



## **Program**

**March 23 - 25, 2018**

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*The Dahlonega Science Council would like to recognize the University of North Georgia, without which this year's festival would not have happened. Thanks to UNG for their support bringing science to Dahlonega!*

# Welcome!

We are glad you chose to attend the inaugural Dahlongega Science Festival. The idea for this festival came out of the Dahlongega Science Café, which has been operating since May 2016. This event is the culmination of work over the past 8 months by a large group of dedicated volunteers. With a generous grant from UNG and our partnership with the Dahlongega Literary Festival, we are planning for this festival to be the first of many. For this first science festival we have included everything from family activities to panels and guest speakers. Don't miss out on any of the great activities planned for this weekend from either the Dahlongega Science Festival, or our partner, the Dahlongega Literary Festival.

If you have questions, stop by the Naturally Georgia Tasting Room on the Dahlongega Square. This is the location of our information station and volunteers will be on duty all day Saturday to answer your questions. Please be sure to take our survey this weekend to provide feedback that will help us build a bigger, better festival in coming years.

Don't forget the Dahlongega Science Council also operates the Dahlongega Science Café, holding monthly talks by scientists for the community.

Thank you for supporting Science in Dahlongega!

***-The Dahlongega Science Council***

***[www.dahlongegascience.org](http://www.dahlongegascience.org)***

***Find us on Facebook and @NorthGAScience on Twitter!***

# Dahlongega Science Council



## Board of Directors:

Amanda Carter  
Gina Childers  
Nancy Dalman  
Ed Erickson  
Megan Foley  
Donna Gessell  
Greta Giles  
Donna Governor  
Sonny Mantry  
Jessica Martin  
Jack Rogers  
Lesley Simanton-Coogan  
Mark Spraker

## With Additional Support From:

Chelsea Belizaire  
Joe Meyer  
Glenda Penders  
Anita Turlington

***The Dahlongega Science Council is a non-profit 501(c)3 organization. Please consider being a sponsor for next year's event!***

# Festival Sponsors

*The Dahlenega Science Festival is proud to recognize our partners for our first event. These organizations and businesses have stepped up to help by providing facilities, materials or financial support to get this event off the ground! We look forward to our growing partnership with these businesses and organizations as we look ahead to a growing festival in coming years!*



**Woodmen Life Chapter #1374:** We are especially grateful to Woodmen Life for providing not only the space for our children's activities, but a contribution to help with materials and supplies as well. For information about Woodmen Life, contact Brandon Branson, Phone: 706-525-9047 Cell: 706-525-9047 or email: [BFBranson@woodmen.org](mailto:BFBranson@woodmen.org)



**Bourbon Street Grille** has hosted the Dahlenega Science Cafe since its inception in May, 2016, and we are proud to have them host our guest author talks for our first festival.



Looking to stock up on GREAT local wine, wine products, or honey? **Naturally Georgia** is the natural choice. We appreciate Naturally Georgia hosting our Information Station this year. So stop by to grab a print program, ask questions of our volunteers and check out the wines and art.

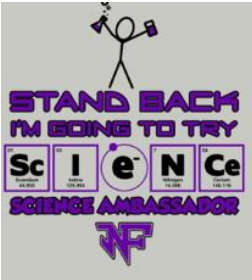


The **Half Moon Saloon**, upstairs at the **Crimson Moon**, is the site of all our panels. We are grateful that the Half Moon Saloon has agreed to provide the space. So come enjoy some coffee and interact with our scientists during our panel discussions.

DAHLONEGA  
LITERARY  
FESTIVAL



The **Dahlonega Literary Festival** has been our partner since the very beginning of planning for the Dahlonega Science Festival. They have graciously shared spaces with us, provided support and guidance, and shared the weekend. Be sure to spend some time at their events. The combined weekend festivals mean twice as much to do!



The **North Forsyth High School Science Ambassadors** have generously provided support for our Hands-On Family Science Activities on Saturday Morning at the Woodmen Life building.

***The Dahlonega Science Festival needs you to return in 2019. Please consider making a tax-deductible contribution to the Dahlonega Science Council, a 501(c)3 charitable organization, to help make this festival an annual event! Become a sponsor in 2019! Contact: [dahlonegascience@gmail.com](mailto:dahlonegascience@gmail.com) for more information.***

# General Event Information:

**Naturally Georgia Tasting Room** (on the square) is the site of our information booth. Need information or programs? Stop by and talk to one of our volunteers to help find events.

**Science Festival Preview: Thursday March 22, 8:00 p.m.**

**Shenanigan's Irish Pub** (87 North Chestatee Street) will be the site of a special Science-Trivia night to preview the festival! Be sure to come out and see how ready you are for the festival!

**Friday March 23: Science Festival Opening Event! UNG HNS Building**

- 6:00 p.m.: Social Hour (HNS lobby outside the auditorium)
- 7:00 p.m.: Dr. Les Johnson, *"Solar Sails: Traveling the Solar System (and beyond) with Sunlight!"* (HNS auditorium)
- 8:00 p.m.: HNS Planetarium: *"IBEX: Search for the Edge of the Solar System"*
- Continuously: Hands-on Astronomy Activities for the family

**Saturday March 24:**

- Join us for several events ranging from family activities to panels, talks and planetarium shows. See the Saturday schedule for more information.
- Lunch with the Authors. Ticketed event at the Dahlonega Marketplace. Come eat lunch with one of our special guest authors: James Costa, Les Johnson, Joe Meany or Anthony Martin. Tickets available through the Dahlonega Literary Festival.
- Gala with the Dahlonega Literary Festival. Ticketed event, 7:00 p.m. Tickets available through the Dahlonega Literary Festival.

