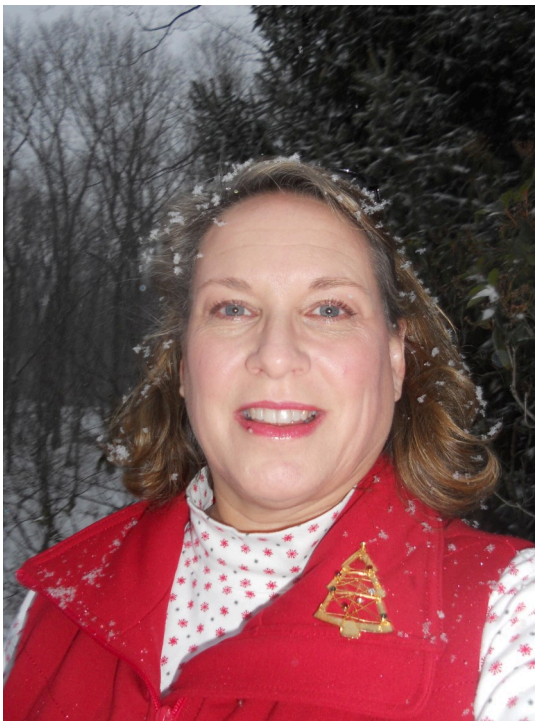
SOCIETY NEWS

THE SOCIETY OF FLAVOR CHEMISTS, INC

President's Message

Deborah Osborne 2016—2017



As far as I am concerned, there are two words in the English language that should never occur in the same sentence: arctic blast. I love a good snow storm on a day when I can just watch it from my warm house, but the thought of having to bundle up and brave something lower than 10 ^{o}F is just not pleasant to me. So, my hat's off to our friends in Canada who do this more regularly than I must (on second thought, I am keeping my hat on—it's too cold and my hair is going to stick straight up from the static anyway).

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Board of Directors 2016-2017

President's Message - continued

Deborah Osborne 2016—2017

If you check the calendar on the website, there is information regarding the 2017 meetings including the hotel information that you will need to make reservations for February in Philadelphia, April in Cincinnati and May in Newark. I hope that you will be able to attend some or all of these meetings. The February one will be held at the Chemical Heritage Foundation where our library has been moved. They have an impressive research library that is devoted to the chemical and related industries. The speakers for the meeting will be from the CHF as well as Monell. The meeting notice has more details, but it will be an interesting afternoon.

There are a couple of things that I find really rewarding as President of the Society. One is getting the chance to welcome our newest members when they take their tests and are voted in. The other is giving scholarships.

There are two scholarships that are available from the Society directly: the Jogue, Inc. Scholarship and the William F. Jaggard Memorial Scholarship. In both cases, the Society received gifts to start and maintain these scholarships and the funds are held in the Society's treasury. The deadline for applying for these are in January every year and the scholarship committee is working on finding the best recipients for 2017. The winners of these scholarships present their research at our meetings in April and May normally and the requirements are spelled out on the website if you are curious about them.

Last summer, we also gave money towards the Monell Science Apprenticeship Program for the first time. This program gives younger people a chance to work with the scientists at Monell to understand what a career in research is like. This money comes from our dues payments. Monell provided us with a report regarding this last summer's program which is available on our website. I would encourage you to read it if you have not done so already.

I think that the influence that these scholarships have in the lives of the recipients is profound and by giving these scholarships, we honor all of our mentors who have started us out and encouraged us to learn our craft,

Wishing you and yours a Happy New Year!

Deborah Osborne

The SFC Needs YOU!

Are you interested in serving on the Society of Flavor Chemists Board? The next vacancy is for the position of Treasurer. If you would like to volunteer or if you have questions, please contact nominating@flavorchemist.org, or any current SFC Board member. You may also nominate someone else if you know of a good candidate for the position.

nominating@flavorchemist.org

Welcome, New Members!
From the September meeting in New Jersey

Scott Michaluk —Apprentice

Scott Michaluk obtained his BS from Montclair State University in Food Science and Nutrition in 2005. In his career so far he has had the ability to work extensively with Essential Oils and Oleoresins. He has created flavors for sweet, savory, dairy, and beverage as well as being able to create some fragrance materials. He started his career working for Kerry Ingredients and Flavours and currently works for Coca Cola.

