



January 2021 Newsletter

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Letter from NAPB President Dave Bubeck



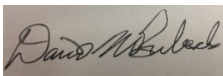
Thanks to all of you as NAPB Members for your ongoing membership and support of NAPB. Ongoing and consistent membership renewal is one simple way you can help keep our organization financially strong. Please remember that we are entirely a volunteer organization, contracting some specific support through the Alliance of Crop, Soil, and Environmental Science Societies (ACSESS). We remain fiscally responsible in spite of ongoing challenges to science societies that the ongoing pandemic presents. Thanks to all of you that volunteer of your precious time towards NAPB committee efforts, in addition to all the other demands of your professional career. Together we can continue to grow the strength of NAPB.

Program planning for the August 15-19, 2021 Annual Meetings, hosted by Cornell University is well underway. I'm sure many of you were looking forward to traveling to Cornell in person to see what this great institution has to offer. However, we have decided that its necessary to observe the ongoing challenges due to the pandemic, therefore, the 2021 annual NAPB meeting will be virtual. We do believe a virtual format this year will provide the maximum opportunity for members across North America and hopefully the world to attend.

We continue to stand strong in our mission to “**strengthen plant breeding to promote food security, quality of life, and a sustainable future.**” Feel free to reach out to me or anyone else from the NAPB Executive Committee if you have ideas on how to further serve you as members, we would love to hear from you. You can reach out to any of us by sending an email through the NAPB Leadership link: <https://www.plantbreeding.org/leadership>

As you plan your 2021 experiments and prepare your teams for the upcoming growing season, I wish you the very best and a most fruitful growing season!

Best regards to each one of you!



Dave Bubeck



Planting sweet corn in the Wisconsin Central Sands

Photographer: Chris D'Angelo

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Early Career Spotlight— Amanda Hulse-Kemp

Where do you come from, what is your background, what led you to plant breeding as a career?



I grew up in Rockingham County, Virginia which is in the heart of the Shenandoah Valley. Many may be familiar with it because of the fantastic mountain views of the Blue Ridge mountains, especially when the leaves are turning (if you haven't had a chance to visit I would highly recommend it – also great hiking). While this area is well known for the mountain views, it is less well known for all of the Agriculture. I grew up on a hobby farm nestled in among several large dairy farms. The surrounding nature sparked in me a love of biology, both animals and plants, which eventually led me to the field of Genetics and Bioinformatics because it allowed the opportunity to work on both plants and animals. Ending up working in the field of plant breeding was a lucky coincidence that I am so happy happened during my PhD.

What institution did you attend and what was the focus of your research?

I am a proud PhD graduate of Texas A&M University, WHOOP! While in Texas I studied cotton genomics working with Dr. David Stelly supported by a large group of cotton researchers, their excitement and support is what drew me into this research after doing lab rotations as a part of the Genetics Program. We were at the forefront of developing the first high-quality cotton genome sequence. My contribution to the effort was working on marker development and genetic mapping, integrating those tools and resources to curate and advance completion of the genome sequence. Along the way I had the opportunity to work with an even larger group of researchers across the world helping to organize the CottonSNPConsortium that successfully created the first publicly available genotyping array for cotton, which is actually still quite a useful resource for cotton research. As a part of all of these activities I found myself learning and needing to use tools to analyze increasingly expanding data sets which led me down the path of Bioinformatics.

What path did you take after graduate school?

After graduate school I did a postdoc with Dr. Allen Van Deynze at UC-Davis where I had the opportunity to broaden the number of crop species that I have experience with by working on Bioinformatics projects for a number of different species. We developed a high-quality genome sequence and genotyping array for pepper, a high-quality genome sequence for coffee and spinach, as well as working on supporting development of resources for orphan crops. All of this experience was highly valuable for obtaining my current position as a Computational Biologist with USDA-ARS in the Genomics and Bioinformatics Research Unit located in Raleigh, NC.

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Early Career Spotlight continued

I am quite lucky in having the flexibility in this position to work with a large number of diverse researchers, continuing to develop tools and genomic resources for an even larger number of crops (and shhh...also some insects and animals).

