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Dear Friends:

The best news for 2015 is that IHMC's expansion in Pensacola is back on track. We have signed a contract with a builder, received our building permit and have broken ground for the new three-story building on our current site.

Construction had been delayed in the aftermath of the massive rainstorm that hit Pensacola April 29-30, dumping more than two feet of rain on our city. The resulting flooding forced our researchers and administrative staff out of three rental locations downtown, and rendered the first floor of our main Alcaniz Street facility unusable.

The flooding also prompted a reassessment of the expansion. While the April storm was of historical magnitude, it was not the first time heavy rain has caused flooding at IHMC. Our concern was that the latest flood was so high that it might threaten the new building–a concern we answered by further elevating the first floor.

Meanwhile, I am very proud of how our employees responded to the flood, which devastated our first floor. Scientists and staff shared office and lab space on the second floor, and research and administrative work stayed on course. By year end, renovations were complete.

While the flooding caused suspension of the Pensacola Evening Lecture Series, it kicked off again in July with David Waggonner, a New Orleans architect who led design of a comprehensive watershed management plan for New Orleans after Hurricane Katrina.

And while the flooding was a powerful challenge for us, it didn't impede our work or hinder the accomplishments of our employees. In this newsletter you will read about some of their innovative and compelling work.

Finally, I am humbled to have been named the 2015 recipient of the AAAI Distinguished Service Award. This recognition is enabled only by the strong work of my colleagues here at IHMC. Without them it simply would not have happened.

So clearly, IHMC has bounced back from the flood in strong fashion, and we're looking forward to an exciting–and drier–future in 2015.

Best Wishes,

Ken Ford

Kenneth M. Ford, Director

IHMC BOARD OF DIRECTORS

Expansion back on track after flood

IHMC jumpstarted its $8 million Pensacola expansion in January, signing a contract with Hewes and Company LLC, a local contractor with extensive experience with major projects.

The three-story expansion is scheduled for completion in February 2016.

The 30,000-square-foot addition will substantially increase IHMC's Pensacola footprint, allowing consolidation of research and administrative functions at the main campus in the Seville Historic District, and allow for future growth. IHMC's operations are currently spread over four separate sites in downtown.

"We're very pleased to be back on track with the expansion," said IHMC Director and CEO Dr. Ken Ford. "The flood in April delayed our progress, but it was only temporary. We're ready to go and looking forward to a brighter future."

Torrential rains in April 2014 flooded the current headquarters as well as three of IHMC's four rental office sites in downtown, with up to 8 inches of water in the first floor of the main facility at 40 South Alcaniz Street. More than two feet of rain fell over a 26-hour period, causing flooding across Northwest Florida.

Mike James, assistant director, said IHMC quickly contracted with Restore-One, a national disaster recovery firm headquartered in Nashville, to lead the repair effort. The company teamed up with local firms that regularly work with IHMC to begin cleanup, demolition and repair as soon as the flood receded.

As a result of the flooding, the new building—already designed to a higher elevation—was raised another foot to further protect it from any future flood.

Lead architect Carter Quina said the new building features design and technology that "maintain all of our sustainability goals," including the extensive use of natural daylight, LED lighting that adjusts to the daylight, extensive soundproofing for the labs, durable materials, and a powerful lab hoist designed with input from the scientists who will be using it.

Quina said the building was also designed to foster the use of stairs instead of elevators, cutting energy use and helping employees stay fit.

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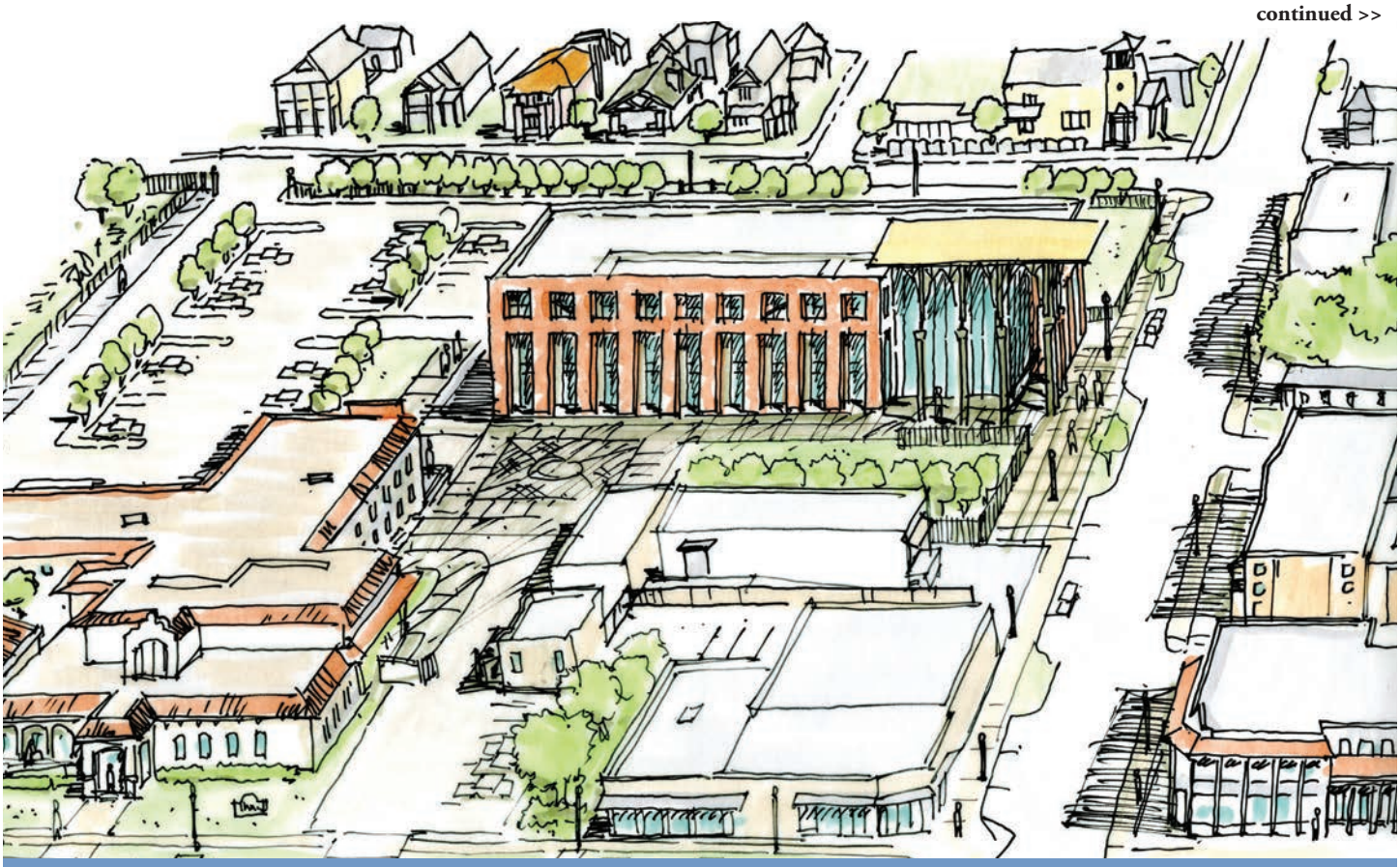


