

## **PPIC Technical Committee Meeting Minutes, Thursday July 29th, 10:00 am to 12:00 pm, via Zoom**

In attendance: Pam Ismail – UMN, PPIC Director  
Karthik Pandalaneni –PPIC Manager of Operations  
Diane Kussy- Bluegrass Ingredients  
Jennifer Kimmel – Roquette  
Chelsey Hinnenkamp – ADM  
Gary Reinnecius – Professor Emeritus, UMN  
Gabriela Perez-Hernandez – Kelloggs  
Lolly Occhino – AURI  
Julie Ann Grover- Kraft Heinz  
Sara Rosene – General Mills  
Adam Janczuk - IFF  
Wajira Ratnayake – Ingredion  
Clint Johnson – ConAgra Brands  
Yui Maneephan Keeratiurai – Danone

- 1) Introductions and Welcome to Diane Kussy from Bluegrass Ingredients, Jennifer Kimmel from Roquette, and New ADM representative Chelsey Hinnenkamp**
  - a. Diane Kussy, Technical Sales Director at Bluegrass Ingredients that joined PPIC as a Partner.
  - b. Jennifer Kimmel, Protein Chemistry Group Manager at Roquette that joined PPIC as a Partner.
  - c. Chelsey Hinnenkamp, Protein Research Scientist at ADM, replacing Seyhun Gemili on the committee.
  
- 2) Quick re-cap of previous meeting** (minutes in *Appendix 1, pg. 3 of meeting agenda*)  
Previous meeting focused on updating research priorities.

### **3) Updates**

Objectives:

- a. New members announcement: 29 members as of the day of the meeting.
- b. Six additional members are in the process of signing membership agreements. Two more potential members (Brabender and Milk Specialties)
- c. Please review “PPIC Exec Board Shared Resources” document to get updates on our conversations with other companies. Review the document at your leisure and please introduce PPIC to your customers and suppliers as you see fit.
  1. Obtaining Brabender’s twin screw high moisture extruder with capacity from 100g- 5kg per hour.
  
- d. Update on external funding:** Two USDA NIFA proposals submitted (\$1,250,000).
  1. “*Cold Plasma as a Promising Approach to Enhance the Functionality and Texturization Potential of Pea Proteins*”
  2. “*Improving The Flavor Quality Of Plant Proteins As Food Ingredients*”
  3. We would know the status of funding in October 2021.
  
- e. Updates on currently funded PPIC projects:**
  1. Cold Plasma Project completed, final report shared

2. Hemp project deadline was extended to Sep 30, 2021.
3. Three funded projects in 2020 are in progress and two progress reports were shared so far.
4. Yui/Adam: In addition to the detailed report, we would like to get executive summary of the projects as well to update the higher management.
5. Chelsey/ Julie Ann: Would like to have a permanent repository for PPIC reports. Karthik will look into a way to share the files with members without having to worry about expiring dropbox link.

f. Updates on Welcome Packages:

1. 4 members' welcome package projects were completed.
2. 7 members' welcome packages are in progress
3. 7 members' welcome packages were initiated.
4. 11 members are yet to initiate welcome package.
5. Wajira: Welcome project was related to flavor. Received a good preliminary information that was very useful. It is a good opportunity to use.
6. Yui: Leveraged welcome package to build technical knowledge.
7. Pam, encourage all to utilize this benefit.

g. Updates on PPIC events in 2021/2022:

1. Proteins Basics Short Course and Research Spotlight 3<sup>rd</sup> Annual Meeting were scheduled tentatively Dec 6-8 2021. Dates to be confirmed by end of August.
  - i. Both events will be held together during those dates
  - ii. Members get two waived registrations for all the PPIC events.
  - iii. Group discounts are also available.
  - iv. We plan to make Research Spotlight meeting hybrid, but Protein short course will be held in-person.
  - v. Short Course content discussion from the Technical Committee meeting (*Appendix 1, pg 6*)
2. New initiative to focus on launching new products, initiatives, and new workshops (e.g., Commercialization Workshop) are being planned by
  - i. Sara Martinez- Program Development Consultant
  - ii. Shannen Bornsen- Marketing and Project Consultant
3. Industry Focused Research Planning Meeting (**May 2022**)

4) About you links: Featuring you on our website

- i) Feedback on PPIC affiliate information form to be filled out by members to feature each company/organization/products and services.
- ii) Yui: Benefits we get from PPIC can be anonymous.
- iii) Clint: Legal team will have to be involved if any information is to be provided.
- iv) Sara/Wajira: Can we make all the details optional.
- v) Yui: Can we modify the question to "Our Plant-based products" instead of Our Products.
- vi) Pam: All the details in the form can be optional. This is mostly to keep new/startup companies informed and to bring the community together.

