



The Honor Society of Food Science and Technology

Phi Tau Sigma Newsletter *January 2019*

News:

Award and Scholarship Deadline Approaching

(Contributed by Poulson Joseph, Ph.D., Awards Committee Chair)

Remember to submit your nominations by **February 1** to the Awards Committee for the Phi Tau Sigma Special Recognition Award, the Phi Tau Sigma Student Achievement Scholarship, the Dr. Gideon "Guy" Livingston Scholarship, and the Phi Tau Sigma Founders' Scholarship. **The student scholarships include an honorarium of \$1000 each and a plaque.**

Send completed nomination forms to Poulson Joseph, Ph.D., Awards Committee Chair, at: pjoseph@kalsec.com, with a copy to Kathryn Kotula, Ph.D. klkotula@msn.com.

Full information can be found at: <http://www.phitausigma.org/awards/>. However, a short description of each is offered below:

"The **Phi Tau Sigma Special Recognition Award** shall be given to a Member of Phi Tau Sigma who has shown exceptional dedication to Phi Tau Sigma - The Honor Society of Food Science and Technology, as evidenced by significant accomplishments towards the goals and/or administration of Phi Tau Sigma. The award comes with a plaque and an appropriate memento."

"The **Phi Tau Sigma Student Achievement Scholarship** shall be given to a student Member of Phi Tau Sigma who has shown exceptional scholastic achievement and a dedication to Phi Tau Sigma."

"The **Dr. Gideon "Guy" Livingston Scholarship** of Phi Tau Sigma shall be given to a student Member of Phi Tau Sigma in honor of the founder of Phi Tau Sigma, and to acknowledge that student's scholastic achievements and dedication to Phi Tau Sigma."

"The **Phi Tau Sigma Founders' Scholarship** shall be given to a student Member or Member of Phi Tau Sigma whose graduate research has had, or is expected to have, a significant Impact - a practical and meaningful application. The objective of the Founders' Scholarship is to emphasize the importance of original research, carefully selected, to solve vexing problems of the food industry."

Upcoming, with a nomination deadline of April 1:

"The **Phi Tau Sigma Outstanding Chapter of the Year Award** shall be given to honor a Chapter of Phi Tau Sigma that has achieved excellence in the areas of research, scholarship, leadership and service. The award comes with a plaque and a \$1000 honorarium to be used by the Chapter to advance distinction in the food science discipline."

Calendar:

->Phi Tau Sigma Awards Schedule:

- November 30: Deadline to submit nominations to the Awards Committee for the Dr. Daryl B. Lund International Scholarship.
- February 1: Deadline to submit nominations to the Awards Committee for the Phi Tau Sigma Special Recognition Award, the Phi Tau Sigma Student Achievement Scholarship, the Dr. Gideon "Guy" Livingston Scholarship, and the Phi Tau Sigma Founders' Scholarship.
- April 1: Deadline to submit nominations to the Awards Committee for the Phi Tau Sigma Outstanding Chapter of the Year Award.

Send completed nomination forms to both Awards Committee Chair Poulson Joseph, Ph.D., (pjoseph@kalsec.com) and Executive Director Kathryn L. Kotula, Ph.D. (klkotula@msn.com). (More information: <http://www.phitausigma.org/awards/>)

->December 18: Deadline to submit Nominations for the **Dr. Carl R. Fellers Award**, and other IFT Achievement Awards.
(More information: <http://www.ift.org/membership/awards-and-recognition/achievement-awards.aspx>)

->Phi Tau Sigma Chapter Schedule:

- November 1: Deadline to order Honor Cords and lapel pins to ensure delivery before Fall graduation dates
- March 15: Deadline for membership nominations to ensure decisions from the Membership and Qualifications Committee before the Annual Meeting
- April 1: Deadline to order Honor Cords and lapel pins to ensure delivery before Spring graduation dates
- May 1: First call for Chapter annual reports
- June 1: Second call for Chapter annual reports
- July 1: Final call for Chapter annual reports
- August 1: Deadline for Chapter annual reports

Reminder to all Chapters: In order to receive the *Certificate of Merit* or *Certificate of Excellence*, Chapters must submit their annual reports for evaluation by August 1. Please send your annual report to the current Chair of the Chapter Affairs Committee, Amy Simonne, Ph.D. (asim@ufl.edu) with a copy to Dr. Kathryn L. Kotula (klkotula@msn.com).

