apre | Alliance for Potato Research & Education

APRE Program Overview

APRE Mission

APRE is dedicated to advancing scientific understanding of the role potatoes play in promoting the health of all people.

APRE Members

Les Fermes Cavendish Farms

Potatoes USA

Canadian Horticultural Council

Simplot

McCain

LambWeston
SEEING POSSIBILITIES IN POTATOES

R.D. OFFUTT COMPANY

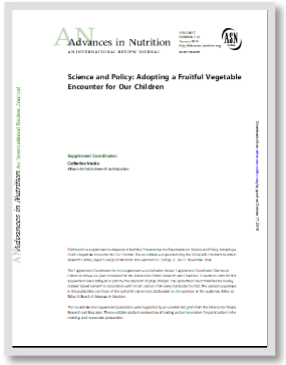
MOSS FARMS

PINK FARMS

NATIONAL POTATO COUNCIL
EST. 1948

AFFI AMERICAN FROZEN FOOD INSTITUTE

APRE History and Evolution



2011

Established in June 2011 to advance the body of evidence on potatoes in all forms

2012

2013

White vegetables help to increase shortfall nutrients and vegetable intake

2014

2015

Industry innovations; white potatoes are not substantial sources of saturated or trans fat

2016

White potatoes are an important source of potassium and fiber for kids

2017

Shift toward more diverse research portfolio, emphasizing **clinical research: 3 trials initiated**

Redirection of funding to limit overhead spending and invest in clinical research vs. communication; **funding 11 studies as a result of first-ever RFP**

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2017: APRE Transformation

- Redirected funding to focus on clinical research
- Refined research priorities
- Increased transparency

2017: APRE Transformation

- Issued first-ever RFP and initiated 11 new studies that recently started at universities around the world
  - 1 animal trial
  - 2 observational studies
  - 8 human clinical trials

- Built a steady pipeline of science that will start publishing in 2019

Potato & Nutrition Landscape

Challenges	Opportunities
• **Carbohydrates still under fire.** Potatoes grouped with simple sugars	• **A re-thinking of carbohydrate quality** is key. Nutrient dense carb sources should not be viewed as akin to simple sugar options. Opportunity to tout fiber, micronutrients, other phytonutrients in potatoes, as well as carb needs for performance
• **Protein, what protein?** The health benefits of protein continue to be touted. However, potatoes are not thought of as a viable protein source	• **A large potato contains about 6-7 gms of protein:** most people don't know that. Building off of the Van Loon study, which hopefully will demonstrate that potato protein can aid in recovery from exercise, coupled with a growing public interest in plant proteins, provides an opportunity to raise awareness of potato protein
• **Negative potato research continues to casts a shadow**: Epidemiological trials link potato intake to obesity, diabetes, mortality	• **Epi studies done in other cultures, with other databases** do not seem to demonstrate negative consequences of potato intake. Ideally the Danish study we funded corroborates this. Opportunity to look at global potato intake; assess the state of potatoes in epi research via meta analysis/review paper
• **Recommendations to limit/avoid potatoes still exist**: Continued use of glycemic index as a tool for rating "good" and "bad" foods	• **Reductionist thinking is frowned upon:** recent NAM committee assessing Dietary Guidelines process recommended a systems approach to diet research; focusing on whole diet and lifestyle, rather than individual foods/nutrients
• **School lunches are being critiqued**. Will potatoes qualify?	• **Existing/ongoing/new studies** in children provide opportunity to counter negative beliefs about potato intake by children
• **Industry funded research more scrutinized than ever**: panels being formed to assess industry influence in nutrition science; validity of industry-funded research being questioned	• **An absolute need to demonstrate integrity**; through Guidelines; via ways we deal with researchers. Possibility of convening researchers; discussing potential solutions; seeking supporters