5) AURI's request for a survey

- i) AURI put together a capital estimate to build out a small-scale protein isolation facility in Crookston, MN that would be complementary to the work of the PPIC and the UMN pilot plant (filling a gap in applications development by being able to produce 1 – 10 pounds of

isolate from starting material). To understand if AURI should invest the \$300,000+ in capital for such a facility, we recently contracted with Axiom Marketing, a consulting firm located in Bloomington that integrates insights, customer data, channel optimization experience to accelerate clients' sales, to complete a market assessment on utilization of and service expectations for such a facility. To complete their work, Axiom is looking for contacts who may be interested in taking advantage of such a facility and will reach out to some of the PPIC partners to interview. Any questions regarding this can be directed to Lolly, [locchino@auri.org](mailto:locchino@auri.org).

## 6) Review Proposals

\*Additional comments/revisions not discussed during this meeting can be found in the evaluation rubric

- a. **Goal:** Fund 3 proposals, potential one of them could be external to the U
- b. Current RFP (*Appendix 2, pg. 8 in meeting agenda*) and evaluation process (*Appendix 3, pg. 13 in meeting agenda*)
- c. **Comments on review process/evaluation rubric**
  - Pam did not vote in this round to voice for external researchers and to encourage consideration of external proposals.
  - Technical committee can evaluate the proposals internally and average the vote.
  - We will use the score on the rubric and also votes on “Yes” to finalize the top three proposals.
  - If Gary’s proposal is funded by USDA, he would not accept the PPIC funds. In that case, funds can be directed to the next proposal in line or can be saved for next year.

### d. Discussion on individual proposals

*"Flavor reactions with plant proteins (2<sup>nd</sup> year)"* (Reineccius et al.) (58.5/65)

- Gabriela voted “Yes”: Is the scope of this project similar to USDA proposal? Gary: Very similar but scaled down to something manageable.
- Gary will make the modification addressing the experimental design comment: “Proposal included highly volatile dimethyl sulfide which at high concentrations can be very noxious. Recommend consulting with "use level" experts to confirm experimental design.”
- Clint: Was this project on just Pea? Gary: USDA grant is broader but PPIC project proposal is just on Pea.
- Yui: In the third objective, it was mentioned that after your learning from Pea you will compare the results with Canola, will you work on Canola as well? Gary: Considering all the objectives, we will be spending a lot of effort in Pea. We will investigate more if we can.
- Lolly: Was there limit for budget. Pam- 50,000 USD per year.

*" Plant Protein Blending: Inducing Molecular Interactions to Enhance Texturization "* (Ismail et al.) (57.6/65 points)

- Lolly: Don’t we expect the PDCAAS to change after the extrusion? Pam: It is a valid question and will bring it up to Dan Gallaher to include assessment of extruded samples.

- Yui: What is the PDCAAS target in the blends? Pam: We will aim at highest we can get. Anything above 0.8 is good. Left it open ended to have more options. We can add a target; anything 0.8 or higher would be great.
- Clint: How do you pick right sources? Pam: Will pick sources we worked in UMN pilot plant such as Chickpea, pea, and oats. Will produce them in the pilot so it simulates what happens in the industry and to have enough sample for the extrusion trials as well.
- Pam: to address another comment on concentrate vs isolate: Traditionally concentrates are used but some companies started using isolates and add starch/fiber during the process. Can add concentrates in the design but it will add a lot of work. Learning from GFI project on Pea isolate will be applied into this project.
- Chelsey/Adam: Would be nice to understand fundamental interactions. What is the best starch/protein, protein/protein, fiber/protein interactions? Optimize the blending to understand these interactions would be nice.
- Clint: Is the main output to understand textural/ structure-function relationship more than PDCAAS? Pam: Objectives are limited based on the budget. Incorporated nutrition aspect by measuring PDCAAS. Can potentially include protein/starch interactions. Learning from GFI project can help us add back starch and fiber at concentrations that might be meaningful.
- Yui: This project might help standardize blending.
- Adam: Agree with Yui. Understanding the influence of base sugars, fats, starches in the blending will be good. Pam: Will add compositional evaluation into the design. Job will be looking into starch changes during extrusion. Will consider these comments as much as we can.
- Wajira: Regarding objective of the project: vaguely define what did you mean by texturization using proteins. What kind of products will you be making using the blends? Pam: I will add more explanation. Targeting to simulate chicken like texture.
- Julie Ann: In line with all the comments so far. How to blend the proteins together for optimal functionality is important. Project is focused on meat analogues; would it be possible to add dairy analogues. Pam: This will add more work than we anticipated and can achieve with limited budget. Can consider dairy alternative as a next step.
- Gabriela: Voted “Yes”.

*"Phosphorus Bioaccessibility of Emerging Pulse Protein Products by In Vitro Simulation of Human Digestion" (Gallant et al.) (48.2/65)*

- Wajira: This research problem is well defined. Findings from this research are probably not immediate benefit to the industry but these would provide justification interms of nutrition as animal proteins being replaced by plant proteins.
- Refer to “Summary of Comments and Revisions” document for all comments entered in the excel as there was no time left during the meeting to discuss further this proposal.

