



Fusarium Focus

Volume 18 Issue 2

Fall 2018

2018 FHB Forum Is Dec. 2-4

Venue: Hyatt Regency St. Louis at the Arch / Early Registration Deadline Is Nov. 9



The National Fusarium Head Blight Forum returns to St. Louis, Mo., in 2018. The Hyatt Regency St. Louis at the Arch again provides the venue for this year's event, which is scheduled for Sunday-Tuesday, December 2-4. This will be the 21st National Fusarium Head Blight Forum.

Hosted by the U.S. Wheat & Barley Scab Initiative, the annual Forum is geared toward public and private scientists, millers, maltsters and brewers,

additional food processors, wheat and barley growers, grower group representatives, consumers and others with interest in Fusarium Head Blight (scab) and its impact.

The 2018 FHB Forum begins at 1:00 p.m. on Sunday, December 2, and concludes at noon on Tuesday, the 4th. The program will consist of oral and poster presentations, along with focus group discussions. The popular Flash & Dash presentations for graduate students,

post-docs and early career professionals will be held as well. The USWBSI Steering Committee will meet on Tuesday afternoon following the Forum's adjournment.

A listing of Forum speakers, current as of mid-October, appears on page 4. Go to <https://scabusa.org> for updates. The USWBSI website also includes full details on registration and making hotel reservations.

Here's a summary of key dates:

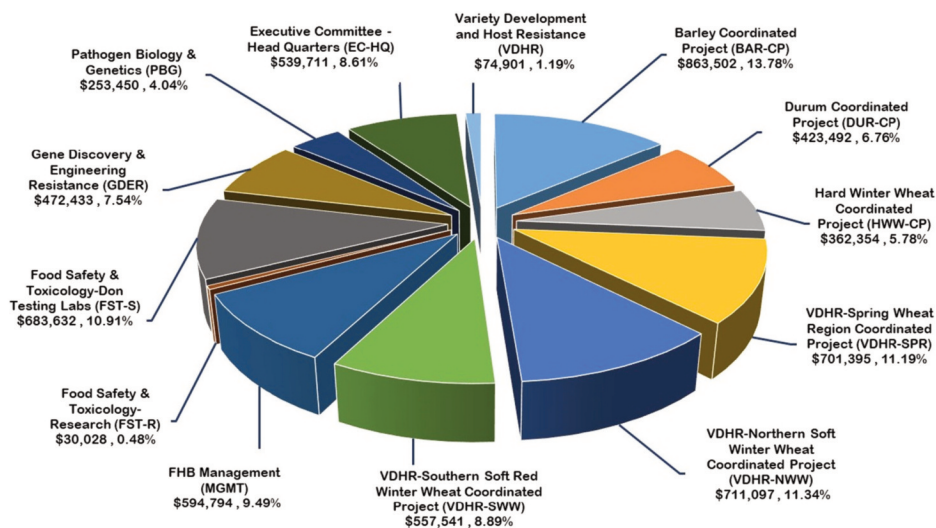
- *Nov. 5* — Deadline for registration of posters/papers/abstracts. Deadline for submission of abstract and paper content for the Forum proceedings.
- *Nov. 9* — Deadline for early registration (fee: US \$175.00). Also, last day to receive full refund.
- *Nov. 10* — Late registration begins (fee: US \$210.00).
- *Nov. 16* — Last day to reserve hotel room with guaranteed availability and rate.
- *Nov. 19* — Last day to receive a partial refund. Also, individuals are notified of selection for 'Flash & Dash' presentations.
- *Nov. 20* — Forum online registration closes. ❖

See Page 4 for a List of Forum Speakers



USWBSI FY 2018 Research Funding Totals \$5,964,776

Encompasses 135 Projects in 31 States



Region - \$701,395 / 14 projects (including one multi-PI project)

- *VDHR / Northern Winter Wheat Region* - \$711,097 / 24 projects (including four multi-PI projects)