->Election schedule:

- December 15: Nominations due to Nomination and Election Committee (Jamie Valenti-Jordan, M.S., Chair (jamie@catapultserv.com))
- January 2: Nominations and Elections Committee convenes
- January 21: Deadline for Nomination and Elections Committee to submit slate of candidates to President

- February 5: Last date on which nominations by petition may be submitted
- March 1: List of candidates will be emailed to the Members for balloting
- March 31: Deadline for casting ballots
- April 8: Deadline for tabulation of ballots
- July 15: Phi Tau Sigma President will present the newly elected individuals to the Membership at the Annual Business Meeting of Phi Tau Sigma

Student Research Synopsis: Green coffee bean extract and 5-O-caffeoylquinic acid regulate fat metabolism in *Caenorhabditis elegans* (Contributed by: Renalison Farias-Pereira, Ph.D. student under the direction of Prof. Yeonhwa Park, Department of Food Science, University of Massachusetts Amherst)

Previously published work featured here: [Farias-Pereira R](#), Oshiro J, Kim KH, Park Y. Green coffee bean extract and 5-O-caffeoylquinic acid regulate fat metabolism in *Caenorhabditis elegans*. *J Funct Foods* 2018. doi:10.1016/j.jff.2018.07.049.

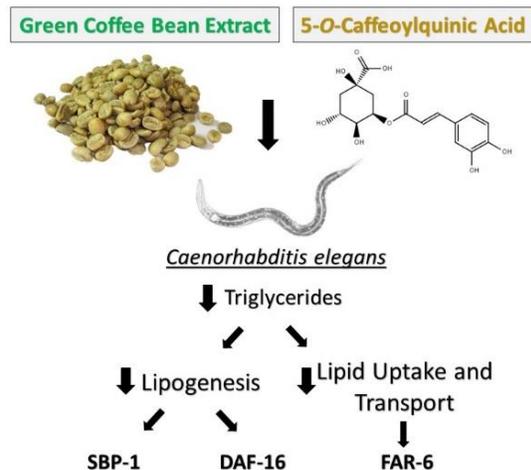
Introduction: Coffee consumption has been associated with reduced weight gain and body fat. This is known to be attributed to coffee polyphenols, such as chlorogenic acids, present in high concentrations in unroasted coffee, namely green coffee beans.¹ Green coffee bean extract (GCBE) and its main chlorogenic acids have shown potential as natural anti-obesity agents.¹ Therefore, identifying the mechanism of actions for GCBE and chlorogenic acids would be helpful to apply them as functional foods.



Objectives: The goal of the current study was to investigate the mechanisms of action of GCBE and chlorogenic acids on fat metabolism using *Caenorhabditis elegans* as a model system.

Methods: *Caenorhabditis elegans* is a multi-organ, microscopic and transparent roundworm, mostly known for its use in aging studies, but it also has been widely used for obesity research.² *C. elegans* has conserved fat and energy regulatory pathways, and its known-whole genome sequence enables this model for determining mechanisms by using knockout mutants and standard molecular biology techniques.²

Results: We found that GCBE and 5-O-caffeoylquinic acid (5-CQA), one of the main chlorogenic acids, reduce fat



accumulation in *C. elegans* depending on *sbp-1* (encodes sterol regulatory element binding proteins homolog) and *daf-16* (encodes forkhead box O homologue), which are involved in lipogenesis and the insulin-signaling pathway, respectively. Moreover, the lipid-binding protein FAR-6, which is involved in lipid uptake and transport, was identified as a possible target for GCBE and 5-CQA. Our findings are consistent with previous reports that chlorogenic acids reduce fat accumulation by regulating lipogenesis-related molecules, such as sterol regulatory element binding proteins (SREBP) and acetyl-CoA carboxylase (ACC),¹ and induce nuclear translocation of DAF-16.³ Therefore, chlorogenic acids are likely to be responsible for the effects of GCBE on fat metabolism. Our study is the first to show the influence of GCBE and 5-CQA on fatty acid β -oxidation and lipid transport pathways.

