

## Curriculum Vitae

**KALIDAS SHETTY**

### Current Position

Professor of Plant Science,  
Founding Director of Global Institute of Food Security & International Agriculture- GIFSIA &  
Associate Vice President for International Partnerships & Collaborations,  
North Dakota State University  
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### Education

- 1989 – **PhD:** **Microbiology**, University of Idaho, Moscow, ID, **USA**.
- 1985 – **MS:** **Bacteriology**, University of Idaho, Moscow, ID, **USA**.
- 1983 – **BSc:** **Agricultural Science**, University of Agricultural Sciences, Bangalore, **INDIA**.  
(Major: **Microbiology**; Minor: **Plant Physiology**)

### Professional Experience

- 2013-Current Professor of Plant Science, Founding Director of Global Institute of Food Security & International Agriculture- GIFSIA and Associate Vice President, International Partnerships and Collaborations  
North Dakota State University, Fargo, ND, USA
- 2004-2012 Professor, Department of Food Science, University of Massachusetts, Amherst, MA, USA
- 2004-2005 Jefferson Science Fellow (Inaugural) at US State Department and subsequently serving as a consultant from 2005-2010
- 1999-2004 Associate Professor (tenured), Dept. of Food Science, University of Massachusetts, Amherst, MA, USA
- 1993-1999 Assistant Professor, Dept. of Food Science, University of Massachusetts, Amherst, MA, USA
- 1992-1993 Post-doctoral Scientist, Plant Biology, Univ. of Guelph, CANADA
- 1990-1991 Post-doctoral Scientist, Plant Cell and Molecular Biology, National Inst. of Agrobiological Sciences, Tsukuba Science City, JAPAN
- 1989 Research Scientist, Biochemical Engineering, University of Idaho, Moscow, ID, USA.
- 1986-1988 Research Assistant, Plant Cell Physiology/Microbial Physiology, Univ. of Idaho, Moscow, ID, USA.
- 1984-1985 Research Assistant, Microbial Physiology, Univ. of Idaho, Moscow, ID, USA.

### Responsibilities

**Professor of Plant Science,**  
**Founding Director, Global Institute for Food Security and International Agriculture &**  
**Associate Vice President for International Partnerships and Collaborations:**

**Research Interests:**

**\*\*\*Metabolic Biology of Crops for Functional Foods and Bioactives for Human Health**  
**\*\*Global Food Systems Biology concepts to combat Diet-linked Chronic Diseases and advancing Food Security strategies**  
**\*\*Food Diversity and Indigenous Food Systems to Combat Diet-Linked Chronic Diseases and advance Global Food Security**  
**\*\*Environmental Impact on Chronic Diseases & Nutritional Solutions using Stress Adapted Crop Food Systems for Climate Resilient Food Production Systems**  
**\*\*Metabolic Biology of Stress Adaptation of Crops for Climate Resilience & Role of Redox Biology**

Specifically, my research interests focus on molecular and metabolic regulation of **phenolic metabolites and phenylpropanoid pathway by proline-linked pentose phosphate pathway and redox-regulated pathways** in autotrophic aerobic food plants, at anaerobic interface of food-associated bacteria and in aerobic fungal and mammalian systems for **advancing climate resilient food systems and public health solutions.**

This focus on **Phenolic-linked “Redox Biology”** is contributing substantially to innovative research advances in the areas of Food Ingredient biosynthesis, Food Preservation, Food Safety, Nutrition, Functional Foods and **Agro-Food Systems for Integrative Public Health solutions.**

**a) Food Metabolic Biology:**

- i) Genetic and physiological regulation of synthesis and mobilization of phenolic antioxidants, anti-microbial, anti-inflammatory, cancer chemo-preventive metabolites, phyto-estrogens and flavors in **food plants in diverse global ecologies for public health solutions.**
- ii) Post-harvest biology and Fermentation bioprocessing of cereals, grain legumes, fruits and vegetables with focus on phenolic metabolites and role of proline-linked pentose phosphate pathway and redox biology in phenolic biosynthesis in diverse complex environments and from this **integrated solutions impacting global public health.**
- iii) Molecular and Biochemical Bioassay models using bacterial, yeast, mammalian cell culture and mice models to screen antioxidants, anti-microbial, anti-cancer and immune modulating phenolic phytochemicals and role of proline-linked pentose phosphate pathway and antioxidant enzyme response pathway for **human health and climate resilient applications.**

**b) Plant Food Systems & Global Food Security for Public Health Solutions:**

Use of **plant systems-based metabolic critical control points of cellular energy pathways** to design **culturally relevant plant-based functional foods to combat diet-linked chronic diseases** and food safety challenges in diverse geographical food niches. This provides a stronger sustainable rationale for advancing global food security solutions based on local food diversity and especially **new platform technologies for post-harvest preservation of grains, fruits and vegetables and fermentation/microbiome biology** for better human health, animal health, zoonotic pandemic counter measures and climate resilient agro-food solutions.

**Integration of Redox Biology and Fermentation Biology** for understanding Eukaryotic cellular protection and disease development pathways using Traditional Diet and Food Diversity to advance global food security for **Public Health solutions based on Innate Immunity and Anti-inflammatory pathways.**

**Teaching Interests: Plant and Food Systems for Climate Resilience and Public Health (Food Systems for Integrative Health)**

**Plant Systems Approach to Global Foods- (PL SC 180)**  
**Systems Innovations to Advance Human Resilience- (Honors 193)**

**Metabolic Biology of Plant & Microbial Systems for Sustainable Agriculture  
Climate Resilient Crop Biology & Biochemistry for Human Health  
Metabolic Biology of Fermented Foods for Human Health**

**Outreach & Service Interests:**

**a) Education and Community Outreach Interests:** Developing new paradigm in International Education at BS/MS, MS and PhD levels using systems-based resilience concepts, including offering US education at Global sites. This includes development of “Food Ecology-Linked Food Security Centers” and “Community and Education Development” centers.

**b) Research and Economic Development Outreach in Native American communities:** This is undertaken by effective integration of traditional food systems for better health and as a basis for sustainable economic development.

**c) Advancing international partnerships and collaborations for NDSU and are being developed with 7 strategic objectives and areas of focus:**

- 1) Research driven doctoral sandwich programs with leading international universities in Asia, Europe and Latin America with options of being awarded either NDSU or partner university PhD. Long term goal is to transition into dual degree doctoral options, especially in Asia and Europe.
- 2) Dual master’s degree options with crossover of credits to complete each Masters in 1 year.
- 3) Advancing “crops for health” to develop food systems and diet-based strategies to counter global child and maternal chronic malnutrition and emergence of diet and environment linked immunity breakdown and chronic diseases (NCD-Non-communicable chronic disease). This also provides a new strategy for value-added agricultural and food systems that can address public health based on critical nutritional breakdown challenges. This will specifically be linked to advancing new initiatives in dual degree Masters and later PhD options in this area of strategic strengths at interface of agriculture, food systems and public health at NDSU.
- 4) Developing NDSU strengths focused on experiential learning-based “Study Abroad” experience for NDSU undergraduates integrated with opening few slots for US universities and international students to advance an international experience in an international setting. These options are being developed initially in select countries in Asia, Latin America and Northern Europe based my own personal network with long term goal to have 12-15 “Study Abroad” centers covering key partner areas across diverse cultural zones for diverse learning experiences.
- 5) Undergraduate immersion experience for international students at NDSU with the experience contributing to their undergraduate degree, while also opening the doors of accelerated graduate studies at NDSU.
- 6) Enhancing undergraduate studies opportunities for international high school students at NDSU with “NDSU Pathway to Higher Education” with a research experience options as the differentiator. This is being positioned in key strategic ‘population dividend’ zone of the world with rapidly growing domestic economies where demand for international higher education is high.
- 7) NDSU summer immersion programs on global studies, research and cultural experiences through summer certificate and transferable course options for promising high school students from around the world with options of joining NDSU after the summer experience.

**Awards and Scholarships/Fellowships**

- 1) Awarded **8 gold medals for academic excellence** at the University of Agricultural Sciences, Bangalore, India (1983).
- 2) **Science and Technology Post-Doctoral Fellowship** of Japan government (1990-1991).

- 3) University of Massachusetts, **Lilly Teaching Fellowship** to promote and encourage promising young faculty (1995-1996).
- 4) University of Massachusetts, College of Food and Natural Resources; **Outstanding Teacher Award** (1996-1997).
- 5) **Asia-Pacific Clinical Nutrition Society Award** (1998-1999)
- 6) University of Massachusetts - College of Food and Natural Resources; **Certificate of Achievement for Outstanding Outreach Contributions**, 2001
- 7) **Jefferson Science Fellow** at the US State Department (2004-2005)
- 8) University of Massachusetts, Award for **Outstanding Accomplishments in Research and Creative Activity**, 2005
- 9) **Fulbright Senior Specialist**, Catholic University of Valparaiso, Chile, 2012

### **Professional Memberships**

Institute of Food Technologists  
 Asia Pacific Clinical Nutrition Society  
 American Society of Microbiology  
 American Chemical Society  
 American Association for Advancement of Sciences

### **Publications**

(Google Scholar H-Index-69; Research Gate H-Index-63 (61 excluding self-citations); Scopus H-Index-58; Mendeley H-Index-58 and Publons Web of Science H-Index-49)

### **Peer-Reviewed Journals:**

1. Shetty, K., Crawford, D. L. and Pometto, A. L. (1986). Production of L-phenylalanine from starch by analog resistant mutants of *Bacillus polymyxa*. **Appl. Environ. Microbiol.**, 52:637-643.
2. Shetty, K., Crawford, D. L., Korus, R. A., and Pometto, A. L. (1988). Amylase activity and L-phenylalanine overproduction from starch by analog resistant mutant of *Bacillus polymyxa*. **Appl. Biochem. Biotechnol.**, 17:347-355.
3. Shetty, K., Korus, R. A. and Crawford, D. L. (1989). Growth kinetics and phenolics production in *Glycine max* cell suspension cultures. **Appl. Biochem. Biotechnol.**, 20/21:825-843.
4. Shetty, K., Bothra, D., Crawford, D. L. and Korus, R. A. (1990). Extracellular peroxidase as an indicator of growth in plant cell suspension cultures. **Appl. Biochem. Biotechnol.**, 24/25:213-221.
5. Suh, H. W., Crawford, D. L., Korus, R. A. and Shetty, K. (1991). Production of antifungal metabolites by the ectomycorrhizal fungus *Pisolithus tinctorius* strain SMF. **J. Industrial Microbiol.**, 8:29-36.
6. Chein, C. T., Shetty, K., Mortimer, M. and Orser, C. S. (1991). Calcium-induced salt tolerance in *Rhizobium leguminosarum* biovar viciae strain C1204b. **FEMS Microbiol. Lett.**, 83:219-224.