Artist's rendition of the Pensacola campus of IHMC showing the position of the new building.

Artist's rendition of the new building.

IHMC is located on the edge of the Pensacola Historic District and adjacent to the newer Aragon neighborhood, making it important to blend in as much as possible with residences, many of which are registered historic structures.

"We want to be good neighbors," Dr. Ford said. "We worked with the architects to ensure that the building, while state of the art inside, fit the neighborhood."

Quina said IHMC sits in what the city has designated as the Brick Warehouse District within the larger historic district. He said the materials and appearance were selected to give the building the look of an historic warehouse that has been repurposed for modern use.

The contractor, Hewes, has done extensive work across the Pensacola area, including large buildings for Pensacola Christian College; Avalex Technologies, a supplier of surveillance equipment for military and law enforcement around the world; and AppRiver, an international company that develops and maintains web and email security products.

Meanwhile, while repairs and improvements to the existing building were still being completed through the Christmas holidays, virtually all IHMC offices there as well as at the three damaged rental sites were back in operation by August.

Phil Turner, director of architectural and engineering services, said IHMC used the repairs to upgrade carpeting, paint, baseboards, restrooms, electrical systems, computers and phones. Air-conditioning units have been relocated to higher ground.

He said IHMC is seeking assistance under a federal flood mitigation grant to build an advanced wall and gate system designed to prevent future flooding. The Federal Emergency Management Agency (FEMA) has already approved the project in concept. The mitigation system is modeled on a very similar project, also funded by FEMA, at Southern University in New Orleans.

"The result would be a much better building that is more durable, aesthetic and flood resistant," Turner said.

The expansion project will preserve IHMC's organic garden, relocating it to a new location.

Artist's rendition of Robotics Lab second-floor visitors' observation area in new building.

Dr. James Allen awarded grant for Big Mechanisms

Senior Research Scientist Dr. James Allen and an IHMC research team have been awarded a three-year, $3 million grant for research in the area of Big Mechanisms. The IHMC team will collaborate with the Moffitt Cancer Center & Research Institute in Tampa on the project, which is funded by the Defense Advanced Research Projects Agency (DARPA).

Big Mechanisms are large, explanatory models of complicated systems in which interactions have important causal effects. While the collection of big data is increasingly automated, the creation of Big Mechanisms remains a human endeavor made increasingly difficult by the fragmentation and distribution of knowledge. The extent to which the construction of Big Mechanisms can be automated could change how science is done, and significantly advance the state of the art in Deep Reading, especially in understanding mechanisms.

Dr. Allen and the six-member team, working in both Pensacola and Ocala, will develop Natural Language Processing (NLP) technology to read research abstracts and papers to extract pieces of causal mechanisms, assemble them into more complete causal models, and reason over these models to produce explanations.

Dr. James Allen

The application domain of the research program is cancer biology with an emphasis on signaling pathways, a research area of intense interest to the Moffitt Cancer Center. However, Dr. Allen said the larger goal is "to develop generic technology that could be applied to many scientific domains. So you might try to model atmospheric processes or any very complex system people struggle to understand."

