

# SOCIETY NEWS

THE SOCIETY OF FLAVOR CHEMISTS, INC



## Board of Directors 2019-2020

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## President's Message Elsa Howerth 2019-2020

Summer greetings to you all! And welcome back. I hope you all took some time away, created wonderful summer memories, and got rejuvenated for the start of a new season.

I am honored to be serving as your President for this term 2019-2020. I regard this position with great respect and this enormous privilege is not lost on me. I hope to be able to move us forward while I have the responsibility of this office. I want to thank the nominating committee for giving me this opportunity two years ago when I was welcomed to the Board of Directors as the secretary. I also want to thank my employer, Kerry, who has been a generous supporter of the SFC, for supporting me in my volunteer efforts with the SFC these past ten years. My volunteer work has been personally enriching.

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# President's Message - continued

Elsa Howerth 2019—2020

I am looking forward to an eventful year. For starters, we are 65 years old as an organization this year. And what better way to mark this 65<sup>th</sup> anniversary year than with our flavor symposium. Yes, indeed, our long-awaited symposium is finally just around the corner. Our symposium committee has been working hard the last two years to bring us this event like no other. As this is designed by flavor chemists for flavor chemists, you won't find a more practical educational program. Our symposium is equally an opportunity to come together, meet our peers in the industry, and share some bonds for aren't we all kindred spirits in this unique profession. This is an SFC tradition, held only every five years, so I encourage you all to attend. Each time is planned to be special. I have been fortunate to have been able to attend all the symposiums since I became a member at the 1994 symposium, and I must say I always came away with a nugget of information, a meaningful conversation, a productive meeting, a memorable experience from our symposiums. And I believe this is useful regardless of where you are in your career as a flavorist.

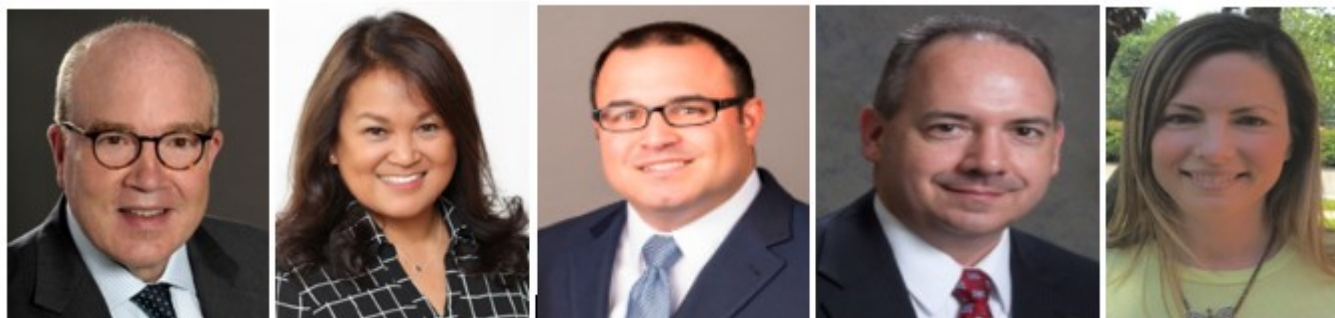
Aside from our symposium, we have all the other monthly meetings we hold. Our dates for this year are already set and posted in our website, this newsletter, and our save-the-date email reminders. We have them out way in advance to help you plan your attendance to these meetings. Our program committees are planning our education programs to give us focused relevant topics with applicable take-aways. If you have ideas or suggestions for our meetings, please do not hesitate to contact the Board or the program chairs. I hope you all can join us for one or more meetings this year. We need your attendance to attain quorum and be able to hold our business meeting. We always have new members or upgrades who need to be elected. And it would just be great to see you all benefit from our meetings.

As with every President that has come before me, we aim to ensure the sustainability of the SFC through various improvement efforts. Foremost for me is the state of our finances. I would like to set us up to be financially sound, so we can continue to serve the purposes for which we exist as a nonprofit organization for years to come -- continue our meetings and education programs, grow our membership, offer more member benefits, and give back to the industry through our scholarships and sponsorships. To this end, an increase in dues will be necessary to be aligned with operating costs that have been increasing over the years. There will be a proposed change to the by-laws regarding the annual dues in the upcoming meetings.

While it is my greatest delight to have this opportunity to serve the SFC in this capacity, I am of the belief that this journey would be less enjoyable and certainly unproductive if I am to walk it alone. I am delighted to be working with a fine group of fellow flavorists, the Board of Directors and Committee Chairpersons, whose care and passion for the SFC keep us going strong. I especially welcome our newest board member, Cathianne Leonardi, as our new treasurer and our new co-chairs of the membership committee, Menzie Clarke and Dana Chen. The work of our volunteers and your participation in our meetings and events keep the SFC alive and vibrant. Let's all continue to be keepers of the flame.

*Elsa Howerth*

## Meet Your 2019-2020 SFC Board!



Sam Tarpe—Chairman

Elsa Howerth - President

Paul Ricciardi—Vice-President

Chris Williams— Secretary

Cathianne Leonardi—Treasurer



**REGISTER TODAY!**

Society of Flavor Chemists  
Flavor Symposium  
October 16—17, 2019  
Princeton NJ



# Mark Your Calendar!

## 2019—2020 SFC Meetings!

September 12, 2019—Chicago IL

October 16-17, Princeton NJ

SFC Symposium!