Patricio R. Lozano—Apprentice

My name is Patricio R. Lozano; I am an Associate Scientist at the Coca Cola Flavor R&D Group. I was born in Ecuador and came to the United States to study Food Science and Human Nutrition following my Agricultural Engineering degree in Honduras. After completing graduate school in Food Science & Human Nutrition with emphasis in flavor from the University of Illinois, I got fascinated with the creative side of flavors. I found a job at a flavor house in Wisconsin and after a few months I started my training under Elsa Howerth before moving to Coca Cola to work with Dr. Bob Peterson and ultimately with David Madrid.

I am a passionate soccer player and a marathon runner having completed several marathons and ultra-marathons around the country. My wife (Lynette), son (Sebastian) and dog (Tango) are my best sourced of inspiration either to create flavors or withstand endurance competitions. I love travelling, eating ice cream (real reason for running) and collecting soccer jerseys from teams around the world.

I'm on my way to volunteer for the SFC Board!

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Welcome, New Members!
From the September meeting in New Jersey

Anusha Sampath —Apprentice

I am a Junior Flavorist with a Master's degree in Food Science from Rutgers University. I have been working at IFF in South Brunswick, NJ since August, 2010, and I have been trained in creating flavors for the Beverages and Sweet Category. Before joining IFF-USA, I worked for IFF -India, where I was trained in making flavors for the Confectionery, Pharmaceutical, and Beverage Categories. On my personal time, I love to cook, watch funny movies, and listen to good music, and spend time with my family.

Vincent Moreau—Certified

Hello, I grew up in Quebec, Canada. I like to travel and learn about countries, their cultures, and foods. I had the chance to visit many areas of North America and countries of Central America, South America, and Europe. I hope that I will have the chance to travel in the future with my family. I am living in the Montreal area with my spouse and our two daughters.

I always had a great interest in food. I am always willing to try new things. Working in the flavor industry is a great pleasure for me. I discovered the flavor industry late in my life and I am very happy that I made the move. That was a unique opportunity to link my studies in Chemistry (that I enjoy a lot) with my interest in food.

Just type nominating@flavorchemist.org into this letter thingy to send a message to volunteer or nominate someone for the next open SFC Board Position.

Welcome, New Members!

From the October meeting in Chicago

Fei Lien Hioe - Apprentice

I come from Indonesia and hold a BS degree in Food Science & Technology from Pelita Harapan. I learnt and fell in love with flavors while I was at the university. One of my professors inspired me. My first job was with PT. Rotaryana Prima (partner with Danisco Flavours) in technical sales. I received basic flavor training from them and learned to love flavors even more. After working there for four years, I moved to Canada and started flavor training for Embassy Flavours in 2009. I really enjoy flavor creating, matching and application. In my spare time I enjoy reading, travelling, exploring new cuisines, volunteering in local church organizations, and of course spending time with my husband and my two beautiful daughters.

Melissa Aubert—Apprentice

I was born and raised in a small town in France named Pernes Les Fountains just a few hours away from the flavor and fragrance industries. I grew up in a family with my Dad as a winemaker and my Mom a teacher where education was very important. I have always been interested in food and chemistry. I found my passion for flavors when I went to Grasse and I discovered this industry by visiting the museum of perfumery and participating in their workshops where one of the activities was to create my own perfume. Flavor was the perfect combination of the science of chemistry and the art of cooking. I decided to become a flavorist and went to Montpellier graduating with BS and MS degrees in chemistry specializing in flavors and fragrances. I moved to England to improve my English, then joined Foodarom in St. Hubert in Quebec, Canada. I have now moved to San Diego with the same company. I have been in North America for five years and am privileged to work for a dynamic young company under a passionate and knowledgeable mentor.

Ryoji Maeda—Apprentice

I graduated from Rutgers University in New Brunswick, NJ with a BS in Food Science. I've always been interested in science and feel lucky to find a field that I am very passionate about. I enjoy cooking and am a firm believer that in order to make good food, you must eat good food. Living an active lifestyle has always been an important part of my life, which I practice through running, swimming, climbing, and various team sports. I am always interested in learning new skills, as well as exploring unfamiliar territories with an open-minded approach.