7. Shetty, K. and Asano, Y. (1991). The influence of organic nitrogen sources on the induction of embryogenic callus in *Agrostis alba* L. **J. Plant Physiol.**, 139:82-85.
8. Shetty, K. and Asano, Y. (1991). Specific selection of embryogenic cell lines in *Agrostis alba* L using the proline analog thioproline. **Plant Science**, 79:259-263.
9. Shetty, K., Asano, Y. and Oosawa, K. (1992). Stimulation of *in vitro* shoot organogenesis in *Glycine max* (Merrill) by allantoin and amides. **Plant Science**, 81: 245-251.
10. Shetty, K., Shetty, G. A., Ezura, H. and Oosawa, K. (1992). Stimulation of benzyladenine-induced *in vitro* shoot organogenesis from cotyledons of *Cucumis sativa* L by proline and abscisic acid. **Plant Tissue Culture Lett.**, 9:104-108
11. Shetty, K., Shetty, G. A., Nakazaki, Y., Yoshioka, K., Asano, Y. and Oosawa, K. (1992). Stimulation of benzyladenine-induced *in vitro* shoot organogenesis in *Cucumis melo* L by proline, salicylic acid and aspirin. **Plant Science**, 84:193-199.
12. Shetty, K. and McKersie, B. D. (1993). Proline, thioproline and potassium mediated stimulation of somatic embryogenesis in alfalfa (*Medicago sativa* L). **Plant Science**, 88: 185-193.

#### **At the University of Massachusetts, Amherst (1993-2012)**

13. Shetty, K., Curtis, O.F., Levin, R.E., Witkowsky, R. and Ang, W. (1995). Prevention of vitrification associated with *in vitro* shoot culture of oregano (*Origanum vulgare*) by *Pseudomonas* spp. **J. Plant Physiol.**, 147:447-451.
14. Curtis, O.F., Shetty, K., Cassagnol, G. and Peleg, M. (1996). Comparison of the inhibitory and lethal effects of plant metabolites (anethole, carvacrol, eugenol and thymol) on food spoilage yeast (*Debaryomyces hansenii*). **Food Biotechnology**, 10: 55-73.
15. Shetty, K., Curtis, O.F. and Levin, R.E. (1996). Specific interaction of mucoid strains of *Pseudomonas* spp. with oregano (*Origanum vulgare*) clones and the relationship to prevention of hyperhydricity in tissue culture. **J. Plant Physiol.**, 149: 605-611.
16. Shetty, K., Carpenter, T.L., Kwok, D., Curtis, O.F. and Potter, T.L. (1996). Selection of high phenolics-containing clones of thyme (*Thymus vulgaris* L.) using *Pseudomonas* spp. **J. Agric. Food Chem.**, 44:3408-3411.
17. Shetty, K., Carpenter, T., Curtis, O.F. and Potter, T.L. (1996). Reduction of hyperhydricity in tissue cultures of oregano (*Origanum vulgare*) by extracellular polysaccharide isolated from *Pseudomonas* spp. **Plant Science**, 120:175-183.
18. Eguchi, Y., Curtis, O.F. and Shetty, K. (1996). Interaction of hyperhydricity-preventing *Pseudomonas* spp. with oregano (*Origanum vulgare*) and selection of high rosmarinic acid-producing clones. **Food Biotechnology**, 10:191-202.
19. Kwok, D. and Shetty, K. (1996). *Pseudomonas* spp-mediated regulation of total phenolics and rosmarinic acid in thyme (*Thymus vulgaris*) clonal lines. **J. Food Biochemistry**, 20:365-377.
20. Ueno, K. and Shetty, K. (1997). Effect of selected polysaccharide-producing soil bacteria on hyperhydricity control in oregano tissue cultures. **Applied Environmental Microbial.**, 63:767-770.

21. Shetty, K., Ohshima, M., Murakami, T., Oosawa, K. and Ohashi, Y. (1997). Transgenic melon (*Cucumis melo* L.) and potential for expression of novel proteins important to food industry. **Food Biotechnology**, 11:111-128.
22. Yang, R., Potter, P.T., Curtis, O.F. and Shetty, K. (1997). Tissue culture-based Selection of high rosmarinic acid producing clones of Rosemary (*Rosmarinus officinalis* L.) Using *Pseudomonas* Strain. **Food Biotechnology**, 11:73-88.
23. Eguchi, Y., Bela, J.S. and Shetty, K. (1998). Stimulation of somatic embryogenesis in anise (*Pimpinella anisum*) by fish protein hydrolysates in combination with proline. **J. Herbs, Spices and Medicinal Plants**, 5:61-68.
24. Zheng, Z. and Shetty, K. (1998). Cranberry processing waste for solid-state fungal inoculant production. **Process Biochemistry**, 33:323-329.
25. Kwok, D. and Shetty, K. (1998). Effect of proline and proline analogs on total phenolic and rosmarinic acid levels in shoot clones of thyme (*Thymus vulgaris* L.). **J. Food Biochemistry**, 22:37-51.
26. Zheng, Z. and Shetty, K. (1998). Solid state production of beneficial fungi on apple processing waste using glucosamine as the indicator of growth. **J. Agric. Food Chem.**, 46:783-787.
27. Ueno, K., Cheplick, S. and Shetty, K. (1998). Reduced hyperhydricity and enhanced growth of tissue culture-generated raspberry (*Rubus* sp.) clonal lines by *Pseudomonas* sp. isolated from oregano. **Process Biochemistry**, 33:229-238.
28. Komali, A.S. and Shetty, K. (1998). Comparison of the growth pattern and rosmarinic acid production in rosemary (*Rosmarinus officinalis*) shoots and genetically transformed callus cultures. **Food Biotechnology**, 12:27-41.
29. Milazzo, M.C., Kellet, G., Haynesworth, K. and Shetty, K. (1998). Regulation of benzyladenine-induced *in vitro* shoot organogenesis and endogenous proline in melon (*Cucumis melo* L.) by exogenous proline, ornithine and proline analogs. **J. Agric. Food Chem.**, 46:2402-2406.
30. Yang, R. and Shetty, K. (1998). Stimulation of rosmarinic acid in shoot cultures of oregano (*Origanum vulgare*) clonal line in response to proline, proline analog and proline precursors. **J. Agric. Food Chem.**, 46:2888-2893.
31. Ueno, K. and Shetty, K. (1998). Prevention of hyperhydricity in oregano shoot cultures is sustained through multiple subcultures by selected polysaccharide-producing soil bacteria without re-inoculation. **Appl. Microbiol. Biotechnology**, 50:119-124.
32. Komali, A.S., Peleg, M., Gerhards, C. and Shetty, K. (1998). A study of the cell wall mechanical properties in unhyperhydrated shoots of oregano (*Origanum vulgare*) inoculated with *Pseudomonas* sp. by load deformation analysis. **Food Biotechnology**, 12:209-220.
33. Zheng, Z., Pinkham, J.L. and Shetty, K. (1998). Identification of polymeric dye-tolerant oregano (*Origanum vulgare*) clonal lines by quantifying total phenolics and peroxidase activity. **J. Agric. Food Chem.**, 46:4441-4446.
34. Bela, J., Ueno, K. and Shetty, K. (1998). Control of hyperhydricity in anise (*Pimpinella anisum*) tissue cultures by *Pseudomonas* spp. **J. Herbs, Spices and Medicinal Plants**, 6:47-57.

