teams for the School of Food Science. August 2013 to-date.

   2021-22 Highlights:
   - IFT Developing Nations Competition.
   - Ocean Sprays' Product Development Competition (3rd place)

   2019-20 Highlights:
   - Placed in Top 5. IFT Developing Nations Competition.

   2018-19 Highlights:
   - 1st place. IFT Developing Nations Competition.

   2016-17 Highlights:
   - 3rd place. Fiberstar Citri-Fi National Product Development Competition.
   - 1st place. AACC International Product Development Competition.

   2015-16 Highlights:
   - 1st place. DDW Natural Coloring Competition for Students.
   - 2nd place. Idaho Milk Processors Association New Product Development Competition.
   - 6 more teams are participating in various National Product Development Competitions.

   2014-15 Highlights:
   - 1st place. American Association of Cereal Chemists International's Student Product
   - 2nd place. Idaho Milk Processors Association 2015 New Product Development Competition.
   - 4th place in the IDFA Ice Cream Technology Conference.

   2013-14 Highlights:
   - 6 teams participated in various National Product Development Competitions.
   - 1 team was selected as "DuPont Knowledge Award Competition Finalist", May 2014, Dupont Danisco.
5. Chair – Department Awards Committee. August 2016 to Dec 2019.

6. Co-Chair – Department Safety Committee. August 2018 to Dec 2019.

7. Co-Chair – Department Safety Committee. August 2014 to July 2016.

GRADUATE STUDENTS CHAIRED

Name	MS/Ph.D.	Department	Graduation Date
Graduated (23)			
Jana Richter	Ph.D.	School of Food Science, WSU	Dec 2023
Marina Ikuse	MS	School of Food Science, WSU	July 2023
Gabriely Alfaro	MS	School of Food Science, WSU	July 2023
Mahvash Rezaey	MS	School of Food Science, WSU	May 2023
Lovepreet Singh	MS	School of Food Science, WSU	May 2023
Debomitra Dey	Ph.D.	School of Food Science, WSU	May 2022
Halle Choi	MS	School of Food Science, WSU	May 2022
Ek Pichmony	Ph.D.	School of Food Science, WSU	Dec 2021
Kejia Gu	MS	School of Food Science, WSU	Dec 2021
Irene Rangira	MS	School of Food Science, WSU	May 2020
Ewa Pietrysiak	Ph.D.	School of Food Science, WSU	July 2019
Elvis Baidoo	MS	School of Food Science, WSU	May 2019
Yujing Zhu	MS	School of Food Science, WSU	May 2019
Bon-Jae Gu	Ph.D.	School of Food Science, WSU	Dec 2018
Siyuan Wang	Ph.D.	School of Food Science, WSU	Dec 2017
Ryan J. Kowalski	Ph.D.	School of Food Science, WSU	May 2017
Gaurav Dhumal	MS	School of Food Science, WSU	Dec 2017
Nancy Asen	MS	School of Food Science, WSU	June 2017
Maria Dian Masli	MS	School of Food Science, WSU	May 2017
Nicole A. Aluwi	MS	School of Food Science, WSU	May 2016
Chongjun Li	MS	School of Food Science, WSU	May 2016
Sravya Kallu	MS	School of Food Science, WSU	July 2015
Trent M. Millin	MS	School of Food Science, WSU	July 2014
In Progress (6)			
Caleb Wagner	Ph.D.	School of Food Science, WSU	May 2024
Elizabeth BN	Ph.D.	School of Food Science, WSU	May 2025
Preston Watanabe	MS	School of Food Science, WSU	May 2025
Joshua Bernin	Ph.D.	School of Food Science, WSU	May 2026
Julianne Kummer	MS	School of Food Science, WSU	May 2024
Aniket Kamboj	Ph.D.	School of Food Science, WSU	Dec 2027

The students graduated from my program are well placed in the Food Industry (at companies such as, Beyond Meat, Inc., Impossible Foods, Inc., Sky Chefs, Inc., Oberto Brands, Inc., CW Brabender, Inc., IndoFood (Indonesia), and others) and in the Academia as a Faculty (Kongju National University-South Korea, Cambodia, Michigan State University).