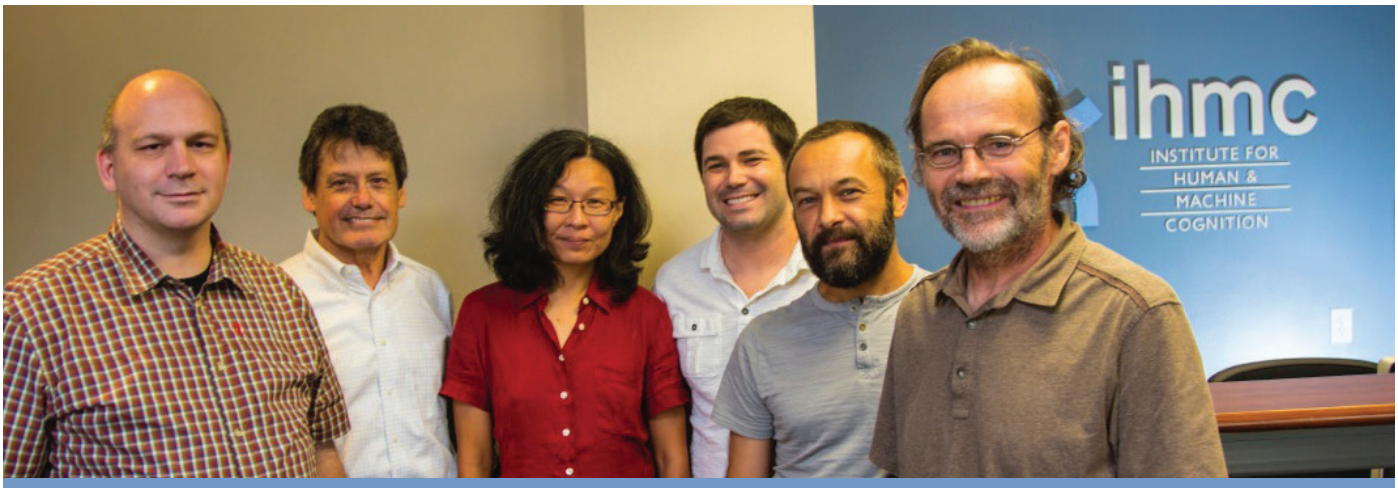
The research explosion in biology makes it a good test case.

"There's a real problem in biology now," Dr. Allen said. "Even if you wanted to read the new research you couldn't; it's coming out faster than a human being can read, and it's too vast to digest. The motivation is to develop systems that automatically do the reading. The hope is to create models that are precise enough in terms of the representations that biologists use that you could run a computer simulation and actually see whether what we know actually accounts for the behavior we see."

Today, he said, computational biologists are trying to build these models by hand—a daunting task.

This is not the first time IHMC and Moffitt have worked together. Dr. Allen said its role on this project would be primarily to advise the team on cancer biology and the intricacies of cancer signaling pathways, and provide expertise for evaluating performance.

"IHMC remains very interested in these cross-discipline collaborations," he said. This project is a great opportunity to further our collaboration with Moffitt."



The members of the Big Mechanisms research team, from left:
Tomas By, Bill Dalton, Choh Man Teng, Adam Dalton, Lucian Galescu, James Allen.

Jeff Bradshaw chairs Nissan advisory council

IHMC Senior Research Scientist Dr. Jeff Bradshaw is serving as chair of the inaugural Scientific Advisory Council for the Nissan Research Center — Silicon Valley, in Sunnyvale, Calif.

The advisory group gives guidance on science, technology, research and other similar topics of special interest to Nissan Motors Corporation. That includes research on autonomous vehicles, connected vehicles, human machine interactions and other subjects.

"I'm excited to work with this stellar group of experts," Dr. Bradshaw said. "Nissan's commitment to a human-centered, rather than a technology-centered, design approach puts them in a unique and enviable competitive position. As a result, they will produce well connected, environmentally aware and highly capable vehicles that excel in their safety, usability and usefulness."

Other members of the board are James Euchner, vice president of Global Innovation, Goodyear Tire & Rubber Company; Dr. Don Norman, co-founder of the Nielsen Norman Group; Dr. Missy Cummings, associate professor at Duke University and director of the Humans and Autonomy Laboratory; and Dr. Terry Fong, director of the Intelligent Robotics Group at the NASA Ames Research Center in Silicon Valley.

Human-Agent-Robot Teamwork has been a central interest for Dr. Bradshaw. From 2002-2006, IHMC's KAoS framework was used as part of a NASA series of annual two-week field tests of human-robot teams, led by Dr. Bill Clancey and Dr. Maarten Sierhuis, performing simulated planetary surface exploration at the Mars Desert Research Station in the Utah desert. With Dr. Sierhuis he co-founded and, with the help of Dr. Catholijn Jonker and Dr. Virginia Dignum, organized the Human-Agent-Robot Teamwork Workshop series (HART). Recently, Dr. Bradshaw led an international workshop for the National Academies of Science on Intelligent Human-Machine Collaboration.

Dr. Jeff Bradshaw

In collaboration with Dr. Paul Feltovich, Dr. Matt Johnson and Dr. Robert Hoffman of IHMC, and Dr. David Woods and others, Dr. Bradshaw has co-authored a series of influential articles relating to the inadequacies of the supervisory control model, the "myths of autonomy," and the virtues of what Johnson has termed, developed and championed as "coactive design"—an approach to human-machine interaction that contributed to IHMC's leading performance within the DARPA Robotics Challenge program.

Nissan, Japan's second-largest automotive company, is headquartered in Yokohama and is part of the Renault-Nissan Alliance. Operating with more than 236,000 employees globally, Nissan sold more than 4.95 million vehicles in fiscal 2013, and built more than 790,000 vehicles in the United States.

Pictured, from left, at the Nissan Research Center: Yoshitaka Deguchi, Nissan; Terry Fong, SAC; Gregg Dibb, Nissan; Jim Euchner, SAC; Maarten Sierhuis, Nissan; SAC Chair Jeff Bradshaw, IHMC; Don Norman, SAC; Missy Cummings, SAC; and Takeshi Mitamura, Nissan.

HexRunner sets speed record

IHMC Robotics researchers achieved a milestone in May with a record-setting speed run for a legged robot. The record-breaking robot, HexRunner, reached a speed of just over 30 mph on an open course, without the support of tethers.

The historic run was captured on video by the Discovery Channel.

"More significant than the top speed is showing that you can make a running robot that doesn't need a lot of feedback from sensors, and you don't need a lot of actuation," said IHMC Senior Research Scientist Dr. Jerry Pratt, team leader of the HexRunner project.