**Post-Tenure Associate Professor, University of Massachusetts, Amherst**

35. Bela, J. and Shetty, K. (1999). Somatic embryogenesis in anise (*Pimpinella anisum* L.): The effect of proline on embryogenic callus formation and ABA on advanced embryo development. **J. Food Biochemistry**, 23:17-32.
36. Zheng, Z., Levin, R.E., Pinkham, J.L. and Shetty, K. (1999). Decolorization of polymeric dyes by a novel *Penicillium* isolate. **Process Biochemistry**, 34:31-37.
37. Milazzo, M.C., Zheng, Z., Kellet, G., Haynesworth, K., and Shetty, K., (1999). Stimulation of benzyladenine-induced in vitro shoot organogenesis and endogenous proline in melon (*Cucumis melo* L) by fish protein hydrolysates in combination with proline analogs. **J. Agric. Food Chem.**, 47:1771-1775.
38. Andarwulan, N., and Shetty, K. (1999). Phenolic content in differentiated tissue cultures of untransformed and *Agrobacterium*-transformed roots of anise (*Pimpinella anisum* L.). **J. Agric. Food Chem.**, 47:1776-1780.
39. Zheng, Z. and Shetty, K. (1999). Effect of apple pomace-based *Trichoderma* inoculants on seedling vigor in pea (*Pisum sativum*) germinated in potting soil. **Process Biochemistry**, 34:731-735.
40. Perry, P., Ueno, K. and Shetty, K. (1999). Reversion to hyperhydration by addition of antibiotics to remove *Pseudomonas* in unhyperhydrated oregano tissue cultures. **Process Biochemistry**, 34:717-723.
41. Perry, P.L. and Shetty, K. (1999). A model for involvement of proline during *Pseudomonas*-mediated stimulation of rosmarinic acid. **Food Biotechnology**, 13:137-154.
42. Komali, A.S., Zheng, Z. and Shetty, K. (1999). A mathematical model for the growth kinetics and total phenolics synthesis in *Pseudomonas* species inoculated shoot cultures of oregano (*Origanum vulgare*) **Process Biochemistry**, 35:227-235.
43. Al-Amier, H., Mansour, B.M.M., Toaima, N., Korus, R.A. and Shetty, K. (1999). Tissue culture-based screening for selection of high biomass and phenolic-producing clonal lines of Lavender using *Pseudomonas* and azetidine-2--carboxylate. **J. Agric. Food Chem.**, 47:2937-2943.
44. Andarwulan, N. and Shetty, K. (1999). Antioxidant activity associated with lipid and total phenolic mobilization during seed germination of *Pangium edule* Reinw. **J. Agric. Food. Chem.**, 47:3158-3163.
45. Andarwulan, N., Fardiaz, S., Apriyantono, A., Hariyadi, P. and Shetty, K. (1999). Mobilization of primary metabolites and phenolics during natural fermentation in seeds of *Pangium edule* Reinw. **Process Biochemistry**, 35:197-204.
46. Andarwulan, N. and Shetty, K. (1999). Improvement of pea (*Pisum sativum*) seed vigor by fish protein hydrolysates in combination with acetyl salicylic acid. **Process Biochemistry**, 35:159-165.
47. Andarwulan, N. and Shetty, K. (1999). Influence of fish protein hydrolysates in combination with acetyl salicylic acid on hyperhydricity reduction and phenolic synthesis in oregano (*Origanum vulgare*) tissue cultures. **J. Food Biochemistry**, 23:619-635.
48. Al-Amier, H., Mansour, B.M.M., Toaima, N. Korus, R.A and Shetty, K. (1999). Screening of high biomass and phenolic-producing clonal lines of Spearmint in tissue culture using *Pseudomonas* and azetidine-2-carboxylate. **Food Biotechnology**, 13:227-253.

49. Duval, B., Shetty, K. and Thomas, W.H. (1999). Phenolic compounds and antioxidant properties in the snow alga *Chlamydomonas nivalis* after exposure to UV light. **J. Applied Phycology**, 11:559-566.
50. Eguchi, Y., Milazzo, M.C., Ueno, K. and Shetty, K. (2000). Partial improvement of vitrification and acclimation of oregano (*Origanum vulgare*) tissue cultures by fish protein hydrolysates. **J. Herbs, Spices and Medicinal Plants**, 6:29-38.
51. McCue, P., Zheng, Z., Pinkham, J.L. and Shetty, K. (2000). A model for enhanced pea seedling vigor following low pH and salicylic acid treatments. **Process Biochemistry**, 35:603-613.
52. Zheng, Z. and Shetty, K. (2000). Azo dye-mediated regulation of total phenolics and peroxidase activity in thyme (*Thymus vulgaris* L.) and rosemary (*Rosmarinus officinalis* L.) clonal lines. **J. Agric. Food Chem.**, 48:932-937.
53. Zheng, Z. and Shetty, K. (2000). Solid-state bioconversion of phenolics from cranberry pomace and role of *Lentinus edodes* beta-glucosidase **J. Agric. Food Chem.**, 48:895-900.
54. Zheng, Z. and Shetty, K. (2000). Solid-state production of polygalacturonase by *Lentinus edodes* using fruit processing wastes. **Process Biochemistry**, 35:825-830.
55. Andarwulan, N. and Shetty, K. (2000). Stimulation of novel phenolic metabolite, epoxy-Pseudoisoeugenol-(2-Methylbutyrate)[EPB], in transformed anise (*Pimpinella anisum* L.) root cultures by fish protein hydrolysates. **Food Biotechnology**, 14:1-20.
56. Zheng, Z. and Shetty, K. (2000). Enhancement of pea (*Pisum sativum*) seedling vigor and associated phenolic content by extracts of apple pomace fermented with *Trichoderma* spp. **Process Biochemistry**, 36:79-84.
57. Zheng, Z., Sheth, U., Nadiga, M., Pinkham, J.L. and Shetty, K. (2001). A model for the role of proline-linked phenolic synthesis and peroxidase activity associated with polymeric dye tolerance in oregano. **Process Biochemistry**, 36:941-946.
58. Al Ameir, H.A., Mansour, B.M.M., Toaima, N., Craker, L. and Shetty, K. (2001). Tissue culture for phenolics and rosmarinic acid in thyme. **J. Herbs, Spices and Medicinal Plants**, 8:31-42.
59. Shetty, P., Atallah, M.T. and Shetty, K. (2001). Enhancement of total phenolic, L-DOPA and proline contents in germinating fava bean (*Vicia faba*) in response to bacterial elicitors. **Food Biotechnology**, 15:47-67.
60. Duval, B. and Shetty, K. (2001). The stimulation of phenolics and antioxidant activity in pea (*Pisum sativum*) elicited by genetically transformed anise root extract. **J. Food Biochemistry**, 25:361-377.
61. Kaspera, R., McCue, P. and Shetty, K. (2001). Partial purification of a basic guaiacol peroxidase from fava bean (*Vicia faba* L.): Characterization of enzyme stability following elicitor treatment. **Food Biotechnology**, 15: 99-111.
62. McCue, P. and Shetty, K. (2002). Clonal herbal extracts as elicitors of phenolic synthesis in dark-germinated mung beans for improving nutritional value with implications for food safety. **J. Food Biochemistry**, 26: 209-232.
63. Strycharz, S. and Shetty, K. (2002). Peroxidase activity and phenolic content in elite clonal lines of *Mentha pulegium* in response to polymeric dye R-478 and *Agrobacterium rhizogenes*. **Process Biochemistry**, 37: 805-812.

64. Shetty, P., Atallah, M.T. and Shetty, K. (2002). Effects of UV treatment on the proline-linked pentose phosphate pathway for phenolics and L-DOPA synthesis in dark germinated *Vicia faba*. **Process Biochemistry**, 37: 1285-1295.
65. Randhir, R., Shetty, P. and Shetty, K. (2002). L-DOPA and total phenolic stimulation in dark germinated fava bean in response to peptide and phytochemical elicitors. **Process Biochemistry**, 37:1247-1256.
66. McCue, P. and Shetty, K. (2002). A biochemical analysis of mung bean (*Vigna radiata*) response to microbial polysaccharides and potential phenolic-enhancing effects for nutraceutical applications. **Food Biotechnology**, 16:57-79.
67. Strycharz, S. and Shetty, K. (2002). Response of oregano (*Origanum vulgare*) clonal lines to *Pseudomonas* sp. Z strain and polydye R-478 and implications for hyperhydricity prevention in tissue culture. **Process Biochemistry**, 38:343-350.
68. Strycharz, S. and Shetty, K. (2002). Effect of *Agrobacterium rhizogenes* on phenolic content of *Mentha pulegium* elite clonal line for phytoremediation applications. **Process Biochemistry**, 38:287-293.
69. Vatter, D.A. and Shetty, K. (2002). Solid-state production of phenolic antioxidants from cranberry pomace by *Rhizopus oligosporus*. **Food Biotechnology**, 16:189-210.
70. Randhir, R. and Shetty, K. (2003). Light-mediated fava bean (*Vicia faba*) response to phytochemical and protein elicitors and consequences on nutraceutical enhancement and seed vigor. **Process Biochemistry**, 38: 945-952.
71. Shetty, P., Atallah, M.T. and Shetty, K. (2003). Stimulation of total phenolics, L-DOPA and antioxidant activity through proline-linked pentose phosphate pathway in response to proline and its analog in germinating fava beans (*Vicia faba*) **Process Biochemistry**, 38: 1707-1717.
72. McCue, P. and Shetty, K. (2003). Role of carbohydrate-cleaving enzymes in phenolic antioxidant mobilization from whole soybean fermented with *Rhizopus oligosporus*. **Food Biotechnology**, 17:27-37.
73. Seaberg, A., Labbe, R.L. and Shetty, K. (2003). Inhibition of *Listeria monocytogenes* by elite clonal extracts of oregano (*Origanum vulgare*). **Food Biotechnology**, 17: 129-149.
74. Vatter, D.A. and Shetty, K. (2003). Acrylamide in food: Probable mechanisms of formation and its reduction. **Innovative Food Science and Emerging Technologies**, 4: 331-338.
75. McCue, D.A., Horii, A and Shetty, K. (2003). Solid-state bioconversion of phenolic antioxidants from defatted powdered soybean by *Rhizopus oligosporus*: Role of carbohydrate cleaving enzymes. **J. Food Biochemistry**, 27: 501-514.
76. Vatter, D.A. and Shetty, K. (2003). Ellagic acid production and phenolic antioxidant activity in cranberry pomace mediated by *Lentinus edodes* using solid-state system. **Process Biochemistry**, 39: 367-379.
77. Randhir, R., Lin, Y-T. and Shetty, K. (2004). Stimulation of phenolics, Antioxidant and antimicrobial activities in dark germinated mung bean (*Vigna radiata*) sprouts in response to peptide and phytochemical elicitors. **Process Biochemistry**, 39: 637-646.
78. Vatter, D.A., Lin, Y.T., Labbe, R.G. and Shetty, K. (2004). Phenolic antioxidant mobilization in cranberry pomace by solid-state bioprocessing using food grade fungus *Lentinus edodes* and effect on antimicrobial activity against select food-borne pathogens. **Innovative Food Science and Emerging Technologies**, 5: 81-91.