**Sunday March 25:**

- **Our first festival wraps up with a special Brunch talk:** Paleontologist Anthony Martin: *"Dinosaurs without Bones: Dinosaur Lives Revealed by Their Traces"* at the Bourbon Street Grille. Socialize and order your brunch @ 9:00 a.m. Dr. Martin's talk begins promptly at 10. Seats are first come, first serve.

Friday's Festival Schedule: 6 pm Social Hour @ HNS  
 7 pm Solar Sails talk by Dr. Les Johnson @ HNS Auditorium  
 8 pm IBEX planetarium show @ HNS Planetarium

**SATURDAY'S FESTIVAL SCHEDULE:**

<b>Time</b>	<b>Science Panels @ Crimson Moon</b>	<b>Guest Author Talks @ Bourbon Street Grille</b>	<b>Science Speakers @ Community House</b>	<b>Children's Activities @ Woodmen Life</b>
<b>9:00 - 10:00</b>	Frankenstein: Creation and Consequence		Bryson Payne: Teach your Kids to Code	Hands on Science Activities for Kids
<b>10:15 - 11:15</b>	Astrobiology: Life on Other Worlds		Joseph Meany: "NanoYou: Medical, Ethical, and Environmental Effects of Nanotechnology"	Hands on Science Activities for Kids
<b>11:30 - 12:30</b>	Natural Disasters		Nancy Dalman: "Mysteries of the Deep"	
<b>12:30 - 1:30</b>				
<b>2:00 - 3:00</b>	Space Travel: Journey to Other Worlds	James Costa: <i>Darwin's Backyard (Biology)</i>	Chris Seminack: "The Geologic Impact of Hurricane Sandy"	
<b>3:15 - 4:15</b>	If You Give a Scientist a Question...	Les Johnson & Joseph Meany: <i>Graphene (Physics)</i>	Jessica Hartel: "Landmines in the Forest: Assessing and Mitigating Anthropogenic Threats to Wild Chimpanzee Conservation in Uganda"	
<b>4:30 - 5:30</b>	Science in Pop Culture	Anthony Martin: <i>The Underground Evolution (Paleontology)</i>	Scott Harris: "Assessing the Risk of Cosmic Collisions from the Geological Record of Asteroid Impacts"	





### SATURDAY'S FESTIVAL SCHEDULE:

Time	UNG Planetarium	UNG HNS Auditorium	UNG MakerBot Innovation Center	Community Based Activities
9:00 - 10:00				
10:15 - 11:15				
11:30 - 12:30	Harry Potter Astronomy			<b>Paul Thomas Chocolates:</b> The Chemistry of Confections
12:30 - 1:30	Meet the Dwarf Planets		Makers Fair - Fun for the Whole Family	<b>Canvas &amp; Cork:</b> The Chemistry of Art @ Littlefield Cottage
2:00 - 3:00	IBEX: Search for the Edge of the Solar System	Fun Weird Science Stage Show (For families and kids of all ages!)	Makers Fair - Fun for the Whole Family	<b>Paul Thomas Chocolates:</b> The Chemistry of Confections ----- <b>Canvas &amp; Cork:</b> The Chemistry of Art @ Littlefield Cottage
3:15 - 4:15	Harry Potter Astronomy		Makers Fair - Fun for the Whole Family	<b>Canvas &amp; Cork:</b> The Chemistry of Art @ Littlefield Cottage
4:30 - 5:30	Meet the Dwarf Planets	Frankenstein 200th Anniversary Film Screening	Makers Fair - Fun for the Whole Family	<b>Canvas &amp; Cork:</b> The Chemistry of Art @ Littlefield Cottage

Sunday's Festival Schedule: 10 am Brunch & 11 am  
 Dinosaurs without Bones talk by Dr. Anthony Martin @  
 Bourbon St Grille

# 2018 Science Talks by Guest Authors

Friday, March 23, UNG Heath & Sciences Building @ 7:00 p.m.:

**Dr. Les Johnson - "Solar Sails: Traveling the Solar System (and Beyond!) with Sunlight"**

The reality of sunlight-based sailing in space began in May 2010, and solar sail technology has continued to advance rapidly through new space missions. Using the energy of reflected sunlight for spacecraft propulsion will be the next major leap forward in our journey to other worlds. In this talk, you will learn about solar sails, how they work, and how they will be used in the exploration of space. There will be a special planetarium show at 8:00, following Dr. Johnson's talk and hands-on activities will also be shared!