Significance:

This study proposes the mechanism of actions for GCBE and 5-CQA, which reduce fat accumulation in *C. elegans* by modulating SBP-1 (involved in lipogenesis), DAF-16 (involved in the insulin signaling pathway) and FAR-6 (involved in lipid uptake and transport). Understanding the pathways involved in GCBE and 5-CQA effects are helpful to apply these as functional foods for a target population. Furthermore, *C. elegans* has been proven as a model system for mechanistic studies with respect to fat metabolism.

References:

1. Murase T, Misawa K, Minegishi Y, Aoki M, Ominami H, Suzuki Y, et al. Coffee polyphenols suppress diet-induced body fat accumulation by downregulating SREBP-1c and related molecules in C57BL/6J mice. *Am J Physiol - Endocrinol Metab* 2010; 300: E122 LP-E133. doi:10.1152/ajpendo.00441.2010.
2. Shen P, Yue Y, Park Y. A living model for obesity and aging research: *Caenorhabditis elegans*. *Crit Rev Food Sci Nutr* 2016: 1–14. doi:10.1080/10408398.2016.1220914.
3. Zheng S-Q, Huang X-B, Xing T-K, Ding A-J, Wu G-S, Luo H-R. Chlorogenic Acid Extends the Lifespan of *Caenorhabditis elegans* via Insulin/IGF-1 Signaling Pathway. *J Gerontol A Biol Sci Med Sci* 2017; 72: 464–72. doi:10.1093/gerona/glw105.

Lifetime Member Tribute: Lilian Were, Ph.D.

Associate Professor of Food Science, Chapman University

Why did you become a Lifetime Member?

As someone that has lived and breathed food science since my undergraduate studies, being a Lifetime Member was a no-brainer as this was the only food science honor society available to me. To avoid the hassle of having to remember to pay dues, annually, I opted for the Lifetime membership.

Education:

- 2003 Postdoctoral Fellow, University of Tennessee, Knoxville, TN
- 2002 Ph.D. in Food Science, Purdue University, West Lafayette, IN
- 1998 M.S. in Food Science, University of Arkansas, Fayetteville, AR
- 1996 B.S. in Food Science, University of Arkansas, Fayetteville, AR



Experience:

2010- present Associate Professor, Food Science, Chapman University
2003-2009 Assistant Professor, Food Science, Chapman University

Areas of Expertise:

My current research is focused on determining preservative and sensory properties of phenolic and melanoidin compounds from coffee, mushroom and sunflower seeds, with the overall goal of enhancing sensory quality and chemical shelf life of food ([https://scholar.google.com/citations?user= G9PJr0AAAAJ&hl=en](https://scholar.google.com/citations?user=G9PJr0AAAAJ&hl=en)).

Awards and Honors (selected list):

2018 Purdue Outstanding Food Science Award Recipient
2017 IFT Muscle Foods Division Leadership and Service Award
2015 Excellence in Teaching Award, Chapman University, Orange, CA

Personal: Interests, Hobbies: Outside of my professional duties, I enjoy my involvement with my local church, spending time with friends and hiking.

Advice to university students and career food scientists and technologists:

Be present: if at all possible, while in school, take and soak in all that school has to offer, as you have the rest of your life to work. Your short time in school is not only a time for information gathering, but a transformative time. Take advantage of the extra-curricular activities school has to offer, and the relationships through group projects and extra-curricular activities, as these will be friends for life.

Whatever you do, do it with all your heart, **but while doing it, have fun.**

Chapter News: University of Georgia Chapter

(Contributed by Daoyuan Yang)

Mr. Jaideep Sidhu, a Phi Tau Sigma member and UGA graduate was invited back to the department to give a seminar. Mr. Sidhu received his Master's degree in food science in 2013. He is currently working with Coca-Cola and serving as the Manager and Scientific Information and Product Stewardship in the Global Scientific & Regulatory Affairs team. The topic of the seminar was "Scientific and Regulatory Affairs". He introduced the specific position he has been working in for 5.5 years, which is an important and indispensable component for a company while is still unknown to most of the students. The seminar was a success. It was open to everyone in the College of Agriculture. Lots of students and faculty members from both Athens and Griffin (Video) campus joined the seminar. The seminar was beneficial for the students especially if they intend to apply for a job in industry. It helped the students to get to know more about the positions in a big company like Coca-Cola and how each department cooperates with each other.