January 23, 2020— Anaheim, CA

February 20, 2020—Newark, NJ

April 2, 2020—Cincinnati, OH

May 7, 2017—Newark, NJ

Roundtable and Annual Meeting!

September 10, 2020—Chicago, IL

October 14, 2020 Newark, NJ

## Welcome, New Members!

### From the February Meeting in Philadelphia



#### **Glen Kraemer—Upgrade to Certified**

Since moving to the Midwest four years ago, Glenn has been enjoying the great parts of Chicago and the surrounding areas. Access to a busy airport hub, as well as parts of Europe, Southeast Asia and South America. When he is not working, he spends a lot of his free time reading, hunting or cooking.

#### **Sara Marino—Direct to Certified**

Sara is happy to have the opportunity to be a Food Engineer and better to be a flavorist. She enjoys every moment on her job; everything in the world is about senses, and the goodness of influencing in some way to the food and sport nutrition industry.



## Welcome, New Members!

### February Meeting in Philadelphia



New members voted in at the Philadelphia meeting

Christina Hook—Apprentice

Mary Gromlowicz—Apprentice

Ryan Cook—Certified

#### **Ryan Cook—Direct to Certified**

Ryan works at ADM Nutrition. He received his Bachelor of Science degree in Biology degree from the University of Dayton in 2004, and has been working for Wild Flavors/ADM Nutrition since 2008. He started off in Applications, but has worked in Flavor Creation for the past seven years. Ryan is a passionate fan of Cleveland sports franchises and enjoys listening to music, hiking, and spending time with his wife and two young boys.

#### **Christina Hook—Apprentice**

Christina began her career at Bell Flavors & Fragrances working part-time in a variety of departments and learning the big picture of how a flavor company works. Then, she moved to Sensient Flavors to begin her training as a Flavorist. Outside of work, she loves to read, play golf, softball, and volleyball.

#### **Mary Gromlowicz—Apprentice**

Mary is a Rutgers graduate and former varsity collegiate rower. Her very first job out of college introduced her to the mysterious world of Flavor Chemistry. Mary quickly realized that the blend of art and science was a natural fit for her. Currently she is improving her skills at Tastepoint by IFF. She has a passion for learning and tasting new foods. She is particularly inspired by Savory Flavors. Mary loves all things outdoors, especially spending time hiking with her fiancé.

## Welcome, New Members! April Meeting in Cincinnati



### Amy Haw-meei Yap—Apprentice

Amy started her flavor industry journey in R&D, then quickly gravitated towards flavor creation. Amy holds a Bachelor of Science Degree from North Carolina State University and a Masters Degree from Pennsylvania State University. She has been with Givaudan Flavors for over a dozen years, training with a focus in savory and process flavors. She has been fortunate to work with many talented flavorist in the area of sweet, savory, and process flavors. Outside of work, Amy enjoys spending time with her family, cooking, baking, and being outdoors.

### Francois Laverdiere—Apprentice

Francois completed his Bachelors and Masters degrees in his hometown of Montreal Canada, and went to work in the field of flavors with Foodarom, where he is in flavorist training. He has been fortunate to train among an exceptional team where his passion for flavors is nourished and grows. Francois is also a curious home cook, always ready to try out recipes from around the world and also enjoys playing and listening to music,



### Jacqueline Finner—Upgrade to Certified

Jacqueline is a native of Chicago and currently lives in the western suburbs. She enjoys her time with her four children, whether attending sporting events or going to museums. Jacqueline enjoys spending her free time being active working out and being outside and doing outside activities. She also enjoys sewing and reading.

## Welcome, New Members!

### April Meeting in Cincinnati



#### Peter Rowell—Upgrade to Certified

Peter believes the most exciting part of flavor creation is the adaptability. When he is not working, he likes to travel, bake sourdough bread, and attend live music and comedy performances. His favorite aspects about travel include trying the local cuisine and listening to local social, political and philosophical views of the residents. Peter is curious how the future trends in things such as peer-to-peer economy, social media, 3-D printing, streaming services, automation and digital intelligence will shape our future in and outside the industry.

#### Amelita Vinas—Apprentice

Amelita is a graduate of Adamson University in Manila, Philippines where she received her Bachelor of Science in Civil Engineering. After immigrating to Canada, she decided to make a change in her career direction and studied Pharmaceutical and Food Technology. She has been working in the flavor industry since 2006. She first worked at Sensient Flavors Technology Canada under the mentorship of a Certified Flavorist. When Sensient closed their facilities in Canada in 2014, Amelita began working at Bonnie and Don Flavours, where her main responsibility is matching flavors.



#### Melissa Barbercheck—Upgrade to Certified

Melissa attended Indiana University for Biology, where she was first introduced to the food industry at her internship with the Environmental Health & Safety Department as a Food Safety Intern. After a few years of field work, she decided that she wanted to get back into a lab environment, and discovered a new passion in the flavor industry. In her free time, she enjoys cooking, running, yoga and travelling. Melissa currently resides in Cincinnati, Ohio, with her husband and two fur kids, a husky and a cat.