**Saturday March 24: Guest Author Talks @ Bourbon Street Grille**

**2:00 p.m.: James Costa: *Darwin's Backyard: How Small Experiments Led to a Big Theory***

Charles Darwin is an iconic figure typically portrayed as a staid Victorian; a lone genius, melancholy, serious, even tormented. In this talk I explore the Darwin behind the portraiture and myth — the husband, father, and friend; the crowd-sourcer and scientist of boyish enthusiasms and impish impulses; above all the inveterate "*experimentiser*." Darwin was a life-long experimenter, devising simple yet ingenious experiments on myriad topics — orchids and sundews, barnacles and vines, bees' cells and pollination, earthworms and seed dispersal, and more. Yet it was all of a piece. Engaging his children, friends, and neighbors as assistants, and encouraging fellow naturalists to follow his lead, Darwin's ingenious experiments yielded universal truths about nature, and ammunition for his revolutionary arguments in *On the Origin of Species* and other watershed works. Darwin's working method holds lessons for us today as well: following his lead, we can recreate his experiments in home and school, inspiring a new generation to think like a scientist.

**3:15 p.m.: Les Johnson & Joseph Meany - "Graphene: The Superstrong, Superthin, and Superversatile Material That Will Revolutionize the World"**

What if you discovered an infinitesimally thin material capable of conducting electricity, able to suspend millions of times its own weight, and yet porous enough to filter the murkiest water? And what if this substance was created from the same element as that filling the common pencil? This extraordinary material, graphene, is not a work of science fiction. First isolated in 2004, this revolutionary material is poised to change just about everything.

**4:30 p.m.: Anthony Martin - "The Underground Evolution: Burrows, Bunkers, and the Marvelous Subterranean World Beneath Our Feet"**

Animals have used burrows as a way to survive disasters and mass extinctions and have changed the planet through their burrowing. Find out all about the amazing world of animals below.

**Sunday March 25 at the Bourbon Street Grille: Brunch with the Dinosaurs**

**Anthony Martin - "Dinosaurs without Bones: Dinosaur Lives Revealed by Their Traces"**

What if all of the dinosaur bones vanished tomorrow? How would we know dinosaurs existed or how they behaved? Welcome to the world of dinosaur traces: tracks, nests, burrows, and much more. Brunch & social hour @ 9:00, the talk starts at 10 a.m. Open seating.



*Our Guest Authors will have book signings immediately following their Saturday talks. Find James Costa and Les Johnson at the Dahlonega Community House for their book signing. Anthony Martin's book signing will be held at the Naturally Georgia Tasting room, where our information station is located.*

# 2018 Science Festival Talks

These talks will be held at the Dahlonega Community House on Saturday March 24. We have a great variety of talks to attend! Our speakers come from a variety of different disciplines. Many are UNG scientists, but we also have a special guest from the Fernbank Science Center. Be sure to catch as many of these interesting talks as you can!

## 9:00 a.m.: [Bryson Payne](#) - "Teach Your Kid to Code"

Everyone knows that computers are an important part of both our work lives and personal lives, with technologies like smartphone apps, drones and robots, and 3D printers changing the way we communicate, the way we work, even the way we think. But, fewer than 3% of Americans can read and write the language that makes all these technologies possible: computer programming code. Come spend a few minutes with Dr. Bryson Payne, computer science professor at UNG and author of the book "Teach Your Kids to Code" for this interactive session. You'll learn the basics of coding, and you'll learn how to help your kids speak the "language of the future".

## 10:15 a.m.: [Joseph Meany](#) - "NanoYou: Medical, Ethical, and Environmental Effects of Nanotechnology"

The current rate of new material development and discovery is rocketing forward at an unprecedented pace. Since chemists first learned the "rules" of organic chemistry in the nineteenth and twentieth centuries, chemicals never before isolated in nature have cropped up – and not all of them have been benign. Material science aims to completely change our Earth; if you believe the hype: nanoparticles will eradicate cancer, graphene will eliminate thirst, and DNA origami will eliminate disease. At what cost to the living natural systems are we seeking this advanced knowledge, and at what point have we gone too far? Who should have first access to the potential panaceas of tomorrow, and is displacing or eradicating natural bacterial (or viral) populations okay? How do we square this with an ever-growing human population?

## 11:30 p.m.: [Nancy Dalman](#) - UNG Biology Professor - "Mysteries of the Deep"

Ninety percent of the Earth's living space is beneath the surface of the sea, yet we know more about outer space than we do about the largest habitat on our own planet. Since 1930 when William Beebe and Otis Barton descended to nearly 430 meters in a steel sphere just 1.5 meters in interior diameter, to today's high tech remotely – operated vehicles plunging to the bottom of the 10,000+ meter Marianas Trench, deep sea exploration has come a long way. Land – bound humans perceive the deep sea as a completely inhospitable environment – dark, cold, high pressure

and, in places, very low in oxygen. Yet, the deep sea has the highest biodiversity and some of the longest living and largest animals of any habitat on the planet. How can these organisms live in such a harsh environment? What are some of the amazing adaptations they have that allow them to not just survive, but to thrive? Come aboard this journey to the deep to learn about the past, present and future of deep – sea research and to learn about the anatomical, physiological and ecological mechanisms deep sea animals use to live in this environment.

**2:00 p.m.: Chris Seminack - UNG Geology Professor - "The Geologic Impact of Hurricane Sandy"**

Hurricane Sandy made landfall over Atlantic City, NJ on October 29, 2012. Effects from this storm were observed from the Outer Banks of North Carolina to southern New England. It is estimated that the damage attributed to Hurricane Sandy was upwards of \$65 billion, making it the second most costly hurricane in U.S. history, with a death toll of more than 100 people in the U.S. alone. New Jersey and New York were the hardest hit along the U.S. Atlantic coast, due to the unusual abrupt westerly hook of the hurricane path. In addition, Hurricane Sandy impacted the U.S. Mid-Atlantic coast during a full moon, thus causing an approximate 20% increase to the storm surge. Effects from Hurricane Sandy include widespread coastal flooding, barrier island overwash, and some isolated cases of barrier island breaching.