2016—2017 SFC Meetings!

January 19, 2017—Los Angeles, CA

February 16, 2017—Philadelphia, PA

March 9, 2017— California Meeting (joint meeting with NAFFS)

April 20, 2017—Cincinnati, OH

May 11, 2017—Newark, NJ

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Frontera Grill Meeting Touring "The Bayless Gardens"

Bill Aslanides, SFC Website Committee

On a beautiful, sunny and warm August 5th in the Bucktown area of Chicago, a group of seventeen flavorists and guests made a trip to The Bayless Gardens (http://www.rickbayless.com/about-rick-bayless/the-bayless-gardens/). This organic garden, tucked away in a 3 lot residential parcel in the neighborhood, supplies the greens and spices to the local restaurants of the world-famous chef Rick Bayless. We were given a private tour of the garden by Mr. Bayless' professional gardener Mr. Bill Shores, who was also a speaker at last year's local Chicago meeting of the Society. During the one hour tour, Mr. Shores gave us all insight into the wide variety of botanicals he oversees for Chef Bayless. After the tour was over, we all made a short trip further into Downtown Chicago for fresh margaritas and a 5 course private meal at Bayless' famous restaurant, Topolobampo. The meal was prepared in a live presentation by the staff in Bayless' private library kitchen, complete with one of the world's largest collection of cookbooks from all over the culinary world. http://www.rickbayless.com/restaurants/private-dining/. This experience was heightened by the Chef's descriptions of each course and the inspirations that led to that creation. A great time was had by all during this unique opportunity.

September Meeting in Newark, NJ

The 425th meeting of the SFC held September 22, 2016 held at the Hilton Newark Airport Hotel.

The main speaker was Stanley Cherkaskyof Change Management Consulting. He is a motivational speaker that gave a two hour presentation on "To improve performance—first improve work relationships". People are divided into four personality types: Driver, Expressive, Amiable, and Analytical. Drivers are task-oriented and fast pace, and tend to be fast moving, action-oriented, live in the present, and not too concerned about relationships. Expressives are fast-paced but people-oriented, future-oriented, want to be in groups, impulsive and not concerned by routines. Amiables are people-oriented and slow-moving. They live for the present, slow-moving, do not like rejection or change, and a re supportive. Analyticals are slower-paced, task-oriented people that have a historical time reference, move slowly and organize, cautious and are less concerned about relationships or involvement.

The population is roughly divided between the four styles, who all have relative strengths and weaknesses. The important thing is to know your own personality and recognize the personality type of the people you are relating to. People tend to want to be treated as they treat other people. By adjusting your behavior to match your co-workers, you will have better relationships with your co-workers and your teams will be more effective.

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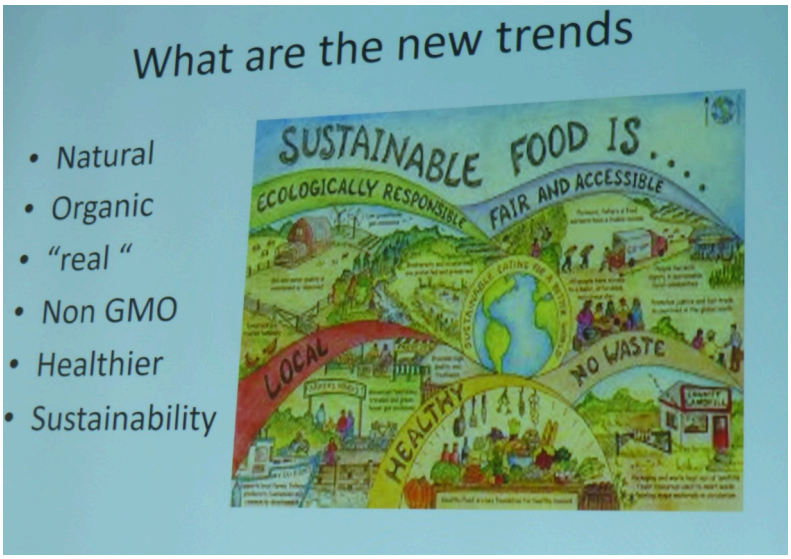
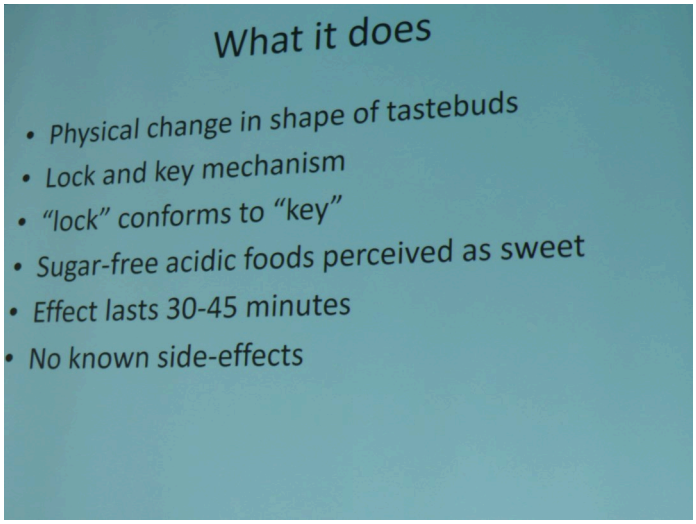
October Meeting