#### Kathleen Brown—Apprentice

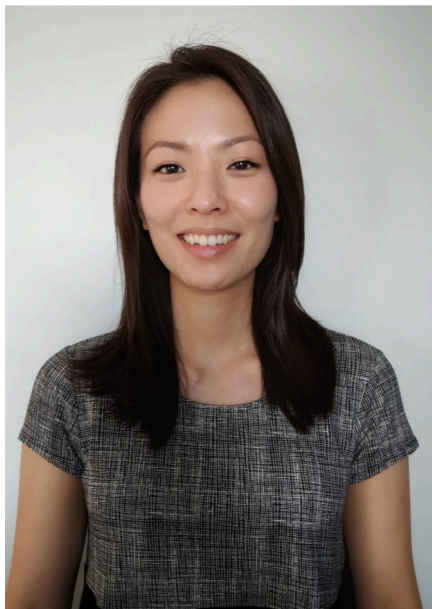
Kathleen lives in Climax, North Carolina with her husband and two sons, but her heart is still in Texas where she grew up. She is very passionate about trail running, experimenting with new recipes, gardening, travelling, exploring new places and reading actual tangible books. Surprisingly enough, Kathleen's favorite flavor is vanilla.

## Welcome, New Members!

### From the May Meeting in New Jersey

#### Shelley Kung — Upgrade to Certified

Shelley Kung is a flavorist at Symrise. She started as an intern at Flavor Dynamics in 2010 while earning a Bachelor of Science Degree from Rutgers University. The interest in flavors naturally aligned from her interest in food. As a New Jersey native, she enjoys hiking and enjoying the landscapes in her spare time.



#### Melis Cakirer—Upgrade to Certified

Melis loves the constant learning and growth that comes with creating flavors. She is grateful for the experiences she has had in the flavor industry over the past twelve years. Melis began learning about flavors at Pennsylvania State University where she did a Master's study on flavor differences among cacao cultivars. This work led to an internship in Costa Rica, evaluating different coffee blends for export. Melis began flavorist training at Colgate-Palmolive developing oral care flavors for toothpaste and mouthwash. Since 2010, she has been working as a flavorist at Takasago adapting new technologies in winning flavors, continuing to learn and grow in the field. Outside of work, Melis enjoys spending time with her family. Exploring the outdoors, hiking, biking and skiing.



#### Katie Beaver—Upgrade to Certified

Katie Beaver went to West Chester University where she studied Forensic and Toxicology Chemistry. Shortly after graduating, she was introduced to the world of food and flavor chemistry and soon became passionate about the food and flavors industries. When not working, Katie enjoys travelling with her husband, baking, reading and knitting. She was sponsored by Hedy Kulka, Steve Kudla and Sam Tharpe of McCormick & Company.



#### Jose Alberto Franca Silveira – Direct to Certified

Jose is from Brazil with a degree in Chemistry and started working in the Flavor business at Degussa Flavor Systems as a flavor lab assistant in 2005. As soon as the Degussa flavors business was sold to Cargill, he was promoted to Flavorist Trainee and then to Junior Flavorist, creating and matching flavors in confectionary, dairy, beverage and citrus emulsions category until 2011.

Now Jose works for Cramer, a Chilean Flavor & Fragrance company in the sweet and savory categories and still working with the same passion as when he started, feeling amazed every time a good smell touches his nose.



## January Meeting in Anaheim—by Chris Williams

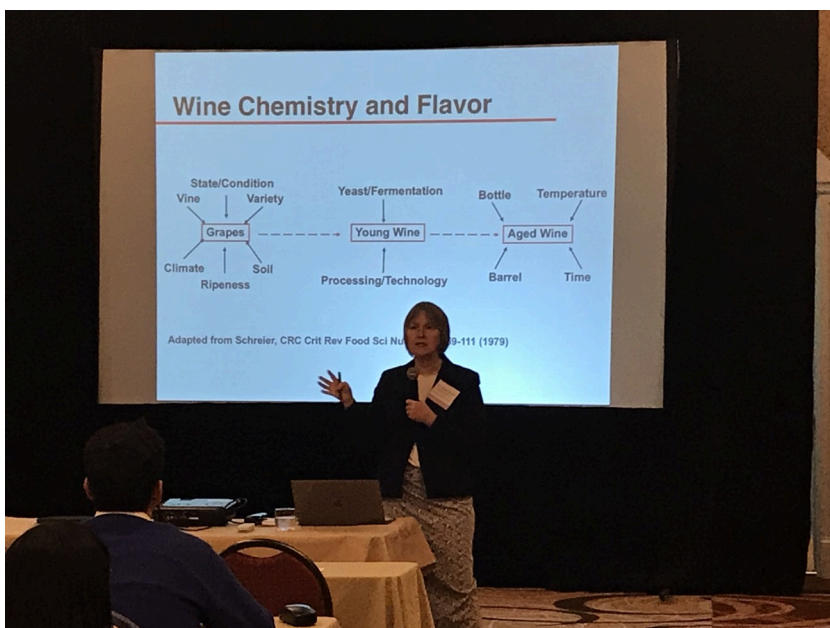
Unfortunately, it was not a sunny, beautiful southern California day for our January meeting as it was very cloudy with rain for most of the day. We still had a vibrant and enthusiastic crowd with a full afternoon on the subject of winemaking. The following is just a very brief summary of the presentations.

