

PPIC Executive Board Meeting Minutes, Tuesday, May 12th, 2020, 8 – 9:30 am, via Zoom

In attendance: Pam Ismail – UMN

Amy Mathiowetz – UMN

Jason Robinson – AURI

Christina Connelly – Canadian Consulate

Julie Simonson – Schwan's

Denis Chereau – IMPROVE

Stacy Pyett – Wageningen University and Research

Greg Cuomo – UMN

1. Quick re-cap of previous Executive Board meeting

A. Did not review to respect time constraints – available for review in *Appendix 1* of meeting agenda

2. Technical committee meeting minutes, FYI

A. Did not review to respect time constraints – available for review in *Appendix 2* (May 4th meeting minutes) and *Appendix 3* (Feb 10 meeting minutes) of meeting agenda

3. PPIC general updates

A. **Update on Proposal to GFI:** submitted pre-proposal and got invited to submit a full proposal; Title: “Characterizing and Texturizing Proteins from Pulses to Form Fibers with Textures that Mimic Chicken”; Three interdisciplinary researchers (Zata Vickers, Job Ubbink, and Pam Ismail); Funds requested: \$250,000 (**FUNDED**)

i. We have identified two graduate students to work on this project starting in Fall 2020

B. **Update on FFAR proposal** submitted to Plant Protein Enhancement Project; Title: Legumes of the future: Developing methodologies and germplasm to enhance the functionality and nutritional quality of pea protein; Five interdisciplinary researchers; Funds requested: \$1,167,797 (Still PENDING, we should hear back in the summer)

C. **Updates on currently funded PPIC projects:** Q2 reports shared with Tech Committee and Exec Board

i. “*The Impact of Cold Plasma Treatment on Pea Protein Structural and Functional Characteristics* (Ismail et al.)

ii. *An Interdisciplinary Strategy for Improving Hemp Protein as a Food Ingredient through Plant Breeding and Processing* (Michaels et al.)

iii. Asking for Quarter 3 project updates this week

iv. Projects supposed to end in September, however, we will be offering no-cost extensions due to Covid shutdown

D. Event Updates

i. Research Planning Meeting (originally set for May 4th): Postponed, date TBD. Potentially in the fall joined with Research Spotlight meeting

ii. Updates on short course/workshop and recommendations from Tech Committee (*Appendix 4 of meeting minutes*); Considering postponing from Sept. offering to fall date combined with Research Planning Meeting and Research Spotlight Meeting

iii. Option to combine 3 events in October/November (4 day event: 2 day workshop/short course, followed by 1 day Research Planning Meeting, followed by 1 day Research Spotlight Meeting