In Case You Were Wondering...the satisfaction of bird watching and counting (Contributed by Paul Fellers, Ph.D.)

Birdwatching is a passion of mine, and most weeks I make it out for a birding hike at least once. My wife, Donna, and I live in Winter Haven, FL which gives me wonderful opportunities to indulge in this passion.

An excellent stopover place for fall migrant birds is Saddle Creek Park (SCP) only 20 minutes away. Many of the birds come down all the way from Canada's vast forests, some to spend the winter with us but most of them on their way to Central and South America and the islands. I have enjoyed walking a 2 1/2-mile round-trip trail at SCP countless times since 1970. This past fall my best birds were two rare Philadelphia Vireos, Wood Thrush, and two Black-throated Green Warblers. Many additional longer birding trips in Florida are made throughout the year.



Paul Fellers, Ph.D. in the Corkscrew Swamp, February 2017



Paul Fellers, Ph.D. and dog, Zip, at Mackay Gardens and Lakeside Preserve, June 2018

Even as a boy in Amherst, I was uncommonly interested in birdwatching. Although they were not birders, my parents would take however many of us eight kids who wanted to go on nature hikes in our area. Right in our own woods on our property at 52 Fearing Street, we had nesting Ruby-throated Hummingbirds and Wood Thrushes and several other species. We knew where the Wood Thrush nests were, and during breeding season would remove cowbird eggs from nests that had been parasitized by the opportunistic cowbirds laying their eggs in the thrush nests.

When we worked in our family garden adjacent to the woods, birds would be singing: my favorites were Rose-breasted Grosbeaks and Baltimore Orioles. The Orioles also nested in our front yard in the elm tree, which would often be at eye level from my bedroom window. Their hanging basket-shaped

nests would sway with the breezes. Each spring we eagerly looked forward to seeing the first robins of the year, which generally arrived by my birthday, March 10th.

In 1964, when I moved to Florida for work after my Ph.D. at Michigan State, I found birdwatching to be a pleasant pastime with many birds to see year-round and some active birding friends. Florida has a wonderful array of large or exotic species on view every day, like herons, ibis, Sandhill Cranes, and Bald Eagles. Even the pink Roseate Spoonbills can be seen. I have always kept bird lists of the species seen, including sightings here at the house. In 1971, a friend and I counted 171 species in one day, which was a record for birders in Florida for many years.

Since I was a student of science, proper bird counting appealed greatly to me, and I began to become involved the Christmas Bird Counts (CBC). A CBC is a day-long count held between December 14th and January 5th of all birds seen and heard in a predetermined 15-mile diameter circle, with over 2,000 circles in the Western Hemisphere. These and other counts and surveys provide valuable scientific data about the status of bird species in an ever-changing world.

When the opportunity arose to inherit the running of the local Lakeland CBC, I oversaw that one for over 30 counts. I have participated in many other Florida CBCs. Another scientific count that I conduct is the Breeding Bird Survey (BBS), a federal program. Each survey begins a half-hour before sunrise and encompasses a 25-mile driving route with 50

predetermined stops being made each half mile. All the birds heard and seen for exactly three minutes are counted. I have completed 80 BBSs involving four different routes, usually with the help of a hardy volunteer willing to start work before dawn.



Paul Fellers, Ph.D. calling birds at Hillsborough River State Park, June 2018

In addition, since coming to Florida, I have led and participated in a plethora of birding, flower, and general nature field trips around the state. One special area was at the phosphate mines. Reclaimed phosphate mining lands, 300,000 acres of which are in my county alone, have many ponds and wetlands that allow for great numbers of birds. Up to 100 bird species (including 14 species of ducks and 18 species of shorebirds) can be seen in a day. Over the years, I birded and led field trips there. However, at the present time, the mined land is not open to the public.