Schiller Park, IL



The 426th Annual meeting of the Society of Flavor Chemists was held at the Four Points by Sheraton Hotel near O'Hare. There were 79 attendees. First speaker was Chef Richard Farina , formerly of Moto restaurant. He talked about using chefs to create flavors. He said that chefs are in the forefront of trends, citing heath, sustainability and natural at important trends. Chefs are "disruptive" - willing to work against the norm and create change. Small companies can influence big companies. Competition promoters creativity and chefs know flavors.

Culinoligist Harold Plein presented on the "Miracle berry" - *Synsapalum dulcificum.* This berry, when consumed first, makes sour flavors like lemons taste sweet. Plein discussed the history, mechanism, and potential uses for this extract. The causative molecule is known and can be better formed via genetically modified organisms. He feels that someone will be able to commercialize this product and make it big.



A Flavor-Filled 2017 Awaits

By Jerry Bowman
Executive Director, FEMA

As a reader of the SFC "Society News" you likely know of FEMA's reputation as a trusted leader in the flavor industry, one with a deep commitment to safety, creativity and innovation. Our critical objectives (Science, Advocacy, Communication and Intellectual Property Protection) drive our commitment, and we continue our work to identify and solve complex industry challenges on behalf of our members. Your company may even already be a member of FEMA.

Whether you're familiar with FEMA or new to our organization, I appreciate this opportunity to share some recent initiatives that have been keeping FEMA and our 120+ member companies busy, in the best possible sense.

Our educational efforts are a critical part of delivering on FEMA's mission. This past year, we hosted webinars on the Food Safety Modernization Act and natural products procurement. In addition, our 2016 Fall Symposium featured speakers on the increasingly important issue of sustainability.

We also continue efforts to inform on the flavor ingredient safety front. As you likely know, our FEMA GRAS™ program, launched in 1959, is the longest-running and most widely recognized industry GRAS assessment program. With its vigilant eye toward evaluating the safety of flavor ingredients, the FEMA Expert Panel published its GRAS 27 Flavoring Substances report in the August 2015 issue of *Food Technology* magazine.

FEMA
FLAVOR & EXTRACT MANUFACTURERS ASSOCIATION

We also have been excited to receive much positive feedback about our recently launched Flavor Ingredient Library, which creates greater awareness for anyone interested in learning more about flavor ingredient safety. Our Flavor Ingredient Library, relied upon by industry professionals and the public alike, provides information on ingredients that have been determined to be generally recognized as safe under conditions of intended use as flavor ingredients by the FEMA Expert Panel.

Our work with regulators and lawmakers continues as well. In 2016, we played a proactive role in contributing to a public dialogue about natural flavors by submitting comments to the U.S. Food and Drug Administration (FDA) calling for retaining the existing federal definition of natural flavors, which we strongly support. Additionally, in June of this year, FEMA held our third annual "Flavors on The Hill" fly-in, where representatives from over 20 of our member companies met with over 40 Members of Congress and their Congressional staff from both sides of the aisle. The bipartisan day acted as a successful tool to educate elected officials and their staff about FEMA and our flavor industry initiatives that help so many, and we plan to continue this public dialogue in 2017.