a. Meeting makeup

- 2 day workshop/short course

- 1 day Research Planning Meeting – industry speakers to speak about trends, challenges, opportunities to drive the conversation about where research should be going so we can set our research priorities for the following year
 - 1 day Research Spotlight Meeting – Researchers give us updates on projects funded by PPIC, as well as researchers from different institutions (national and international) and a keynote speaker to give us presentations on most innovative research in the plant proteins space
 - Attendees can register for 1, 2, or all events
- b. Executive Board feedback**
- Christina: In favor of a Fall virtual meeting: unclear whether people will sign up/be able to travel by Fall; hard to get registrations and commitments, particularly from speakers without knowing if it will be virtual or not
 - Stacy: nice idea to bundle events, however second what Christina said; at least from Wageningen, will not likely be able to travel internationally for rest of calendar year
 - Greg: getting okay from UMN to do a meeting in the fall will be unlikely. Even if PPIC is able to schedule a meeting, there is no guarantee that the Covid situation will be resolved by Fall; getting people together on such short notice would be difficult – if you want to ensure the meeting will happen in the fall, it would be best to do it virtually
 - Jason: 1) you don't want to be the group that kicks off another infection 2) whether or not people will be able to travel, how are we going to compete, particularly with 4 day event, with all of the other events that are being pushed to Fall right now. At a minimum, consider a virtual back-up; at a maximum, think about a 1-day in person event
 - Julie: travel will still be very limited in fall. For workshop consider modified virtual workshop or delay to spring. Encourage virtual events for Research Planning Meeting and Research Spotlight Meeting and not necessarily back-to-back to avoid having people sit in meetings all day. The meeting space we had for the RSM in the fall will not work with new covid guidelines. Pros and cons on virtual: Pro -- more participants, no travel, Con -- people can pick and choose what sessions to participate in and there will scattered participation so we will need to be very deliberate in setting the objective of the meeting
- c. In response to Exec Board feedback, Pam recommended two scenarios knowing that she would like to keep Research Planning Meeting and Short Course as in person events**
- Scenario 1**
- We can plan the Research Spotlight Meeting virtually for the Fall (Oct/Nov) and we can have sessions that people can sign up for. Good to stay present as a Center and share our results so people remain aware of the PPIC. We will record presentations and registrants can have access to the recordings after the meeting
 - Postpone Research Planning Meeting and Short Course to Spring (March) as in person events and combine these 2 events into a 3-day event, where attendees can register for 1 or both. If we still cannot do in-person by spring, we can shift the planning meeting to virtual and postpone the short course again
- Scenario 2**
- Postpone all 4 events to Spring as back-to-back in-person events
- d. Executive Board in favor of Scenario 1.**

- Christina: good to look toward Spring event now – a lot of Fall events will start getting pushed to spring and it would be good to lock in your event dates ahead of the curve. Additionally, pick a one day or half day date in Fall for virtual research update
- Jason: important to keep something in the Fall (virtually) to highlight research in Center; can also cover research updates in newsletter to maintain visibility
- Julie: In favor of fall virtual research spotlight event to stay in front of our constituents and the broader public. Second's Christina's thoughts about proactively planning spring events now. If we do need to do spring event virtually, there are remote virtual tools for ideations and Zoom has ability to break into subgroups.
- Greg: the University is investing in automated tools; what can we do technical-wise to make fall virtual event more engaging for attendees
- Pam will learn from upcoming virtual events to understand how to make more engaging (i.e. IFT (July) pre-recorded panels with live follow-up discussion)

E. Updates on efforts (by Tech Committee and Exec Board members) to recruit new members:
Announcing new members Danone (Partner), Bay State Milling (1 year Associate trial membership), and Evergrain (Associate). General Mills converted to full partner! **Total of 15 members (9 partners and 6 associate) as of today -- that was the goal for the first year of PPIC!**

- 14 are founding because they joined or saw interest within the first year of the Center (all received discount)

F. Updates on conversations with other companies and potential members (“Exec Board Shared Resources Document” in Google Drive)

- Did not review to respect time constraints, but have had several conversations with industry companies; we are actually running projects for several of these companies that are not yet members – hopefully they will see the value in the PPIC through these projects and join
- Had conversation with Technical Committee at Feb meeting as to whether they want to increase membership or focus on satisfying current members. As partners, they agreed to continue increasing (and diversifying) membership pool so that we have ~1 million consistently in funding per year (5-6 projects)
- Yesterday (5-11-20), we spoke with flavor company for first time (International Flavors and Fragrances, who recently merged with DuPont) who are very interested in being first flavor house to join the Center
- AURI had conversation with one of first equipment/processing companies interested in joining the PPIC, Coperion, who make extruders for meat analog industry and K tron feeders
- Christina has a contact a JUST she will pass along

4. Review Proposals

A. Goal: We would like to fund 3 proposals; if more are worthy of funding, we will prioritize them in the next cycle of RFP

B. Proposals for review

- "High-protein mung bean for potential food applications: protein structure-function relationship and ingredient characteristics"* (Lamsal et al.)
- "Enhancing pennycress oilseeds as a new protein source by improving flavor and protein extractability"* (Marks et al.)
- "Developing high throughput methods to predict pea protein functionality and accelerate the breeding of new varieties"* (Mulkey et al.)
- "Impact of pea storage protein fractions and their ratio on functionality and nutritional quality"* (Ismail et al.)
- "Flavor reactions with plant proteins"* (Reineccius et al.)