What is your favorite part of your current job?

My favorite part of my current job is that I am able to work with a large number of researchers on a broad range of interesting crops and biological problems. I take great pride in working within interdisciplinary teams, including mentoring my own graduate students and postdocs as a USDA Assistant Professor at North Carolina State University, to develop tools and answer research questions that will ultimately make a difference in the world.



Was there any person (or people) who you felt helped you along your career path?

All of my mentors at each of my positions, including my current Research Leader, Dr. Brian Scheffler, have had a huge impact on who and where I am today, I certainly would not be there without them. I do feel that part of your success is also contributed by those who you assemble around you at different stages of your career to provide support, a great working team is irreplaceable and I can say I am very proud of my current Hulse-Kemp lab group in Raleigh and our larger Genomics and Bioinformatics Research Unit spread across the Southeast; without all of these people work wouldn't be quite so much fun!



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2021 Borlaug Scholars

Frequently Asked Questions:

When and where are the 2021 NAPB Annual Meetings?

August 15 -19, 2021, Ithaca, NY, hosted by Cornell University



Who should apply for NAPB Borlaug Scholarships?

Upper-level undergraduates heading toward graduate school, and advanced level graduate students (enrolled at U.S. institutions) seeking career growth opportunities; who strongly desire to and can, if selected, attend the 2021 NAPB Annual Meeting; who have a demonstrated research and career interest in pursuing plant breeding, in the broadest sense, as a professional career.

When can we apply?

The self-nomination window is open from January 7 - March 18, 2021.

Where do I apply for an NAPB Borlaug Scholarship beginning January 7?

Apply [here](#) for upper-level undergraduate students

Apply [here](#) for advanced graduate students

What does a Borlaug Scholarship include?

Borlaug Scholars will receive travel funds, free meeting registration, student annual membership in NAPB if not previously a member, recognition in appropriate media and in person during the conference, networking opportunities, scientific learning, soft skills training opportunities, and a personal professional mentor during and following the annual meetings to help enrich the total experience. Also, there is an opportunity to present personal research in the poster session.

I just learned about NAPB. How can I join NAPB?

Our website is www.plantbreeding.org.

This is an excellent program to help students and the plant breeding scientific community! How can I get involved?

As a member of NAPB, you should encourage experienced and worthy students to apply for Borlaug Scholarships. Seasoned professional members should consider volunteering as mentors by entering their profile in our mentor data base: mentors click [here](#). Seasoned mentors are welcome to participate in the selection and program planning committee.

Scholarships require significant funding. How can I donate to the NAPB Borlaug Scholars ASF Fund?

You may donate online using your credit card: Click on this [link](#).

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Borlaug Scholars Program, Continued

Scholarships require significant funding. How can I donate to the NAPB Borlaug Scholars ASF Fund?

You may donate online using your credit card: Click on this [link](#).

I represent an institution or organization willing to contribute to the NAPB Borlaug Scholars Fund. Who should I contact to donate?

You may contact Donn Cummings, Past Chair NAPB Borlaug Scholars Committee at 765-438-0359 or by email at donncummings1@gmail.com to discuss your plans and arrange your contribution. Your institution will be appropriately recognized for their participation.

Read profiles about all 18 Borlaug Scholars using this [link](#) and see who mentored each. The class of 18 was comprised of 16 graduate and 2 undergraduate students.

In addition to recognition at the 2020 NAPB Annual Meeting, scholars were highlighted in Seed-World, at the ASTA Conference, and on social media. Due to Covid-19 restrictions, two mentoring sessions were held during the 2nd half of 2020 with scholars, mentors, and special guests to discuss topics of interest to participants.