It is with a great deal of satisfaction that I have accomplished the above endeavors.

Donna and I are looking forward to winter, which will mean more activity outside: nature walks and some Christmas bird counts for me and horseback riding for her. Holiday gatherings with friends and neighbors have already begun, and more enjoyable festivities will follow.

Dues Reminder:

Your dues status is listed in the cover email of this Newsletter. If you have not already paid your dues, Phi Tau Sigma Member dues are \$40 per year, but students get a discount so their dues are \$20 per year. Lifetime Membership is \$400 (just once). Please access the Phi Tau Sigma Membership Dues Page at: <http://www.phitausigma.org/membership-dues/>. Proceed on to pay by PayPal. Once you are successful with your PayPal payment, you will receive a receipt. If you do not receive a receipt, please try again.

Dues can also be paid by check payable to **Phi Tau Sigma**, (made with U.S. Funds and drawn on a U.S. Bank). (Do not send a money order.)

Mail your check to: **Kantha Shelke, Ph.D.** (Do **not** address to Phi Tau Sigma.)
33 West Ontario, Suite 57F, Chicago, IL 60654.

You are welcome at any time to give a donation to the Dr. Carl R. Fellers Award Fund, the Dr. Gideon "Guy" Livingston Scholarship Fund, Phi Tau Sigma Student Achievement Awards Fund, Phi Tau Sigma Special Recognition Award Fund, Dr. Daryl B. Lund International Scholarship Fund, Phi Tau Sigma Founders' Scholarship, Phi Tau Sigma Chapter of the Year Award, Honorary Society Advancement Fund, or the President's Fund.

We also ask each Chapter to send a list of their current, and lapsed, members along with contact information to the Chapter Affairs Committee Chair, Amy Simonne, Ph.D. at: asim@ufl.edu, to help ensure our records are accurate.

Phi Tau Sigma Store

Phi Tau Sigma has an online store. Items featured include Honor Cords, Official Lapel Pins, Banners (podium and wall/table), Annual and Lifetime Member dues, printed Certificates of Membership, and an opportunity to make tax deductible donations to Phi Tau Sigma. The Society Store can be found by going to www.phitausigma.org/store.

Editorial: Space

This summer and autumn I have been thinking about space. Not outer space, although that is always interesting. I have also contemplated that I should have had more space as paths between the plantings in my garden this year, but that is not my point here.

What I want to comment upon is the empty space on business cards, and in some popular press books. In many of the business cards I have accumulated there is way too much empty space, and the type is much too small. I have also been reading books where the type (font size) is small, but, based on the spacing between lines, the page would accommodate larger type.

One's business card is one of the 'first impressions' that one projects. A card with tiny type and lots of empty space does not make as good impression as one that has larger type and is easy to read.

About Phi Tau Sigma Communications:

The Phi Tau Sigma Newsletter Committee includes: Kathryn Kotula, Ph.D., Editor-in-Chief, Chair (klkotula@msn.com), Claire Zoellner, Ph.D., Associate Editor (cez23@cornell.edu), Anthony W. Kotula, Ph.D., Afef Janen, Ph.D., Hossein Daryaei, Ph.D., Tianxi Yang, Ph.D., and Yiren Yue, B.S. (Ph.D. Candidate). Please be responsive to their inquiries for information for the Newsletter.

The Newsletter Committee particularly wishes to share news from Phi Tau Sigma Members and Chapters. Any items for the monthly Phi Tau Sigma Newsletter should be emailed in Word (97-2003 compatibility mode) to Editor Kathryn L. Kotula, Ph.D. at klkotula@msn.com or Associate Newsletter Editor Claire Zoellner at cez23@cornell.edu. Write “*Phi Tau Sigma Newsletter*” in the subject line. Please provide the information by the 1st of the month. Thanks.

Documents:

Phi Tau Sigma Documents can be found on our website at: www.phitausigma.org.