- vi. *"Understanding and modulating aroma, appearance, and color of grilled plant-protein-based meat analogues"* (Ubbink et al.)

C. Review evaluation criteria (*Appendix 5 of meeting minutes*), which was formulated to clarify process after first round

- i. Tech committee reviewed all 6 submitted proposals and had 2 weeks to fill out evaluation rubric which was enhanced from first RFP round
- ii. Did not have to invite ad hoc reviewers (number of proposals was manageable)
- iii. Informed Tech Committee that PPIC is not a typical funding agency – whether vote yes or no, TC members can revise proposals as they see fit to meet PPIC goals and industry needs
- iv. TC can invite PIs to answer their questions; Pam (a PI and/or Co-PI on 5 proposals) and Gary (a PI and/or Co-PI on 3 proposals) were able to answer most questions during the TC meeting
- v. Tech Committee casted vote: yes, yes with revisions, no submit next round, no
- vi. Because there were split votes on some, Pam also asked the TC members to also indicate their top three proposals
- vii. Amy has put together a summary of Technical Committee votes, comments, and requested revisions for Executive Board review

D. Enter initial votes for discussion

- i. Julie: Reineccius et al. (1), Ismail et al. (2), Marks et al. (3)
- ii. Jason: Mulkey et al. (1), Marks et al. (2), Ubbink et al. (3), Ismail et al. (4), and Buddhi et al. (5)
 - a. Concerned with applicability of Ubbink et al. given makeup of PPIC
 - b. Thought Ismail et al. could be delayed to next round from NIR proposal
- iii. Christina: Ismail et al. (1), Reineccius et al. (2), Ubbink et al. (3)
 - a. Difficult to select between Ubbink, Marks, and Mulkey – Struggled with whether her goal was to attract new members or satisfy makeup of existing group
- iv. Denis: Reineccius et a. (1), Mulkey et. Al (2), Marks et al. (3)
- v. Stacy: Ismail et al. (1), Reineccius et al. (2), Mulkey et al. (3)
 - a. Took the approach of voting based on Technical Committee rankings – Reineccius and Ismail were clear favorites of the Technical Committee
 - b. Focused on mixed review proposals from Technical Committee review (Mulkey et al. or Ubbink et al.) for third funding decision

E. Discussion of proposals (referred to Tech Committee comments, votes, and rank)

- i. The Executive Board members took two different routes of approaching initial funding decisions, either starting from the point of evaluating the proposals based on their own perceptions and making their initial funding decisions accordingly, or basing their initial funding decisions on the Technical Committee's ranking
- ii. Hearing first from those who deviated from ranking of Technical Committee
 - a. Denis: Evaluated projects based on own perceptions to avoid bias from Technical Committee rankings: 1) flavor project is very critical and applicable (a lot of comments from industry about off-notes when dealing with plant proteins); 2) high-throughput method, if successful, would bring a lot of benefits to entire value chain; 3) pennycress project is something new and it is sometimes good to investigate outside of mainstream work
 - b. Jason:
 - In favor of Marks et al.: Important to explore beyond pea/mainstream proteins, keeping in mind that we funded a pea protein project in the first RFP round. The only issue with pennycress is that we are a long ways off from commercializing pennycress as viable

protein source; although this is foundational work, we could potentially push this proposal back a funding cycle

1. Pam noted that the Forever Green Initiative recently received funding from Minnesota Dept. of Ag to conduct pennycress research, and several other pennycress proposals have been funded recently; Pam got a proposal funded through FGI to work with breeders on breeding for protein quality. Technical Committee voted no submit next time (6) and yes (3) – there is interest and value in this proposal; if we wait to fund until next time, the breeders can continue to develop proof of concept (breeding for protein quality)

