



Center for Advanced Processing and Packaging Studies

**The Ohio State University (Managing Site), North Carolina State University
and University of California, Davis**

Request for Proposals

Dear CAPPs Investigators:

This is a call for proposals for the CAPPs Fall meeting, to be held on **May 2, 2017** at North Carolina State University, Raleigh, NC. Proposals and project reports are due to Julie Townsend Townsend.57@osu.edu no later than **March 31, 2017**. Please note the following procedures carefully.

Process for proposal submission to IAB

Investigators need to contact one or more IAB members to receive support for their proposal. The IAB member must certify their support by sending an email message to the Interim Managing Site director, Dennis Heldman.20@osu.edu. Proposals will not be forwarded to the IAB for consideration without this IAB member communication. Please note that this expression of support is preliminary, and does not commit the IAB member to ensuring funding for your specific project. Please contact IAB members well in advance, to ensure that they have time to consider your ideas.

Funding cycle

New proposal requests will be considered for funding during the Spring meeting. Renewals and extensions will be considered during the Fall. Projects are funded for one year only. Project managers are requested to state at the time of original submission whether the work will involve more than one year. A second-year request will then be considered a renewal only if it was so identified in the original submission.

Some funds have been set aside for proposals for *seed funding* during *Fall meetings* (\$5,000 - \$10,000). These are short proposals, primarily intended to develop and explore ideas in preparation for a full proposal for the Spring meeting, ***full proposals will only be considered if the budget is \$55,000 or less.*** Seed funding may also help investigators generate additional external support.

*IAB members recently met and discussed **updated** targeted areas of research interest, below are the suggested topics along with the company interested in the particular topic. Please note that these interest areas represent guidelines, and additional industry relevant innovative ideas for projects are welcome. Industry interests remain dynamic and addressing them does not guarantee funding.*

Special Note to Investigators

If your project is funded, you will be expected to attend the CAPPs meetings to report your progress. **Progress reports, final reports and requests for no-cost extensions** are also due on **March 31, 2017** for inclusion on the web site.

The following topics have been identified by CAPPS IAB representatives as having high priority for projects to be funded. Many of the topics are of interest to multiple member companies. Faculty with interest in these topics should explore innovative approaches with member representatives, and develop appropriate proposals.

Chemistry

- Identification of colors, preservatives, flavors, etc. from sources that do not require label declaration. (AFP, Hormel, HP Hood, PepsiCo, Coca-Cola, Abbott)
- Development of analytical methods for detection of adulteration in foods. (Hormel, DPSG, PepsiCo, Nestle, Coca-Cola)
- Development of plant proteins to function like proteins from animal sources. (AFP, HP Hood, PepsiCo, Nestle, Coca-Cola, Abbott, Hershey)
- Use of starches/hydrocolloids to create unique textures in foods. (AFP, HP Hood, PepsiCo, Nestle, Hershey)
- Using redox potential as a parameter in the formulation and preservation of foods; investigating the influence or evolution of redox potential of a food during a process. (AFP, DPSG, Nestle, Abbott)

Microbiology

- Identification and development of natural antimicrobials and preservatives for food and beverage applications. (AFP, Hormel, HP Hood, DPSG, Nestle, Coca-Cola)
- Development of methods to control/predict biofilm formation; unique surface coating. (Hormel, HP Hood, DGPS, Coca-Cola, Abbott, Hershey)

Processing

- Identification of preservation processes to enhance functionality of food and beverage products; retention of nutritional and quality attributes while extending shelf-life. (AFP, HP Hood, Michael Foods, DPSG, PepsiCo, Nestle, Coca-Cola, Abbott, Hershey)
- Ensuring food safety in the manufacturing environment; post-process contamination. (Michael Foods, DPSG, PepsiCo, Coca-Cola)
- Improved/novel process control systems based on simulations, big data, and automation. (PepsiCo, Nestle, Coca-Cola, Abbott)
- Control of toxic by-products generated from reactions occurring during processes; acrylamide during coffee roasting Nestle
- Development of novel pasteurization processes for nuts (Hormel is very interested)
- Influence of high electromagnetic fields on protein stability during UHT processes. (AFP, HP Hood, Michael Foods, Nestle, Coca-Cola, Abbott)
- Improved efficiency of food product drying; consideration of preliminary dewatering steps. (Abbott, Hershey)
- Improved understanding of the water activity/food texture relationship; achieving crisp products at high water activities, or softer food at lower water activities (Hershey)
- Enhanced heat transfer during cooling of beverages in bottles following hot-fill. (HP Hood, DPSG, Nestle, Coca-Cola, Abbott)
- Improved understanding of the water activity/food texture relationship; achieving crisp products at high water activities, or softer food at lower water activities. (Hormel, PepsiCo, Nestle)
- Investigation of membrane technologies for applications to cold pasteurization. (HP Hood, DPSG, Nestle, PepsiCo, Coca-Cola, Abbott)
- Development of efficient and less energy-intensive concentration or dewatering processes. (HP Hood, Nestle, Coca-Cola, Abbott, Hershey)
- Analytical methods to support processing, product, and packaging issues. (DPSG, Coca-Cola, Abbott)
- Improved understanding of air impurities effect on drying processes. (Abbott)