The presentations began with Dr. Susan Eberle, Professor, Department of Viticulture and Enology from the University of California Davis, speaking about the basics of wine flavor chemistry. Her three areas of interest and her presentation focused on the following: What are the flavor compounds in wine? How does the winemaking practices effect wine composition? How do these compounds relate to the sensory properties? She went into detail and covered some common wine flavor compounds and analytical methods used for testing during the fermentation process.

### "Wine Flavor Chemistry - The Basics"

Dr. Susan Eberle

Professor, Department of Viticulture and Enology,  
University of California, Davis



### "Red berries and clove spice, with a hint of asparagus" Unraveling the complexity of wine aromas

David Raffaele, Master Winemaker - Maurice Carrie Vineyard and Winery, Temecula California



## January Meeting in California—Cont'd

Next up was David Raffaele from the Maurice Carrie Vineyard and Winery in Temecula, California. His perspective is that of a farmer/grower and hearing this different viewpoint was refreshing. We sampled a few different wine varieties with specific flavor attributes.

We gathered for the business meeting following the presentations. Regrettably, we did not have enough certified members present. Due to lack of quorum, President Sam Tharpe adjourned the meeting at 4:20 PM on January 17, 2019 at the DoubleTree Suites by Hilton in Anaheim, CA.



We then departed on the optional wine tasting event at the nearby Pali Wine Company in the Anaheim Packing District.



## February Meeting in Philadelphia

The February meeting was held again in Philadelphia, taking advantage of the proximity of Monell Chemical Sense Center. The Chemical Sources meeting that was held prior to the SFC meeting featured Dinh Phan of Synerzine, showing natural pyrazine mixtures. The first speaker of the SFC meeting was Dr. Emily Mayhew of Monell, with her talk on "Using quantitative models to predict aroma quality of mixtures. This was followed by Dr. Nancy Rawson of Monell n health and flavor perception,. Finally, Dr. Fredrica Genovese of Monell talked about trigeminal modulation of odor perception.. The presentations were followed by a tour of the Center and social hour.



Dihn Phan of Synerzine



Dr. Emily Mayhew of Monell

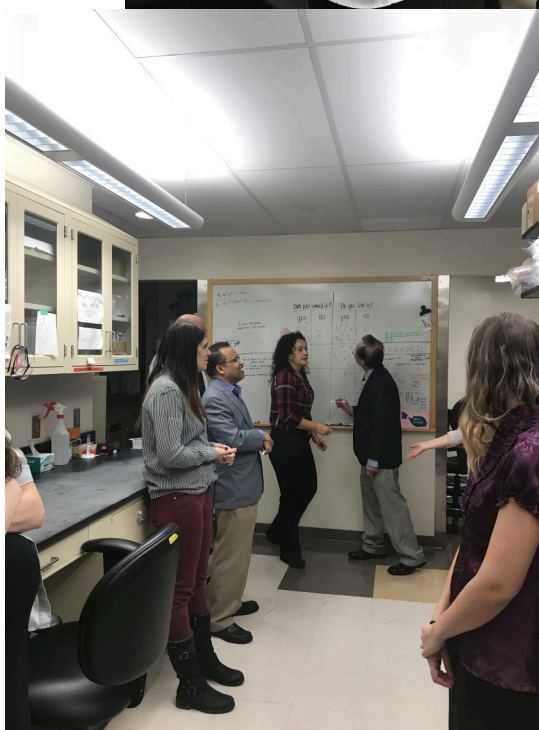


Dr. Fredrica Genovese of Monell



Dr. Nancy Rawson of Monell

## February Meeting in Philadelphia—Cont'd



## April Meeting in Cincinnati

April 18, 2019 Meeting in Cincinnati, OH  
by Ryan McCoy

### New Look at Spirits Research

Dr. Tom Asquith, Whiskey Scientist at OTR Still House

Dr. Asquith gave an interesting talk about spirits research concerning the chemical composition of spirits and how those compositions can affect burn and mouthfeel. His presentation began with commonly known knowledge of high proof distillate production and how those are processed into bottle strength products. Dr. Asquith discussed how congeners, the minor and varying chemical constituents produced in spirits production, have been found to form clusters of ethanol “rich” and water “rich” compound structures that significantly impact the perception of burn and mouthfeel in products. These differences are far more pronounced in colored spirits due to higher amounts of congeners and chemical compounds from wood ageing. The research into these clusters of chemicals bound to ethanol and water shows that the burn of spirits is likely tied to the relative amounts of “free” vs structured or clustered ethanol and that the mouthfeel of products is tied to structured water in a spirit. This continued research seems to be leading to product development that is testable and measurable for desired affects in spirits development.



### Novel Molecular Drivers of Trigeminal Burn in Alcoholic Products

Dr. Devin Peterson, Director of the Flavor Research and Education Center at The Ohio State University

Dr. Peterson began his presentation by giving some insight into the goals of FREC, The Flavor Research and Education Center at The Ohio State University. He discussed how important the role of flavor is in our society today and why flavor is the key driver helping our society make better food choices. FREC spends a lot of time trying to understand what drives “liking” of foods. Dr. Peterson concluded that if healthier food tastes better people will consume more of it and our society will become healthier in the process. He also spoke a little about FREC’s process of partnering with industry leaders as members to spread out the cost of this important research among many members. They are also exploring and developing models to allow for proprietary research to members for commercial products.