*"Eco-friendly defatting of oat protein isolates: Impact on protein structure-function relationships, flavor, and nutritional quality" (Malalgoda et al.) (51.3/65)*

- Wajira: Voted “No”. Leveraging the funds is missing. Also, SFE currently is being used by the industry and what new can be done by this project was lacking in the proposal.
- Pam: SFE is not a go to method to extract fat.
- Chelsey: Findings provide specific information that are not widely applicable. Scope of the project is small. Lot of oat in the industry is wet milled that results in oat gluten fraction, so

from industry perspective, I would like to see that piece added to the design. Choosing supercritical extraction on oat flour is a narrow the scope.

- Gabriela/Lolly: Voted “Yes”. Information needed on oats. There is a lack of commercially available isolates or concentrates from oats or there is limited capacity. Limited knowledge on oats, so this project might give good insights.
- Sara: Voted “Yes”
- Adam: Voted” Not in this round”: What is the impact to the industry? We are not convinced by SFE as a method to go for now. Oat is a good target but think about it in a different way.
- Gary: I encourage what Adam said.
- Jennifer: Agree with Adam. There are other groups working on oats. Nancy Aims group in Canada and VTT in Sweden is doing work on oats, although not as extensively as Pea but we are getting there.
- Gabriela: this could generate fundamental knowledge.
- Clint: Voted “yes with revisions”
- Wajira: need bit more specificity in the project proposal.
- Julie Ann: Voted “yes with revisions”- Comments similar to Chelsey. Additional treatment can be added. SFE can be applied to conventionally prepared isolates and not to the whole grain flour.
- Yui: Voted “Yes”. Have some foundation knowledge with industry moving fast.

*"Fermentation of mung bean flours to improve ingredient characteristics, including flavor" (Lamsal et al.) (45.8/65)*

- Chelsey: Voted: “No, Submit next around”: Fermentation is a frontier in terms of protein technology and that is something we should explore. Concerns is that Mungbean is not a key concern for ADM. Justification to why Mungbean protein to be looked at was not strong enough. Additionally, actual fermentation in the design is very vague in terms of what they are trying to achieve and what fermentation they are trying to do, which microbes they are going to ferment with, and the impact. I would like to see the proposal more focused and justify that Mungbean has industrial impact. I do not see Mungbean as a most impactful choice right now.
- Wajira: Voted “No”: substantial improvements need to be done with proposal. Objectives are very vague and need to be specific. This proposal needs lot of improvements.

### **Summary of the votes on Top Three Proposals**

- *Flavor reactions with plant proteins (2<sup>nd</sup> year) (Reineccius et al.)- 11/12*
- *Plant Protein Blending: Inducing Molecular Interactions to Enhance Texturization (Ismail et al.) – 11/12*
- *Phosphorus Bioaccessibility of Emerging Pulse Protein Products by In Vitro Simulation of Human Digestion (Gallant et al.) – 5/12*
- *Eco-friendly defatting of oat protein isolates: Impact on protein structure-function relationships, flavor, and nutritional quality (Malalgoda et al.) – 5/12*
- *Fermentation of mung bean flours to improve ingredient characteristics, including flavor (Lamsal et al.)- 4/12*

### **7) Post-Meeting Action Items**

- a. RFP Next Steps

- i) Karthik will compile votes, comments, and revisions from Technical Committee into a summary document and disseminate to the Technical Committee and Executive Board Members
- ii) Executive Board will make final funding decisions (Exec Board meeting is 8/25/21)
- iii) PPIC Team will notify PIs of funding decisions
- b. Provide executive summaries for the project reports.
- c. PPIC will obtain quarter 3 reports on the three PPIC projects funded in 2020 and share with Technical Committee
- d. Karthik will work on easier way to share the PPIC reports.
- e. Will update the Technical Committee once the dates for the upcoming events are finalized.

## *Appendix 1*

### **Thoughts on short course for 2020**

1. A lot of survey comments from first Protein Basics Short course requested more information on formulation on plant proteins – not enough time to go into depth but could be its own topic?
2. Dina: In the past year, a lot was going on in the field with protein basics (i.e. IFT and other meetings focused a lot on basics of plant proteins): PPIC needs to evolve every year and show new things; can show more advance in field if we change topics.
3. Steve: Expanded course proposal sounds exciting. But also nothing wrong with offering same course again especially considering high demand in first year for Protein Basics
4. Lolly: Consider 1 day where everyone is together lecture style. Second day can offer variety of tracks and attendees can choose which track is of more interest to them. People can get out of it what they need specifically.
  - Committee members also discussed option to register for 1, 2, or 3 days; Keep short course same for 1-2 days, then add 1 day of flexible choices that changes with year
5. Could potentially rotate theme biannually