

Summary of Research Priorities and Ranking Activity from PPIC Inaugural Meeting

1 – 21 are the original priorities determined by the steering committee

22 – 51 are new research priorities generated by the meeting attendees (also indicated by *)

76 Participants contributed to the ranking

TOP 6

7. Functionalize novel proteins and determine impact on flavor, functionality, and nutrition (37%)

1. Determine the impact of processing on nutritional quality 29%

5. Determine flavor and protein interactions in various protein sources and in different food systems (26%)

10. Characterize structural/functional properties of novel proteins upon isolation and processing (26%)

13. Investigate novel protein extraction techniques that are solvent free and can be labeled as organic (while looking at flavor, nutrition and functionality) (26%)

6. Identify ways to mitigate off flavors while maintaining textural properties (25%)

4. Investigate potential increases in nutritional value and functionality via blending of plant proteins (24%)

18. Breed to enhance protein quality (24%)

15. Study the interactions of novel proteins with other macromolecules in food systems and determine (22%)

3. Determine the impact of replacing (wholly or partially) traditional proteins with novel plant proteins on nutrition, physiology, flavor, and textural properties (21%)

2. Evaluate the nutritional value (PDCAAS) for emerging proteins (18%)

9. Develop alternate/simpler method to evaluate digestibility and amino acid score (17%)

12. Transform defatted meals of oilseeds into value-added co-product of equivalent or higher value than the oil (17%)

27.* Reducing/eliminate Allergenicity of plant proteins (17%)

8. Identify unique functionality and applications of novel plant proteins in comparison to common protein ingredients (16%)

16. Investigate the impact of non-thermal processing (e.g. cold plasma) on protein structure and function 16%

20. Develop sustainable supply chain for various protein crops (14%)

23.* Minimize water usage in plant protein processing (14%)

30.* Transparent consumer education that allows the scientific community to engage with and direct the conversation (14%)

47.* Effect of scale-up on flavor, functionality, and nutrition (14%)

19. Determine the impact of crop diversity on flavor, nutritional and functional quality of the protein (13%)

37.* Breeding to improve protein flavor (13%)

40.* Methods for controlling allergens in processing & data gathering to establish regulatory allergen labeling limits (13%)

22.* Effect of extraction, processing, breeding, and final application on protein color (12%)

26.* Use co-products from other food production processes as sources of protein (e.g. spent grains from brewing industry) (12%)

11. Identify high-value end use (e.g. encapsulation; agglomeration) (11%)

21. Assess market value (11%)

28.* Utilization of by-products to add value (holistic use of raw materials) (11%)

49.* Minimize carbon footprint for manufacturing operations of proteins and co-products (11%)

50.* Digestibility of plant proteins and effect on microbiome (11%)

32.* Design and execute nutritional clinical studies promoting health benefits of plant proteins (examples: muscle preservation, satiety) (9%)

46.* Long-term health results and differences between animal-based diet vs. plant-based diet (9%)

48.* Study the economic viability of all novel plant-based proteins processes (9%)

14. Determine the efficiency and recovery rate of electrostatic dry separation for the production of protein concentrates (while looking at flavor, nutrition and functionality) (8%)

24.* Identifying novel sources of protein crops globally and mapping in terms of functionality and quality, and assessing supply chain feasibility (8%)

31.* Consumer facing, technically sound, searchable information - be a source of this (8%)

35.* Cross-laboratory validation of protein testing methods (8%)

- 39.* Consumer research on plant-based market innovation (7%)
- 42.* Developing markets and applications for plant protein co-products (7%)
- 25.* Lingering effects (after-taste) of plant proteins in value-added food products (5%)
- 38.* Collaboration with breeders (5%)
- 41.* Developing knowledge base of a wide variety of plant proteins and other nutritional or anti-nutritional components. Targeting proteins toward specific products (5%)
- 45.* Broaden applications of raw plant protein source (5%)
- 17. Evaluate bioactivity of peptides derived from various sources (4%)
- 34.* Assessing the climate robustness of plant protein supply chains (4%)
- 44.* Identifying partners that might facilitate a smoother scale up transition e.g. smaller companies might be a better fit to suit current supply and demand (4%)
- 33.* Age-based analysis of protein needs/forms/timing/dosage ... physiological impacts or side effects of surplus/deficit at various stages of life (3%)
- 43.* Method development for studying novel proteins (3%)
- 29.* Understand and eliminate biologically active plant protein "Tagalongs" (example: isoflavones) (1%)
- 36.* Assessment of nutritional and digestibility of plant proteins in at-risk and immunocompromised populations (1%)