He speculated that HexRunner could hit 45 mph under the right conditions.

HexRunner is a spoked robot with six legs (spokes) revolving around a central hub, with three legs on each side of the hub. At the tip of the top spoke it stands six feet high. Dr. Pratt said the speed was measured with a chase car and through analysis of high-speed motion video shot from the side.

The project has also spun off a subsidiary. IHMC Research Scientist Dr. Sebastien Cotton, a member of the HexRunner team, developed a two-foot-tall version dubbed OutRunner for sale to the general public as a remote-controlled running robot. His company, Robotics Unlimited (robotics-unlimited.com), licensed the technology from IHMC. Dr. Cotton left IHMC to pursue the new commercial venture.

In November, Robotics Unlimited won $5,000 by finishing third in the inaugural Innovation Awards Business Competition sponsored by Innovation Coast, Space Florida and the Florida Small Business Development Center. Innovation Coast is a Pensacola-area consortium of tech ventures, including IHMC. The competition offered cash and prizes valued at $215,000 as well as access to venture capitalists.

HexRunner was developed as part of IHMC's FastRunner project, sponsored by the Defense Advanced Research Project Agency (DARPA). Dr. Pratt said that FastRunner is more complicated than HexRunner, and while it has shown excellent stability in simulation, the research team doesn't fully understand the stabilizing mechanisms. HexRunner, a less complex machine, was built to help develop that understanding.

"By looking at the HexRunner and understanding why it is stable, we can now look at the more complicated model and see if we see the same stabilizing mechanisms," Dr. Pratt said. "And once we understand better what is going on, then we should be able to get the FastRunner working."

He credits a computer simulation done by IHMC Research Associate Johnny Godowski for leading to HexRunner, under development for about a year.

"We had to do something completely different than had been done before," Godowski said. "It's a different architecture, but it mimics what's being done in nature. It opened new vistas between engineering and biology."

The ultimate goal, Dr. Pratt said, is to figure out how animals run in nature, an understanding that could produce breakthroughs in robotics.

"The high-level question is how can animals run with stability at high speeds?" he said. "And how can we make a robot to achieve the same feats?"

HexRunner in launch position for record run, with chase car in position.

HexRunner on its record-setting run, with Discovery Channel crew filming.

Dr. Ken Ford honored for service to AI community

The Association for the Advancement of Artificial Intelligence (AAAI) has awarded one of its highest honors, the AAAI Distinguished Service Award, to IHMC Director and CEO Dr. Ken Ford.

The Distinguished Service Award, which was established in 1999, recognizes a single individual each year "for extraordinary and sustained service" to the artificial intelligence community. Dr. Ford is the 14th honoree.

In a letter announcing the award, Manuelo Veloso, the chair of the Awards Committee, wrote that Dr. Ford was "specifically honored for your contributions to the field of artificial intelligence through sustained service, including the founding of the Florida Institute for Human and Machine Cognition (IHMC), leadership roles at NASA, and your work on the advisory boards of federal science and technology research organizations."

In nominating him for the award, former NASA Administrator Michael D. Griffin said that, "Few technologies have greater potential benefit to humanity than does the field of artificial intelligence, and even fewer people are able to convey the essence and importance of the field to federal leaders in the fashion in which Ken Ford has done and continues to do it. He is quite simply a national resource, and a more than deserving recipient of the AAAI Distinguished Service Award."

Griffin said that to many people at NASA, "Ken Ford simply 'is' artificial intelligence as it relates to the field of space flight."

He also cited Dr. Ford's "stunning success in founding and growing IHMC," which has become known for its groundbreaking research in the field of artificial intelligence.

Dr. Ken Ford

"I'm truly humbled by the recognition from AAAI," Dr. Ford said. "It is a testament to the important work done by my colleagues at IHMC."

In addition to founding IHMC, Dr. Ford is a groundbreaking AI researcher. He is Emeritus Editor-in-Chief of AAAI/MIT Press and is an AAAI Fellow, a charter Fellow of the National Academy of Inventors, a member of the Association for Computing Machinery, a member of the IEEE Computer Society, and a member of the National Association of Scholars. He has received numerous awards and honors, including the Doctor *Honoris Causas* from the University of Bordeaux in 2005 and the 2008 Robert S. Englemore Memorial Award for his work in AI. In 2012, Tulane University named him its Outstanding Alumnus in the School of Science and Engineering.

He served on the National Science Board, chaired the NASA Advisory Council, and has served on the Air Force Science Advisory Board and the Defense Science Board.

Under his leadership, IHMC has grown into one of the nation's premier research organizations with world-class scientists and engineers investigating a broad range of topics related to building technological systems aimed at amplifying and extending human cognitive, physical and perceptual capacities.

Previous winners include Barbara Grosz of Harvard, Raj Reddy of Carnegie Mellon, Nils Nilsson of Stanford, Ronald J. Brachman of Yahoo Research and David Waltz of Columbia.

IHMC team enters the 2014 Portofino Sunset Tri Series

Contrary to some popular notions, robotics scientists do sometimes emerge from their research caves to engage in activities with other humans.

IHMC provided the outfits for the employee triathlon team to enter the 2014 Portofino Sunset Tri Series on Pensacola Beach. Pictured are the team members, from left: Research Associate Nick Payton (7.5-mile bike ride); Research Scientist Dr. Chris Schmidt-Wetekam (1.5-mile run); and Senior Research Scientist Dr. Peter Neuhaus (300-yard swim).