2018 Program Overview and Metrics

Research

- Issue **annual RFP** (6-8 new studies)
- Manage **12 studies** and **two publications** in progress
- Ensure **100% submission rate of completed research** and publication of at least two manuscripts
- Develop **nutrition translation overviews** of published studies
- Commission **review on potatoes and epi evidence**
- Host **carbohydrate quality researcher roundtable** and publish proceedings
- Initiate **at least one research partnership or speaking engagement**

Science Education

- Conduct **50+ briefings** with leading researchers at least **4 scientific conferences**
- Facilitate at least **one educational session** at a nutrition scientist or health professional conference
- Distribute **quarterly e-newsletters** and improve open rate to 25%
- Support **website updates** as science is published
- Provide research translation and **perspectives surrounding hot media stories/issues** as needed

Management

- Monitor **Horizon Topics** and share regular perspectives and implications with Board members
- Support **new member outreach**
- Send **monthly email updates** to all Board members
- Update **Research Pipeline Overview** as needed for member outreach
- Support **quarterly Board meetings**
- Share **updates at grower and processor member meetings**

APRE Research Priorities

Cardiometabolic Health			
Diabetes	Heart Health	Healthy Weight	Gut Microbiome
Potatoes in Healthy Dietary Patterns			
Diet Quality and Culturally Appropriate Food Patterns			
Potatoes in Healthy Lifestyles			
Athletic Performance	Child Nutrition	Aging	

Cardiometabolic Health

Heart Health / Diabetes / Healthy Weight

- Potato Intake and Risk of Cardiovascular Disease in a Large Norwegian Cohort (Norwegian Univ. of Science and Technology)
- The Effect of Potatoes on Markers of Cardiometabolic Health (Pennsylvania State University)
- Effects of potatoes on potassium retention and blood pressure (Purdue University)

Gut Microbiome

- Efficacy of Potato Resistant Starch on Improving Gut Microbiota Composition, Inflammatory Profile, and Insulin Signaling in High-Fat Fed Rats (University of Georgia)
- Impact of potato phenols on gastrointestinal transit/glycemic response (NC State)

Potatoes in Healthy Dietary Patterns

- Influence of Resistant Starch in Baked and Boiled Potatoes (Texas Woman's University)
- Potato Consumption and Energy Balance: A Randomized, Controlled, Clinical Trial (Indiana University)
- Nocturnal Blood Glucose Responses to Potato-Based Mixed Evening Meals (Australian Catholic University)

Potatoes in Healthy Lifestyles

Athletic Performance

- Anabolic Properties of Potato Derived Protein (Maastricht Univ.)
- Ingestion of Potatoes as a Nutritional Strategy to Improve Cycling Time-Trial Performance in Endurance Trained Cyclists (Univ. of Illinois)
- Potato-Supported Strategies to Increase Carbohydrate Oxidation, Race Economy and Performance During Endurance Exercise (Australian Institute of Sport)

Child Nutrition

- Healthy Adolescent Dietary Patterns for Minimizing Cardiometabolic Risk Include Regular Potato Consumption (Boston University)
- Effect of White Potatoes, Potato Components on *In Vivo* and *In Vitro* Glycemic Response and Satiety Across the Lifespan (Ryerson Univ.)
- Effects of potatoes and other carbohydrates on cognition, glycemia and satiety in children (Ryerson Univ.)

Research Pipeline Timeline

- Cardiometabolic Health
- Healthy Dietary Patterns
- Healthy Lifestyles

	2018 Estimated Publications: 2-3 white papers/commentaries 2 study manuscripts				2019 Estimated Publications: 1-2 white papers 3 study manuscripts			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Start	Devlin			6-8 new RFP studies				4-6 new RFP studies
Mid	Burd, de La Serre, Maziarz, Weaver	Allison, Burke, Devlin, Moore	Bellissimo, Kris-Etherton, Moholdt, Van Loon			2018 RFP studies mid-year reports		
Final				Burd, de La Serre, Weaver	Allison, Burke, Devlin, Kris-Etherton, Maziarz, Moholdt	Van Loon	Bellissimo, Moore	
PUB	Performance Commentary	Bellissimo	Glycogen Response White Paper	Ferruzzi **Epi Review/ Commentary**	**Epi Gap Analysis**			Burd, de La Serre, Weaver