2020 Borlaug Scholars and Mentors: [Link](#)

Clayton Carley - Iowa State University, Klaus Koehler
Tia Dunbar - Texas A&M University, Ksenija Gasic
Christina Finegan - University of Florida, Peggy Ozias-Akins
Jenna Hershberger - Cornell University, Allen Van Deynze
Brittany Jones - Montana State University, Duke Pauli
Natalie Kaiser - Michigan State University, Sarah Potts
Saarah Kuzay - University of California - Davis, Roy Cantrell
Ammani Kyanam - Texas A&M University, Jodi Scheffler
Chandler Levison - University of Georgia, Hannah Senior
Kathryn Michel - University of Wisconsin, Amy Lezzoni
William Singer - Virginia Tech University, Richard Pratt
Nikayla Strauss - Washington State University, Jennifer Yates
Ella Taagen - Cornell University, David Bubeck
David Tork - University of Minnesota, Donn Cummings
Cassandra Winn - Iowa State University, Amanda Hulse-Kemp
Zara York - Washington State University, Julie Dawson
Abelina Jackson (UG) - University of California - Davis, Bo Zhang
Hallie Longest (UG) - Iowa State University, Virginia Sikes

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Plant Breeder spotlight:

Sean Finnie from Flourish Flour



What is Flourish Flour and what makes it unique from other products on the market?

Flourish Flour is the first high-fiber white refined flour. Its fiber content comes from a natural increase in the amount of resistant starch due to the elevated amylose levels. Since the fiber source is from starch, the fiber is concentrated in the endosperm allowing for higher fiber contents than standard whole wheat flour. In general, specialty ingredients are additives, reliant on other ingredients to provide structure to the food product. Flourish Flour is whole-food nutrition, where you get the added nutrition of a specialty ingredient from a commodity.

What was the inspiration behind the development of this product?

There are two large categories for the inspiration behind this product. The 1st is solving the Fiber-Gap. Only 5% of the US population is consuming the recommended daily fiber amount. This has a tremendous impact on the overall health and wellbeing of our society. By providing a refined flour with increased fiber content, consumers can make a big change in their diet with no, to little effort. This product does not ask the consumer to make lifestyle changes – instead of giving up something, they can just eat. The second inspiration behind this product is a way to offer growers an alternative to growing commodity wheat. Growers can produce wheat under Identity Preserved production, ensuring the crop has a commercial outlet at a known value for the grower. This provides consistency and stability to the grower's crop. The grower also receives a premium for growing this material, that is incrementally higher than common wheat. Lastly, I will mention that most growers are eager to grow this product. There is a large community of Growers that are committed to the approach of better health through agriculture.

Describe the team behind Flourish. Who is Bay State Milling?

The Flourish Flour Team is cross-functional - responsible for bringing Flourish Flour to the market. The Team is comprised of marketing, food and nutritional scientists, cultivar development specialist and supply chain and grower relationship managers. In addition, we work with external partners to help with the go-to-market aspect of this initiative. Bay State Milling is a family-owned company with a strategic intent to support the growth of the next generation of grain-based foods in North America by providing the leading array of plant-based ingredients. Since 1899, we have proudly provided exceptional quality flour and grain products, and we continue to build on our legacy as we bring new supply chains and technologies into our realm of capabilities. Our Core purpose is to provide food ingredients to promote the growth of healthful and affordable food choices for the consumer.

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Interview with Flourish Flour continued

What type of plant breeding went into the development of Flourish Flour? Who helped, breeding methods, etc?

Flourish Flour is based on gene discoveries dating back to the mid 1990's. The original work was initiated by a public private partnership in Australia as part of their Cooperative Research Centers program. Today, Arista Cereal Technologies (a joint venture of Limagrain Ingredients and CSIRO) owns the intellectual property. Once the genes were discovered that control amylose concentrations in starch, conventional, non-gm techniques, were utilized to introduce and select for high amylose wheat. Today, in North America, Limagrain Cereal Seeds is our breeding partner. We continue to invest in breeding to advance high amylose wheat development into various wheat classes in North America. Additionally, we have formed partnerships with Arcadia Biosciences and UC Davis to commercialize their High Amylose wheat in North America

What are the biggest challenges around developing an identity preserved market? Any supply chain issues?