POST-DOCTORAL FELLOWS SUPERVISED (6)

Name	Dates	Research Topic
Brasathe Jeganathan	2023 – to-date	Pulse proteins and processing
Katarzyna Skrzypczak	2022 – 2023	Pulse proteins
Ewa Pietrysiak	2019 – 2021	Food processing and safety
Bon-Jae Gu	2019 – 2021	Extrusion processing
Medina-Meza Ilce Gabriela	2014 – 2016	Thermal processing of foods
Isuru Wijesekara	2014 – 2015	Value-added processing of pomace

MS AG. (FOOD SCIENCE AND MANAGEMENT)

GRADUATE STUDENTS CHAIRED
Graduated (3)
Jill Wisehart – graduated – Spring 2020
Kim Nasados – graduated – Spring 2021
Sierra Bender – graduated – Fall 2022

GRADUATE STUDENTS COMMITTEE MEMBER
Graduated (11)
Priscilla Mark- graduated – Summer 2017
Lisa Budd – graduated – Fall 2017
Prashant Tank – graduated – Summer 2017
Summer Calabro – graduated – Spring 2017
Priya Potter – graduated – Summer 2018
Katelin Merkh – graduated – Spring 2019
Omar Soto – graduated – Summer 2018
Jea-hee Kwak – graduated – Fall 2018
Amanda Jensen – graduated – Summer 2019
Alex Bulnes – graduated – summer 2019
Erika Woods – graduated – summer 2020

In Progress (6)
Rashawnda Jackson – active
Brad Drumhiller – active
Travis Bettinson – active
Krissy Waters – active
Shelley Stancik-Smith – active
Marissa Stubbs – active

EXTERNAL GRADUATE COMMITTEES AND REVIEWER

Name	MS/Ph.D.	Department	Graduation Date
Graduated (25)			
Victoria Surette	Ph.D.	School of Food Science, WSU	May 2022
Ivy Kloepfer	MS	School of Food Science, WSU	May 2022
Yaeseol Yang	MS	School of Food Science, WSU	May 2022
Alexis Hamilton	Ph.D.	School of Food Science, WSU	May 2021
Phoebe Unger	MS	School of Food Science, WSU	May 2021
Blanca Ruiz	MS	School of Food Science, WSU	May 2020
Ren Yang	Ph.D.	Biological Systems Engineering, WSU	May 2020
Amninder Sekhon	MS	School of Food Science, WSU	May 2020
Arshdeep Singh	MS	School of Food Science, WSU	May 2020
Fariba Zad Bagher	Ph.D.	School of Food Science, WSU	Dec 2019
Maryam Baniasadidehkordi	Ph.D.	School of Food Science, WSU	May 2019
Kristen Sparkman	MS	School of Food Science, U *of* I	May 2019
Ravi K. Tadapaneni	Ph.D.	Biological Systems Engineering, WSU	Dec 2017
Poonam R. Bajaj	Ph.D.	Biological Systems Engineering, WSU	May 2017
Yuanzhu Li	MS	School of Food Science, U *of* I	May 2017
Ewa Pietrysiak	MS	School of Food Science, WSU	May 2017
Summer Calabro	MS	School of Food Science, WSU	Jan 2017
Cedric Habiyaremye	MS	Dept. of Crop & Soil Sciences, WSU	Nov 2016
Samjhana Dahal	MS	School of Food Science, U *of* I	May 2016
Emily F. Fleischman	MS	School of Food Science, WSU	May 2015
Yu-Hui Chao	MS	School of Food Science, U *of* I	May 2015
Sirivikorn Ditudompo	Ph.D.	Biological Systems Engineering, U *of* IL, IL	Dec 2014
Yang J.	Ph.D.	Biological Systems Engineering, WSU	May 2014
Park EY.	Ph.D.	School of Food Science, WSU	May 2014
Anubha Garg	MS	Dept. Of Grain Science & Industry, KSU	May 2014

In Progress (4)			Anticipated Grad Date
Amninder Sekhon	Ph.D	School of Food Science, WSU	May 2023
Sonali	MS	School of Food Science, WSU	May 2023
Alex Lampien	MS	School of Food Science, WSU	May 2023
Phoebe Unger	Ph.D	School of Food Science, WSU	May 2024

UNDERGRADUATE STUDENTS ADVISED/ADVISING (42)

Current

42. Kimberly Baxley, Spring 2024 to date. Junior. Food Science. WSU.
41. Oscar Wise, Spring 2024 to date. Freshman. Food Science. WSU.
40. Lauren Crisostomo, Fall 2023 to date. Freshman. Food Science. WSU.
39. Natalie Christine Camerino, Fall 2022 to date. Junior. Food Science. WSU.
38. Saskia Steltman, Spring 2023 to date. Sophomore. Food Science. WSU.
37. Macie Ann Loutherback, Spring 2023 to date. Sophomore. Food Science. Univ. of Idaho.
36. Jessica Landis, Fall 2022 to date. Junior. Food Science. WSU.
35. Margaret McGlothern, Spring 2021 to date. Senior. Food Science. WSU.