- *VDHR / Southern Winter Wheat Region* - \$557,841 / 11 projects (including one multi-PI project)

- *FHB Management* - \$500,910 / 27 projects (including 19 state-based integrated management trials)

- *Food Safety & Toxicology / Research* - \$30,028 / 1 project

- *Food Safety & Toxicology / DON Testing Labs* - \$683,632 / 4 projects (labs)

- *Gene Discovery & Engineering Resistance* - \$380,949 / 13 projects (including one multi-PI project)

- *Pathogen Biology & Genomics* - \$253,450 / 5 projects (including one multi-PI project)

- *Executive Committee & USWBSI Headquarters* - \$539,711 / 5 projects (including one research project that potentially could benefit multiple PIs)

Each year, the U.S. Wheat & Barley Scab Initiative is charged with developing a comprehensive research plan and budget recommendation that is aimed at achieving the Initiative's primary mission: enhancing food safety and supply by reducing the impact of Fusarium Head Blight (scab) on wheat and barley.

The process followed to develop this research plan and budget is the product of extensive deliberations overseen and approved by the USWBSI Steering Committee (SC), which is comprised of wheat and barley growers, farm organization representatives, food processors, public and private scientists and consumer groups. The USWBSI Networking and Facilitation Office (NFO) coordinates this process in close consultation with the organization's Executive Committee (EC) and the chairs of each individual research area and coordinated project.

For more information about the USWBSI's funding application and approval process, go to its website — <https://scabusa.org> — and click on "About USWBSI" and "Research Categories."

The U.S. Wheat & Barley Scab Initiative (USWBSI) has submitted its fiscal year 2018 Research Plan and Budget to the USDA Agricultural Research Service, totaling \$5,964,776 in scab-related research projects. The funding total includes 135 projects in 31 states and encompasses 32 land grant universities and several USDA-ARS locations.

The above pie chart depicts the percentage of recommended funding broken down by research category, plus the actual amount for each category. The dollar level recommendation and number of projects for category break down as follows:

- *Barley Coordinated Project* - \$863,502 / 14 research projects
- *Durum Coordinated Project* -

\$423,492 / 9 projects

- *Hard Winter Wheat Coordinated Project* - \$362,354 / 7 projects
- *Variety Development & Host Resistance (VDHR) / Spring Wheat*



Remembering ARS Barley Breeder Darrell Wesenberg

Research Leader & Location Coordinator at Small Grains & Potato Germplasm Research Unit in Aberdeen, Idaho Prior to Retirement in 2001 After 33 Years with USDA-ARS

The nation's barley research community lost a prominent figure on July 30 with the passing of Darrell Wesenberg.

Prior to his retirement in 2001, Wesenberg served as research leader and location coordinator with the USDA-ARS Small Grains and Potato Germplasm Research Unit at Aberdeen, Idaho. He had been with the ARS for 33 years as of his retirement.

A Wisconsin native, Wesenberg received his Ph.D. from the University of Wisconsin in 1968 – the same year he began work as a plant breeder with ARS in Aberdeen. “Darrell developed many barley and oat cultivars that greatly benefited growers and industry nationwide. Notable was the release of the barley cultivar ‘Klages,’ which spurred the growth of the malting industry in the western states,” says Robert Matteri, ARS area director for the Pacific West. “Darrell’s years-long effort to introduce malting barley traits into winter barley culminated in the release of ‘Charles’ and opened new opportunities for efficient barley production.” Germplasm from Wesenberg’s program has been used widely by U.S. and Canadian breeders, Matteri adds.

Wesenberg became research leader at the Aberdeen Unit in 1986 and subsequently oversaw the design and construction of the National Small Grains Germplasm Research Facility and the transfer to there of the National Small Grains Collection. Among his honors, he received the Distinguished Service to Oat Improvement Award in 1998, the Idaho Barley Industry Service Award in 2000 and was inducted into the Eastern



Darrell Wesenberg

Idaho Agriculture Hall of Fame in 2007.