-In favor of Ubbink et al: This proposal could attract “silicon valley food companies” i.e. Beyond Meat, Impossible Foods although on flip side, could frustrate current members, given its very specific product development focus. Overall, unique relative to other proposals submitted

-Why he did not vote for Reineccius et al. – Did not understand proposal beyond the main idea of trying to understand base mechanisms for off-flavor development [Pam offered clarification around importance of investigating covalent bonding vs. other forms of bonding]. On the other hand, knowing we are trying to go after flavor houses and knowing that this work specifically helps build a toolbox for flavor houses, this puts proposal into pre-competitive approach that PPIC is looking for – producing research that can benefit everyone and attract new members; Jason happy to go with majority Exec Board vote for this proposal

- iii. Pam noted that NIR (Mulkey et al.) and pea storage protein fractions (Ismail et al.) proposals are interdependent. Pea storage protein proposal proves concept and determines which pea storage fractions are relevant; as follow-up, the pea storage protein fractions would be used as standards for the NIR methodology. Breeders need to screen thousands of lines to know appropriate protein profile, but we are not able to do biochemical assays on thousands of lines, so NIR methodology would expedite the selective breeding process. Preference would be to either fund together or 1 in this funding round and the second in the next funding round
 - a. In response to Pam’s clarification, Executive Board was in agreement that appropriate order of funding would be to fund Ismail et al. in this cycle and prioritize Mulkey et al. for funding in next cycle
- iv. More discussion over Ubbink et al. in comparison to other proposals, as it was controversial for both Technical Committee and Executive Board
 - a. Technical Committee (3 “Yes”, 4 “Yes with revisions”, 2 “No submit next round”, 2 “No”): product-development focus and not innovative enough to fund
 - b. Christina (Debating between Marks et al. and Ubbink et al.) Looked at these proposals from the perspective of what do these different proposals provide in terms of outreach to others. The meat analog project, while more product-development focused, could push the industry of meat-analogues focusing. If we do fund this proposal, worth thinking about whether grilling is most appropriate cooking mechanism to be assessing. On the other hands, the Marks proposal would push us more in the direction of companies interested in alternative protein cropping systems (i.e. PepsiCo). However, to the point of Technical Committee member, we have not yet figured it out for canola, and pennycress is far behind canola, so is it way too soon to be investigating this?
 - c. Stacy: Considered this proposal as important to evaluate for potential funding given that 5 Technical Committee members put this in their top 3 funding choices. Concern with Ubbink proposal is that if we want to use this research to appeal to flavor companies,

this is not good enough – will not surprise or interest flavor houses given that they are already focusing on similar product development work in house; we need to challenge our researchers to do something further than this. It's more of a problem when you step into their core business presenting something that they are already aware of/knowledgeable about vs. presenting something that they don't necessarily know anything about (i.e. pennycress). We need to be critical about research projects when stepping into meat analogue domain if we really want to appeal to companies in this industry sector