**3:15 p.m.: Jessica Hartel - UNG Biology Professor - "Landmines in the Forest: Assessing and Mitigating Anthropogenic Threats to Wild Chimpanzee Conservation in Uganda"**

The human population's exponential growth rate coupled with the massive loss of biodiversity makes long-term sustainability and conservation a global concern. The USA has one of the highest ecological footprints in the world, requiring more than three times as many hectares per person as the global, African, and Ugandan averages. As a result, industrialized countries have a global, practical, and ethical responsibility to use financial and scientific resources to promote sustainability and conservation in developing countries, especially where human population growth and biodiversity are high and in conflict. The Albertine Rift is a biodiversity hotspot that stretches along the western border of Uganda and contains more vertebrate species than any other location on the African continent, including the most threatened endemic species such as chimpanzees and gorillas. Located within the Rift, Kibale National Park is a stronghold for the eastern subspecies of chimpanzees (*Pan troglodytes schweinfurthii*) and have been ranked by the IUCN as a high priority for conservation. Intensifying anthropogenic threats along both the boundary and within the park have compromised its integrity. Chimpanzees, in particular, are under siege as local people and poachers illegally enter the park to extract resources. Acting

like landmines in the forest (cryptic, indiscriminate, and deadly), snares are set to catch bushmeat, and while chimpanzees are not the intended target, they are often accidental victims - leaving them with serious handicaps and in extreme cases amputations. What are scientists doing to help mitigate this threat and how can you be an active advocate for change?

**4:30 p.m.: Scott Harris - Planetary Geologist from Fernbank Science Center  
- “Assessing the Risk of Cosmic Collisions from the Geological Record of Asteroid Impacts”**

Our solar system has always been a dangerous place to live. Asteroids and comets have collided with planets and moons for more than 4.5 billion years leaving behind cratered surfaces as testimony to the devastating energy released when rocks meet traveling thousands of meters per second. The geologic forces constantly reshaping the surface of Earth have erased or obscured much of the impact record here, but geologists have confirmed more than 180 craters between 10 years old and 2 billion years old. What are the chances of our home being hit again? By something large enough to destroy a city? Or large enough to end life forever? What can we learn about our future risks by studying the past record of catastrophes?

# 2018 Science Panels

All panels will be held at the Half Moon Saloon, upstairs at the Crimson Moon on the Dählonega Square on Saturday March 24. Join us for coffee, science and some great discussions! Bring some of your own questions as our science specialists discuss these topics.

**9:00 - *Frankenstein: Creation & Consequences*** - Celebrate the 200th anniversary of Mary Shelley's *Frankenstein* with our panelists and to discuss this science fiction classic.

**10:15 - *Astrobiology: Life on Other Worlds*** - Find out about how life might evolve on other worlds and what we should look for as we discover more and more exoplanets each year.

**11:30 - *Natural Disasters!*** - From tornadoes to asteroid impacts, you can be prepared for anything!

**2:00 - *Space Travel: Journey to Other Worlds*** - Our experts talk about the science of interstellar travel.

**3:15 - *If You Give a Scientist a Question....*** Bring your questions for our experts - this is our "ask a scientist" panel.

**4:30 - *Science in Pop Culture*** - From Hogwarts to Krypton, from Asgard to Tatooine, our panelists will address "how that would work" across various science fiction worlds.

# 2018 Family Activities

We have planned a full schedule of family activities for the 2018 Dahlonega Science Festival! Engage in science with the entire family!

## Friday March 23: Hands-on Astronomy Activities

- Make your own constellation cookie... construct moon and star clocks.... try Nitrogen Ice Cream! These activities are part of our festival kick-off! Additional activities include a special talk by NASA physicist Les Johnson and a special planetarium show **at the UNG Health & Sciences Building.**

## Saturday March 24: Hands-on Science Children's activities - 9:00 a.m. to 11:30 a.m.

- Join us at the Woodmen Life building on the square (over Cranberry Corners and across from Hancock Park) for more than 20 Hands-on Science Activities for kids! Make an air cannon! Build a straw rocket! Explore surface tension!

## Saturday March 24: Maker's Fair - 12:30 p.m. to 5:30 p.m.

- The (Choice Street) UNG MakerBot Innovation Center will host this exciting activity! Try your hand at designing objects for 3D printing, explore some great technology applications, engage in a variety of physics kits and robotics activities. Fun for the whole family!

## Saturday March 24: *Fun, Weird Science* - 2:00p.m.

- Come out for a Science pep rally to get excited about making STEM fun! This exciting stage show will be held in the HNS Auditorium (room 232) and includes a variety of science demos guaranteed to get your family excited about science! Don't miss out!