Research Pipeline Timeline

- Cardiometabolic Health
- Healthy Dietary Patterns
- Healthy Lifestyles

	2020 Estimated Publications: 9-10 study manuscripts			
	Q1	Q2	Q3	Q4
Start				4-6 studies from 2020 RFP
Mid	2019 RFP			
Final	2018 RFP			2019 RFP
Pub	Allison, Burke, Devlin, Kris-Etherton, Maziarz, Moholdt	Van Loon	Bellissimo, Moore	2018 RFP Studies

Communications Takeaways: 2018 Publications*

Eating potatoes as part of a balanced breakfast may boost memory and feelings of fullness in school-age kids. (Bellissimo)

Potatoes can help enhance gut health. (Ferruzzi)

*Draft for illustration purposes; final messages will be contingent upon research results

Communications Takeaways: 2019 Publications*

Trained cyclists improve time-trial performance when consuming potatoes. (Burd)

Potato resistant starch impacts the gut microbiome, and decreases inflammation and improves insulin signaling in laboratory animals. (de La Serre)

Eating potatoes, as part of a balanced diet, may improve potassium retention, which can lower blood pressure. (Weaver)

*Draft for illustration purposes; final messages will be contingent upon research results

Communications Takeaways: 2020 Publications*

Eating potatoes, as part of a balanced diet, does not promote weight gain. (Allison)

Eating potatoes is associated with a lower risk of CVD and T2D, as well as mortality rate, in a large Norwegian cohort. (Moholdt)

Eating potatoes with dinner promotes a favorable blood glucose response while you sleep, which may lower disease risk. (Devlin)

Eating potatoes once a day has no adverse effects on blood glucose, insulin, or serum lipid levels. (Kris-Etherton)

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Communications Takeaways: 2020 Publications*

Resistant starch in potatoes can improve blood glucose response in overweight females. (Maziarz)

Eating potatoes before intense exercise can help boost performance and exercise efficiency. (Burke)

Protein in potatoes can help improve muscle protein synthesis and recovery after exercise. (van Loon)

Eating potatoes can positively impact blood sugar levels and feelings of fullness in children and elderly adults. (Bellissimo)

Children who consume potatoes have a lower risk of elevated blood pressure, as well as lower cardiometabolic risk, later in life. (Moore)

*Draft for illustration purposes; final messages will be contingent upon research results

Research Management: RFP Process

	2017	2018											
	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Refine researcher mailing list for 2018 RFP	◆												
Finalize research questions and issue RFP		◆											
Evaluate LOIs; update Board			◆										
Request full proposals				◆									
ID reviewers; evaluate proposals				→	→								
Collaborate with other commodities on trials as opportunities arise			→	→	→								
Site visits as warranted					→	→							
Board approves proposals; acceptance/rejection letters sent						◆							
Contract negotiations							→	→	→	→	→		
Finalize contracts; begin to disseminate PMTs											→	→	

2018 RFP Questions

Potatoes in Cardiometabolic Health

- What is the impact of potato consumption in subjects with Metabolic Syndrome and/or Type II diabetes?
- What are the short and longer-term impacts of low-to-moderate glycemic load meals/diets (that include potatoes) on indices of health and disease?

Potatoes in Healthy Dietary Patterns

- What is the health profile of individuals/population groups for whom potatoes are a staple food?
- What are the effects of plant-based diets, including potatoes, on body weight and related health indices in healthy, overweight subjects?
- How does potato protein quality compare with protein quality of other plant based foods?

2018 RFP Questions

Potatoes in Healthy Lifestyles/Life Stages

- What is the impact of potatoes on overall nutrient intake in school aged children?
- What impact does potato fiber/resistant starch have on the gut microbiome and markers of cardiometabolic health/disease?