Process Analysis and Improvements

- Development of baking/frying processes to improve product crispness, with reduced oil pickup. (PepsiCo, Hershey)
- Development of predictive models for shelf life of oil/water emulsions, based on lipid oxidation. (AFP, HP Hood, Nestle, Abbott)
- Establishment of thermal inactivation kinetics of heat resistant mold in fruit beverages. (DPSG, Coca-Cola)
- Development of models for scale-up of food process unit operations based on maximum quality attributes; spray drying, fouling during HTST/UHT processes, etc. (HP Hood, DPSG, Nestle, Coca-Cola, Abbott)
- Investigation of factors influencing stickiness of spray dried powders. (Nestle, Abbott)
- Analysis of dehydration processes to improve efficiencies; improvements in energy efficiency while maintaining quality attributes. (Nestle, Coca-Cola, Hershey)
- Improved pumping and transport of high-solids and/or high viscosity products in HTST, UHT, evaporators, or spray dryers. (HP Hood, Michael Foods, DPSG, Nestle, Abbott)
- Identification of steps to increase throughput in manufacturing operations; extended run times, reduced time for cleaning (CIP), or reduced cycle times. (AFP, HP Hood, Michael Foods, DPSG, Nestle, PepsiCo, Coca-Cola)
- Development of in-line sensors for process optimization and control. (Abbott)
- High efficiency air filtering process. (Abbott)

Packaging

- Improved understanding of packaging permeability; high barrier and low weight materials; durable materials; retention of quality attributes; UV light barrier, etc. (AFP, Hormel very interested, HP Hood, DPSG, Nestle, Coca-Cola)
- Improved accelerated shelf-life testing methods; texture, flavor, color, nutrients. (AFP, Hormel, DPSG, Nestle, Coca-Cola, Abbott, Hershey)
- Development of in-line non-invasive methods for qualifying and quantifying head space gases in sealed packages. (AFP, Hormel very interested, DPSG, Nestle, Coca-Cola, Hershey)
- Identification of steps to increase throughput in manufacturing operations; extended run times, reduced time for cleaning (CIP), or reduced cycle times. (Abbott)
- Finding alternative methods for maintaining an oxygen-free environment during filling of beverages. (HP Hood, DPSG, Nestle, PepsiCo, Coca-Cola, Abbott)
- Reducing the impacts of packaging on waste streams; biodegradable materials. (DPSG, Nestle, PepsiCo, Coca-Cola)

Sensory Science

- Development of analytical methods to evaluate quality attributes in foods in a manner that correlates with sensory evaluation. (HP Hood, DPSG, PepsiCo, Nestle, Abbott, Hershey)
- Development of mechanical (rheology, tribology, texture analysis) methods that are correlating with mouthfeel. (Abbott)

Health and Wellness (via processing and packaging)

- Improved understanding of the relationships between food, nutrition, health, and wellness; role of bioavailability (AFP, DPSG, Nestle, Abbott, Hershey)

CAPPS Project Proposal Guide

PI Name and University

(Must not exceed four pages including P.I. biographical information)

Project Title:

Project Manager/Collaborators *(including name of supporting IAB Member Company):*

Duration:

Requested funding (one year only):

Description:

- Brief description of problem being addressed and the possible influence the solution would have on the industry.
- Purpose of research-pertinence to processing and packaging

If possible, proposals should communicate a range of commercial applications in layman's terms. The industry members need to translate clearly the research topics into commercial terms to sell these projects internally and obtain relevant feedback from team members.

Related Work Elsewhere:

How Yours Is Different:

Objectives/Milestone Schedule:

- Discussion of what you hope to accomplish and the time frame expected.

Project Design and Experimental Plan:

- Discussion of methods and materials and how the research will proceed.
- How milestones will alter the time table and emphasis of the project at those decision points.

Budget: (include your university overhead if applicable)

Salary

Fringe

Supplies

Equipment

Travel

Potential Benefits/Deliverables to Member Companies:

- Discuss how the proposed research will help alleviate the problem being addressed and how that will promote industrial progress.
- CAPPS Industry partners you have spoken with who expressed an interest in your project.

Brief Biographical Data of Principal Investigator *(not to exceed one page)*

- Education
- Professional experience and honors
- Relevant publications

Proposals Due March 31, 2017

E-Mail to:

Attn: Julie Townsend

Townsend.57@osu.edu



**THE OHIO STATE
UNIVERSITY**

COLLEGE OF FOOD, AGRICULTURAL,
AND ENVIRONMENTAL SCIENCES

NC STATE UNIVERSITY

UC DAVIS
UNIVERSITY OF CALIFORNIA