NAPB Newsletter

September 2016

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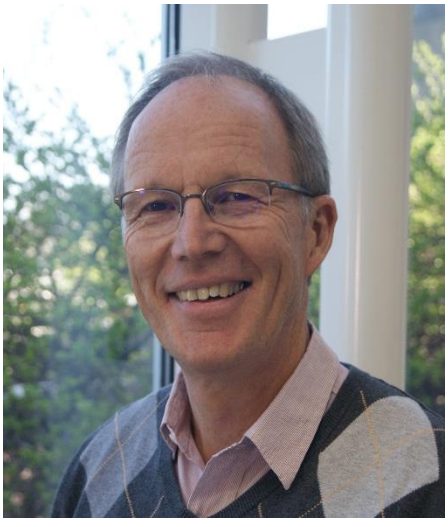
President's Comments

Klaus Koehler – NAPB President



Dear NAPB members and friends,

NAPB had an excellent year in 2015/16 under the leadership of our past president David Francis. We saw successful implementation of our paid membership program with currently over 400 registered, paying NAPB members. We engaged in several outreach activities, including NAPB presence at several events in Washington DC, supporting STEM education, The National Plant Germplasm System and raising awareness of new breeding techniques as well as the need to educate

the next generation of plant breeders. In some of these events we collaborated with ASTA. We were also able to send a group of graduate students to Washington DC to attend the advocacy efforts of the Tri-Societies. This has created a higher awareness of the organization of NAPB as well as the important role that plant breeding plays in the improvement of crops and creating global food security.

We also just completed our 2016 annual meeting in Raleigh NC with record attendance and an inspiring program. We recognize the contribution of the organizing committee, headed by Don Jones and with contributions of our Graduate Student Group. The graduate students are an important part of our organization and their participation contributed greatly to the overall success of our meeting.

Over the next year I see the following priorities for NAPB:

- We need to continue to build our membership. We do not yet have good representation at all plant breeding schools and also need to develop our membership in the commercial sector. Increased revenue will allow us to hire our own continuous staff to help develop NAPB's cause and effectiveness, including organizing our annual meetings.
- We intend to establish a young professionals working group. This is currently seen as a gap in our NAPB activities. Such a group can also cause a higher engagement of the more experienced commercial and public sector members in NAPB by development of mentorships with our young professionals.
- We shall continue our outreach activities: extend the collaboration with ASTA, the Tri-Societies and the Horticultural Society. We need to support advocacy for public funding of plant breeding and discover how we can expand our influence on the state level or engage with industry. We need to explore possibilities of public-private partnerships such as within FFAR, the Foundation for Food and Agricultural Research. Overall our goal remains to promote public awareness of the benefit plant breeding provides to society at large and educate the public about the methods we use. This is well aligned for collaboration with other organizations.
- We need to become the knowledge center for plant breeding. This requires that we catalog success stories in plant breeding as well as materials that are tailored to explain our work as a plant breeder in laymen's terms to educate the greater society around us. The further development of a YouTube website for plant breeding subjects would complement this.
- We will continue our collaboration with PBCC in developing education in plant breeding and serving the plant breeding needs of all crops.
- At some point we need to consider international engagement with other organizations such as Eucarpia in Europe or to develop a community of practice and

networking to facilitate the advancement of plant breeding in the developing world, where plant breeding has an even greater direct impact on the lives of people.

- We appreciate the high engagement of our graduate student group. We need to find ways to have them participate and contribute more in our committees based on their interests.

As the incoming president I am grateful for your interest and participation in NAPB activities to further the organization. I am sure that will your help we will have a good and successful year ahead which will allow us to further develop the National Association of Plant Breeders.

Kind regards

Klaus Koehler, President

https://www.plantbreeding.org/about-us/goals-and-objectives

2016 NAPB Meeting Summary

North Carolina State University and Cotton Incorporated hosted the 6th annual meeting of the National Association of Plant Breeders (NAPB) and the 10th annual meeting of the Plant Breeding Coordinating Committee August 15-17 in Raleigh, NC. The theme of the meeting was "Improving Efficiency in Breeding Programs." Participants at the meeting heard presentations on breeding challenges from a variety of crops including pine trees, strawberries, corn, sweet potato and tobacco. A common theme was how to use genetic data and other breeding methods to decrease generation time and increase selection accuracy. Attendees also heard career reflections from a number of experienced plant breeders including last years' early career and plant breeding impact awardees.