Phi Tau Sigma Membership Nominations

<http://www.phitausigma.org/membership-nomination-form-pdf/>
<http://www.phitausigma.org/membership-nomination-form-word/>

Phi Tau Sigma Scholarships and Awards Forms

<http://www.phitausigma.org/awards/>

Phi Tau Sigma Constitution and By-Laws

<http://www.phitausigma.org/constitution/>
<http://www.phitausigma.org/bylaws/>

Phi Tau Sigma Mentorship Program

<http://www.phitausigma.org/mentorship/>

Donors, Sponsors, and Contributing Partners:

Phi Tau Sigma accepts donations and has a variety of available sponsorship opportunities.

Phi Tau Sigma is a non-profit 501(c)(3) charitable organization, so your contributions are tax deductible to the extent provided by U.S. law.

Donations and sponsorships may come from, but are not limited to, Corporations, Companies, Universities, Government agencies, Associations, Consultants, and individuals.

Contributions are appreciated in any amount, and can be made by way of the Phi Tau Sigma website (<http://www.phitausigma.org/sponsor/>). Donations by check can be made by contacting: Treasurer Kantha Shelke, Ph.D. (kantha@corvusblue.net), 33 West Ontario, Suite 57F, Chicago, IL 60654. Please write “Donation” or “Sponsorship” in the subject line.

Contributions of \$500 or more will be recognized publicly by the Society at the annual meeting, on the Phi Tau Sigma website, in printed material associated with relevant programs and events, and in the Phi Tau Sigma monthly Newsletter. Sponsorships of awards and scholarships are also available at levels of contribution sufficient to cover the associated cost of the award or scholarship. Endowments are also accepted.

Sponsorship opportunities are available for the Phi Tau Sigma Annual Recognition Event, Phi Tau Sigma Special Recognition Award, Phi Tau Sigma Student Achievement Award (up to 3 will be awarded), the Dr. Gideon "Guy" Livingston Scholarship Fund, the Phi Tau Sigma Founders' Scholarship, the Dr. Daryl B. Lund International Scholarship Fund, and the Phi Tau Sigma Outstanding Chapter of the Year Award. Donations can be made towards the awards and scholarships listed above, as well as the Program fund and the General fund. There are also endowment opportunities for student scholarships named for the sponsoring company.

Phi Tau Sigma has a **Contributing Partners Program** with five levels of sponsorships as described below. The Contributing Partner receives all of the benefits in the previous levels, plus the addition of the benefit listed for that level.

Bronze (\$5000)

- Company listing in the "Donors and Sponsors" section of the Phi Tau Sigma Newsletter.
- Recognition with company name on www.PhiTauSigma.org
- Prominent recognition at all major Phi Tau Sigma events

Silver (\$10,000)

- Bronze benefits.
- Posting your company's job openings and internships in the Phi Tau Sigma Newsletter.

Gold (\$15,000)

- Silver benefits.
- Acknowledgement of sponsorship and placement of corporate logo on plaque or scholarship/award memorabilia.

Platinum (\$20,000)

- Gold benefits.
- A press release associated with significant contributions, distributed to allied professional and trade associations for circulation to their membership via their publications, e-news and/or listservs.
- Complimentary access to student resume database.

Diamond (\$25,000)

- Platinum benefits.
- Prominent multi-year listing on the Phi Tau Sigma website as a sponsor of an Endowed Program.

Some corporations will match individual contributions of their employees, so check with your company about matching funds.

For more information contact the Treasurer, Kantha Shelke, Ph.D.

(kantha@corvusblue.net), or the Executive Director, Kathryn L. Kotula, Ph.D.

(klkotula@msn.com). Please write "Donation" or "Sponsorship" in the subject line.

2018-2019 Donors and Sponsors:

Dr. Mary K. Schmidl is the President of the International Union of Food Science and Technology (IUFoST), a Lifetime Member and a past President of Phi Tau Sigma, a Past President of the Institute of Food Technologists (IFT) and Adjunct Professor, University of Minnesota.

Dr. Theodore P. Labuza is a Lifetime Member of Phi Tau Sigma, a Past President of the Institute of Food Technologists (IFT) and the Morse Alumni Distinguished Teaching Professor of Food Science and Engineering, University of Minnesota.

Dr. Fergus Clydesdale, a Lifetime Member of Phi Tau Sigma, is the Distinguished Professor and Director of the UMass Food Science Policy Alliance, University of Massachusetts Amherst and a member of Phi Tau Sigma since the 1960's.