Dr. Peterson spoke about two interesting projects being explored at FREC as examples of the type of research being done. The first was using LCMS to identify novel non-volatile chemicals in coffee that consistently raised the statistical cupping score of coffee when added to lower quality coffee. The second was research into breeding of wheat for “liking” by decreasing the generation of a bitter molecule in the process of bread making.

In conclusion of his presentation Dr. Peterson discussed the research that is being conducted on alcohol burn. Asking the question “Is it just alcohol that is causing the burn” the researchers looked at pH to determine if a change in pH would affect the perceived burn in spirits. They found that the increasing the pH effectively lowered the aldehydes present in a spirit and decreased the alcohol burn. Dr. Peterson tied these finding rather well to the previous presentation of Dr. Tom Asquith showing that the congener aldehydes identified in spirits can drastically change the perceived burn of a spirit. In addition to this research Dr. Peterson mentioned that these findings centered on pH could be very useful in the process and use of proofing water to decrease ageing time of spirits.

## April Meeting in Cincinnati—Cont'd



Presentation by 2019 William Jaggard Memorial Scholarship Recipient  
 Brianna Linne  
 Identification of characterization of the tactile chemical compound of coffee body

Brianna gave a great presentation of her research work on identifying chemicals that contribute to the body of coffee. She began by describing how professional coffee cuppers use “body” to describe the tactile qualities of mouthfeel, fullness and amplitude of a coffee when determining its quality. Her research began with studying the tactile sensitivity of the tongue by similar comparison to the tactile sensitivity of touch. This was done by identifying chemical compounds that activate similar tactile touch receptors of the tongue. After conducting extensive sensory guided tastings, she decided to pursue four key attributes of chalkiness, thickness, mouth coating and astringency. Through processing with ultra-filtration separation and solid phase extraction separation Brianna found that low molecular weight organic elution chemicals seemed to be of the most interest for study. Following this finding she performed time-based LC/MS fractionation of a coffee sample and compared each fraction against control samples containing caffeine to identify which fractions demonstrated her four key attributes. While she was unable to come to a conclusive fraction for thickness she had very good success identifying fractions associated with mouth coating, chalkiness, astringency and a fraction that contained both mouth coating and astringency. This very detailed and successful research sets up the possible next steps of identifying specific compounds or groups of compounds in these fractions that could be used to better understand and modulate coffee body levels that contribute to the flavor experience of coffee.

### Tactile contributors in coffee

- **Macromolecules? Polysaccharides?** (Nunes et al 2001, Navarini et al 1997, Illy et al 1995)
  - Despite containing a variety of macromolecules, the **physical viscosity** of non-espresso coffee does not differ substantially from water (Health, 1988)
- **Other?**

**May there be other compounds playing a role in the tactile experience of coffee?**

Flavor Research & Education Center, Department of Food Science & Technology, Ohio State University



April Meeting in Cincinnati- Cont'd



### April Meeting in Cincinnati- Cont'd



## May Annual Meeting in New Jersey

The May 9th SFC Business Meeting along with the annual Chemical Sources Association NJ roundtable was a busy and successful day. It's always exciting to see so many suppliers, flavorists, and industry colleagues working together under one roof. The main event for the day was the CSA Roundtable where you can quickly evaluate numerous raw materials from a variety of suppliers throughout the day via timed sessions. This is beneficial to flavorists of all ages and experience levels along with purchasing agents, R&D professionals, and other industry experts. This year we had over 120 registered attendees and 26 exhibitors.

The CSA slate of officers for 2019-2020 were also voted on and are the following:

Bill Aslanides – President (Second Term) / Synergy Flavors

Jim Kavanaugh – Treasurer / Omega Ingredients

Secretary – Bill Becker / Advanced Biotech

Chairman – Mike Monterosa / Bell F&F

After the last roundtable, the SFC Business Meeting was held where a new slate of officers were voted upon (see the attached business meeting minutes). This was followed by cocktails, appetizers, and the evening dinner. The dinner speaker was the 2019 Jogue Scholarship Award Recipient, Zhuzhu Wang, from the University of Illinois at Urbana-Champaign. Her informative talk was on, "The effect of ethanol on the flavor perception of distilled spirits".



## May Annual Meeting in New Jersey—Cont'd

The evening finished with the 25 and 50-year SFC membership recognition recipients. The following thirteen 25 year award recipients were recognized along with one 50 year award recipient:

- Sajid Ahmedi
- Larry Buckholz III
- Michael Crain
- Yogendra Desai
- John Houtenville
- Mamoun Hussein
- Christopher Ivaniski
- Gregory Mondro
- Masanori Sawada
- Christopher Toms
- Yasuhiro Unno
- Maria Wallack
- Douglas Young  
50-year membership
- Cormack Flynn



Gregory Mondro—25 Years

It was awesome hearing a few expressive and moving words from the award recipients in attendance.



Christopher Ivaniski—25 Years



Yogendra Desai—25 Years



Michel Crain—25 Years

## Zhuzhu Wang- 2019 Jogue Scholarship Winner

### Bio:

Zhuzhu has a Bachelor's in chemistry, and Masters' degrees in Molecular Chemistry and Pharmaceutical Science. Prior to admission to the PhD, she worked for over two years as a Research Scientist for Archer Daniel Midland (ADM) company. Currently, she is conducting her doctoral research in Flavor Science under the supervision of Dr. Keith Cadwallader at the University of Illinois at Urbana-Champaign. Zhuzhu's research focuses on the effect of ethanol on the flavor perception of distilled spirits.