Past

34. Hallie Janae Simpson, Spring 2023 to Fall 2023. Senior. Food Science. WSU.
33. Daun Park, Summer 2023. Junior. Pullman High School.
32. Bradley Stephen Lubeck, Fall 2019 to Spring 2023. Food Science. WSU.
31. Breana Downs, Summer 2022. Junior. Biology. Pacific Lutheran University.
30. Marek Alexander Fitos-Link, Fall 2022. Freshman. Food Science. WSU.
29. Luuvan Nguyen Hoang, Spring 2019 to Spring 2022. Senior. Food Science. WSU.
28. Elizabeth Bitar Nalbandian, Fall 2019 to Summer 2022. Senior. Food Science. WSU.
27. Alissa Marie Jilk, Fall 2020 to Spring 2021. Junior. Ag. Ed.. WSU.
26. Elea Joy Van Weerdhuizen, Fall 2019 to Spring 2021. Junior. Ag. Ed.. WSU.
25. Marina L Ikuse, Spring 2019 to Spring 2021. Senior. Food Science. WSU.
24. James Lawrence, Fall 2019 to Spring 2020. Senior. Food Science. WSU.
23. August Scellick Wavra, Summer 2019 to Spring 2020. Senior. Food Science. WSU.
22. Ivy Klopher. Summer 2018 to Summer 2020. Senior. Food Science. WSU.
21. Preston Watanabe. Fall 2017 to Fall 2019. Junior. Food Science. WSU.
20. Lauren Rose Rooney. Summer 2019 to Spring 2020. Food Science. WSU.
19. Rebeca Velasquez Morales. Summer 2019 to Fall 2019. Food Science. WSU.
18. Christopher Kerr. 2019. School of Chemical Engineering, WSU.
17. Julianne Kummer. 2019. Food Science, WSU.
16. Greg Housley. 2018. Food Science, WSU.
15. Katy Lobeda. 2018. Food Science, Virginia Tech.
14. Lyssa Blood. 2018. Electrical Engineering, Gonzaga University.
13. Cristen Frieszell. 2018. Food Science, WSU.
12. John Johnson. 2018. Food Science, WSU.
11. Serena Ranney. 2018. Food Science, WSU.
10. Jacob Hause. 2018. Food Science, WSU.
9. Victoria Wilk. 2017. Vassar College, Poughkeepsie, NY.
8. Arjun Dangi. 2017. Mechanical Engineering, WSU.
7. Henry Campbell. 2017. Food Science, WSU.
6. Puspita Hamijoyo, 2017. Food Science, WSU.
5. Arianne W. Kreger. 2017. Food Science, WSU.
4. Oscar R. Ulloa. 2017. Food Science, WSU.
3. Kristen Sparkman. 2016. Food Science, WSU.
2. Chongjun Li. 2015. Food Science, WSU.
1. Jacob Blaylock. 2015. Food Science, WSU.

Future Farmers of America (FFA) Food Science and Technology Career Development Event (CDE)

Overview:
"Future Farmers of America" was founded by a group of young farmers back in 1928. Their mission was to prepare future generations for the challenges of feeding a growing population. They taught us that agriculture is more than planting and harvesting– it's a science, it's a business, and it's an art. FFA continues to help the next generation rise to meet those challenges by helping its members to develop their own unique talents and explore their interests in a broad range of career pathways, including Food Science and Technology.

The Food Science and Technology CDE provides FFA members the opportunity to gain awareness of career and professional opportunities in the field of food science and technology, marketing, and management occupations. Participants take an objective test, design, and formulate or reformulate a simulated food product, practice quality assurance principles, conduct a sensory analysis and apply food safety and sanitation principles.

Dr. Ganjyal's Contributions:
Dr. Ganjyal provides leadership with a team of WSU staff, students, collaborators, and educators to annually organize this CDE event at the state convention. There are six parts to the FFA CDE: i) Objective Test, ii) Problem Solving/Math Practicum, iii) Customer Inquiry, iv) Sensory Practicum, v) Food Safety/Sanitation, and vi) Team Activity. Dr. Ganjyal and his team organizes this entire event and prepares all the tests. On the day of the CDE, a team of 20 to 25 people must be on hand all day to execute the event. This takes up a significant portion of Dr. Ganjyal's time on the day of the event, as well as numerous days spent preparing and coordinating the event with the State FFA staff and the high school FFA advisors across the state.

Date	Location	Collaborator(s)	# of Attendees	Contact Hours
6/1/2022	Pullman, WA	WA FFA, JD Baser, Dany Cavadini	68	544
5/26/2021	Online - Zoom	WA FFA, JD Baser, Dany Cavadini	150	1800
5/9/2019	Pullman, WA	WA FFA, JD Baser, Abbie DeMeerleer	251	3012
5/9/2018	Pullman, WA	WA FFA, JD Baser, Abbie DeMeerleer	244	2928
5/10/2017	Pullman, WA	WA FFA, JD Baser, Abbie DeMeerleer	213	2556
5/12/2016	Pullman, WA	WA FFA, Abbie DeMeerleer	226	2712
		Total	1,152	13,552