

## **PPIC Technical Committee Meeting Minutes, Monday, July 29th, 2019 1 – 3:00 pm, FScN 153**

In attendance: Pam Ismail – UMN, PPIC Director, via WebEx  
Amy Mathiowetz – UMN, PPIC Manager of Operations  
Lolly Occhino – AURI, via WebEx  
Clint Johnson – ConAgra Brands, via WebEx  
Dina Fernandez – ADM, via WebEx  
Carrie Lendon – Cargill, via WebEx  
Wajira Ratnayake – Ingredion, via WebEx

Absent: Steve Hess – Hershey's

- 1. Introductions and Welcome to Wajira Ratnayake from Ingredion (5 min)**
- 2. Quick re-cap of previous meeting (minutes in *Appendix 1*) (5 min)**
- 3. Updates (30 min)**

### **Objectives:**

#### **a. Update on Basic Protein Short Course (Sep 4-5 2019)**

- Expanded enrollment to 45 people: all spots now full; will open 2 spots to Nutriati when membership agreement is finalized
- Hands-on pilot plant/lab experience
- Speakers:
  - Pam: protein trends, overview of protein chemistry, functionality, blending, utilization
  - Sara Rosene, Dilek Uzunalioglu: formulating with plant proteins, challenges using experience they bring from companies
  - Jim House: protein nutrition and quality
  - Gary Reineccius: flavors and interactions between flavor-protein, mitigation of off-flavors
- Mitchell Maher, UMN: demonstration on protein ingredient production in pilot plant on Thursday, Sept. 5<sup>th</sup> (two groups 30-40 minutes)
- 3 hours of hands-on experiences on Friday, Sept. 6<sup>th</sup>, including formulating ready-to-drink beverage formulation with Dilek
- At CECC on campus & dept for pilot plant, lab activities

**Q:** What is the level of experience of attendees? How will we address different levels of experience?

**Pam:** It is a diverse audience; not everyone attending has a science background. Will do best to cater to whole audience – will cover basics in protein chemistry but will also provide useful information for those in R&D

**Q:** Are we planning to invite anyone with expertise on protein extraction, processing?

**Pam:** Yes, Pam will cover some of this topic during lecture; pilot plant demonstration will include protein isolation process

Carrie suggested providing recommendations for Sept. 4th dinner locations (set up an easel at event with recommendations?) to encourage networking among attendees

Pam: Amy and Pam can recommend dinner locations and potentially help to set up reservations at said locations

**b. Update on RFP (*Appendix 2*) and proposals submitted**

- Deadline extended to July 22<sup>nd</sup>
- Received two proposals (discussion summarized at end of minutes)
  - In future, start earlier with announcement, encourage with multiple emails to submit
- Intention for first round of RFPs was to fund two 1 year research projects to provide short-term updates and present preliminary findings at the Research Spotlight Meeting (or at the very least, announce start of Center-funded research)

**Q:** Is there a possibility to extend RFP into Fall to give researchers more opportunity to submit proposals given that we only received two?

**Pam:** The reason for maintaining a summer deadline is RFPs in academia tend to be written with intention for funding to start beginning of respective semester; start of fall semester is September, start of spring semester is January. There will be another RFP mid-year next year when we have additional funding and members that the PPIC's researchers can apply for

**c. Update on FFAR proposal (justification shared earlier during April meeting is in *Appendix 3* and preproposal submitted in *Appendix 4*)**

- Full proposal in good shape and ready to be submitted
- Currently sorting out legalities internally between sponsor office and accountant
  - Discussion around how we are using matching dollars in system
- Thank you to everyone for letter of support
- Potentially another form that the FFAR will request external funders to sign; waiting to hear from sponsoring office if this will be required
- Researchers involved from Center's pool of researchers:
  - ***Principal Investigator: B. Pam Ismail***; Associate Professor in Food Chemistry with a focus on protein chemistry and functionality; Department of Food Science and Nutrition Department, University of Minnesota
  - ***M. David Marks***; Professor of Genomics; Department of Plant and Microbial Biology, University of Minnesota
  - ***James Anderson***; Professor of Breeding and Genetics; Department of Agronomy and Plant Genetics, University of Minnesota
  - ***James House***; Professor of Nutritional Biochemistry; Department of Food and Human Nutritional Sciences, University of Manitoba, Canada
  - ***Gary Reineccius***; Professor of Flavor Chemistry; Department of Food Science and Nutrition Department, University of Minnesota
  - ***Zata Vickers***; Professor of Sensory Evaluation; Department of Food Science and Nutrition Department, University of Minnesota
  - ***George Annor***; Assistant Professor of Cereal Technology; Department of Food Science and Nutrition Department, University of Minnesota