### Research outline:

Despite the variety of classes and types, many people enjoy drinking distilled spirits on the rocks or with a splash water to open up the flavors. From a physicochemical perspective, the addition of water (dilution of ethanol) affects the spirit's matrix in several ways. These include a decrease in surface tension, a change in the structure of the liquid water/ethanol matrix and a change in volatile compound partitioning/release from the bulk solution. However, physicochemical properties of the aroma compounds and ethanol only determine the likelihood that the aroma compounds will be released from the matrix into the headspace. Additional attention has also been drawn to the physiological impact of low ethanol content (caused by dilution with water) on aroma perception, as it partially reduces the pungency associated with high ethanol content, and more importantly, it increases olfactory sensitivity to the aroma compounds. In order to provide a clearer picture as to the physiological effects of ethanol on individual aroma compound perception, a modified gas chromatography-olfactometry (GC-O) system was built so that panel was able to sniff the GC effluent in a background of constant ethanol vapor of differing concentrations (generated from 0% ABV, 20% ABV, and 40% ABV solutions). In this way, the solvating effect of ethanol (such as in the case of distilled spirits) was totally excluded, so that any experienced alteration of aroma detection could be attributed solely to the physiological effect of ethanol from the vapor background. Our results support the physiological suppression effects of ethanol on aroma compound detection thresholds in air, suggesting a possible relationship between aroma compound structure and the degree of ethanol aroma suppression. Accordingly, this research will provide additional insights into the structure-function understanding at the molecular level in an effort to better explain the physiological suppression effect of ethanol on flavor perception.

## Brianne Linne- 2019 Jaggard Memorial Scholarship Winner

### Bio:

Brianne grew up in New Jersey and received her BS in neuroscience from the University of Rochester in 2014. She completed her MS in sensory food science at Ohio State under Dr. Christopher Simons, during which she researched roughness and astringency perceptions in the oral cavity. She then completed a year-long graduate internship in R&D at Coca-Cola before returning to Ohio State to pursue a PhD at the intersection of flavor chemistry and sensory science under the co-advisement of Dr. Devin Peterson and Dr. Chris Simons. Her research currently focuses on tactile and chemesthetic drivers of “body” in coffee



### Research Outline:

#### Identification of Characterization of the tactile chemical compound of coffee body:

Four tactile attributes, including “chalkiness”, “mouthcoating”, “astringency”, and “thickness”, and their appropriate references were identified. A high body coffee then underwent fractionation LC/MS. This work will help to understand how factors such as regional origin, processing, and roasting conditions may affect differences in “body”, as well as how these effects could be predicted and optimized.



## THE BRITISH SOCIETY OF FLAVOURISTS

The British Society of Flavourists was founded in 1970 to promote the interests of individuals working within the Flavour Industry. Membership is now in excess of 400 individuals, based in over 40 countries around the world. These include flavourists, food technologists, marketing and sales executives.

From its inception, The Society has fostered intrinsic values which are outlined in the below excerpt from the constitution.

### **“Objects of the Society**

- a) To undertake scientific research in and promote knowledge of flavour technology and application.
- b) To promote and encourage the science and art of flavour technology and application.
- c) To protect the interests of Members actively engaged in flavour research, technology and application.
- d) To promote and encourage the education and development of flavourists, with the co-operation of the Training Boards as necessary.
- e) To foster scientific and general professional discourse among the Members of the Society.
- f) To provide a responsible and informed body of professional opinion to comment on all aspects of legislation which affects the science and art of flavour technology both publicly and to those bodies who have a public duty regarding flavour legislation.
- g) To promote good relations with other societies or International bodies capable of assisting in the development of or the objects of the Society.
- h) At all times to maintain a high standard of professional conduct.”

The general running of The Society is managed by an elected group of Councilors made up of its members. Historically this group of councilors has included respected champions of our industry.

The Society has been instrumental in the set-up of many, much sought after, regular events. Many of these have grown considerably in both necessity and esteem to the industry.

### **British Society of Flavourists Training Course for Flavourists - University of Reading**

The course was established by the University of Reading and British Society of Flavourists in 2002 because of a need, perceived by the BSF, for a laboratory based course that would help junior flavourists to develop their skills. It was recognised that the larger international companies often have their own flavourist training programmes, which are very effective and well-suited to the company requirements. However, there are many smaller companies where flavourists receive less structured formal training. This has been reflected in the participants we have taken on the course. As was expected, the course has been particularly popular with small to medium sized companies. However, some larger companies have found that the course is very beneficial for their young flavourists, providing additional training and experience.





## THE BRITISH SOCIETY OF FLAVOURISTS

With the exception of 2003, the course has been run annually since 2002. Since its inception, the support provided by BSF members has been its mainstay with the success of the course deriving from the knowledge and experience they provide.

Over 16 years this has been a very successful course and has been oversubscribed for a number of years. The course is fulfilling needs of the flavouring industry world-wide. It is unique and, it seems, no other similar course exists anywhere in the world. Elsewhere there are a few short lecture-based courses but none of these appear to offer the practical training in flavour creation that is offered by this course.