Nick Payton, Dr. Chris Schmidt-Wetekam, Dr. Peter Neuhaus

Dr. Paul Kaminski joins IHMC Science Advisory Board

Dr. Paul Kaminski, one of the pioneers of stealth technology, has joined the IHMC Science Advisory Board.

He brings a sterling resume´ of achievement in both his academic and professional careers to the SAC, whose members are charged with using their expertise to steer the broad research goals of IHMC. The board's members cover a range of disciplines and backgrounds and are leaders in government, corporate and academic arenas.

"We are delighted to have Paul Kaminski on our Science Advisory Board," said IHMC Director/CEO Dr. Ken Ford. "It's an understatement to say he's at the top of his field; he brings to IHMC a compelling blend of technical and leadership expertise."

Dr. Kaminski has served as Under Secretary of Defense for Acquisition and Technology, and is a member of the Director of National Intelligence Senior Advisory Group and the Senate Select Committee on Intelligence Technical Advisory Board. A former chair of the RAND Corporation board, he chairs the boards of both Exostar and Hughes

Dr. Paul Kaminski

Research Labs, and is a director for General Dynamics, Bay Microsystems, CoVant Technologies, the Johns Hopkins Applied Physics Lab and the United States Air Force Academy Endowment. He is a former chairman of the Defense Science Board.

While director for Low Observables Technology with the Air Force, he oversaw development, production and fielding of major stealth systems, including the F-117 and the B-2 bomber. He also led the initial development of a National Reconnaissance Office space system and related sensor technology. And he was responsible for testing and evaluating key components for the Minuteman nuclear missile and the first precision-guided munitions in the U.S. military's arsenal.

He holds degrees from the Air Force Academy, M.I.T. and Stanford. That includes a master's in electrical engineering, and a master's and Ph.D. in aeronautics and astronautics.

Ocala hosts two robotics camp sessions

Two Robotics Camp sessions at the Ocala facility in July hosted 40 students in sessions that, like IHMC's other outreach programs, are designed to nurture a passion for science and learning. In the case of the Robotics Camp, the goal is to give sixth- and seventh-grade students their first practical steps toward what could be a path leading them to careers in fields such as computer science, robotics and engineering.

Facilitated by a local high school IB physics teacher, the camps use high school students as volunteers to help campers learn to design and program robots.

A highlight of the camps were the lunchtime talks prepared by two IHMC researchers as well as volunteers from Lockheed Martin.

From IHMC, Senior Research Scientist Yorick Wilks spoke on "How Computers Understand Human Language," and Senior Research Scientist David Atkinson talked on "Robots in Your Future."

The Lockheed Martin talk was by Keith Johnson and Jorge Nevarez, who spoke on technology and careers at Lockheed Martin. A fourth talk, on computer vision, was given by Tyler Ward, a Ph.D. student from the University of Florida.

Career Source CLM is the program sponsor, partnering with IHMC to offer the camps. Other sponsors include Lockheed Martin, HeritageBank of the South, College of Central Florida, the Ocala Star Banner, Cheney Brothers, Inc., FLATE, MRMA, and Clear Channel.

Middle school students work in teams to design, build, and program robots during a one week summer camp offered at IHMC.

Tom Jones salutes the first Martians at X-STEM Symposium

Veteran Shuttle astronaut Tom Jones, a senior research scientist at IHMC, saluted the first Martians at the inaugural X-STEM: Extreme STEM Symposium in Washington, D.C., in April.

At least, he hopes they will be the first.

"So who's going to lead us into, and to, Mars?," Jones asked the 500 middle and high school students attending his talk. "I'm no longer flying to space; the space station crews will be too old by the 2030s, too. You young explorers out there, in middle school and high school—you are going to be the leaders, the pioneers, in this effort. That's why we're counting on your generation to study science, math and engineering, and tackle these tough exploration problems.

"If you excel in math and science, and study engineering or science in college, you'll be ready for these challenges. Study hard, read everything about space you can get your hands on (including the books your grandmother gives you), be determined and persistent, and follow your own star—that dream that inspires you—then you'll succeed. If you'll do that, then I'll be able to salute you … as one of the very first Martians."


Dr. Tom Jones

The symposium is part of the USA Science & Engineering Festival Expo and Book Fair, hosted by sponsor Lockheed Martin. Held at the Walter E. Washington Convention Center, X-STEM is a "TED-style"event for kids with talks by 50 of the nation's most noted science, technology, engineering and mathematics (STEM) professionals.

Dr. Jones is a veteran NASA astronaut, planetary scientist, author and speaker. He flew on four space shuttle missions, and led three spacewalks at the International Space Station (ISS) to help install the U.S. science lab, Destiny. The Wall Street Journal named his book, "Sky Walking: An Astronaut's Memoir," one of its "five Best" books on space.

An Air Force Academy graduate, he earned a Ph.D. in planetary sciences. He flew B-52 bombers for the Air Force, studied solar system exploration concepts for NASA and served on the NASA Advisory Council. His current interests include planetary defense and extending human exploration to the Moon, asteroids and Mars.

The USA Science & Engineering Festival is the nation's largest science festival. More than 325,000 people attended the 2014 event, organizers said.

J. Mort O'Sullivan joins Board of Directors at IHMC

Prominent Pensacola CPA J. Mort O'Sullivan has joined the IHMC Board of Directors. He replaces Pensacola businessman Lewis Bear.

O'Sullivan is managing member of the O'Sullivan Creel Division of Warren Averett LLC, an accounting and financial advisory firm with 14 offices across the Southeast U.S., Texas and Grand Cayman, and clients in all 50 states and 36 countries.

"Mort is so well respected across Pensacola for his integrity, his business acumen and his community leadership," said IHMC Director and CEO Dr. Ken Ford. "We are very pleased to have him join our board."