79. McCue, P., and Shetty, K. (2004). Inhibitory effects of rosmarinic acid extracts on porcine pancreatic amylase and implications for health. **Asia Pacific Journal of Clinical Nutrition**, 13: 101-106.
80. Randhir, R., Vatter, D. and Shetty, K. (2004). Solid-state bioconversion of fava bean by *Rhizopus oligosporus* for enrichment of phenolic antioxidants and L-DOPA. **Innovative Food Science and Emerging Technologies**, 5: 235-244.
81. Randhir, R. and Shetty, K. (2004). Microwave-induced stimulation of L-DOPA, phenolics and antioxidant activity in fava bean (*Vicia faba*) for Parkinson's diet. **Process Biochemistry**, 39: 1775-1784.
82. McCue, P. and Shetty, K. (2004). A role for amylase and peroxidase-linked polymerization in phenolic antioxidant mobilization in dark-germinated soybean and implications for health. **Process Biochemistry**, 39: 1785-1791.

#### **After Promotion to Professor at University of Massachusetts, Amherst**

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32. Rale, V., Singh, P. and Shetty, K. (2019). Lemnaceae: Source of Food Supplements to Functional Foods. In: Food Biotechnology Series, K. Shetty and D. Sarkar (Ed.), **Functional Foods and Biotechnology: Sources of Functional Foods and Ingredients.** CRC Press (Taylor and Francis Group), Boca Raton, USA, Chapter 9, pp 133-142.
33. Randhir, R. and Shetty, K. (2019) Biotechnology of Non-Nutritive Sweeteners. In: Food Biotechnology Series, K. Shetty and D. Sarkar (Ed.), **Functional Foods and Biotechnology: Sources of Functional Foods and Ingredients.** CRC Press (Taylor and Francis Group), Boca Raton, USA, Chapter 11, pp 165-184.
34. Sarkar, D. and Shetty, K. (2020) Metabolic Modulation of Abiotic Stress Response for Improvement of Functional Ingredients in Food Plants. In: Food Biotechnology Series, K. Shetty and D. Sarkar (Ed.). **Functional Foods and Biotechnology: Biotransformation and Analysis of Functional Foods and Ingredients.** CRC Press (Taylor and Francis Group), Boca Raton, USA, Chapter 1, pp 3-23.
35. Deo, D., Rale, V., Shetty, K and Kulkarni, R. (2020) Biotransformation of Food-Related Phytochemicals by the Gut Bacteria. In: Food Biotechnology Series, K. Shetty and D. Sarkar (Ed.). **Functional Foods and Biotechnology: Biotransformation and Analysis of Functional Foods and Ingredients.** CRC Press (Taylor and Francis Group), Boca Raton, USA, Chapter 2, pp 25-39.
36. Agustinah W., Joshua, M. and Shetty, K. (2020) Lactic Acid Fermentation and Bioactive Enrichment of Functional Ingredients in Berries. In: Food Biotechnology Series, K. Shetty and D. Sarkar (Ed.). **Functional Foods and Biotechnology: Biotransformation and Analysis of Functional Foods and Ingredients.** CRC Press (Taylor and Francis Group), Boca Raton, USA, Chapter 4, pp 57-76.
37. Hepsiba A.S, Murthy, K.N.C. and Shetty, K. (2020) Applications of Cell and Cell Based Models to Screen the Health Promoting Properties of Dietary Components. In: Food Biotechnology Series, K. Shetty and D. Sarkar (Ed.). **Functional Foods and Biotechnology: Biotransformation and Analysis of Functional Foods and Ingredients.** CRC Press (Taylor and Francis Group), Boca Raton, USA, Chapter 15, pp 279-294.
38. Murthy, K.N.C., Hepsiba, A.S. and Shetty, K. (2020) Plant Phytochemicals for Cancer Chemoprevention: Applications & Advantages. In: Food Biotechnology Series, K. Shetty and D. Sarkar (Ed.). **Functional Foods and Biotechnology: Biotransformation and Analysis of Functional Foods and Ingredients.** CRC Press (Taylor and Francis Group), Boca Raton, USA, Chapter 17, pp 327-343.
39. Sarkar, D., Ankolekar, C. and Shetty, K. (2020) Beneficial Lactic Acid Bacteria (LAB) Based Biotransformation of Plant and Dairy Substrates to Enhance Type 2 Diabetes Relevant Health Benefits. In: Food Biotechnology Series, K. Shetty and D. Sarkar (Ed.). **Functional Foods and Biotechnology: Biotransformation and Analysis of Functional Foods and Ingredients.** CRC Press (Taylor and Francis Group), Boca Raton, USA, Chapter 18, pp 245-360.
40. Panchal, P., Singh, S., Banerji, R., Saroj, S., Menon, K., Rale, V. and Shetty, K. (2020) The Potential Roles and Implications of Microbiota on Maternal and Child Health. In: Food

Biotechnology Series, K. Shetty and D. Sarkar (Ed.). **Functional Foods and Biotechnology: Biotransformation and Analysis of Functional Foods and Ingredients**. CRC Press (Taylor and Francis Group), Boca Raton, USA, Chapter 19, pp 361-377.

### Manuscripts in Conference Proceedings

#### At University of Massachusetts Amherst (1993-2012)

1. Shetty, K. and Curtis, O.F. (1995). The biotechnology of plant secondary metabolites and their applications in food. In: Proceedings of Indonesian Workshop on "Benefits of Traditional Food", Jakarta, June 9-11, 1995. Indonesia.
2. Bela, J. S. and Shetty, K. (1996). *In vitro* developmental response of anise to growth regulators and establishment of a clonal propagation system. **Acta Horticulturae**, 426:483-488.
3. Curtis, O. F. and Shetty, K. (1996). Growth medium effects on vitrification, total phenolics, chlorophyll and water content of *in vitro* propagated oregano clones. **Acta Horticulturae**, 426:489-504.
4. Kellet, G., Reid, J. and Shetty, K. (1996). Bacterial-mediated stimulation of phenolics and control of vitrification in clonal line of oregano. **Acta Horticulturae**, 426:505-510.
5. Shetty, K., Nadiga, M., Zheng, Z. and Lanza, G. (1997). Phytoremediation of aromatic pollutants and selection of elite clones. Proceedings of Tsukuba Advanced Research Alliance Symposium; Feb. 21, 1997, Tsukuba University, Japan.
6. Shetty, K., Nadiga, M., Zheng, Z. and Lanza, G. (1997). Phytoremediation of aromatic pollutants and selection of elite clones. Proceedings of Microbial-Based Technologies for Pollution Abatement of Laguna DeBay, Manila. Sponsored by University of the Philippines and Japanese Society for Promotion of Science; Feb. 25-27, 1997, Makato City, Philippines.
7. Shetty, K., Kwok, D. and Labbe, R.G. (1997). Antioxidants and antimicrobials from elite thyme clones. In: Proceedings of Herb '97 - International Herb Conference, Danvers, July 10-14, 1997, MA. .
8. Shetty, K. and Labbe, R.G. (1998). Food borne pathogens, health and role of dietary phytochemicals. In: Proceedings of 2nd Asia-Pacific Clinical Nutrition Society Conference, Mar, 1998, Kuching, Malaysia. In: **Asia Pacific J. Clinical Nutrition**, Vol: 7: 270-276.
9. Shetty, K. (2000). A rationale integrated approach to scientific and commercial development of botanical nutraceuticals. In: Proceeding of the Vitafoods International Conference, May, 2000, Geneva, Switzerland.
10. Shetty, K. (2002). "Botanical Ingredients as Nutraceuticals". In Proceedings of Vitafoods International Conference, Geneva, Switzerland, May, 2002.
11. Shetty, K., Lin, Y-T., McCue, P., Labbe, R.G., Randhir, R. and Ho, C-H. (2003) Low microbial load sprouts with enhanced antioxidants for Astronaut diet. In Proceeding of International Conference on Environmental Systems, Vancouver, BC; Canada, July, 2003.
12. Shetty, K. (2007) Estrategias de Comercializacion en Biotecnologia y Ciencias de la vida: Desafios. In Proceedings (Textos) Gestion-Innovacion y Comercializacion en Biotecnologia (Gil, L and Adonis, M. (eds)). Editorial Universitaria (University of Chile, Santiago).

13. Lin, D-R., Hu, L-J., You, H., Sarkar, D., Xing, B-S. and Shetty, K. (2010) Initial Screening Studies on Potential of High Phenolic-Linked Plant Clonal Systems for Nitrate Removal in Cold Latitudes. **J Soils & Sediments**, 10:923–932.

#### **At North Dakota State University, Fargo (2013-Current)**

14. Sarkar, D., Walker-Swaneey, J. and Shetty, K. (2020). Food Diversity and Indigenous Food Systems to Combat Diet-Linked Chronic Diseases. **Current Developments in Nutrition**, Volume 4 (Supplement 1), 3–11, (<https://doi.org/10.1093/cdn/nzz099>)

#### **Patents**

1. Shetty, K. (1999) Plant Clones Containing Elevated Secondary Metabolite Levels "U.S. Patent" # 5,869,340.
2. Shetty, K., Zheng, Z. and Levin, R. (1999) *Penicillium* strain for Bioremediation "U.S. Patent" # 5,877,014.
3. Shetty, K. (1999) Fruit Pomace Compositions and Uses Thereof "U.S. Patent" # 5,882,641.
4. Shetty, K. (1999) Plant Propagation Compositions and Methods "U.S. Patent" # 5, 906,941.
5. Shetty, K. (2007) Organic Compositions and Methods of Use for Promoting Plant Growth "U.S Patent" # 7,271,128 B2.
6. Ghaedian, R. Shinde, R.M. and Shetty, K. (2013) Compositions and Methods for controlling metabolic syndrome using whole fruit-derived cranberry ingredient profile enriched in stress adapted bioactives (SABs). "U.S. Patent" # 8,557,305 B2.