### **British Society of Flavourists Annual Symposium**

The Society has a long standing tradition of hosting an Annual Symposium. In the past the Symposium has featured a theme, whereby guest speakers were invited to talk to the membership in accordance with this theme, e.g. "Is the Food Chain Costing the Earth? How Flavour can Help" which was the theme of the 2009 Symposium. The Symposium is frequently attended by a great cross section of the industry, from training flavourists, academics in flavour science, Fellow members of the Society as well as Sales and Marketing members wishing to learn more about the science and art of the trade. Therefore in order to better serve the needs of the diverse attendees, more recently, not defining a central theme has been seen as a positive, with every attendee taking away topical and relevant learnings from their respective fields of focus.

### **FlavourTalk Exhibition & Conference, Amsterdam- Flavour Horizons**

The Annual Raw Material Exhibition, started by The Society, but now run by Flavour Horizons, is a showcase of raw materials used in flavourings. Over the course of one day delegates are given unique insight into EU Naturals, Flavouring substances, extracts, essential oils, flavour modifiers, innovative materials produced from biotechnology as well as other ingredients useful to formulating new flavourings. The event has been oversubscribed for many years and has turned into an essential addition to many industry members' calendars.

### **Bill Littlejohn Memorial Lecture**

The lecture and award medallion is given every year in memory of William (Bill) Rowe Littlejohn (1907-1970) to commemorate his life and the work he did for the Society. He was instrumental in the formation of the British Society of Flavourists, as he believed that flavourists needed a society that promoted the art and science of their profession. Sadly he died before the inaugural meeting in 1970. Today the lecture is well attended by many from industry and academia and is an accolade awarded to those who have greatly served the industry. All past recipients of the Medallion are notable, they include but are by no means limited to-

**Henry Heath MBE**, Centenarian, Past president of the Society and author of the much read, 'Source Book of Flavors'.

**Heston Blumenthal OBE**, British celebrity chef, the proprietor of The Fat Duck in Bray, Berkshire, one of five restaurants in Great Britain to have three Michelin stars; it was voted No. 1 in The World's 50 Best Restaurants in 2005.

The lecture continues to be well attended and now serves as the final lecture in our Annual Symposium.



## THE BRITISH SOCIETY OF FLAVOURISTS

### News & Views and New Flavourist

**News & Views** was the British Society of Flavourists' magazine-style hard copy newsletter. There are also on-line versions available dating back to Autumn 2005. The regular publication detailed news of The Society's activity and upcoming events. It was also a very useful resource to student members as it often included flavouring raw material evaluation notes as well as write-ups from lectures recently offered to The Membership.

Recently, the Council decided to cease publication of News & Views and begin publication of a new online resource called **New Flavourist**. New Flavourist is a quarterly magazine featuring articles of direct relevance to flavourists, covering topics such as attributes of flavouring ingredients, flavouring legislation, sensory science, analytical methodology, flavour innovation, olfaction/gustation/chemesthesis science as well as other relevant topics. The new publication also covers events organised by the Society including member news. The magazine is circulated electronically to Society members worldwide and is one of the many benefits of being a member of the Society. The second edition of New Flavourist has just been published following very positive feedback from members.

The British Society of Flavourists continues to be a hub of scientific and industry specific discussion. Vibrant and dedicated in endeavouring to uphold its constitutional objectives, The Society not only acknowledges and praises giants of the past but remains committed to promoting the future interests of individuals working within the Flavour Industry as well as the future of the industry on the whole.

Future collaboration between The Society of Flavor Chemists and The British Society of Flavourists holds much potential for assisting in the developments of their mutual objectives. To this end, in exploring such collaboration, 'The juice will certainly prove to be worth the squeeze'.

Trevor Groome  
Honorary Secretary  
British Society of Flavourists

## Cannabis

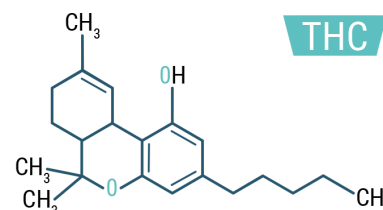
### Shane T McDonald



Having talked “clean label” to death, the food industry was in dire need of something new to obsess over. It looks like cannabis fits the bill.

What is cannabis? Cannabis is a member of the *Cannabaceae* family, which contains a 100+ species of something called a hackberry, plus species in the genus *Humulus* (hops) and *Cannabis* (marijuana). So, the closest relative to marijuana turns out to be hops used in beer. Cannabis has one to three species, depending on who you talk to. The psychoactive agent in marijuana is THC (tetrahydrocannabinol). Cannabis that is less than 0.3% THC dry weight is “hemp”; equal or above that limit is “marijuana”.

There are three fractions of cannabis that are of interest of the flavor industry: THC, non-psychoactive cannabinoids such as cannabidiol (CBD) and terpenes.



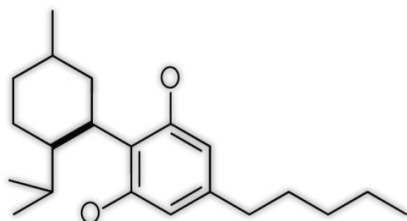
THC used to be mostly delivered by smoking, but as it became more available, many people choose to take it by edibles. Many of these edibles are in the form of sweet candies. I went to the Research Chefs Association meeting last year in Louisville. One presentation I attended was by Shehzad Hoosein of Cannabistry Labs. The speaker develops THC containing products, but avoids sweet products, with preference for “adult” flavors. He pointed out products containing cannabis that were in a form that could obviously appeal to children, such as “Pot Tarts” pasties and “Stoney Ranchers” candy. Flavor houses would do well to find out where their flavors are going.