FEMA—Continued

FEMA committees play an incredibly active role in furthering our critical objectives. This can be evidenced by the wide variety of recent committee efforts, such as our Alcohol, Tax and Trade Committee's continued efforts to streamline TTB flavor approvals and to help members with tax compliance. Or by our Enhanced Communications Committee's successful launch of our FEMA Member Tool Kit, which helps our member companies communicate more effectively about flavors. Or, by the collective volunteer expertise on science and safety, and related opportunities to participate in committees, so central to our industry's success. These committees continue to provide timely revisions to the Cramer Ford Hall Decision Tree, a valued tool which facilitates the safety evaluation of flavor materials, and the FEMA Poundage Survey that surveys FEMA membership on use of more than 3,330 ingredients used to formulate flavors.

Our member companies continue to enjoy access to the FEMA GRAS™ Program, which provides independent safety evaluation of new flavoring substances, and assistance from experienced FEMA staff on regulatory and technical issues. We also provide updates on U.S. and international regulatory and legislative developments, as well as several major annual meetings, educational benefits, communications support, access to the IOFI website, and many other member benefits.
FEMA is focused on playing a larger role in the greater public dialogue on food – one which conveys to more people what the flavor industry actually *does*, and how we contribute to people's quality of life by helping ensure that safe, flavorful food makes it to our tables each day. Our plans in this area include development of videos so consumers have a greater understanding of flavor ingredients, and which also explain the history and interesting complexities of the FEMA GRAS™ Program. In addition, we plan to launch a new FEMA website this coming fall.

We invite *Society News* readers to visit our site, www.femaflavor.org, an information-packed resource about flavors, flavor ingredients, and their safety. For further information about FEMA, please also feel free to contact me at (202) 331-2453 or jbowman@femaflavor.org. If your company is already a member of FEMA, you have access to the benefits I've mentioned here as well as others. I'd be pleased to discuss with you how to make the most of your FEMA membership.

Here's to a flavor-filled 2017!

Jerry Bowman
Executive Director, FEMA

nominating@flavorchemist.org

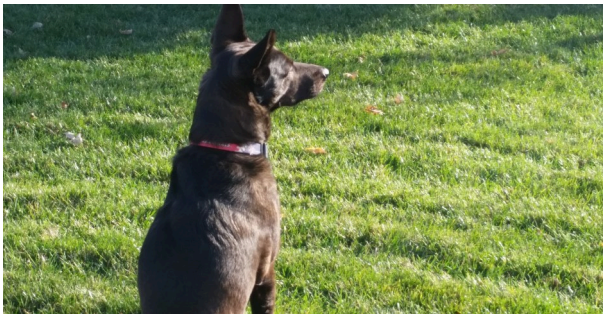
Making Pet Food More Palatable for Our Dogs and Cats

Doug Gledhill, Flavor Chemist and Owner, Bella Flavors & Creations

Most of us treat our pets like members of the family. We want to do everything we can to improve their lives and well-being. One method to improve their nutrition and health is to improve their food's palatability with flavors. The skilled companion animal (pet) food flavor chemist will be able to delight both the pet and its owner with their creations. This requires the companion animal flavor chemist to know and understand the types of flavors and processes the pet food industry uses as well as the hundreds of flavor ingredients and processes to develop flavors.

Just as flavors for human food are created within specified label parameters, pet food flavor are also under scrutiny. Flavors are often developed for the owner's desire to have natural, non-GMO and organic food for their pet. Functionality is also a concern for pet owners. Owners look for ingredients that will maintain a healthy coat, skin, nails, teeth, etc. Of course, the name and aroma of the flavor must also be appealing for the owner; for example filet mignon or grilled salmon.