#### **Invited Lectures and Seminars**

##### **At University of Massachusetts, Amherst (1993-2012)**

1. Givaudan Roure, Clifton, NJ, USA; June 1994. Biotechnological applications for flavor production in plants.
2. Mannheimer, Inc., NY, USA; Oct. 1994. Development of natural flavors from plants and microbes using biotechnology.
3. Ocean Spray, Middleboro, Massachusetts, USA Oct, 1994; Solid-state fermentation of cranberry wastes to produce value-added metabolites.
4. Bogor Agricultural University, Bogor, Indonesia, June 1995. Biotechnological approaches to harness the potential of secondary metabolite-producing plants.
5. Indonesian National Workshop on Benefits of Traditional Food, June, 1995, Jakarta, Indonesia. "Biotechnology of Plant Secondary Metabolites for Food Applications".
6. National Institute of Agrobiological Resources, Tsukuba, Japan, June 1995. Biotechnology of plant secondary metabolites for food and pharmaceutical applications.
7. Chiba University, Matsudo, Japan, Apr, 1996. Biotechnology of Plant Phenolics; Role in food applications and plant development.

8. National Institute of Agrobiological Resources, Tsukuba, Japan, April 1996. Use of PR-GUS Fusions in transgenic tobacco to select antiinflammatory metabolites in elite clones of oregano and thyme.
9. Goodman-Fielder Medical Oration, Dec, 1996, Monash University, Melbourne, Australia. "Biotechnology to Harness the Benefits of Dietary Phenolics: Focus on Lamiaceae".
10. Department of Medicine, Monash Medical Center; Monash University, Melbourne, Australia, Dec, 1996. Health benefits of phenolics from fermented legumes.
11. Department of Nutrition, University of Agricultural Sciences, Bangalore, India, Jan, 1997. Health benefits of dietary phytochemicals.
12. Tsukuba Advanced Research Alliance, University of Tsukuba, Japan, Feb, 1997. Phytoremediation of aromatic pollutants and selection of elite clones.
13. University of the Philippines and Japanese Society for Promotion of Science, Makato City, Philippines, Feb. 1997. Phytoremediation of aromatic pollutants and pollution abatement in Laguna DeBay using plants.
14. Inter-Mountain Institute of Food Technology Meeting, Mar, 1997, Sun Valley, Idaho, USA. "Trends in Food Biotechnology: Market Opportunities for Idaho and Western States in the Asia-Pacific Region".
15. Department of Microbiology and Biochemistry, University of Idaho, USA April 1997. Regulation of phenolic synthesis in plants by microorganisms for food, pharmaceutical and environmental applications.
16. International Herb Conference, Herb '97, July, 1997, Danvers, MA, USA. "Antioxidants and antimicrobials from elite thyme clones".
17. Faculty of Biological Sciences, University of de Nuevo Leon, San Nicolas, Mexico, Sept, 1997. Plant biotechnology and phytoremediation of aromatic pollutants.
18. Department of Biology and Biotechnology, Worcester Polytechnique Institute, Worcester, MA, USA Nov 1997. Regulation of phenylpropanoid pathway metabolites by proline-linked pentose phosphate pathway.
19. Asia-Pacific Clinical Nutrition Society, Kuching, Malaysia, Mar, 1998. "Food borne pathogens, health and role of dietary phytochemicals".
20. Ist Latin American Conference on Soil and Water Contamination, Organized by International School for Environmental Technology, USAID and World Bank, in Quito, Ecuador, May, 1998. "Strategies for phytoremediation of aromatic pollutants".
21. Seminar on 'Microbial Interaction Strategies for Phytochemicals and Functional Foods' to New England Society of Industrial Microbiology, Oct, 1998. Groton, CT, USA.
22. Symposium on "Antioxidants and Oxidative Process in Health and Foods." Sponsored by the UMASS, Department of Food Science, Nov, 1998, Amherst, MA, USA.
23. Danish Agricultural Research Institute, Arsløv., Denmark, Apr, 1999. "Phytochemicals and Functional Foods: Non-transgenic Biotechnology Strategies".
24. Norris Ltd., at Icelandic Fisheries Institute, Reykjavik, Iceland, July, 1999. Value-added products from fishery byproducts for food, nutraceutical and agricultural applications.

25. Hershey Foods, PA, USA. July, 1999. Non-transgenic biotechnology for production of plant-based functional food ingredients for health and food preservation.
26. Decas Cranberry, MA, USA Aug, 1999. Nutraceutical value added products from processed cranberry.
27. Novartis Nutrition, MN, USA. Sept, 1999. Integrated approach to the development of Nutraceuticals and Functional Foods.
28. Eastern Institute of Food Technology Conference, Hershey, PA, USA October 1999. Emerging perspectives in Food Biotechnology: Non-transgenic approaches for plant-based functional ingredients for nutraceuticals and functional foods.
29. National University of Singapore, Department of Biological Sciences, Jan, 2000. "Emerging perspectives for the scientific development of nutraceuticals".
30. Bristol Myers Squibb, Wallingford, CT, USA Natural Products Group, Mar, 2000. "Technological innovations for consistency of botanical profiles for pharma applications".
31. Vitafoods International Conference, 2000, Geneva, Switzerland, May, 2000. Session on Natural and Herbal Products and Medicine: "A rationale integrated approach to scientific and commercial development of botanical nutraceuticals".
32. Ceres Listeria Round Table, Nov 2000, Georgetown University, Washington, DC, USA. "Elite herb extracts to control *Listeria*".
33. ETH-Zurich, Switzerland, Institute of Food Science, Dec 2000, "Biotechnology Strategies for development of Functional Foods".
34. Food Safety symposium, Clemson University, Clemson, USA, April, 2001. "Phytochemical extracts for control of food-borne pathogens".
35. Listeria Symposium, American Meat Institute Foundation, Dallas, TX, USA Dec, 2001. "Elite clonal herb extracts and pH interaction on Listeria control in meats".
36. Vitafoods International Conference, 2002, Geneva, Switzerland, May, 2002. "Botanical Ingredients as Nutraceuticals".
37. Strategic Research Alliance, Department of Food Science, UMASS, Amherst, MA, USA May 2003. "Phytochemicals and Health a Systems Biology Approach".
38. International Conference on Environmental Systems, Vancouver, BC; Canada, July 2003 "Low microbial load sprouts with enhanced antioxidants for Astronaut diet".
39. Iowa State University and NASA Food Technology Commercial Space Center, Ames IA, USA October, 2003 "Metabolic Biology of Phytochemicals for Functional Food".
40. NE Society of Industrial Microbiology, Boston, MA, USA October, 2003", "Plant-Microbe Interaction for functional food developments"
41. Central Food Technological Research Institute, Mysore, India, Jan 2004, "Systems and Metabolic Biology of Phytochemicals for Chemoprevention".
42. International Union of Biological Sciences, General Assembly, Cairo, Egypt, Jan 2004, Workshop Presentation " Systems Biology of Plants for Environmental Health.

43. Faculty of Biological Sciences, University of de Nuevo Leon, San Nicolas, Mexico, September, 2004. "Systems Biology and Biotechnology for Development of Functional Foods and Food Safety".
44. International Agri-Biotechnology Conference, University of Agricultural Sciences, Bangalore, India, December, 2004. "Integration of Systems Biology and Biotechnology for Improvement of Horticultural Crops".
45. Faculty of Sciences, St. Aloysius College, Mangalore, India, December, 2004. "Biotechnology strategies for improvement of functional foods and food safety".
46. Department of Food Science and Nutrition, Hannam University, Deojeon, South Korea, January, 2005. "Biotechnology Strategies for Design of Functional Foods".
47. Faculty of Life Sciences, Jeju National University, Cheju, South Korea, January, 2005 "Next Generation Food Biotechnology for Management of Human Health".
48. Department of Food Science, Seoul National University, Seoul, South Korea, January, 2005 "Next Generation Food Biotechnology for Design of Functional Foods".
49. Asia Biotech Forum, Kuala Lumpur, Malaysia, February, 2005 "Next Generation Food Biotechnology and University-led IP Development".
50. Biotechnology and Food Science Program, University Putra Malaysia, Selangor, Malaysia, February, 2005 "Next Generation Food Biotechnology for Management of Human Health".
51. Faculty of Horticulture, Chiba University, Matsudo, Japan, February, 2005 "Next Generation Food Biotechnology for Management of Human Health".
52. Universidad Autonomous Coahuila, Saltilo, Mexico; Biotechnology Program, February, 2005 "Next Generation Food Biotechnology for the Management of Human Health".
53. Purdue University, West Lafayette, IN, USA Department of Horticulture, March, 2005 "Strategies for Design of Horticultural Crops for Functional Food Applications".
54. National Institute of Health-NCI, Bethesda, USA March, 2005 "Role of proline-linked pentose phosphate pathway for phenolic synthesis in plants and relevance to human health".
55. Bose Institute and Kolkatta University, Kolkatta, India, April, 2005 "Next Generation Food Biotechnology to Manage Human Health".
56. University of Burdwan, Burdwan, West Bengal, India, April, 2005 "Next Generation Food Biotechnology to Manage Human Health".
57. Bangalore Bio, 2005; Bangalore, India; April 2005 "Biotechnology Strategies to Develop Functional Foods and Nutraceuticals".
58. Bangalore Bio, 2005; Bangalore, India; April 2005 "India and the Knowledge Economy: Biotechnology Potential of India". Address to Indo-German Business Group.
59. MARDI-Malaysian Agricultural Research and Development Institute, Kuala Lumpur, Malaysia; April 2005 "Next Generation Food Biotechnology to Manage Human Health".
60. BioMalaysia, 2005; Putra Jaya, Malaysia; April 2005 "Next Generation Food Biotechnology and Global Challenges".