Dr. Rakesh K. Singh is the President of Phi Tau Sigma, a Lifetime Member; and is Professor and Head of Department of Food Science & Technology at the University of Georgia. He is also a Fellow of IFT and Editor-in-Chief of LWT – Food Science and Technology. (Sponsorship of a Phi Tau Sigma Student Achievement Scholarship.)

David K. Park, M.S., Phi Tau Sigma Lifetime Member, is Principal, Food-Defense, LLC, providing expert food safety / food defense, USFDA and USDA-FSIS Process Authority consultation for thermal and non-thermally processed low acid canned foods (LACF), acidified foods (AF), and refrigerated extended shelf life foods (ESL) and their packaging systems. (Donation towards a Phi Tau Sigma Scholarship.)

Nina Teicholz, M.Phil. is an investigative science journalist and author. Her international bestseller, *The Big Fat Surprise* has upended the conventional wisdom on dietary fat—especially saturated fat. The executive editor of "The Lancet" wrote, "this is a disquieting book about...ruthless silencing of dissent that has shaped our lives for decades ... researchers, clinicians, and health policy advisors should read this provocative book." *The Big Fat Surprise* was named a 2014 *Best Book* by *The Economist*, *the Wall Street Journal*, *Forbes*, *Mother Jones*, and *Library Journal*. Teicholz is also the Executive Director of The Nutrition Coalition, a non-profit group that promotes evidence-based nutrition policy. She is a graduate of Stanford and Oxford Universities and previously served as associate director of the Center for Globalization and Sustainable Development at Columbia University. Teicholz is the only journalist to date to be elected to Phi Tau Sigma. (Donation towards a Phi Tau Sigma Scholarship, and Phi Tau Sigma programs.)

Dr. Daryl and Mrs. Dawn Lund. Dr. Lund is past President of Phi Tau Sigma, Lifetime Member, past Treasurer, current Assistant Treasurer, and an Emeritus Professor, University of Wisconsin-Madison. (Sponsorship of the Dr. Daryl B. Lund Student International Travel Scholarship.)

Hawkins, Inc. is a progressive concern that manufactures and distributes specialty chemicals and provides functional solutions for a wide variety of industries. The Food Ingredients Group is a leading manufacturer of innovative pathogen control technologies and ingredients for the food industry. The formation of Ingredient Works, an entity conceived to capitalize on expertise in functional ingredient



FOOD INGREDIENTS
GROUP

applications, food industry knowledge, technical service, and an extensive product portfolio, is focused on the comprehensive science of shelf-life, providing customized solutions to both the common and the highly complex issues faced every day by food manufacturers. The ultimate goal for the Hawkins Food Ingredient Group is to re-define the concept of shelf life and become a complete solution provider to the food industry. (Contribution to support the Phi Tau Sigma Founders' Scholarship, and the Phi Tau Sigma general fund.) **Hawkins, Inc. is a Bronze level Contributing Partner.**

Elsevier Publishing Company. Elsevier's Food Science content covers aspects of food from chemical composition, to growth and production to distribution and consumption – from farm to fork. Our extensive collection includes eBooks, print books, series, handbooks, and major reference works, all complementing our expansive collection of food science journals and designed to help food science professionals continue to be innovative and make evidence-based contributions to the communities, translating knowledge into applications for the world. Elsevier books have an established reputation for providing ground-breaking and expansive content; written by world renowned, award-winning authors and reviewed by an expert team of editors. Our wide variety of books and eBooks has been empowering research development, initiating innovation, and encouraging confidence and career growth in the scientific field. (Donation towards a Phi Tau Sigma Scholarship.)



ELSEVIER



International Food Network, Inc. is a consultancy based in Ithaca, New York that serves the food, beverage and nutrition industry, providing services in the areas of value optimization, corporate development, mergers & acquisitions and divestitures. Peter Salmon is IFN's founder and principal. (Contribution for the General Fund.)

A donation was made towards a Phi Tau Sigma Scholarship by a Phi Tau Sigma Lifetime Member who wishes to remain anonymous.