***Please note that parents must accompany children at all events. At no time should unsupervised children be dropped off for any of these activities.***



# 2018 Planetarium Shows

*Enjoy a variety of special shows at the UNG Planetarium!*

## **Friday March 23:**

### **8:00 p.m.:** *IBEX: Search for the Edge of the Solar System*

Find out how the Interstellar Boundary Explorer is used to map the edge of our Solar System. We'll also look at the current night sky and explore exciting recent discoveries in astronomy!

## **Saturday March 24:**

### **11:30 a.m.:** *Harry Potter Astronomy*

Peer into the magical world of Harry Potter through the lens of science! We'll explore the how J.K. Rowling used constellations, star names, and astronomy to add depth to the characters and enchanting classes of Hogwarts.

### **12:30 p.m.:** *Meet the Dwarf Planets*

Meet the small, but amazing worlds of our solar system known as the Dwarf Planets. We'll visit the bright spots of Ceres, heart-shaped tundras of Pluto, the oblong oddness of Haumea, and more!

### **2:00 p.m.:** *IBEX: Search for the Edge of the Solar System*

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# Community Sponsored Events

*We invited the Dahlonega Community to participate and host science-based activities in their businesses. While these activities are not sponsored by the festival organizers, they are an important part of a community festival. The Dahlonega Science Festival is proud to have these organizations participating in the festival by presenting science related sessions in their businesses.*

## **Saturday March 24:**

**11:30 - 12:30 Paul Thomas Chocolates:** The Chemistry of Confections - Almond Butter Crunch. Find out how Cocoa is grown and how the beans are processed. Learn a little History about its value in the Old World as well. See how Almond Butter Crunch is made and how the science concepts temperature & humidity play such a large part of its formulation. Limited to 10-15 people.



**12:30 - 1:30 Canvas & Cork @ Littlefield Cottage:** The Chemistry of Art - Chemistry has always been a part of art, remember: color is a result of absorbing certain wavelengths of light. Come to learn about the ancient and modern history, chemistry and demonstration of **indigo** (aka “blue gold”) dyeing. Also, see and hear about the **alcohol ink** painting, what makes it so “forgiving”, what’s the difference between a dye and a pigment? Finally, ask questions about **acid etching** of soft metals and see it done!

**2:00 - 3:00 Paul Thomas Chocolates:** The Chemistry of Confections - Peanut Brittle. Find out how Cocoa is grown and how the beans are processed. Learn a little History about its value in the Old World as well. See how Peanut Brittle is made and how the science concepts temperature & humidity play such a large part of its formulation. Limited to 10-15 people.

**Canvas & Cork @ Littlefield Cottage:** The Chemistry of Art - Chemistry has always been a part of art, remember: color is a result of absorbing certain wavelengths of light. Come to learn about the ancient and modern history, chemistry and demonstration of **indigo** (aka “blue gold”) dyeing. Also, see and hear about the **alcohol ink** painting, what makes it so “forgiving”, what’s the difference between a dye and a pigment? Finally, ask questions about **acid etching** of soft metals and see it done!

**3:15 - 4:15: Canvas & Cork @ Littlefield Cottage:** The Chemistry of Art - Chemistry has always been a part of art, remember: color is a result of absorbing certain wavelengths of light. Come to learn about the ancient and modern history, chemistry and demonstration of **indigo** (aka “blue gold”) dyeing. Also, see and hear about the **alcohol ink** painting, what makes it so “forgiving”, what’s the difference between a dye and a pigment? Finally, ask questions about **acid etching** of soft metals and see it done!

**4:30 - 5:30: Canvas & Cork @ Littlefield Cottage:** The Chemistry of Art - Chemistry has always been a part of art, remember: color is a result of absorbing certain wavelengths of light. Come to learn about the ancient and modern history, chemistry and demonstration of **indigo** (aka “blue gold”) dyeing. Also, see and hear about the **alcohol ink** painting, what makes it so “forgiving”, what’s the difference between a dye and a pigment? Finally, ask questions about **acid etching** of soft metals and see it done!

	<p>Paul T. Hoffman, Chocolatier, has worked since 1975 to deliver incredible candies, chocolates and sweets for all to enjoy. Located at 102 Public Square North in Dahlenega, Paul Thomas Chocolates is not just a candy store, it is an experience, as well as an opportunity to understand the complexity of chocolate and its creation.</p>
	<p>Canvas and Cork is located in the Stanton Storehouse in down-town Dahlenega, just off the square. Canvas and Cork occupies the first floor and is an inviting, eclectic space filled with original art and fine local wine. Everything from recycled glass work, pottery, jewelry and paintings in all mediums are available for purchase in 2 artists’ studios, and additional gallery space features the work of 12 more local artists.</p>

## Guest Authors



**James Costa:** Jim Costa is executive director of the Highlands Biological Station and professor of biology at Western Carolina University, where he teaches courses on biogeography, evolution, and Darwin. He is a long-time Research Associate in Entomology at Harvard's Museum of Comparative Zoology, and a former fellow of the Radcliffe Institute for Advanced Study and the Wissenschaftskolleg zu Berlin. Jim lectures widely in the US and abroad, and is currently serving as a Sigma Xi distinguished lecturer and a trustee of the Charles Darwin Trust.