Pet's diets do not vary as much as our diets and therefore their food must deliver the needed nutrition while maintaining palatability. Cats, as obligate carnivores, will choose higher protein diets over lower protein diets. Their taste system is "tuned" to detect compounds in animal tissues (amino acids, peptides, etc.) They are more likely than dogs to avoid spoilage aromas. They lack lateral jaw movement; hence, texture and size are very important. They also lack molars, and cannot grind their food. Acidification helps salivation which helps them swallow their food. Surface texture also plays a role in palatability. Dogs are omnivores. They tend to respond to a wider variety of flavors, including sugar. Dogs appear to prefer stronger, roasted aromas. They tend to choose diets based on aroma. PAL (Palatability) testing conducted on dogs shows a strong link between their first choice of food and total consumption.



Kiwi Gledhill

The most common forms of pet food are liquid, dry, compounded, reacted and/or combinations. Pet food flavors are created for extruded food, canned food, baked treats, oil sprays, bag seals and also as "spikes". Spikes are a concentrated compounded or reaction flavor used to enhance or boost palatability, for example in a cheap liver digest to enhance palatability. Numerous processes allow for "spike" application at many points in the pet food or treat making process depending on the desired flavor profile.

Most flavors for pet food are divided into two general classes (1) reaction flavors/digests or (2) compounded flavors. Both can have liquid or dry forms and be created internal or external to the "food" matrix. This means, the complete reacted flavor can be added to the final product (e.g. kibble) or the flavor can be designed to react during the processing of the pet food. Compounded flavors are exactly what the name implies, and are very similar to the flavors created for humans.

Pet Food Flavors (Cont'd)

Reacted/digest flavors often utilize hydrolysates of a meat, fish, vegetable, or grain as a source of free amino acids necessary for the Maillard reactions. The flavorist will employ a variety of hydrolysis schemes in order to generate the desired free amino acid profile for the end flavor desired. In combination with this amino acid mixture the flavorist chooses carbohydrate sources for the necessary carbonyls to promote a reaction. Precursor flavors can be added at this point prior to the actual reaction. Like other reactions flavors, they can be produced under atmospheric or pressurized conditions and at various temperatures. Post reaction is the preservation phase where the final flavor will be stabilized with several ingredients to retard oxidation and inhibit yeast, mold, and bacterial growth. Pet food flavor creation is complex and requires an understanding of ingredients, processing, the owner's desires, and the pet's needs. The flavorist must also keep current with the numerous regulatory bodies globally that govern the pet food industry: FDA, USDA, EU and FEMA. In the United States, the Association of American Feed Control Officials (AAFCO) reviews ingredients for pet food flavors and publishes approved ingredients in their Official Publication (OP). One must be careful when formulating for animals, some ingredients that are safe for humans are not safe for cats (propylene glycol) or dogs (alkaloids like theobromine from cacao plants & xylitol). If you have questions about pet food flavors, please feel free to reach out: **513-315-5718 or dougledhill66@gmail.com.** For more interesting information on pet food flavors, visit:

http://www.popsci.com/science/article/2013-03/chemistry-kibble

AJ (on top) and Harry McDonald

Check out the new registration table cover when you go to your next SFC meeting!

Chilled Tomatoes in the News

Shane T McDonald

It seems almost universally accepted that today's tomatoes found in the typical grocery store lacks flavor. While this is in part due to breeding for other characteristics (disease resistance, size, color, etc.), another cause for reduced flavor is from chilling tomatoes. A recent study by Zhang et al (2016) determined this to be true and found that chilling caused certain enzyme functions related to flavor creation to stop, and in many cases returning previously chilled tomatoes to room temperature for a day or two was not sufficient to bring back full flavor. Tastants such as sugars and acids were not affected. They have no place to go. However, the stem scar allows volatile flavor compounds to escape. If the tomato doesn't continuously create more flavor molecules, the tomato loses flavor.

The authors described three sources of tomato volatiles: amino acid derived, lipid derived, and carotenoid derived. Examples of amino acid derived flavors include isoamyl alcohol, 2-methyl-1-butanol, and isovaleraldehyde. Lipid-derived volatiles included hexanal, trans-2-hexenal, and cis-3-hexen-1-ol. Carotenoid derived flavor compounds include methyl heptenone and geranial.