Another problem with edibles is the effective dose. Smoking ensures that the THC goes right to the bloodstream. But when ingesting, the product gets transported to the liver and partially metabolized (into what?). The THC that survives is often released into the bloodstream very slowly, up to 90 minutes after eating. People used to the immediate effect of smoking get impatient and take additional cannabis, and eventually ending up overdosing. Manufactures are trying to get around

this by nasal sprays, sublingual strips or beverages with nano-emulsions.

The next item of interest is CBD oil. This is a non-psychoactive cannabinoid that has many purported health benefits. They include pain relief, reduced anxiety and depression, alleviate cancer-related symptoms, reduce acne, has neuroprotective properties, benefit heart health, anti-psychotic effects, aid in controlling substance abuse, anti-tumor and prevent diabetes. However, when asked about the benefits of CBD, Dr. Hoosein said “don’t believe everything you read on the internet”! There is one proven application (some types of seizures), a couple more applications that look promising and a whole lot of speculation at this time. I would not be too quick to suggest any health benefits until the science comes in.

## CBD



An industry problem is a lack of a professional infrastructure. Responsible manufacturers would like to ensure that a consistent dose of THC or CBD is delivered in their products, resulting in a growth industry of analytical laboratories of varying degrees of reliability. This will eventually sort itself out. Dr. Hoosein noticed that five years ago, the audience of a cannabis talk would be wearing tie dye. Nowadays, the audience looks like professional businesspeople.

## Cannabis (Continued)

That brings us the latest hot topic, “terpenes”. Last year at the SFC meeting in Cincinnati, Sean Arnold of Franklin Bioscience presented on cannabis. He struck me as a marketing person talking to a technically inclined crowd. Mr. Arnold was waxing praise on the benefits of terpenes. When asked “which terpenes”, he responded with things like limonene, linalool, caryophyllene, and pinene. I think everybody there went “Seriously? The most common flavor chemicals you can think of are now wonderdrugs?”

There are two basic beliefs about terpenes. One is that they have aromatherapy emotional type effects. Eugenol relieves stress, camphene is refreshing and lime is calming. Rather hard to prove, but most marijuana imbibers probably find it relaxing. Can odor molecules affect mood? There is a whole science looking into this: aromachology. There is some evidence that odors affect mood, but the science is not really that well established. In the meantime, the internet keeps churning out often conflicting description of the effects of aroma molecules. For a good review, see:

*Rachel S. Herz (2009) Aromatherapy Facts and Fictions: A Scientific Analysis of Olfactory Effects on Mood, Physiology and Behavior, International Journal of Neuroscience, 119:2, 263-290, DOI: 10.1080/00207450802333953*

The other function is the “entourage” effect. This is a putative synergistic effect that terpenes help the functionality of THC and CBD. The various health effects of cannabinoids are enhanced when in the presence of terpenes, perhaps by acting on the receptor level. This may be true, but it sounds a lot to me that they don’t really know what the effects of terpenes are. It is a bit of mystery that is hard to prove.

One favorable effect (for the cannabis cultivators) is that terpenes allow for some creativity. There are many strains of cannabis, and the terpene content separates one strain from the others, and make them smell different too. One industry site compared various varieties of cannabis, and remarked on their terpene contents and how that affected the high. For the flavorist, terpenes can be used to impart desirable flavors to THC or CBD containing beverages and foods and to mask off-odors of the extracts. The consumer can make his or her own judgement on the efficacy of the terpene blends involved.

Many terpenes are chiral (have mirror images). That can affect flavor. Per the Herz article noted above, d-Limonene, usually from citrus, has a fresh orange aroma while l-limonene has a turpentine lemon note. The chiral isomers of linalool also have somewhat different aromas. Some studies suggest that different isomers may have different mood properties. So, a whole lot of speculation and a small amount of legitimate research. One advantage of the gradual legalization of marijuana will be that it will be easier to obtain funding and get material for research and controlled studies of the effects of cannabis and terpenes.

A final thought. Recently, a lawsuit was brought upon LaCroix water claiming:

"LaCroix in fact contains ingredients that have been identified by the Food and Drug Administration as synthetic," the lawsuit obtained by CBS Philly states. "These chemicals include limonene, which can cause kidney toxicity and tumors; linalool propionate, which is used to treat cancer; and linalool, which is used in cockroach insecticide."

<https://www.newsweek.com/linalool-lacroix-cockroach-insecticide-lawsuit-sparkling-water-1155897>

On the other hand, linalool: according to the pro-cannabis website “Leafly”, has been used in traditional medicines for its sedative and anti-epileptic properties. Mice exposed to linalool have less anxieties and depression. It is also supposed to be a sedative and may treat Alzheimer's.

<https://www.leafly.com/news/cannabis-101/linalool-cannabis-terpene-benefits>

Of course, linalool is the predominate aroma compound in coriander seed oil, used for many recipes especially Indian and Asian.

But, why does coriander have linalool? It probably is a good insecticide.