**d. Update on Research Spotlight meeting (Oct 17 2019); Keynote speaker: Julia Keppler, Wageningen University and Research; other suggested speakers from our pool of PPIC researchers: Jim House (University of Manitoba), Lingyun Chen (University of Alberta),**

**Tom Michaels (breeder) , David Marks (genetics & breeding), Gary Reineccius, Pam Ismail. We are offering booths/tables at no cost to our partners and supporters**

- Purpose of the Center’s Research Spotlight Meeting is to highlight Center’s researchers and work that gets funded from Center/preliminary data
- Students working for the 16 researchers will have posters to showcase work
- Networking around research in space
- Booths for partners for free (featuring products, research, ing., etc.), in addition to free registration to 2 members from each partner
- Follow up with MJ Kinney from Good Food Institute – talked about potentially coming to give a talk about protein trends

**Q:** Open only to member companies or open to others, as well?

**Pam:** Open registration for anyone who would like to come; we did our best to avoid times of other conferences/meetings. Registration for the event will be sent to PPIC’s master contact list. Partner companies can send more than 2, but will have to pay for additional attendees. Reasonable cost for non-members of \$250 (\$200 early-bird). Fee for non-members will cover cost for operation, venue, food

**Q:** Is there a specific topic for the spotlight meeting?

**Pam:** For our first year as a center, the spotlight meeting will feature an overview of activities in the plant proteins space; the idea is to showcase researchers and what they are doing in the space, as well as bring in keynote speakers that will talk about trendy topics and hold a poster session that is open to research in overall plant protein space  
As we grow and have different programs within the Center, we can have focused research meetings on given program

Additional commentary:

- Carrie commented on how the Protein Basics Short Course and the Research Spotlight Meeting may attract different audiences and between the two, the PPIC will attract a good diverse audience, which is very valuable to the Center
- Carrie suggested Lolly could highlight AURI’s work/capabilities as a speaker
  - Lolly will feature AURI’s work at booth informally; an engineer from Waseca co-products facility will talk about AURI’s capabilities

**e. Update on Literature Review**

- Members of Ismail lab continue to add to body of plant proteins research in literature review document
- Christina Connelly provided document from Protein Highway of currently ongoing research in plant proteins space. Will merge with Ismail lab’s literature review.

**4. Efforts to recruit new members (10 min)**

**Objectives:**

- a. Announcing potential new members (Coca Cola and Nutriati)**
- Nutriati:

- Startup company focusing on chickpea protein concentrate, flour
- Will join at associate level
- Membership agreement to be signed mid-August
- Coca-Cola:
  - Pam has had conversations with a couple of different groups (each group has their own source of funding) – analytical group, ingredient research
  - Alec Hayes from ingredient group interested in joining at Associate level\* for one year non-renewable – uncertain how Coca-Cola can benefit from Center
  - Could convert to partner membership as they determine how they can benefit

\*Original PPIC bylaw stated that membership level was based solely on size of company. However a lot of companies (e.g. sunopta) expressed interest in joining PPIC but did not have enough profit to join at partner level – enough demand that we made an adjustment in bylaws that will allow larger companies to join for 1 year non-renewable at associate level

**b. Share conversations with different companies (excel sheet)**

\*For a more in depth list of contacts/summaries, please see shared Exec Board Share Resources Google Drive excel document