The author of numerous papers and the books *Wallace, Darwin, and the Origin of Species*; *On the Organic Law of Change*; and *The Annotated Origin* (all Harvard University Press), Jim was awarded the silver Wallace Medal from the London-based Alfred Russel Wallace Memorial Fund in 2017 for his contributions to Wallace scholarship. His latest book, *Darwin's Backyard: How Small Experiments Led to a Big Theory* (W. W. Norton) was a finalist for the 2018 AAAS/Subaru SB&F Prize for Excellence in Science Books. Jim lives in the Blue Ridge Mountains of North Carolina with his wife Leslie and sons Addison and Eli.



**Les Johnson:** Les Johnson is a physicist, an author, and the Principal Investigator for the Near-Earth Asteroid Scout solar sail mission at the NASA George C. Marshall Space Flight Center in Huntsville, Alabama. He is an author of several popular science books including "Solar Sails: A Novel Approach to Interplanetary Travel" [featured in *Nature*, April 2008] and his latest, "Graphene: The Superstrong, Superthin, and Supers versatile Material That Will Revolutionize the World" [reviewed in *Nature* January 2018].

He is also a science fiction writer; his fourth novel, "Mission to Methone," was published in February 2018 by Baen Books. Les was the NASA co-investigator on the European Union's InflateSail solar sail mission and the Japanese Aerospace Exploration Agency's T-Rex tether mission. During his career at NASA, he served as the Manager for the Space Science Programs and Projects Office, the In-Space Propulsion Technology Program, and the Interstellar Propulsion Research Project. He thrice received NASA's Exceptional Achievement Medal and has 3 patents. Les earned his M.S. in physics from Vanderbilt University in 1986 and his B.A. from Transylvania University in 1984. Les was the featured 'interstellar explorer in the January 2013 issue of *National Geographic* magazine.



**Anthony Martin:** Following up on an early affinity to natural history, Anthony (Tony) Martin combined interests in biology and geology to earn a B.S. degree in geobiology from St. Joseph's College (Indiana), an M.S. in geology from Miami University (Ohio), and a Ph.D. in geology from the University of Georgia. Although trained mostly as a geologist and paleontologist, his research emphasis is in ichnology, the study of modern and fossil traces.




In his research, Martin's fossil discoveries or co-discoveries include: the only known burrowing dinosaur; the oldest dinosaur burrows in the geologic record; the oldest fossil crayfish in the Southern Hemisphere; the oldest bird tracks in Australia; and the best assemblage of polar dinosaur tracks in the Southern Hemisphere. Martin is the author of *Life Traces of the Georgia Coast* (Indiana University Press), *Dinosaurs Without Bones* (Pegasus Books), and his latest book, *The Evolution Underground* (Pegasus Books). Martin also does much outreach on ichnology and paleontology through public speaking and his blog, *Life Traces of the Georgia Coast*, and is active on Twitter as @Ichnologist. In 2015, in recognition of his significant contributions to research, teaching, and public service, he was elected as a Fellow in The Explorers Club and a Fellow in the Geological Society of America.



**Joseph Meany:** Joseph E. Meany, Ph.D., (a.k.a. the Crimson Alchemist) is a chemist from Atlanta, GA. He received his Ph.D. in Chemistry from the University of Alabama in 2016 and continues to work and volunteer in various science communication venues with a focus on how chemistry and nanotechnology impact society.

He is a member and contributor to the Tennessee Valley Interstellar Workshop in Oak Ridge, TN and maintains an active interest in nanotechnology applications in aerospace. His first book, with co-author Les Johnson, called *Graphene: The Superstrong, Superthin and Superversatile Material that will Revolutionize the World* was released in February 2018 by Prometheus Books. You can find it at [tiny.cc/graphenebook](http://tiny.cc/graphenebook).

# Guest Speakers

	<p><b>Nancy Dalman</b> is a Professor and Department Head of Biology at the University of North Georgia. She received her B.S. degree in biology from Virginia Tech, her M.S. degree in environmental science from Duke University, and her Ph.D. in biology from Stanford University, where she did her research at Stanford's Hopkins Marine Station. Her research is in environmental toxicology and she teaches marine field courses on Sapelo Island, GA, and Calabash Caye, Belize.</p>
	<p><b>Scott Harris</b> is the planetary geologist at the Fernbank Science Center and Jim Cherry Memorial Planetarium in Atlanta. A Georgia native, he was educated at Arizona State University, the University of Georgia, and Brown University. A world traveler, field geologist, petrologist, and science educator, he has spent most of his 25-year academic and research career studying the record of asteroid impacts on Earth. He also studies extraterrestrial volcanism and the ancient history of our solar system preserved in meteorites. A Goldwater Scholar, Circumnavigators Foundation Fellow, and NASA Space Grant Fellow, he is the author or co-author of more than a dozen peer-reviewed articles and field guides and one hundred conference papers. He also has served as a visiting lecturer of mineralogy at Georgia State University and as the geologist for the Georgia Department of Transportation, where he received the 2013 Commissioner's Achievement Award.</p>
	<p><b>Jessica Hartel, Ph.D.</b>, is a primatologist in the Biology Department at the University of North Georgia and is also the Director of Conservation for the <b>Kibale Chimpanzee Project</b> in Kibale National Park, Uganda. She received her B.S. in both Biology and Anthropology from Missouri State University, M.S. in Experimental Psychology from Central Washington University, Ph.D. in Integrative and Evolutionary Biology from the University of Southern California, and was a postdoctoral scholar at the Center for Biocultural History at Aarhus University in Denmark. Her current research focuses on the human-chimpanzee conflict and how to effectively mitigate intensifying anthropogenic threats to wild chimpanzees. As an active advocate for chimpanzee welfare both in the wild and in captivity, Jessica uses her voice to speak for those without to work towards policy changes that treat chimpanzees and other animals as persons instead of property. Past work at chimpanzee sanctuaries include retiring chimpanzees from biomedical research to a new sanctuary in Blue Ridge, GA and working with chimpanzees that use American Sign Language.</p>