There was strong graduate student participation at the meeting with more than 100 graduate student attendees, 30 graduate student lightning presentations, three graduate student talks and many posters. The posters were excellent; three students won awards for the quality of their posters. For more information see the full abstract book.

A pre-conference tour on August 14th gave participants the opportunity to see three North Carolina State experiment stations and meet breeders in peanut, tobacco, stevia, sweet potato, soybean and cotton breeding. A post-conference tour on August 18th toured SAS Institute and Cotton Incorporated.

Thank you to Don Jones and the organizing committee for making this year's meeting so successful! And thank you to the sponsors for making the meeting possible.

If you could not join us this year, we hope to see you at the 2017 Annual Meeting August 7-10 in Davis California!

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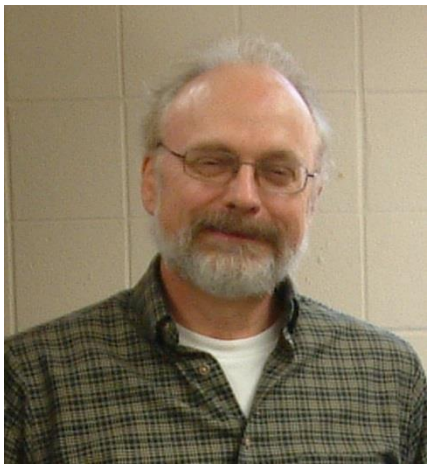
2016 NAPB Career Awards

by Jim McFerson

During the 2016 Annual Meeting, NAPB presented awards for Lifetime Achievement, Plant Breeding Impact, and Early Career Scientist.

Lifetime Achievement Award



This award, recognizing distinguished long term service to the plant breeding discipline through research, teaching, outreach, and leadership, was given to Dr. Philipp Simon, a USDA Agricultural Research Service Research Geneticist and Professor of Horticulture at the University of Wisconsin, Madison.

Dr. Phil Simon is a USDA, ARS Research Geneticist and Professor of Horticulture at the University of Wisconsin, Madison. His research in vegetable genetics and breeding has focused on carrot improvement, targeting improved flavor and nutritional quality, nematode, disease and abiotic stress resistance, and genetic mapping of these and other traits. He led the development of widely used carrot germplasm with high carotene content, sweet, mild flavor, purple color, and root-knot nematode resistance. To complement his breeding effort, along with students and collaborators, he has developed breeding tools, including co-leadership in the sequencing of the carrot genome, and he has collected carrot, *Allium*, and other vegetable germplasm in nine collecting expeditions. He has undertaken related plant breeding research including the first production of true seed in garlic, and the development of cucumber and melon germplasm with orange color and elevated carotene content. He has supervised the training of over 30 graduate students, is a Fellow of the American Society for Horticultural Science, recipient of the ASHS Vegetable Breeding Award, and of an Honorary Doctorate from the Agricultural University of Krakow, Poland. He is a past chair of the Plant Breeding Coordinating Committee.

Plant Breeding Impact Award

This award recognizes significant advancements in the field of plant breeding, specifically in the area of germplasm or technology development, who have demonstrated measurable impact on crop production. The 2016 recipient of the NAPB Plant Breeding Impact Award is Dr. Brett Carver, Regents Professor at Oklahoma State University.