- LOL group came in and visited center
  - Main question: Is center going to focus on blending, i.e. dairy proteins & plant proteins? – This could be something to discuss among technical committee in terms of research priorities
  - Sending 11 employees to Short Course
  - Sharon Marsh continues to reach out to maintain conversation about potentially partnering with PPIC
- Visit from Novozyme (Craig Sherwin), July 22nd
  - Whole new program for developing enzymes for protein modification and enhancement
  - Novozyme in process of restructure; hoping to have this program approved
  - Advocating for being partners with Center in next fiscal year
- AGT
  - Several conversations with Mehmet Tulbek; visiting in person in October for Research spotlight meeting
- Simplot – visit in late May, very interested, no follow-up as of yet
- Nestle – Nadji Rekhif; seemed very interested, need to follow-up
- Several conversations with companies focused on rice bran protein (Gehl Foods, Extraction Alternatives, Stabil Nutrition)
- Pepsico – Ricardo and Imran; met with on July 8<sup>th</sup> and May 30<sup>th</sup>, respectively; expressed interest
- DSM – interested but waiting until they launch canola protein lines (2021)

**Q:** Is there a difference in how smaller companies and startups are engaged vs. larger companies?

**Pam:** Smaller companies will not join technical committee, will not have privilege of discussing research priorities, but will have access to other benefits and will be able to weigh in at spring research planning meeting and other PPIC meetings

**Q:** Are we interested in only U.S. companies?

**Pam:** no, would like to gain international partners; have been in conversation with AGT (Canada), Roquette (France), etc.

**c. Discuss new strategies for recruiting additional partners**

- Consider procuring feedback from Nutriati on how PPIC message lands to smaller companies; illustrate value of smaller companies would bring to table
- Tap into Protein Industry Canada (PIC) cluster??
  - Pam: Potential exchange of students or researchers without transferring money

**5. Review and vote on submitted proposals (60 min)**

**Objectives:**

**a. Technical committee members review and discuss the proposals and go over the scoring sheets**

- Comments on review process, itself
  - Discussion needed on ways to improve the process
  - Request for more time to review the proposals
  - Potentially need to modify the scoring system (committee members found that their scores did not necessarily reflect their overall feelings on the proposals)
  - Perhaps we could get preliminary proposals to review, provide feedback and allow time for modifications before final committee review?
- Comments on proposals submitted for review
  - The committee would have preferred to see a larger number of proposals to score (5 to 6 would be good).
  - The committee had some suggestions for ways to improve or strengthen the proposals but were unsure about the process. The timeline seems tight so could modifications be made and circulated through the committee for potential recommendation and still meet the timeline?
  - Committee members were uncomfortable recommending the proposals since there were outstanding concerns and questions and budget requested for each was substantial.
  - Committee members generally agreed that the overall scores didn't accurately reflect their assessment of the proposals. For example, some committee members felt that the Cold Plasma proposal was a "better" project but yet their score for this one was lower than the Hemp proposal.
  - Consideration that it would be nice to have shorter term research underway to show at Research spotlight meeting; would have to understand that if we decide not to fund either one, we would not be able to show early results

**b. Vote on funding the proposals and make recommendations to the Executive Board**

\*Please see page 7 for scoring and specific comments on proposals

**6. Next steps (20 min)**

\* tabled for future discussion due to time constraints

Objectives:

- c. Discuss utilization of additional funds
- d. Discuss ideas for a training program (Exchange Training)

**Action Items**

- Amy and Pam to look into dinner/networking options for Sept. 5-6<sup>th</sup> short course
- Technical Committee continue to brainstorm ways to recruit new partners, including smaller companies and startups
- Amy will continue to update literature review document and will merge with the document on ongoing plant proteins research provided by Christina Connelly from the Protein Highway
- Amy to reach out to Julia Keppler, keynote speaker at the Research Spotlight Meeting, for a short bio, abstract and title of presentation
- Pam to follow-up with MJ Kinney as a potential speaker for Research Spotlight Meeting
- Pam and Amy will continue to update Exec Board Shared Resources Document, which documents up-to-date conversations with potential partners and company contacts
- Technical Committee to hold discussion on how to improve proposal review process. Overall clarification needed on how review process is to be conducted.
- Technical Committee to clarify vote on proposals submitted for first round of RFPs and provide additional constructive feedback where needed.