**Dr. Bryson Payne** is the founding Director of the Center for Cyber Operations Education at the University of North Georgia, an NSA Center for Academic Excellence in Cyber Defense. He is also a tenured professor of computer science at UNG, where he has taught aspiring cyber professionals since 1998. He is a Certified Information Systems Security Professional (CISSP®) and Certified Ethical Hacker (CEH), among other industry certifications. Featured in *CIO* magazine, *Campus Technology*, and the *Wall Street Journal*, Dr. Payne is the best-selling author of *Teach Your Kids to Code: A Parent-Friendly Guide to Python Programming* (2015). He holds a Ph.D. in computer science from Georgia State University and has published articles in scholarly and trade journals, in addition to speaking regularly at national and international conferences on computer science and cybersecurity education.



**Chris Seminack:** Chris Seminack is an Assistant Professor of Geology at the University of North Georgia in the Lewis F. Rogers Institute for Environmental and Spatial Analysis. He earned his B.A. from La Salle University, M.S. from Temple University, Ph.D. from George Mason University, and was a postdoctoral scholar with the National Park Service at Assateague Island National Seashore. He specializes in coastal geology along the U.S. Atlantic coast, studying the effects of intense storms, tidal inlet life-cycles, and barrier island evolution.

**Stop by the Dahlonega Community House to pick up one of our festival t-shirts! Limited availability!**



# Meet Our Panelists

## **Frankenstein: Creation and Consequences (9:00 a.m.)**

**Frank Crittenden** (Biology): Frank Crittenden is a lecturer in biology at UNG.

**Indhira De-La-Rosa-Corporan** (Biology): **Indhira De-La-Rosa-Corporan** is in the biology department at UNG.

**Jeff Pardue** (History): Dr. Jeff Pardue was born in Minnesota and raised in Casper, Wyoming. He lived six years in Waterloo, Ontario (Canada) where he attended graduate school. He currently lives in Atlanta with his wife, kids, and hairless cat. He enjoys reading and remains a devoted (if perennially disappointed) Minnesota Vikings fan.

**Anita Turlington** (Victorian Literature): Anita Turlington is an Associate Professor of English on the Gainesville campus of UNG. Her research areas are Victorian women's literature and gothic novels.

*Panel Moderator: Edward Erickson*

## **Astrobiology: Life on Other Worlds (10:15 a.m.)**

**Scott Harris** (Planetary Geology): Scott Harris is the planetary geologist at the Fernbank Science Center and Jim Cherry Memorial Planetarium in Atlanta. A Georgia native, he was educated at Arizona State University, the University of Georgia, and Brown University. He has spent most of his 25-year academic and research career studying the record of asteroid impacts on Earth.

**Les Johnson** (Physics & Space Systems (NASA)): Les is a physicist, a science and science fiction author, and a NASA technologist. He is the Principal Investigator for NASA's Near Earth Asteroid Scout solar sail mission, launching in 2019.

**Anthony Martin** (Biology): "Tony" Martin is a paleontologist at Emory University and the author of *Life Traces of the Georgia Coast* (Indiana University Press), *Dinosaurs Without Bones* (Pegasus Books), and his latest book, *The Evolution Underground* (Pegasus Books).

**Clarke Miller** (Chemistry): Clarke Miller is in the Chemistry department at UNG.

*Panel Moderator: Nancy Dalman* (Biology)

## **Natural Disasters (11:30 a.m.)**

**Royce Dansby-Sparks** (Analytical Chemistry): Royce Dansby-Sparks is an associate professor of chemistry and has taught at UNG since 2011. He was a physical scientist for the US EPA prior to his time at UNG and conducts research in the field of trace metal analysis.

**Scott Harris** (Planetary Geology): Scott Harris is the planetary geologist at the Fernbank Science Center and Jim Cherry Memorial Planetarium in Atlanta. A Georgia native, he was educated at Arizona State University, the University of Georgia, and Brown University. He has spent most of his 25-year academic and research career studying the record of asteroid impacts on Earth.

**Chris Seminack** (Coastal Geology/Storm Impacts): Chris Seminack is a coastal geologist who specialized in the impact of intense storms along coastal settings. He is an assistant professor at the University of North Georgia and is a geologic consultant for the U.S. National Park Service.

**Kelly West** (Biology): Ms. West is in the biology department at UNG. She is interested in the human impact on the natural environment, primarily in the Appalachian region. She is also very involved in engaging undergraduates in authentic learning experiences that also benefit the larger community.

*Panel Moderator: Jack Rogers*



### **Space Travel: Journey to Other Worlds (2:00 p.m.)**

**Tom Diggs** (Evolutionary Biology, Botany): Tom Diggs is an evolutionary biologist whose research centers on the evolution and biogeography of glade and rock outcrop plants. These plants are specialized for very harsh habitats which could be useful in space!