61. American Center Library & University National Autonomous of Mexico, Mexico City; May, 2005 "Next Generation Food Biotechnology to Manage Human Health".
62. University Autonomous at Chappingo; Chappingo, Mexico; May 2005 "Next Generation Food Biotechnology to Manage Human Health".
63. CIATEJ-Center for Research and Assistance in Technology and Design (Food Technology) and Rural Development Secretariat; Guadalajara, Mexico; May 2005 "Biotechnology Strategies for Functional Foods and Food Safety".
64. Weizmann Institute of Science, Rehovot; Israel; May 2005 "Design of Functional Foods to Manage Human Health".
65. Volcani Research Institute, Bet Dagan; Israel; May 2005 "Biotechnology Strategies to Design Functional Foods".
66. Bio-Tech Israel; 2005, Tel Aviv; Israel; May 2005 "Biosynthesis of Dietary Phenolic Antioxidants for Metabolic Disorders".
67. Hebrew University; Revohot; Israel; May 2005 "Design of Functional Foods to Manage Human Health".
68. Taiwan Agricultural Research Institute, Taichung, Taiwan; June 2005; "Regulatory Policy Issues in GM Food and Environmental Safety".
69. American Corner, Taichung, Taiwan; June 2005; "Next Generation Food Biotechnology to Manage Human Health".
70. Department of Health, Taiwan; June 2005; " Microbial and GM Food Safety Challenges and Regulatory Issues".
71. American Institute of Taiwan and Taiwan Biotechnology Association, Taiwan; June 2005; " Commercialization of Biotechnology: The Challenges".
72. American Institute of Taiwan and Taiwan Biotechnology Association, Taiwan; June 2005; " University-Led Commercialization and IP Development: The Role of Bayh-Dole Act".
73. American Chamber of Commerce, Taipei, Taiwan; June 2005; " Commercialization of Biotechnology: The Challenges".
74. Taipei International Food Show, Taipei, Taiwan; June 2005; "Next Generation Food Biotechnology to Manage Human Health".
75. Karolinska Institute, Department of Medical Nutrition, Stockholm; Sweden; June, 2005; "Novel Regulation of Cellular Antioxidant Response for Chemoprevention of Diseases".
76. Danish Chamber of Commerce and US Embassy, Copenhagen, Denmark; June 2005; "Next Generation Food Biotechnology to Manage Human Health".
77. Royal Veterinary and Agricultural University, Fredricksberg, Denmark; June 2005; "Next Generation Food Biotechnology to Manage Human Health".
78. University of Life Sciences, As, Norway; June 2005; "Next Generation Food Biotechnology to Manage Human Health".
79. University of Sao Paulo; Sao Paulo, Brazil; July 2005; "Biotechnology Strategies to Design Functional Foods".

80. University of Campinas; Campinas, Brazil; July 2005; "Next Generation Food Biotechnology to Manage Human Health".
81. University of Londrina, Parana, Brazil; July 2005; "Next Generation Food Biotechnology to Manage Human Health".
82. University of Chile, Santiago, Chile; July 2005; "Biotechnology Strategies to Design Functional Foods".
83. Jeju National University, Jeju Island, South Korea; August, 2005; Workshop on "Biotechnology Strategies to Design Functional Foods".
84. International Seminar "Experiences de Empresas Biologicas de America Latina y el Caribe"; Bogota, Columbia; October 2005; "Commercialization Strategies in Life Sciences and Biotechnology: The Challenges".
85. International Seminar on Innovations and Commercialization in Biotechnology in Latin America; Santiago, Chile; December 2005 "Commercialization Strategies in Life Sciences and Biotechnology: The Challenges".
86. National Symposium on Biotechnology- "Bridging the Industry-Academia Gap", Organized by St. Aloysius College, Mangalore, India, January, 2006 "Current Developments in Food Biotechnology".
87. International Conference on Biotechnology Approaches for Alleviating Malnutrition and Human Health, Organized by University of Agricultural Sciences, Bangalore, Purdue University and USAID in Bangalore, India, January, 2006 "Advances in Molecular Nutrition: Integration of Phytochemicals and Antioxidant Response Pathways".
88. National Research Foundation of Greece, Athens, Greece; March, 2006, "Food Biotechnology: Design of Functional Foods to Manage Human Health."
89. Aristotelian University of Thessaloniki, Greece; March 2006 "Preventive Management of Disease and Phytochemicals: A New Perspective".
90. Food Chemistry and Plant Research International, Wageningen, Netherlands (Holland); April 2006 "Phytochemicals and Functional Food Applications".
91. Animal Sciences Group, Wageningen UR at Lelystad, Netherlands (Holland); April 2006 "Phytochemicals for Functional Foods and Animal Health".
92. Symposium on "Development of Industrial Materials with High Value from Natural Resources" at Daegu University and Sang-Ju National University, S. Korea; May 2006 "Biochemical Strategies to Design Functional Foods to Manage Human Health".
93. *In vitro* Biology Meeting, Minneapolis, MN, USA; June, 2006 "Advances in Molecular Nutrition: Role of phytochemicals and antioxidant response pathways"
94. University of Londrina, Parana State, Brazil; June, 2006 Food Biotechnology, Lecture series on "Emerging Concepts in Functional Foods and Food Safety".
95. University of Sao Paulo, Brazil; June, 2006 Food Biotechnology, Lecture series on "Emerging Concepts in Functional Foods and Food Safety".
96. Hokkaido University, Sapporo, Japan; International Symposium on Sustainable Development, August, 2006 "Sustainable Food Production: Integration of Emerging Global Food, Health and Environmental Challenges".

97. VI International Congress of Food Safety, Guadalajara, Mexico; Organized by CIATEJ and CONACYT, August, 2006 "Microbial Food Safety Challenges in an Era of Diet-Related Disease Problems and Global Trade".
98. Cheju National University; Jeju Island, South Korea; October 2006; Seminar series on "Recent Advances in Functional Ingredient Design & Applications".
99. Iowa State University, Ames, IA, USA; November 2006: Role of Proline-Linked Redox Pathways for Food, Feed and BioFuel Applications".
100. Indigenous Farming and Food Conference, White Earth, MN, USA; February 2007: "Benefits of Indigenous and Traditional Foods for Human Health".
101. MATFORSK (Norwegian Food Research Center) & UMASS Workshop, Aas, Norway; March 2007: "Global Food Diversity to Combat Diet-Linked Chronic Diseases and Better Health" and "Optimization of Phenolic Antioxidants in Diverse Food Systems for Better Health".
102. Institute of Food Technology, Annual Meeting Chicago, IL; July 2007: "Value-added biochemical strategies in Indian subcontinent diet design for disease prevention" Session: "Foods from the Indian subcontinent that Inherently Promote Wellness and Reduce Disease Risk".
103. Kemin Industries, Inc., Des Moines, IA, USA: August 2007: "Metabolic Biology of Phenolic Phytochemicals from Lamiaceae for Functional Ingredients".
104. Pioneer Valley Life Science Institute, Springfield, MA, USA: September 2007: "Redox Pathways for Diet Design to Manage Type 2 Diabetes".
105. Proline Symposium: Proline Metabolism in Health & Disease, NCI-Frederick, MD, USA: September 2007: "Functional Food Design via Proline-Linked Redox Pathways to Counter Diet-Linked Chronic Disease Challenges".
106. Meeting of South Carolina Center for Botanical Medicine, Charleston, SC, USA: June 2008 "Redox Biology-Based Metabolic Innovations for Botanical Medicine".
107. American Chemical Society Meeting, Philadelphia, PA, USA: August 2008: "Small Fruit Phenolics and Relevance for Type 2 Diabetes and Hypertension Management".
108. Cornell University, Department of Food Science, Geneva, NY, USA: September, 2008: "Metabolic Innovations Using Cellular Antioxidant Response for Improvement of Functional Food Ingredients and Antimicrobials".
109. International Biotechnology Symposium, Dalian, China: October 2008: "Metabolic Innovations in Food Biotechnology for Plant Ingredients for Human Health Applications".
110. Food Biotechnology Seminar Series, University of Sao Paulo, Brazil: November, 2008: "Biotechnology Strategies for Plant-Based Functional Ingredients".
111. Harbin Institute of Technology, Harbin, China: March 2009: "Food Biotechnology and Food Systems Integration for Nitrate Pollution Removal in Cold Latitudes".
112. Pro Chile, Osorno City and University of Valparaiso, Chile: July 2009: "Metabolic Innovations for Phenolic Antioxidant-Enriched Functional Food Design".
113. Sineferm-National Bioprocessing Symposium of Brazil, Natal, RN, Brazil: August 2009: "Bioprocessing strategies and metabolic innovations for functional food ingredients".

114. International Symposium of Molecular Environmental Soil Science at the Interfaces in the Earth's Critical Zone ISMESS 2009, Hangzhou, China: October 2009: Initial Screening Studies on Potential of High Phenolic-Linked Plant Clonal Systems for Nitrate Removal in Cold Latitudes”.
115. The International Convention on Powder Technology and Products at Changxing, Zhejiang Province, China, October 2009: “Integration of Powder Technology and Microbial Food Bioprocessing for Functional Food and Food Safety Applications”.
116. New England Vegetable and Berry Conference, Manchester, New Hampshire, USA: December, 2009: “Phenolic Phytochemicals in Fruits and Vegetables are linked to Health Benefits”.
117. Central Agricultural University, College of Home Science, Tura, Meghalaya, India, June 7, 2010: “Emerging Challenges in Food Science and Nutrition and Opportunities for Higher Education and Research Careers”.
118. Eighth International Conference of World Association of Vedic Studies, Trinidad and Tobago; August 3-7, 2010, “Systems Biology Meets Vedic Wisdom for Global Food Security and Universal Healthcare”, WAVES 2010.
119. American Chemical Society Meeting, Boston, MA, USA; August 24, 2010, “Phenolic antioxidant-enriched plant foods for prevention and management of type 2 diabetes and its complications”.
120. ILSI Brazil – International Life Sciences Institute - IV International Symposium on Functional Foods, São Paulo, Brazil, October, 2010. “Phenolic Phytochemicals & Cellular Redox Biology for Dietary Prevention of Chronic Diseases”.
121. National Academy of Science and Technology, Kathmandu, Nepal, December 2010. “Systems Biology-Based Strategies for Global Food Security and to Combat Diet-Linked Chronic Disease Challenges”.
122. United Arab Emirates University at Al Ain, UAE, March, 2011. "Innovations in Biotechnology for Functional Foods Based on Understanding of Cellular Redox Biology”.
123. New Medical Center-Neopharma, Musafa, Abu Dhabi, UAE, March 2011. "Innovations in Biotechnology for Functional Foods Based on Understanding of Cellular Redox Biology”.
124. Harvard Medical School, Conference on Practical Approaches to the Treatment of Obesity; June, 16-18, 2011, Cambridge, MA, USA. “Interface of Metabolomics & Nutrigenomics Shaped by Redox Biology to Design Functional Foods to Combat Obesity-Linked Chronic Diseases”.
125. All India Management Association-AIMA Conference on Inclusive Healthcare Management for Sustainable Development: August, 2011, Bangalore, India. "Innovations for Healthy Food Systems to Manage Diet-Linked Chronic Diseases and Advance Sustainable Development in India”.
126. National University of Mongolia, Ulaan Baatar, Mongolia, August, 2011 Seminar, “Perspective on World Food Systems for Advancing Sustainable Developmental Strategies”.
127. National University of Mongolia, Ulaan Baatar, Mongolia, August, 2011 Seminar “Biotechnology and Metabolic Biology of Functional (Medicinal) Foods Based on Understanding of Redox Biology for Sustainable Development”.