While Wesenberg never worked with Fusarium Head Blight since it was not an issue in the Pacific Northwest during his career, “his germplasm and varieties were important contributions that we continue to build on, and that are surprisingly useful to our work on FHB,” notes Dr. Phil Bregitzer, research geneticist at the ARS Aberdeen facility.

Bregitzer offers these additional observations regarding Wesenberg’s contributions to the barley industry and, likewise, current efforts to manage Fusarium Head Blight:

- “Prior to Klages (which was released in the early ’70s) the western U.S. was not recognized as a good source of malting barleys. But the release of the well-adapted Klages

opened people’s eyes to the potential of this region and jump-started what now is a huge industry — and, in the context of FHB, the region where we can consistently produce DON-free barley. Klages is in the pedigrees of many two-rowed malting barleys adapted to the western regions of North America.”

- “[Wesenberg] conducted a long-running program of introducing quality into the traditionally feed-quality-only winter hardy barleys, which ultimately culminated in the ARS-Aberdeen release of Charles and Endeavor. These winter hardy malt barleys are enabling a significant new opportunity for producers and users of barley. Winter barleys have a more favorable pattern of water use, enabling greater sustainability of production in our water-limited western environment. Again, this is good for FHB-free production of barley. In the context of the increasing threat of FHB in the West (still small, but real, aided by burgeoning acreages of corn and warmer temperatures), the earlier (than spring varieties) heading dates of winter barleys occur during weather that typically is cooler than preferred by Fusarium, providing a bit of protection from FHB.”

- “Serendipitously, Darrell left germplasm behind in which we are finding what appears to be a remarkable level of resistance to FHB. This really puts us ahead in our nascent but serious quest to develop and release FHB-resistant barleys for the West, and to conduct genetic studies to understand the barley/Fusarium interaction. We are therefore able to conduct research and varietal development activities directly in our own breeding populations, without having to start from scratch using germplasm derived from other breeding programs.”

Wesenberg’s passing on July 30 occurred at his cabin on Lake Kabetogama in northern Minnesota, where he had spent much time following his 2001 retirement. Along with his many professional contributions, friends and colleagues remember him as an avid fisherman and all-around enjoyable person with whom to share time, activities and conversation. ❖



2018 FHB Forum Speakers

The list of confirmed speakers at the 2018 National FHB Forum, current as of October 22, includes the following:

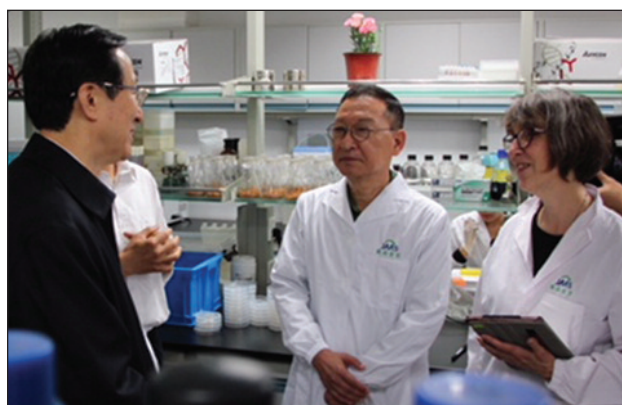
- Anthony Adeuya / U.S. Food & Drug Administration / *Mycotoxin Control and Monitoring Program: All Hands on Deck*
- Jörg Bormann / Institute for Cell Biology, University of Bremen, Germany / *Harnessing Antiviral Defense Reactions to Defeat Fusarium Head Blight.*
- André C. Rosa / Biotrigo Genética Ltda., Passo Fundo, Brazil / *To be announced*
- Robert Brueggeman / North Dakota State University / *Barley Heading and Flowering Phenology, Fusarium Infection and Implications for Fungicide Timing*
- Hui Chen / Kansas State University / *Application of CRISPR to Generate FHB Resistance*
- Alyssa Collins & Paul Esker / Pennsylvania State University / *Regional Perspective on the Management of FHB in the Mid-Atlantic*