O'Sullivan was chairman of the Pensacola Area Chamber of Commerce (2007-2009), and served on the Florida Chamber of Commerce Board of Directors; is a graduate of Leadership Florida; named Pensacola Business Leader of the Year in 2002; named as a University of West Florida Distinguished Alumnus in 2007; is a UWF Foundation Fellow and serves on the Board of Directors for Gulf Power Co.


J. Mort O'Sullivan

He also serves on the board of the Pensacola Museum of Art, is treasurer for the Autism Society of the Panhandle, and sits on the board of the African American Heritage Society. He is on the advisory boards of Hancock Bank and Landrum Companies.

"I've followed IHMC since its birth in Pensacola," O'Sullivan said. "I'm very proud of what Ken Ford has done in building it into a world-class institute. IHMC is clearly an invaluable community asset that I hope will continue to change us all for the better."

Ford, NFL panel pick winners for brain research grants

In November, the NFL announced seven winners of $500,000 brain research grants in Head Health Challenge II. IHMC Director/CEO Dr. Ken Ford serves on the eight-person judging panel that selected the winners, who are eligible to receive up to $8.5 million to accelerate brain injury research, diagnosis and protection. The NFL's partners are Under Armour and General Electric.


Dr. Ken Ford

The winners, which include researchers from the public and private sectors, were selected from nearly 500 high-tech proposals from 19 countries.

"We had to pick the winners from a long list of smart, innovative proposals that represent some of the best new ideas on how to prevent, diagnose and treat traumatic brain injuries," Dr. Ford said. "It's very rewarding to be able to be part of the Head Health Challenge II program. The implications go well beyond the game of football."

Concern about traumatic brain injuries stems from the increased awareness of problems from a variety of causes, including the use of powerful improvised explosive devices (IEDs) and the increased awareness of concussions occurring in football and other sports.

"The disruptive ideas introduced by these seven entries are designed to increase brain safety for athletes, members of the armed forces and society at-large," the NFL said in a release announcing the grants.

Dr. Ford was named to the panel due to his significant expertise and experience in the development of technologies intended to enable cognitive orthotics and his broad background in science and technology R&D. An international leader in research on human cognition and artificial intelligence (AI), Dr. Ford holds a Ph.D. in computer science. He served as chairman of the NASA Advisory Council (Oct. 2008-Oct. 2011), received a presidential appointment in 2002 to the National Science Board, and recently completed a term on the Defense Science Board.

The effort is part of a multi-year collaboration among Under Armour, GE and the NFL called the Head Health Initiative. Launched in March 2013, it includes a four-year, $40 million research and development program from the NFL and GE to develop next-generation imaging technologies to improve diagnosis and allow for targeting treatment therapy for patients suffering from the impact of mild traumatic brain injuries.

Short online videos about the winning entries and their innovative research can be found at www.headhealthchallenge.com.

Dr. Bonnie Dorr accepted into Leadership Florida Class

Dr. Bonnie Dorr, an IHMC associate director and senior research scientist in Ocala, was named to the 33rd Annual Leadership Florida class. She joins several previous IHMC selectees, including General Counsel Julie Sheppard, Associate Director Dr. Sharon Heise and Associate Director Dr. John Rogacki.

Leadership Florida, formed in 1982 by the Florida Chamber of Commerce, selects engaged individuals from across Florida for a year-long process to develop leadership skills and build relationships with diverse individuals across the state.

The 55-member class will meet for group sessions in cities throughout Florida to learn about issues facing the state. The meetings will be held in Sarasota, Pensacola, Tallahassee and Miami, after an opening session a Howey-in-the-Hills.


Dr. Bonnie Dorr

At IHMC she leads cutting-edge research in natural language processing, building machines that interact with humans at a deep level of understanding.

Dr. Dorr was previously a computer science professor and associate dean of the College of Computer, Mathematical and Natural Sciences at the University of Maryland, and a program manager at the Defense Advanced Research Projects Agency (DARPA). She holds a master's and a Ph.D. in computer science from the Massachusetts Institute of Technology and a Bachelor's from Boston University.

She is a Sloan Fellow, a NSF Presidential Faculty (PECASE) Fellow, former president of the Association for Computational Linguistics, and an elected Fellow of the Association for Advancement of Artificial Intelligence.

Dr. Dorr is married to Stephen Martin, has three children, and enjoys SCUBA, running and cycling.

Matt Johnson earns Ph.D. in computer science from Delft

Research Scientist Matt Johnson has earned his Ph.D. in computer science from Delft University of Technology in the Netherlands. His thesis focused on improving the effectiveness of human-robot teams.

Dr. Johnson has a bachelor's degree in aerospace engineering and a master's in computer science. He came to IHMC in 2002 after 10 years of active duty as a Naval aviator, flying both fixed-wing aircraft and helicopters. He continued in the Navy Reserve after joining IHMC, retiring in June 2012 after 20 years of service.

He selected Delft University through connections in his work at IHMC, principally IHMC Senior Research Scientist Dr. Jeff Bradshaw and Dr. Maarten Sierhuis, director of the Nissan Research Center—Silicon Valley. His advisor at Delft was Dr. Catholijn Jonker. The university allowed him to work remotely, traveling to Delft about every six months. "It took a little longer than I liked, but I was enjoying working here and did not want to interrupt that for full-time school," Dr. Johnson said.


Dr. Matt Johnson

Among his most recent work is as part of IHMC's team in the DARPA Robotics Challenge. IHMC finished first in the initial phase, and second overall in the second phase of the international competition. He is also Co-PI on the National Robotics Initiative for development of humanoid avatars using NASA's Valkyrie robot, based on Robonaut, and serves as the lead PI in IHMC's micro-air vehicles project for the Air Force Research Lab, and the PI for a NASA project on rotorcraft noise minimization.