128. North Dakota State University, Fargo, ND, USA. Nov, 2011 Seminar: "Internationalization of Higher Education and the Innovation Economy: Emerging Global Partnerships".
129. North Dakota State University, Fargo, ND, USA. Nov, 2011 Seminar, "Integration of Redox Biology to Design Functional Foods to Combat Obesity-Linked Chronic Diseases".
130. Qatar University, Doha, Qatar. Jan 2012 Seminar, "Integration of Redox Biology to Design Functional Foods to Combat Obesity-Linked Chronic Diseases".
131. University of Massachusetts, Department of Chemistry and Biochemistry, Dartmouth, MA, USA. Feb 2012. Seminar: "Integration of Redox Biology to Design Functional Foods to Combat Obesity-Linked Chronic Diseases: Type 2 Diabetes as Model"
132. Summer Research Forum: *Dietary Factors and Long-Term Consequences for Health*, May 14-16, 2012 North Dakota State University, Fargo, ND, USA. "Integration of Redox Biology to Design Functional Foods to Combat Obesity-Linked Chronic Diseases: Type 2 Diabetes as Model".
133. International Seminar in Advances in Molecular Genetics and Biotechnology for Public Education at Atma Jaya Catholic University, Jakarta, Indonesia. June 2012 "Redox Biology as the Basis for Metabolic Innovations in Food Biotechnology"
134. Food Ecology Forum at Eden Project, Cornwall, UK, July 2012 "Integration of Redox Biology to Design Functional Foods to Combat Obesity-Linked Chronic Diseases: Type 2 Diabetes as Model"
135. Prince of Songkla University, Faculty of Agro-Industry, Hat Yai, Thailand, July 2012. "Redox Biology as the Basis for Metabolic Innovations in Food Biotechnology"
136. Catholic University of Valparaiso, Faculty of Food Engineering., Chile, August 2012 "Application of Metabolic Innovations in Food Biotechnology for Functional Food Applications".
137. Catholic University of Valparaiso, Valparaiso, Chile; Public Lecture, August 2012 "Integration of Redox Biology to Design Functional Foods to Combat Obesity-Linked Chronic Diseases: Type 2 Diabetes as Model"
138. III International Symposium on Medicinal and Nutraceutical Plants (3ISMNP) along with III Conference of National Institute of Science & Technology for Tropical Fruits, Aracaju, Sergipe, Brazil. October 2012 "Integration of Redox Biology to Design Functional Foods to Combat Obesity-Linked Chronic Diseases: Type 2 Diabetes as Model Using Crops Relevant to Brazil" & Round Table on "Benefits of Antioxidant Rich Foods".
139. 5th International Congress on Food Science and Food Biotechnology in Developing Countries, Puerto Vallarta, Mexico, October 2012 "Redox Biology-Based Metabolic Innovations to Design Functional Foods"
140. BioMalaysia, 2012, Kuala Lumpur, Malaysia, November 2012 "Redox Biology Platform for Innovations in Life Sciences: A concept for Biotechnology and Metabolic Biology of Functional Foods"

**At North Dakota State University, Fargo (2013-Current)**

141. AOCS 104<sup>th</sup> Annual Meeting and Expo, Montreal, Canada, April 2013. "Biotechnology and Food Security with Focus on Metabolic Innovations for Malnutrition and Chronic Disease Management" in the Forum on Emerging Technologies: Ensuring Global Food Security.

142. American Council of Medicinally Active Plants (ACMAP), 4<sup>th</sup> Annual Conference, University of Massachusetts, Amherst, MA, USA: June 2013. Plenary Lecture "Strategies for Improving Medicinal Plants Using Metabolic Biology".
143. 7<sup>th</sup> INTERNATIONAL FOOD CONVENTION (IFCON) "NSuRE HEALTHY FOODS" (Nutritional Security through Sustainable Development, Research & Education for Healthy Foods); Dec 18 - 21, 2013, CSIR-CFTRI Campus, Mysore, Karnataka, India. Lecture "Food Security Solutions to Address Global Malnutrition and Chronic Disease Challenges Using Systems-Based Plant Metabolic Innovations".
144. University of Pondicherry, India; Department of Food Science and Technology, January 2014, "Systems-Based Plant & Food Metabolic Innovations to Address Global Food Security & Health Challenges"
145. Prince of Songkla University at Phuket Campus, Thailand, January 2014 at Phuket Sustainability Conference, Seminar on "Systems-Based Innovations to Address Food Security, Health & Ecological Challenges".
146. University of Mysore, India: Center for Studies in Microbiology, March 2014 "Systems-Based Plant & Food Metabolic Innovations to address Global Food Security & Health Challenges".
147. Zhejiang University, Hangzhou, China; Fuli Institute of Food Science and Nutrition, May 2014 "Metabolic Biology of Bioactive Components of Traditional & Future Foods".
148. Uttarkhand University of Horticulture and Forestry, Ranichuri, India, May 2014 "Systems-Based Innovations as Solutions to Global Food Security & Health Challenges".
149. American Council of Medicinally Active Plants (ACMAP) 5<sup>th</sup> Annual Conference at North Dakota State University, Fargo, ND, USA, June 2014 Forum on "Crops for Health as Solution to Chronic Diseases: Strategic Vision for Agriculture and Global Food Security".
150. Chile Tree Nuts Association Conference in Vina Del Mar, Chile, June 2014, "Food ecology and Food diversity as rationale to integrate bioactive and functional foods for advancing better human health and global environment".
151. Kagoshima University, Japan at College of Agriculture, July 2014 "Systems Strategies for Solutions to Global Food Security: from Plant Biology to Human Health".
152. Udayana University, Denpasar, Bali, Indonesia, September, 2014 ""Metabolic Innovations and Food Diversity-Linked Solutions for Global Food Security".
153. 24<sup>th</sup> Brazilian Food Science Congress and International Conference on Tropical Fruits, September 2014, Aracaju, Brazil, "Metabolic Biology & Biotechnology of Tropical Fruit Phytochemicals for Functional Foods & Human Health".
154. Prince of Songkla University, Hat Yai, Thailand October, 2014 "Systems Metabolic Innovations to Address Global Food Security & Health Challenges".
155. Cornell University, Ithaca, NY, October, 2014 Institute of Science for Global Policy-Cornell University Conference debate presentation "Systems Solutions to Global Food Security Challenges to Advance Human Health and Global Environment Based on Diverse Food Ecology".
156. 6<sup>th</sup> International Congress on Food Science and Food Biotechnology, Monterrey, Mexico, October 2014 ""Strategic Vision for Advancing Global Food Security: A New Initiative for International Partnerships and Collaboration at North Dakota State University".

157. Pennsylvania State University, State College, PA, USA November 2014 "Systems-Based Plant & Food Metabolic Innovations to address Global Food Security & Health Challenges".
158. Beary Institute of Technology, Mangalore, India February 2015 "Systems-Based Understanding of Global Food Security Challenges with Integration of Urban Living & Green Technologies".
159. American Council of Medicinally Active Plants (ACMAP) 6th Annual Conference at Washington State University, Spokane, WA, USA, May 2015 "Metabolic Biology of Bioactive Medicinal Foods from American Indian Food Systems".
160. Thailand Food Ingredient Conference, Bangkok, Thailand, September, 2015 "Metabolic Innovations of Phytochemicals for Health".
161. Pharmaceutical Sciences, AAPS Conference, NDSU, Fargo, ND September 2015, "Metabolic Innovations for Developing Functional Foods for Countering Chronic Diseases".
162. Symbiosis University, Pune, India; Program in Biomedical Sciences and Nutrition, October, 2015, "Systems-Based Metabolic Innovations for Global Food Security & Public Health Challenges".
163. Texas A & M University, October, 2015 "Systems-Based Metabolic Innovations for Global Food Security & Public Health Challenges".
164. Sikkim University, Gangtok, India, November, 2015 International Conference on "Ethnic Fermented Foods and Beverages: Microbiology and Health Benefits" "Metabolic Basis for Fermented Foods for Health and Food Security".
165. Symbiosis University, Pune, India, January, 2016 Symposium on Recent Advances in Biomedical Sciences; "Metabolic Innovations for Global Food Security & Public Health Challenges".
166. 19th ADNAT Convention, International Symposium on Microbiome in Health and Disease; Bangalore, India, 23rd - 25th February, 2016, "Fermented Food Microbiome for Chronic Disease Management"
167. Food for Health International Conference, Kagoshima University, Japan, March 20-23, 2016, "Metabolic Innovations for Fermented Foods as Functional Microbiomes & Bioactives for Human Health".
168. American Council of Medicinally Active Plants, 7<sup>th</sup> Annual Conference, Lima, Peru, June 28-July 2, 2016, "Metabolic Innovations and Fermentation Biology for Medicinally Active Functional Foods".
169. International Conference on Biosciences 2016 –Advancing Biodiversity for Sustainable Food Security, Udayana University, Bali, Indonesia, July 25-27, 2016 "Food Diversity and Fermented Microbiome Diversity to Address Global Food Security Challenges".
170. Agricultural Bioscience International Conference, September 20-23, 2016 in Fargo, ND "Food Metabolic Innovations to Advance Global Food Security and Associated Chronic Disease Challenges".
171. IAFP's 5th Latin American Symposium on Food Safety & 7th Food Science, Biotechnology and Safety in Cancun, Mexico, November 9-11, 2016. "Food Diversity and Microbiome Enhancement to Traditional Food Systems as Solutions to Global Food Security and Public Health Challenges".