With chilling, most of the flavor compound will lower in concentration as volatiles are lost from the fruit and are not regenerated by new concerts. Exceptions are methyl heptenone and geranial. The enzymes for all of these compounds diminish with the loss of enzyme activity when the tomatoes are stored cold. The enzymes do not fully return after the fruit is warmed up for a day. However, compounds derived from carotenoids actually increased, even with the reduced enzyme activity. Stressed tomatoes will create singlet oxygen, and carotenoids are effective quenchers. The result is carotenoid degradation products.

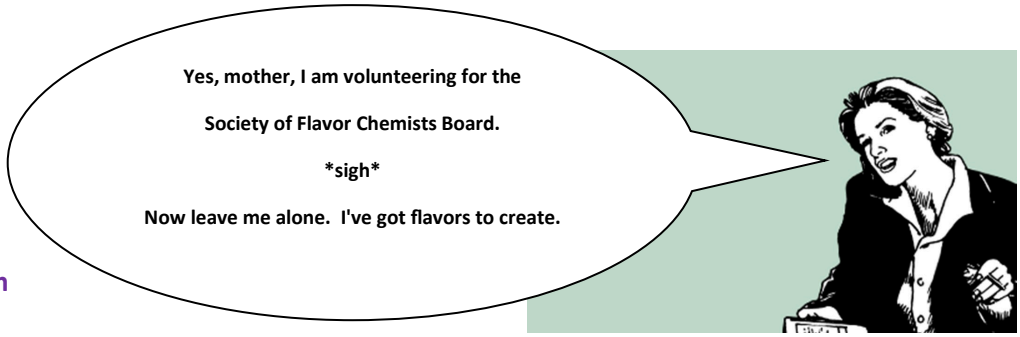
Tomatoes— Continued

What I found interesting is how this information was disseminated in the press. If you Google "tomato chill flavor" (I did on November 11, 2016) you will get numerous articles on the subject. Rather, most are all referring to this one research article. The Washington Post website had "Why Tomatoes Lose Flavor in Fridge: Their Genes Chill Out". It starts and ends with quotes from a local farmer, with the bulk of the article from Denise Tieman, one of the articles co-authors. She said that chilled tomatoes lose flavor due to a loss of "flavor substances from reduced activity of certain genes. Future work was to breed better tomatoes. The same title is used for pages on several other websites including ones from CBS, Yahoo, a Georgia newspaper, Japan Today, a Pennsylvania newspaper (and ascribed to the Associated Press). Nature World News had a bit more technical article titled "Science Confirmed: Tomatoes Lose Their Flavor When Refrigerated – Here's Why". This seems to be a summary of an interview of Tieman in the Los Angeles Times. In it, she explains the role of tastants and aroma volatiles. The LA Times article is termed: "Science Explains Why Refrigerators Sap the Flavor From Ripe Tomatoes". This article is refreshingly technical for a major newspaper, explaining how refrigerating fresh tomatoes will take the earthy and slightly grassy flavor out of the fruit. The reason given for this is that some of the tomatoes genes are turned off due to a process called methylation.

Not surprisingly, the most technical report came from the American Chemical Society's "Chemical & Engineering News". In their article referencing this research, "Chilling Messes with Tomato Flavor", ACS names and depicts the structures of several tomato volatile flavor chemicals which are reduced by chilling: isovaleraldehyde, 3-methyl-1-butanol, and 2-methyl-1-butan-1-ol, calling them "Consumer Favorite Volatiles". However, Marie Wright, in her chapter in John Wright's *Flavor Creation Vol. II*, lists these chemicals as mostly contributors and not characterizing for tomato flavor. It is nice that someone acknowledges that real tomato aroma is comprised of chemicals.

As we can see from this example, just because a particular topic has numerous Google hits does not mean that there is a lot of new information. Also, you can see the divide between "popular" press and scientific press. I recommend that you do some digging to find and read the original research. It is worth it to find the unfiltered news.

Zhang, B., Tieman, D., Jiao, C., XU, Y., Chen, K., Fe, Z., Giovannoni, J., and Klee, H. 2016. Chilling-induced tomato flavor loss is associated with altered volatile synthesis and transient changes in DNA methylation. PNAS (Proceedings of the National Academy of Sciences. PNAS 2016 113 (44) 12580-12585; published ahead of print October 17, 2016,doi:10.1073/pnas.1613910113



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