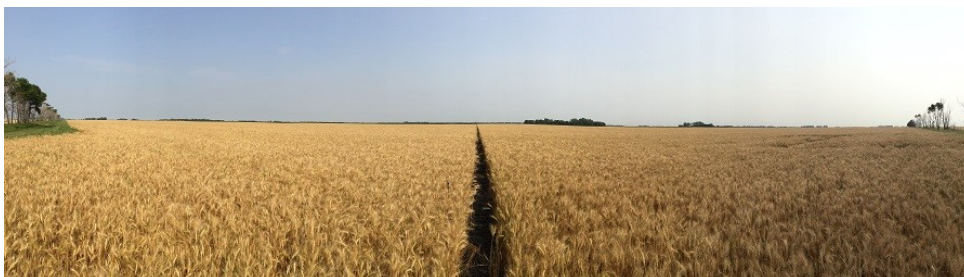


There are many challenges around developing an Identity Preserved supply chain. A critical part of any IP program is ensuring the purity of the seed. Our R&D team developed a rapid seed purity method measuring the purity of high amylose wheat seed in seeds lots. This guarantees our growers receive seed that is pure for the high amylose trait. Another challenge is developing a supply chain that is balanced – ensuring we have sufficient material to meet our demand while we build out the supply chain. We have invested in building a sophisticated grain handling system in our

Tolleson, Arizona facility to support our growing Identity Preservation programs.

What advice do you have for students interested in the intersection of milling and plant breeding?

Being creative takes practice, so take-on as many opportunities of creative thinking as you can. What will enhance your creativity is knowing the basics – High Amylose Wheat is a great example. The scientists approached the problem of enhancing nutrition in wheat in a very creative and simple way. By understanding the fundamental steps in starch biochemistry, the scientist thought creatively on how they can harness the plants inherent pathways to enhance nutrition of the crop. By selecting plants with reduced starch branching enzyme activity, the starch changes from being easily digested, to being more resistant to digestion, increasing the Total Dietary Fiber level. As the rate of diabetes, colon cancers and other diet related health issues continues to increase, this technology will have a huge impact on the health and wellbeing of our society.



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Announcements

Save the Date!

The NAPB ECWG Webinar on **Tuesday, March 16 @ 9:30 am CT** will feature a panel discussion on non-traditional paths to plant breeding and industry. Panelists include Amy Kelly, Scott Jackson, and John Hickey from Bayer Crop Science.

Registration link for March webinar with Bayer : [Link](#)

And here is the link for April webinar with University of Georgia: [Link](#)

2021 NAPB Annual Meeting—August 15-19, 2021

Hosted by Cornell University.

Planning is under-way for the annual meeting and will include virtual field tours, networking and program. Looking forward to the great science and networking. We hope you will all join us!

Video Tours available online to all registrants. Breeding programs and clonal repositories

Professional development on Sunday August 15

Session 1: High Throughput Phenotyping

Session 2: Gene editing

Session 3: Horticulture

Session 4: Innovation Lab for Crop Improvement

Session 5: Genomic Selection

Session 6: Diversity and Inclusion

Session 7: In Vitro Breeding Techniques

Session Awards: Submit nominations today!

Early Career Scientist

Lifetime Achievement

Private Sector Impact

Public Sector Impact

Friends of Plant Breeding



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Website: www.plantbreeding.org

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Have an idea for a future newsletter?

Email the communication committee:

Chair: Zach Jones — zachary.jones@corveva.com

Vice Chair: Allison Thompson-allison.thompson@usda.gov

Secretary: Brian Gardunia — brian.gardunia@bayer.com



NAPB: Improving Plants to Improve Lives

Our Mission: The National Association of Plant Breeders strengthens plant breeding to promote food security, quality of life, and a sustainable future.

Our Vision: The NAPB works to help create a future in which 1) Strong public and private sectors work independently and together to deliver varieties and improved germplasm to society, 2) The value and importance of plant breeding to food security, quality of life, and a sustainable future are known and appreciated by the public, and 3) Plant breeding is viewed as dynamic, problem solving, and creative. The NAPB intends to become a recognized and valued advocate for plant breeding research and education, helping to guide and implement a cohesive national plant breeding agenda.

[Join NAPB today!](#)



“Grapes Galore”

Photographer: Sarah Potts