172. The 28th Annual Meeting of the Thai Society for Biotechnology and International Conference. "Natural Resources and Bio-based Innovative Products", November 28-30, 2016 in Chiang Mai, Thailand "Metabolic Innovations for Food microbiome for Global Food Security and Health".
173. American Chemical Society National (253 rd) Meeting & Exposition, San Francisco, CA, April 2-6, 2017. "Metabolic and Microbiome Innovations for Improving Phenolic Bioactives for Health".
174. American Council of Medicinally Active Plants, 8th Annual Conference, June, 2017, Clemson University, SC, USA; "Food Microbiome to Development Medicinally Active Plant Bioactives for Functional Foods and Health".
175. 10th International Convention of Asia Scholars (ICAS10), July, 2017, at Chiang Mai, Thailand; Panel Chairman and Presentation on "Food Security and Cultural Relevance of Traditional Fermented Food Systems of ASIA Facing Climate Change".
176. The 13<sup>th</sup> Asian Congress on Biotechnology (ACB 2017) "Bioinnovation and Bioeconomy", Khon Kaen, Thailand, July, 2017; "Metabolic Innovations to Develop Food Microbiome for Global Food Security and Health Solutions".
177. University of Costa Rica, San Jose, Costa Rica, September 2017, "Metabolic Innovations for Enhancing Food Microbiomes to Address Global Food Security and Public Health Challenges".
178. University of Costa Rica, San Jose, Costa Rica, September 2017, "Systems Strategies and Innovation to Address Global Food Security and Climate Change Challenges".
179. Kasetsart University, Bangkok, Thailand, October 2017, "Systems Innovations to Advance Value Added Agriculture and Food Security in Thailand and ASEAN Region".
180. Kasetsart University, Bangkok, Thailand, October 2017, "Research and Publication Strategies to Advance Innovation Process in Kasetsart University".
181. International Conference on Functional Foods and Nutraceuticals, October 2017, Gunsan Jeonbuk, South Korea (Organized by ISNFF- International Society for Nutraceuticals and Functional Foods) "Metabolic Innovations for Food Microbiomes for Functional Foods and Human Health".
182. Chiang Mai University, Chiang Mai, Thailand, 4<sup>th</sup> International Conference on Food and Applied Bioscience, February, 2018. "Value Added Crop Food Diversity and Fermented Foods for Climate Resilience to Advance Food Security and Health".
183. 67<sup>th</sup> American Flax Institute Conference, Fargo, ND, USA, April 2018, "Phenolic Antioxidant-Linked Antidiabetic Properties of Flax".
184. Kasersart University, Bangkok, Thailand, International Conference of Agriculture and Natural Resources, April, 2018. ""Metabolic Innovations to Advance Food Diversity & Fermented Foods for Climate Resilient Food Systems".
185. King Mongkut's University of Technology Thonburi, Bangkok, Thailand, June 2018, Seminar on "Research Design, Structure and Publication Strategies".
186. King Mongkut's University of Technology Thonburi, Bangkok, Thailand, July 2018, Mini Conference "Systems-Based Metabolic and Microbiome Processing Innovations for Global Food Security and Public Health Challenges".

187. American Chemical Society Meeting, Boston, MA, USA, August 2018, DIVISION: Division of Agricultural and Food Chemistry, SESSION: Functional Foods: "Metabolic Innovations for Functional Foods Integrating Redox Biology and Microbiome-Induced Bioprocessing".
188. Third Annual Conference on Native American Nutrition, Prior Lake, MN, USA, October 2018, "Food Diversity and Indigenous Food Systems to Combat Diet-Linked Chronic Diseases".
189. Seminario Regional Latinoamericano en alimentos promisorios de origen andino, amazónico y mesoamericano- Latin American Regional Seminar on Food Security Challenges of Andean, Amazon and Meso-America, Arequiba, Peru, October, 2018, "Metabolic and Microbiome Innovations to Advance Traditional Food Systems and Diversity for Food Security".
190. "INTERNATIONAL CONFERENCE ON SCIENCE, TECHNOLOGY AND HUMANITIES 2018 (ICSTH 2018): Theme: "Innovations and Global Partnerships for Resilience to Climate Change", Bali, Indonesia, October, 2018, "Metabolic and Microbiome Innovations to Advance Traditional Food Systems and Diversity for Global Food Security".
191. Latin Food 2018, Symposium Food for Health, Puerto Vallarta, Mexico, November 2018, "Microbiome and Metabolic Innovations for Food for Health Using Food Diversity".
192. Chiangmai University, Faculty of Agro-Industry, Chiangmai, Thailand, November 2018, "Research and Publication Strategies in a Knowledge-Driven Global Economy".
193. American Council of Medicinally Active Plants (ACMAP), Annual Meeting, Dehra Dun, India, February, 2019, Invited Lecture: "Microbiome & Metabolic Innovations for Medicinally Active Functional Foods Using Food Diversity".
194. American Council of Medicinally Active Plants (ACMAP), Annual Meeting, Dehra Dun, India, February, 2019, Banquet Lecture: "Human Resilience & Relevance of Medicinally Active Plants in Living a Resilient Life".
195. Kagoshima University Food for Health Collaborative Workshop with North Dakota State University, USA and Hunan Agricultural University, China, Kagoshima, Japan, March 2019, "Microbiome and Metabolic Innovations for Global Food Security Using Food Diversity".
196. Kagoshima University Food for Health Collaborative Workshop with North Dakota State University, USA and Hunan Agricultural University, China, Kagoshima, Japan, March 2019, Introductory Lecture: "Human Resilience & Importance of Functional Food Relevant Plants in Living a Resilient Life".
197. Symbiosis University, Pune, India, July 2019, Seminar series and Guest Lectures on: "*Advances in Food Science and Technology*" with focus on: "Food for Health and Climate Resilience" and "Systems Innovations for Advance Human Resilience".
198. Indigenous People's Task Force (IPTF) Conference, Minneapolis, MN September 2019, Invited presentation on "Food for Health for Maternal and Child Nutrition: Mother Earth to Maternal Mother Concept for Indigenous Baby Food Design based on Indigenous Food Crops".
199. 4<sup>th</sup> Food for Health International Conference- FOHIC 2019, October 2019, Wroclaw, Poland, "Metabolic and Microbiome Innovations for Foods for Health and Human Resilience".
200. Korean Food Research Institute Symposium to advance Journal of Ethnic Foods (Springer), October 2019, Seoul, S. Korea, "Metabolic and Microbiome Innovations to Advance Global Ethnic Foods".

201. American Public Health Association's APHA's 2019 Annual Meeting and Expo, November, 2019, Philadelphia, PA "Metabolic and Microbiome Innovations for Using Food Diversity to Advance Foods for Health" Session Title: Food, Nutrition, and Population Health: Exploring the Role of Food as Preventive Medicine.
202. 7th International Conference on Food Factors (ICoFF2019), the 12th International Conference and Exhibition on Nutraceuticals and Functional Foods (ISNFF2019), December 2019, Kobe, Japan, "Metabolic Innovations in Global Fermented Foods for Food Security and Health" Session Title: Global Fermented Foods- From Ethnography & Microbes to Metagenomics.

### Editorship

- 1) Editor-in Chief, "**Food Biotechnology**"- Taylor and Francis, UK/USA
- 2) Editor of "**Journal of Food Science and Technology**" (Springer-AFSTI, India)
- 3) Editor of "**Food Biotechnology Series**" (Taylor & Francis) with Dipayan Sarkar

### Editorial Boards

- 1) Editorial Board of "**Journal of Food Biochemistry**"-Wiley-Blackwell Publishers, USA
- 2) Editorial Board of "**Journal of Medicinally Active Plants**" Journal of the American Council of Medicinally Active Plants
- 3) Editorial Board of "**Journal of Medicinal Food**"-Mary Ann Liebert Publishers
- 4) Editorial Board of "**Journal of Ethnic Foods**" -Springer

### Completed:

- 1) Inaugural Editorial Board (2008-2012) of "**Annual Review of Food Science and Technology**", Annual Reviews Series, CA, USA
- 2) Editorial Board (2000-2013) of "**Innovative Food Science and Emerging Technologies**"-Elsevier

### Book Editor

**Food Biotechnology, 2<sup>nd</sup> Edition, 2005** [Shetty, K., Paliyath, G., Pometto, A.L. III and Levin, R.E. (Eds)]. CRC Press (Taylor and Francis Co), Boca Raton, FL.

**Functional Foods and Biotechnology, 2006** [Shetty, K., Paliyath, G., Pometto, A.L. III and Levin, R.E. (Eds)]. CRC Press (Taylor and Francis Co), Boca Raton, FL.

**Functional Foods, Nutraceuticals and Degenerative Disease Prevention, 2011** (Paliyath, G., Bakovic, M. and Shetty, K. (Eds). ISBN-13: 978-0-8138-2453-6 - John Wiley & Sons, NY.

**Functional Foods and Biotechnology: Sources of Functional Foods and Ingredients, 2019** (Food Biotechnology Series, K. Shetty and D. Sarkar (Eds), CRC Press (Taylor and Francis Group), Boca Raton, FL, USA.

**Functional Foods and Biotechnology: Biotransformation and Analysis of Functional Foods and Ingredients, 2020** (Food Biotechnology Series, K. Shetty and D. Sarkar (Eds). CRC Press (Taylor and Francis Group), Boca Raton, FL, USA.