- d.** Julie (Debating between Marks et al. and Ubbink et al.): Ubbink et al. proposal was intriguing as a product developer, but such work is likely being done by flavor houses and other product development houses. Opted to go with pennycress proposal because it is fundamental, precompetitive research, beyond pea, that stretches future in a way the PPIC should be focused on
 - e.** Denis: More of a competitive than pre-competitive type of research; it is best to avoid going in this direction for funding. Convinced that flavor companies are already working on similar projects, and not recommended to enter into competition with them, which ultimately does not bode well in terms of potential membership; always better to explore in an area that they are not knowledgeable in
- v.** Funding proposals submitted from University of Minnesota vs. external institutions
- a.** Christina: In terms of the reach of the broader research consortium, do we need to be thinking about funding proposals submitted from outside of the University of Minnesota? (all but Lamsal et al, which was submitted out of Iowa, were submitted out of Minnesota)
 - b.** This was considered by other Exec Board members, but for reasons outlined in **4.D.vi.**, members could not justify funding the Iowa proposal
- vi.** Discussion on mung bean proposal (Lamsal et al.)
- a.** Technical Committee feedback focused on lack of focus and IP issues
 - b.** Julie: Interest in this proposal because it was a different protein than pea, but proposal needs refinement – encourage to submit again, hone in on focus of research, address patent question, and be more specific about what they are working on that this new and novel in this area
 - c.** Christina: Wanted them to allude to whether they have had any discussion with Just and IP issue; noted Technical Committee comments regarding whether this is a region to grow mung bean; needed more information about why this is really worth digging into – need to document what research has been done vs. not and the possibility of growing in the NA geographic region
 - d.** Pam, as Co-PI on proposal, had given feedback to PI to streamline the overall goal of the project (breeding and the impact of directed breeding to enhance protein quality and functionality) as this was not clearly laid out in proposal
 - e.** PIs were looking to produce ingredients using very typical technologies – would have liked to see more innovation
 - f.** We can encourage PI to re-submit, addressing 1) feasibility to grow and develop mung bean within NA region, 2) what research has already been done on mung bean vs. what new areas this proposal will address, 3) IP issues

F. Enter Final Votes

- i.** Julie: Reineccius et al., Ismail et al., Marks et al.
- ii.** Jason: Reineccius et al., Ismail et al., Marks et al.
- iii.** Christina: Ismail et al., Reineccius et al., Marks et al.
- iv.** Denis: Reineccius et al., Ismail et al., Marks et al., fund Mulkey et al. next round
- v.** Stacy: Ismail et al., Reineccius et al., Marks et al. (yes, with revisions – 6 recommendations from TC for no, submit next round to respect the technical committee need to see additional information/modifications)

G. Final Funding Decisions

- i.** Reineccius et al.: Yes, fund as is
- ii.** Ismail et al.: Yes, fund as is
- iii.** Marks et al.: Yes, fund with minor revisions per Technical Committee recommendations
- iv.** Mulkey et al.: No, submit next round with minor revisions; Proposal will be given high priority
- v.** Lamsal et al.: No, submit next round with major revisions per Technical Committee recommendations
- vi.** Ubbink et al.: No. Encourage PI to submit a new proposal in next round that addresses more precompetitive, fundamental research in the meat analog space

5. Other agenda items not addressed due to time limitations

A. Discuss PPIC specific goals

- Create active platform to study and promote plant proteins
- Gain the involvement of key industry players
- Establish a cohort of interdisciplinary researchers
- Develop research programs that address industry-identified challenges and opportunities
- Develop and disseminate a wealth of interdisciplinary knowledge and technologies to advance plant proteins
- Create momentum and acquire funding from diverse sources to accelerate outputs
- Foster partnerships, scientific exchange, and interdisciplinary interactions
- Train the next generation of researchers, who will become scientists for future hires
- Address the consumer desire for nutritious and healthy food
- Have a positive impact on the environment
- Provide additional protein sources for the growing population
- Provide revenue to farmers
- Become a nationally and internationally recognized protein center of excellence

B. Discuss Membership goals

- Increase our membership pool
- Diversify our membership pool
 - i.** Target: ~1million consistently per year (in next 2-3 years) to fund 5+ active research projects yearly; 10-15 more members could help us reach this number
- Continue with short term projects for the first two years.

6. Post-meeting action items

- RFP next steps
 - Amy will summarize Executive Board comments and revisions
 - Comments and revisions from Technical Committee and Executive Board will be communicated with PIs, along with final funding decisions

- Obtain Q3 reports on the two PPIC funded projects
- Start planning for PPIC fall virtual Research Spotlight Meeting
 - Amy will work to find a date that avoids other fall events
- Christina will provide the PPIC team with a contact for JUST