**Item 5b. (Cont.) Vote on funding the proposals and make recommendations to the Executive Board**

**Proposal Title: Impact of cold plasma treatment on pea protein structural and functional characteristics**

PI: B. Pam Ismail

Co-PIs: Peter Bruggeman, George Annor, Chi Chen

**Overall consensus:** Technical Committee requesting revisions to proposal to be re-submitted and reviewed for potential funding in Fall semester contingent on timing

	<i>Ismail et al.</i>
<b>Average Overall Score (out of 100)</b>	81.7
<b>Average Individual Criterion Scores:</b>	
<b>Project goals &amp; objectives (Total out of 10)</b>	
1) The proposed project addresses at least one of the top priority areas	10.0
2) The proposed project fits well within the overall mission of the PPIC and will advance the overall goals of the Center	9.8
3) The proposed project focuses on research that will expand fundamental knowledge of plant proteins for future end-uses	6.5
4) The objectives of the projects are specific, clear, and measurable	7.8
5) The research objectives and hypotheses are built on sound rationale	8.2
6) The proposed project is innovative in nature and will provide new information or expand on existing information within the plant proteins space	8.7
<b>Approach &amp; Methodology (Total out of 10)</b>	
7) The research design of the project is well thought-out, organized, and directly addresses the research question	7.7
8) Proposed methods are adequate	6.3

9) The project can be reasonably carried out within the proposed budget and timeline	8.0
<b>Qualifications of research team (Total out of 10)</b>	
10) The investigators have the necessary skills and access to equipment/facilities needed to complete the project	8.7
<b>Other criteria (Check if complete)</b>	
All components of the proposal have been provided	yes
The proposal follows designated formatting guidelines	yes
Research team includes two PIs representing two distinct disciplines, one of whom is UMN faculty member	yes

**Summary of comments/questions:**

What exact functionalities will it improve and how so? Did not address this? Unclear how using cold plasma technology would improve functionality

Concern that there is not enough research to show that there will be a positive effect on protein functionality by using cold plasma

In comparison to hemp proposal, this proposal did not include nutrition digestibility changes. Research project would be more complete with this analysis, covering more of a broad scope with how cold plasma will affect proteins. But does check the boxes of research priorities for the center

- Possible that this would be considered in further work following the work done in initial project
- Budget concerns over adding digestibility

Process development for functionalizing plant-based proteins is very impactful – more functional, more value for applications across the board

Why pea? – do we open up for more impact by adding more additional plant proteins

**Proposal Title: An interdisciplinary strategy for improving hemp protein as a food ingredient through plant breeding and processing**

PI: T.E. (Tom) Michaels

Co-PIs: B. Pam Ismail, James House

**Overall consensus:** Technical Committee is recommending ruling out this proposal as submitted to be re-considered upon re-submission for spring RFP

	<i>Michaels et al.</i>
<b>Average Overall Score (out of 100)</b>	79.2
<b>Average Individual Criterion Scores:</b>	
<b>Project goals &amp; objectives (Total out of 10)</b>	
The proposed project addresses at least one of the top priority areas	8.4
The proposed project fits well within the overall mission of the PPIC and will advance the overall goals of the Center	8.2
The proposed project focuses on research that will expand fundamental knowledge of plant proteins for future end-uses	8
The objectives of the projects are specific, clear, and measurable	8.2
The research objectives and hypotheses are built on sound rationale	7.6
The proposed project is innovative in nature and will provide new information or expand on existing information within the plant proteins space	7.8
<b>Approach &amp; Methodology (Total out of 10)</b>	
The research design of the project is well thought-out, organized, and directly addresses the research question	8.2
Proposed methods are adequate	8
The project can be reasonably carried out within the proposed budget and timeline	6.8

<b><i>Qualifications of research team (Total out of 10)</i></b>	
The investigators have the necessary skills and access to equipment/facilities needed to complete the project	8.75
<b><i>Other criteria (Check if complete)</i></b>	
All components of the proposal have been provided	yes
The proposal follows designated formatting guidelines	yes
Research team includes two PIs representing two distinct disciplines, one of whom is UMN faculty member	yes

**Summary of comments/questions:**

In general, feel that hemp proposal is more long term in scope; skeptical of whether will see results in a short period of time

Less focused overall in objectives as compared to cold plasma proposal

A little bit less organized in how the methodology will be handled

Notable difference between the two proposals is the sensitivity around showing progress in a short period of time

- Agronomy portion of hemp project would certainly require more time
- Potential leveraging of current, existing cultivars to help with addressing near-term objectives

May not expand fundamental knowledge of plant proteins in general but will provide more knowledge on this type of plant protein [hemp]

Important to add to research body of hemp protein