Other significant work at IHMC includes working on the Oz flight display; the NASA Human-Robot Teamwork project; the DARPA Augmented Cognition project for improving human performance; and the DARPA Little Dog project to develop walking algorithms for a quadruped robot on rough terrain.

Dr. Johnson has been the lead on integration of robots in several IHMC projects, including for both NASA and the Office of Naval Research projects.

"The whole point of getting the Ph.D. is to be able to feed myself," Dr. Johnson said. "It's challenging to get research grants without a Ph.D., so it's beneficial to my longevity here at IHMC."

Rappaport named Fellow by National Institute of Inventors

Dr. Alain T. Rappaport has been named a prestigious Fellow of the National Academy of Inventors (NAI). Dr. Rappaport serves on the IHMC Board of Directors and its Science Advisory Council.


Dr. Alain T. Rappaport

Dr. Rappaport was cited for demonstrating "a highly prolific spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on quality of life, economic development, and the welfare of society."

The NAI is based in Tampa. It was founded in 2010 "to recognize investigators at universities and non-profit research institutes who translate their research findings into inventions that may benefit society," according to the group's website.

Dr. Rappaport is an Internet and software entrepreneur, the co-founder and CEO of Nudgit, Inc., an Internet company focused on intelligent choice. He received his M.D. from the Necker Sick-Children School of Medicine, René Descartes University, and his Ph.D. in Molecular Pharmacology from the Pierre and Marie Curie University in Paris. Prior to Nudgit, Dr. Rappaport was general manager of health search in the Bing group at Microsoft. He also served as general manager of health search for Microsoft's Health Solutions Group.

He has published in the areas of artificial intelligence, cognitive science and neurosciences in major journals and spoken at leading technology and business workshops and conferences. Dr. Rappaport served as a NASA Advisory Council, Technology and Innovation Committee member in 2010-2012 and is a founding member of the Innovative Applications of Artificial Intelligence (IAAI) Conference. He holds over 10 patents.

NAI members represent top research institutes and universities around the world. Fellows now include 61 presidents and senior leadership of research universities and non-profit research institutes, 208 members of the other National Academies (NAS, NAE, IOM), 16 recipients of the U.S. National Medal of Technology and Innovation, 10 recipients of the U.S. National Medal of Science, 21 Nobel Laureates, 11 Lemelson-MIT prize recipients, 107 AAAS Fellows, and 62 IEEE Fellows. IHMC Director and CEO Dr. Ken Ford was named a Charter NAI Fellow in 2012.

Dr. Rappaport will be inducted during the 4th Annual NAI Conference on March 20, 2015, at the California Institute of Technology in Pasadena.

2014 Cmap Conference in Brazil

Researchers and educators from around the world gathered in Santos, Brazil, in September 2014 for the Sixth International Conference on Concept Mapping (CMC2014). The event was started by Dr. Alberto Cañas, IHMC co-founder, associate director and senior research scientist.

The event was co-sponsored by IHMC, USP80, Petrobras, FAPESP and the University of São Paulo School of Arts, Sciences and Humanities.

The thrust of the presentations was to address various aspects of knowledge management, considering the concept mapping technique as the preferred choice to represent knowledge and organize it visually.

Dr. Cañas is the leading developer of CmapTools, whose client base includes such diverse entities as Microsoft, the U.S. Navy and Cirque de Soleil. CmapTools, provided as a free download by IHMC (http://cmap.ihmc.us), has been downloaded millions of times around the world. IHMC is recognized as the world leader on concept mapping, a technique for graphically organizing and representing knowledge. It was well represented at the conference, whose theme was "Concept Mapping to Learn and Innovate."

Dr. Cañas served as a Program Committee chair and on the Steering Committee. Dr. Joseph D. Novak, who pioneered concept mapping, was Program Committee honorary chair, and addressed the conference's opening and closing sessions. They jointly participated in Poster Session 3, "How Good is My Concept Map? Am I a Good Concept Mapper?" Dr. Novak is a senior research scientist at IHMC, and a Professor Emeritus at Cornell University.

Dr. Robert Hoffman, IHMC senior research scientist, joined a presentation on "The Use of Concept Maps in Organizations." He uses Cmaps extensively in research on expertise, especially on how to capture and preserve an expert's knowledge in any particular field.

The conference is held every two years, alternating between Europe and the Americas. Among the nations represented in 2014 were Brazil, China, Iran, Uruguay, Chile, Mexico, Saudi Arabia, Spain, Colombia, Australia, Canada, Italy, Argentina, Costa Rica, India, Estonia, South Africa, Switzerland and the United Kingdom.

"Brazil has become the organizer of great events, including the FIFA World Cup and the Olympics," Dr. Cañas said. "Keeping it in perspective, it's the natural location for our event. The wide variety of topics in the academic program, with a strong presence of Brazilian educators and researchers, shows the growth in interest and usage of concept mapping in the country. We welcome these new participants to the Cmappers community. And, of course, the conference would not take place if it were not for all the authors willing to share their work."


Dr. Alberto Cañas


Dr. Joseph D. Novak


Dr. Robert Hoffman

Science Saturdays

Science Saturdays is a hands-on science program for kids in grades 3, 4 and 5. They are held one Saturday a month during the school year.

Past activities have included a widely diverse list of subjects, including lemon batteries, roller coasters, bridges, slime and secret codes.