Potatoes in Healthy Lifestyles/Athletic Performance

- What impact do potatoes have on muscle repair/muscle accretion and overall energy levels when combined with habitual physical activity?
- How do potatoes compare to manufactured "sports foods" products with respect to exercise performance and recovery?

2018 Epidemiological Research Strategy

- Continue to fund two epi studies initiated in 2017
  - Address key questions related to cardiovascular health and adults, adolescent dietary patterns
- Continue to support clinical trials that address research questions raised in epi/observational studies
- Commission a review on epi opportunities and limitations, including assessment of existing published epi data with potatoes
  - Strengths and weaknesses: Why the disparities?
  - Key takeaways from existing literature
  - Potatoes and health: Future observational research questions to consider

2018 Research Management

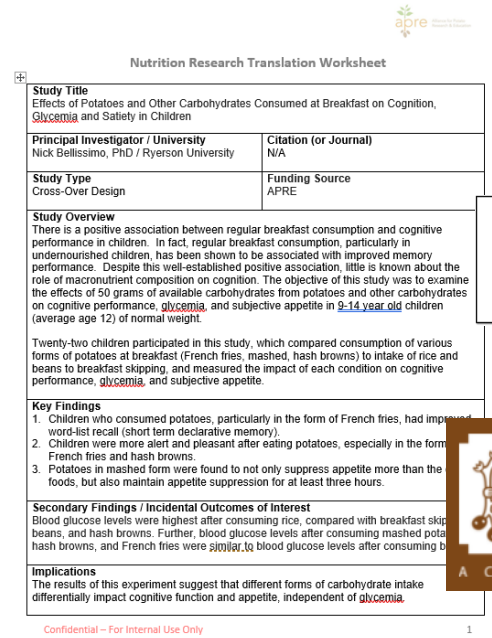
Continue to manage research progress, reports and payments

Track progress to ensure researchers meet key milestones and submit all findings for peer review/publication

Connect with other commodities, institutions and government entities on potential collaboration opportunities as proposals are developed

Develop nutrition translation overviews as studies are published, to support APRE members' and agency partners' communications efforts

Conduct site visits to explore new research opportunities and to assess study progress



Nutrition Research Translation Worksheet

Study Title Effects of Potatoes and Other Carbohydrates Consumed at Breakfast on Cognition, Glycemia and Satiety in Children	
Principal Investigator / University Nick Bellissimo, PhD / Ryerson University	**Citation (or Journal)** N/A
Study Type Cross-Over Design	**Funding Source** APRE
Study Overview There is a positive association between regular breakfast consumption and cognitive performance in children. In fact, regular breakfast consumption, particularly in undernourished children, has been shown to be associated with improved memory performance. Despite this well-established positive association, little is known about the role of macronutrient composition on cognition. The objective of this study was to examine the effects of 50 grams of available carbohydrates from potatoes and other carbohydrates on cognitive performance, glycemia, and subjective appetite in 9-14 year old children (average age 12) of normal weight. Twenty-two children participated in this study, which compared consumption of various forms of potatoes at breakfast (French fries, mashed, hash browns) to intake of rice and beans to breakfast skipping, and measured the impact of each condition on cognitive performance, glycemia, and subjective appetite.	
Key Findings 1. Children who consumed potatoes, particularly in the form of French fries, had improved word-list recall (short term declarative memory). 2. Children were more alert and pleasant after eating potatoes, especially in the form French fries and hash browns. 3. Potatoes in mashed form were found to not only suppress appetite more than the foods, but also maintain appetite suppression for at least three hours.	
Secondary Findings / Incidental Outcomes of Interest Blood glucose levels were highest after consuming rice, compared with breakfast skip beans, and hash browns. Further, blood glucose levels after consuming mashed pota hash browns, and French fries were similar to blood glucose levels after consuming b	
Implications The results of this experiment suggest that different forms of carbohydrate intake differentially impact cognitive function and appetite, independent of glycemia.	