**Laura Forczyk** (Space Industry, Astrophysics): A scientist with entrepreneurial leanings, Laura Seward Forczyk has desired to dance on the Moon and explore the stars from a young age. Her background is in astrophysics and planetary science. She owns space consulting firm Astralytical based in the Atlanta area.

**Les Johnson** (Physics & Space Systems (NASA)): Les is a physicist, a science and science fiction author, and a NASA technologist. He is the Principal Investigator for NASA's Near Earth Asteroid Scout solar sail mission, launching in 2019.

**Joseph Meany** (a.k.a. the Crimson Alchemist): Joseph Meany received his Ph.D. in Chemistry from the University of Alabama in 2016 and continues to work in various science communication venues with a focus on chemistry and nanotechnology.

*Panel Moderator: Murray Allen Lamb* (Physics)

### **If You Give a Scientist a Question... (3:15 p.m.)**

**Indhira De-La-Rosa-Corporan** (Biology): Indhira De-La-Rosa-Corporan is in the biology department at UNG.

**Holly Carpenter** (Biochemistry): Dr. Carpenter is the Director of Clinical Research at Northeast Georgia Medical Center

**Sonny Mantry** (Particle Physics, Cosmology): Sonny Mantry is faculty in the physics department at the University of North Georgia. His research is in the area of theoretical particle physics.

**Ryan Meier** (Chemistry): Ryan Meier is an associate professor of chemistry at UNG.

**Chris Seminack** (Coastal Geology/Storm Impacts): Chris Seminack is a coastal geologist who specialized in the impact of intense storms along coastal settings. He is an assistant professor at the University of North Georgia and is a geologic consultant for the U.S. National Park Service.

*Panel Moderator: Sarah Formica* (Physics)

### **Science in Pop Culture (4:30 p.m.)**

**Megan Foley** (Chemistry): Megan Foley is an assistant professor in the department of chemistry and biochemistry at the University of North Georgia. Her research is in the area of nanomaterials with a focus on fluorescent and magnetic nanoparticles.

**John Kruger** (Inorganic Chemistry): John Kruger has a B.S. in chemistry from Univ. of Wisconsin Green Bay, a Master's Degree in Inorganic chemistry from Georgia Tech and has been teaching chemistry for nearly 20 years. Before teaching, he spent 12 years in the US Army and GaARNG as a Chemical officer. During his time there, he received training in Nuclear, Biological and Chemical warfare, including target analysis.

**Murray Allen Lamb** (Physics):

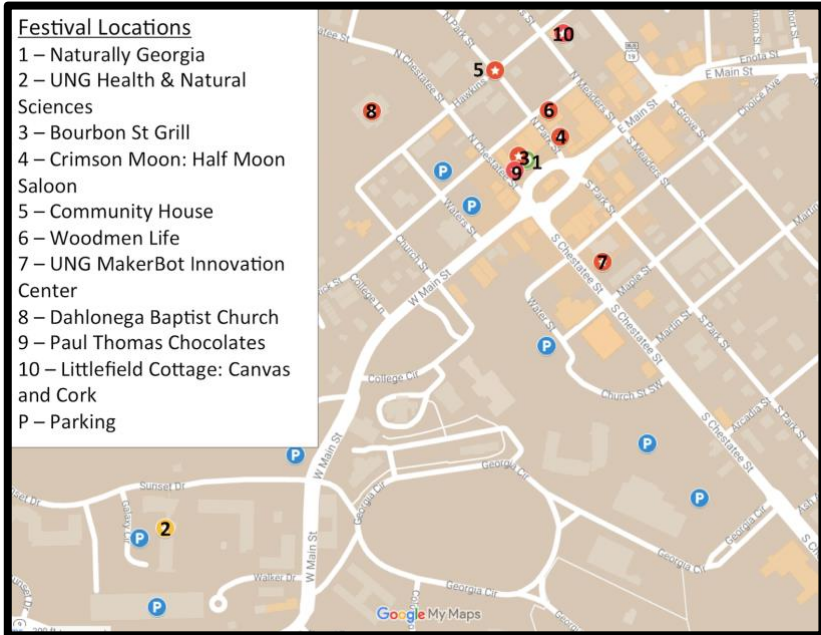
**Mark Spraker** (Physics): Dr. Mark Spraker is a professor of physics who teaches all levels of physics at UNG. His research in nuclear physics has been supported by a U.S. Department of Energy grant since 1997.

**Shane Webb** (Biology): Dr. Webb infers the phylogenetic (evolutionary) relationships of freshwater fishes using DNA sequences and to a lesser extent morphology. Presently Dr. Webb is studying the evolutionary relationships and phylogeography of the goodeids of the Mesa Central of Mexico. His interests include biogeography, the factors affecting the species richness of groups, and the documentation and conservation of fish diversity.

*Panel Moderator: Zane Miller* (Chemistry)

# Festival Locations

You can find activities all over Dhalonega!



*Check out the Dhalonega Science Council's website for information on the Dhalonega Science Café! We bring you monthly science talks to keep you current on all the latest science news!*

[www.dhalonegascience.org](http://www.dhalonegascience.org)

*Find us on Facebook and @NorthGAScience on Twitter!*