Brett Carver is a Regents Professor at Oklahoma State University and holds the Wheat Genetics Chair in Agriculture. He has thirty-plus years' experience in wheat breeding and genetics research, following a bachelor's degree in agronomy from the University of Georgia, a master's degree in crop science specializing in biochemistry and a doctorate degree in crop science specializing in breeding and statistics, both from North Carolina State University. Carver's research encompasses a comprehensive winter wheat breeding and genetics program, dedicated to developing market-ready cultivars for the U.S. Great Plains. He is responsible for originating and directing a faculty-driven research team called the OSU Wheat Improvement Team that has released 20 hard red winter and hard white cultivars since 1998, four of which held the top four places among Oklahoma's 4.9M acres of wheat planted in 2016. Carver has advised 24 graduate students. Professional duties have included chairing the National Wheat Improvement Committee–a consortium of academic, private, and government researchers dedicated to wheat improvement–and currently serving on the scientific advisory board of the Wheat Foods Council. Carver is the editor of Wheat: Science and Trade (Wiley-Blackwell, Ames, IA), a reference book for graduate students, wheat researchers, processors, and practitioners, and a co-editor of Yield Gains in Major U.S. Field Crops, published by Crop Science Society of America. He received Governor Fallin's Outstanding Public Service in Agriculture Award in 2016, and is a Fellow of CSSA and ASA.

Early Career Scientist Award

This award recognizes a scientist in early stages of their plant breeding career who exhibits the ability to establish strong research foundations, to interact with multi-disciplinary teams, and to participate in relevant professional societies.

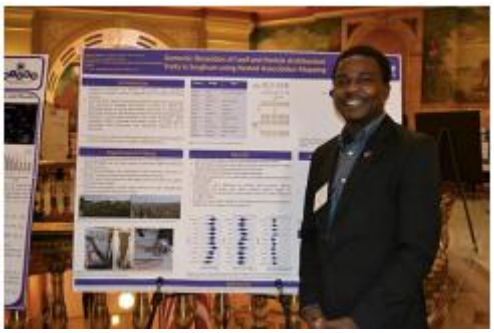
Dr. Jesse Poland is an Assistant Professor at Kansas State University, Director of the Feed the Future Innovation Lab for Applied Wheat Genomics and Associate Director of the Wheat Genetics Resource Center. Research in Dr. Poland's group is focused on wheat genetics, genomics and germplasm improvement. They are currently developing new approaches in quantitative genetics, genomics and high-throughput phenotyping for use in breeding, diversity studies, and association genetics. In collaboration with public breeding programs, Dr. Poland is implementing the use of genomic selection methods to accelerate wheat breeding. In the area of germplasm development, Dr. Poland's group is focused on developing new breeding lines with resistance to the major pests of wheat including stem rust, stripe rust, leaf rust and Hessian Fly and understanding the genetic basis of these traits. To compliment advances in genomics, Dr. Poland's lab is developing high-throughput phenotyping approaches for field-based evaluation of breeding lines with the primary focus being genetic characterization of heat and drought tolerance and development of improved germplasm.

Dr. Poland currently supervises eight graduate students, five post-doctoral scholars, and sits on the graduate committees of students at Kansas State University and at Colorado State University where he holds affiliate faculty status.

Lab website: www.wheatgenetics.org

2016 NAPB Student Poster Winners

1st Place—Olalere (Marcus) Olatoye; "Genomic Dissection of panicle architecture traits in sorghum using nested association mapping"



Marcus is currently a Ph.D. student at Kansas State University working with Dr. Geoffrey Morris. Marcus received his B.S. in Botany at Ogun State University in Nigeria and later went to Universitat Hohenheim, Stuttgart, Germany where he got his M.S. in Genetics and Plant Breeding under the supervision of Prof. Bettina Haussmann. Marcus' research focuses on

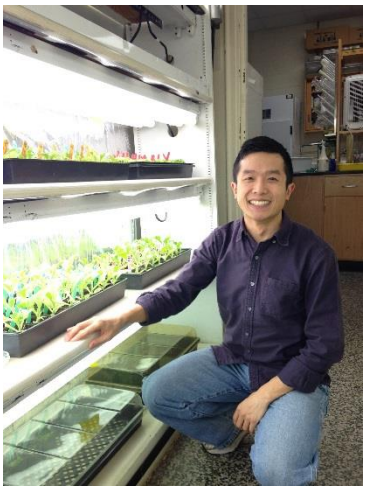
understanding the genomics of agro-climatic traits in sorghum. Marcus is profiled in our graduate student profile section below!