- Andrew Green / North Dakota State University / *Breeding for FHB Resistance in North Dakota: More Questions Than Answers*
- Juliette Marshall / University of Idaho / *Response to Emerging Threat of FHB in the Pacific Northwest*
- Jana Murche / KWS Cereals USA, LLC. / *Going West: Establishing a Wheat Breeding Program in the U.S.*
- Martin Nagelkirk / Michigan State University Extension / *Managing FHB in the Context of Stripe Rust and Other Late Season Foliar Diseases*
- USWBSI DON Lab Leaders Panel

Discussion / *Covering topics such as methods, error, sample submission and sampling.*

- Martha M. Vaughan / USDA ARS NCAUR / *Fusarium graminearum Population specific Differences during Wheat Infection.*
- Susanne Vogelgsang / Agroscope, Zurich, Switzerland / *Cropping Factors: The Key for Sustainable Mycotoxin Management in Small grain Cereals*
- Sean Walkowiak / University of Saskatchewan, Saskatoon, SK, Canada / *Sequencing Wheat Genomes for Gene Discovery and Breeding*
- Yang Yen / South Dakota State University / *A Quantitative Proteomics View on the Function of Qfhb1.* ❖

MSU's Trail at Opening of Chinese Mycotoxin Lab



Frances Trail (right), professor of fungal biology at Michigan State University, visited China in May. There she met the Chinese Minister of Agriculture, Han Changfu (left), and participated in the ribbon cutting ceremony for the opening of a new mycotoxin lab in The Jiangsu Academy of Agricultural Sciences, Nanjing. At center is Prof. Yi-Won-Lee, whose entire career has focused on *Fusarium graminearum* research.



Fusarium Focus

Fusarium Focus is an online newsletter published periodically by the U.S. Wheat & Barley Scab Initiative. The USWBSI is a national multi-disciplinary and multi-institutional research system whose goal is to develop as quickly as possible effective control measures that minimize the threat of Fusarium Head Blight (scab), including the production of mycotoxins, for producers, processors and consumers of wheat and barley. Contact information as follows:

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Recent Peer-Reviewed Scab-Related Publications

- Kim W, Wang, J, Miguel-Rojas C, Townsend JP, Trail F. 2018. Sexual stage-induced long noncoding RNAs in the filamentous fungus *Fusarium graminearum*. *MBio*: In press.
 - Gdanetz K, Trail F. 2017. The wheat microbiome under four management strategies and potential for endophytes in disease protection. *Phytobiomes Journal* 1: 158-168. <https://doi.org/10.1094/PBIOMES-05-17-0023-R>. Featured in *Science Daily* <https://www.sciencedaily.com/releases/2017/11/171127094936.htm>.
 - Imboden L, Afton D, Trail F. 2017. Surface interactions of *Fusarium graminearum* on barley. *Molecular Plant Pathology*, DOI: 10.1111/mpp.12616.
 - Trail F, Wang Z, Stefanko K, Cubba C, Townsend JP. The ancestral levels of transcription and the evolution of sexual phenotypes in filamentous fungi. *PLoS Genet* 2017, 13(7):e1006867. In *F1000Prime*, 11 Aug 2017; DOI: 10.3410/f.727804275.793535202.
 - Zhao, M., Wang, G., Leng, Y., Wanjugi, H, Xi, P., Grosz, M., Mergoum, M., Zhong, S. Molecular Mapping of *Fusarium Head Blight Resistance* in Spring Wheat Line ND2710. *Phytopathology*, Aug 2018. <https://apsjournals.apsnet.org/doi/pdfplus/10.1094/PHYTO-12-17-0392-R>
- Listings of recent FHB-related publications by USWBSI-associated principal investigators are invited for submission for future issues of *Fusarium Focus*. Send listings to Don Lilleboe at lillcomm@yahoo.com.