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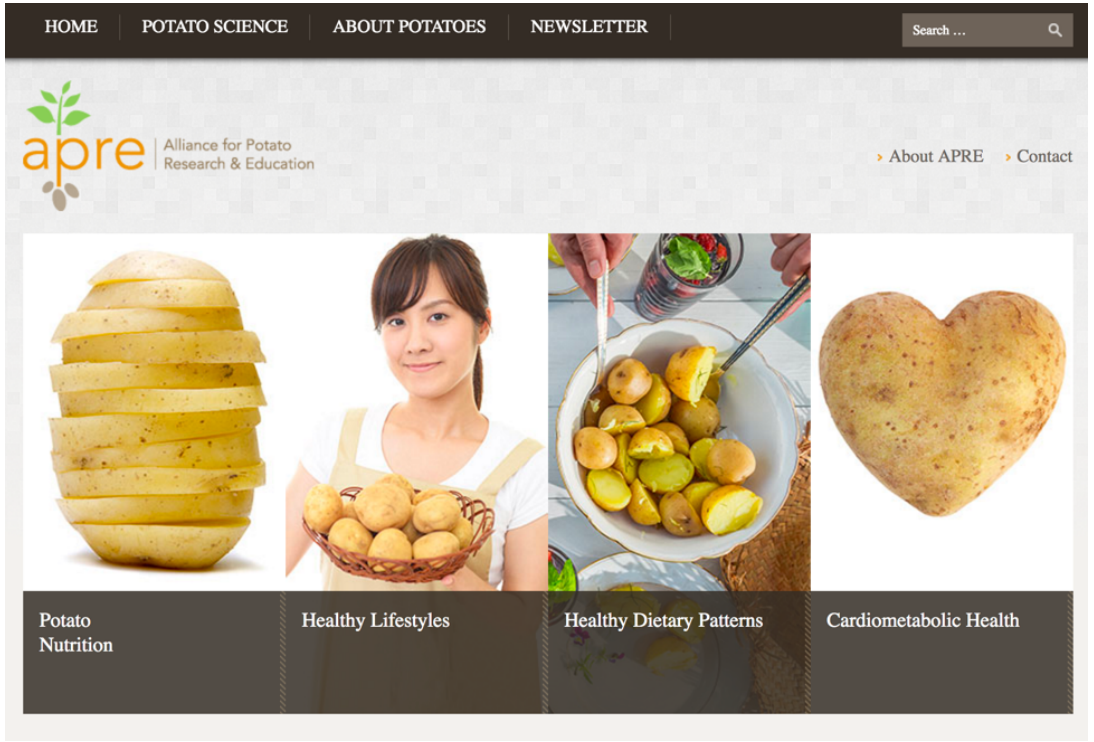
Science Education and Engagement

- Refine website to highlight research priorities
- Distribute quarterly e-newsletter to industry stakeholders, nutrition researchers and health professionals
- Present research at nutrition research conferences and conduct briefings with scientists to build relationships
- Provide translation overviews to APRE members, with suggestions for leveraging potato nutrition research in customer, food & nutrition influencer, and consumer marketing/communications



Horizon Topics Monitoring

- Monitor potato-relevant research and issues via:
  - Google and PubMed alerts
  - Alerts from scientific journals, through an RSS alert platform
- Flag studies of interest to the Board and, when appropriate, include in quarterly e-newsletters
- Develop perspectives to post on website when appropriate (for major studies generating misperceptions)

PEDIATRICS
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Childhood OBESITY

Membership Benefits

- Opportunity to provide input on future research directions
  - Refinement of roadmap priorities
  - Review of annual RFP questions
  - Review of proposals and institutions selected
- Opportunity to receive regular overviews of published research, for integration in marketing/communications and nutrition policy outreach
- Opportunity to participate in meetings and hear research from scientists first-hand

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Thank you!