2nd Place—Eduardo Bernal; "Evaluating quantitative trait loci (QTL) sources of resistance in tomato to multiple *Xanthomonas* Spp."

Eduardo Bernal is currently a M.S. student at The Ohio State University working with Dr. David Francis in the Department of Horticulture and Crop Science. Eduardo completed his B.S. in Cell and Molecular Biology at California State University Northridge (CSUN). While attending CSUN, he was a research assistant for Dr. Ray Hong. In his research, Eduardo has conducted various assays using C. elegans and P. pacificus and ultimately gained valuable skills, which include: Cell and Tissue Culture, Transfection of Human Embryonic Kidney Cells, and Protein Extraction and Quantification. During his undergraduate career, Eduardo became interested in plant genetics and pathology. He was awarded a graduate research assistantship at The Ohio State University and is now currently working in finding sources of resistance in tomato germplasm to bacterial spot. Eduardo has a great passion for scientific investigation; his experiences have allowed him to readily integrate into any research environment.

https://www.linkedin.com/in/eduardo-bernal-92823291

3rd Place—Justin Ma



Justin is currently a PhD student at North Carolina State University under the direction of Dr. Ramsey Lewis, a tobacco breeder. Justin grew up in Scarborough, a suburb of Toronto, and completed his B.S. in Biology at Queen's University in Kingston, Ontario. He attended the University of Illinois for his M.S. and was advised by Dr. Randy Nelson, USDA soybean germplasm curator. At NC State, he obtained a M.S. in Analytics before beginning his current program. Through his studies, he has been supported as a Monsanto Fellow. His research focuses on breeding for disease resistance in flue cured tobacco, including the fine mapping of two *Phytophthora* resistance loci. His poster investigates the genetics of *Nicotiana* hybrid lethality, a phenomenon that eases the production of haploids. In 2017, Justin will begin a position at Monsanto as a soybean germplasm breeder. He is looking to continue rowing and resume volunteering as a mentor in St Louis.

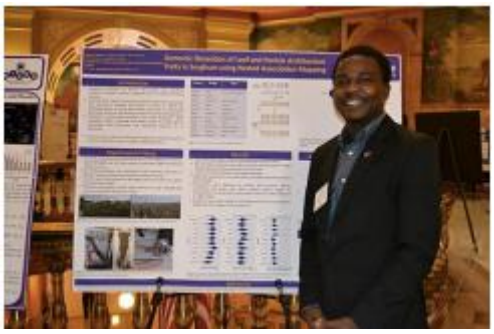
LinkedIn:

https://www.linkedin.com/in/justinma2

Graduate Student Profile

NAPB graduate student profile this quarter is our annual meeting student poster contest winner, Marcus Olatoye. For information on his poster please see above! Marcus answered a series of questions about himself and plant breeding; they have been edited for space.

1. *Tell us a little about your background; where are you from, where else have you studied or worked?*



My name is Marcus Olatoye. I am from Southwestern part of Nigeria and was raised in a family of 4 with parents that gave me everything they had in order to have good education. I had my B.S. in Botany at Ogun State University in Nigeria and later went to Universitat Hohenheim, Stuttgart, Germany where I got my M.S. in Genetics and Plant Breeding under the supervision of Prof. Bettina Haussmann. During my study in Germany I did an internship with DSV (Desutsche Saat-Veredelung) a breeding company in Leutewitz, eastern Germany where I had a great experience.

2. *What would you like to do after graduate school?*
   After graduate school I will like to continue in research in either a post-doctoral position or with a private firm in genomics enabled breeding and after a couple of years join a public research institution like state research institutes or a Consultative Group on International Agricultural Research Center.

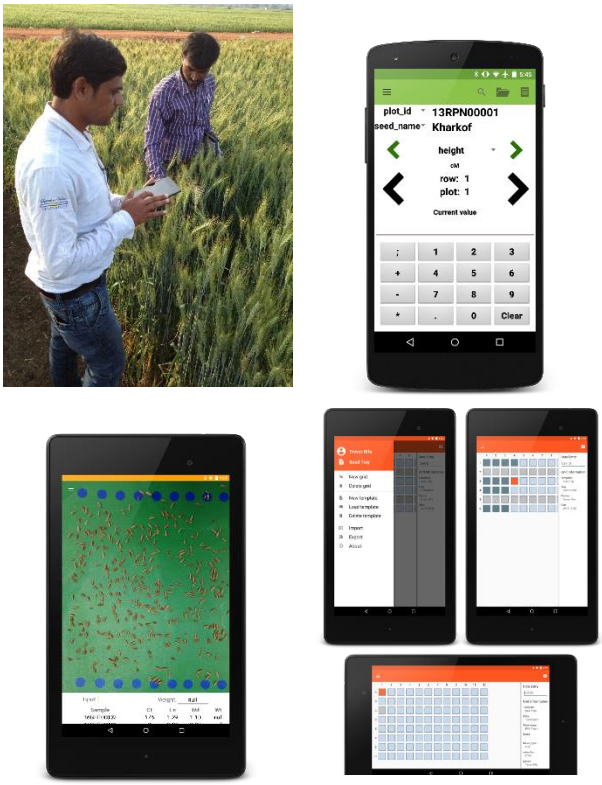
3. What would you like the public to know about plant breeding?
   I would like the public to know that plant breeding is key to our survival in the next couple of decades and we need government support through adequate funding and good policy implementation.

4. What is the biggest plant breeding challenge of our time?
   I think the challenge of breeding in our time is about harnessing and optimizing the resources (molecular and genetic tools, genetic diversity, funding, human capital) we have right now to ensure food security in the face of increasing population and climate change. It is like having a lot to do within a short time with limited resources.

Plant Breeding Success Story: PhenoApps

Jesse Poland, Trevor Rife, Meghan Calvert and Haley Ahlers along with other members of the Poland lab at Kansas State University have developed four apps for plant breeding available for free for use on any Android device. These apps allow breeders at private companies and public institutions to electronically collect data, track inventory, and analyze seed information based on images. In total these apps have more than 2,600 downloads and are being used all around the world including by the CIMMYT Bread Wheat Program and the NEXTGEN Cassava project. These apps help streamline and organize breeding programs and provide power photometry analyses.

The apps can be downloaded here.



Upper Left: Field book in action. Upper Right: Field book screenshot. Lower Left: 1KK app to analyze seed lots based on imagery. Lower Right: Coordinate App for data collection.

Events and Opportunities

- GMO course from Cornell: "Science and Politics of the GMO"
  - This is a Cornell course free to anyone, anywhere with an internet connection. The course launches today (Sept. 13) at 2 PM Eastern time. We want to encourage you to enroll, and to share with others in your network. Studying the science of GMOs helps us to understand biotechnology's potential role in addressing eminent challenges in agriculture. In this free, 5-week introductory course, students will learn the basics of genetic engineering, explore the political debate around the GMO, and review the arguments for and against the technology's use. We will study the politics surrounding the GMO and its impact at both an individual level and on society as a whole, including problems, perceptions, benefits, and risks associated with GMOs. New content is released each week on Tuesday at 2 PM eastern time. However, learners can go through the material at their own pace and on their own timezones. To learn more about the course, the instructors, and to enroll, visit: http://bit.ly/1XZRHSY

- Upcoming conferences
  - Beltwide Cotton Conference Jan 4-6 2017; abstracts due Oct 16th, 2016
  - Plant and Animal Genome Jan 14-18 2017; abstracts due Oct 28th, 2016. Travel grants available.

- **Pioneer Plant Breeding Symposia**
  - University of North West (Potchefstroom) South Africa, October 18
  - Federal University of Vicosa (Brazil), October 26-27
  - University of Wisconsin-Madison, November 4
  - Indian Agricultural Research Institute (IARI) New Delhi India, November 11-12
  - University of Guelph, November 14

- 2017 Annual Meeting **August 7-10 in Davis California**

Please direct any comments and suggestions about the NAPB newsletter to:

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