PENSACOLA

January 24 - Electric Circuits
Presented by Dr. Matt Johnson, IHMC

February 21 - Holograms and Lasers
Presented by Dr. Chandra Prayaga and Dr. Aaron Wade, University of West Florida

March 21 - Pendulums
Presented by Dr. Sylvan Bertrand, IHMC

April 25 - Running Robots
Presented by Dr. Sebastian Cotton, Robots Unlimited

OCALA

January 10 - Paper Helicopters
Presented by Dr. David Atkinson, IHMC

February 7 - Bridges
Presented by Mr. Adam Dalton, IHMC

March 7 - Dophins
Presented by Dr. Lori Marino, Kimmela Center

April 4 - Food. What's In It?
Presented by Prof. Sunny Ferrero, Rasmussen College

May 2 - Running Robots
Presented by Dr. Sebastian Cotton, Robots Unlimited

Profiles of key new employees at IHMC

A research institute like IHMC sees a steady flux in employees, both in and out, for many reasons. New employees will join the institute when new grants are awarded and the research scientists in charge of the various grants ramp up staffing to handle the tasks. The DARPA Robotics Challenge brought a wave of new employees to join the Robotics Team, some for short periods to work on specialized tasks, others for longer duration. IHMC also sees employees come and go as they move back and forth between the institute and universities, government agencies and corporations. Some employees work with their time split between IHMC and another entity. In the often close-knit worlds that are research, academia and government, this circulation helps create relationships among individuals and institutions that foster collaboration and innovation. The following profiles highlight a number of key employees who joined IHMC during the fall of 2014 in a variety of research positions.

Jose Benavides

Jose Benavides joined IHMC in December 2014 as a research engineer. He is building on more than six years with the Advanced Control and Evolvable Systems (ACES) Group in the Intelligent Systems Division at NASA Ames Research Center.

Benavides leads an engineering team in charge of the NASA International Space Station (ISS) Synchronized Position Hold, Engage, Reorient Experimental Satellites (SPHERES) Facility. It is one of the most used and popular Space Station National Lab facilities.

His past projects include rapid prototyping of controls systems using FPGAs, controls-oriented vehicle design of air-breathing hypersonic aircraft, trajectory generation and optimization for tactical flight management systems, pilot-in-the-loop flight simulation, and small satellite software. His research interests include embedded systems, rapid prototyping of control systems, air traffic guidance and control, spacecraft, small satellites, robotics, and human-machine interaction (HMI).

Benavides has bachelor's and master's degrees from Arizona State University in electrical engineering, with specialization in control systems.

His grandparents came to California from Mexico as migrant farmworkers. Both his parents were born in Texas and went on to earn graduate degrees. His father is a mechanical engineer, and Benavides said "my first memories are of working with computer parts at home." He calls himself an "engineer nerd" who got interested in robotics in high school.

He is married (Tiffani) with two children (Diego, 3, and Sedona, 2). His hobbies include reading, hiking, dancing and computer networking.

Dr. Archna Bhatia

Dr. Archna Bhatia began work at IHMC in Ocala in January as a research associate.

Dr. Archna was most recently a visiting postdoctoral researcher at Carnegie Mellon University. She has also worked as a lecturer at Northwestern University, an instructor at Loyola University Chicago, and as a research assistant at the University of Chicago and at the University of Illinois Urbana-Champaign.

Dr. Archna completed her Ph.D. in linguistics from the University of Illinois at Urbana Champaign. Her research areas include linguistics, natural language processing and second language acquisition. She said she is particularly interested in modeling linguistic systems to figure out the structure.

She had applied to a number of universities in both Canada and the United States, and chose the University of Illinois because of its strong linguistics and computer science programs.

She was born and raised in Delhi, India, and attended Delhi University where she earned a dual undergraduate degree in mathematics and education. But she said she also always had a strong interest in languages. During a break in her undergraduate studies she met students who were studying linguistics, and she found her career path.

"I was always a good student, and I liked studying," she said. "I was always interested in science and math."

Dr. Archna lists her hobbies as "finding new things to learn" and walking and running. But, she said, "Usually I have less time than I have things to do."

Dr. Butler Hine

Dr. Butler Hine joined IHMC in January as a senior research scientist. Dr. Hine will continue his work at NASA Ames Research Center via the Intergovernmental Personnel Act (IPA).

Dr. Hine was most recently the project manager for the Lunar Atmosphere and Dust Environment Explorer (LADEE) mission, an orbiter launched in 2013. Prior to LADEE, he managed the Small Spacecraft Division at NASA Ames.

He has managed other NASA programs, including the Robotic Lunar Exploration Program, the Computing, Information, and Communications Technology Program, and the Intelligent Systems Program. He also directed the Intelligent Mechanisms Laboratory at NASA Ames, which pioneered the use of telepresence and virtual reality to control remote exploration systems.

He was president and CEO of a Silicon Valley software company which developed advanced visualization tools for managing large corporate networks.

He received his bachelor's degree in physics and mathematics, summa cum laude, from the University of Alabama, and master's and doctorate degrees in astronomy from the University of Texas in Austin. His professional background includes work in spacecraft design, flight software and avionics, radio and optical astronomy, machine vision and robotics, and 3D visualization.

His research interests include low-cost spacecraft designs, real-time high-performance computing architectures and space telerobotics.

Dr. Hine said that the Apollo landings inspired his childhood interest in science and space exploration.

Outside the office he engages in martial arts, with two 3rd-degree black belts, as well as hiking and camping. He is a commercial pilot. He is married (Ann), with one child (Stephen), a high school physics teacher.

Dr. Gregory Dubbin

Dr. Gregory Dubbin, a newly minted Ph.D., begin work in December at IHMC as a research associate in the Ocala facility.

Dr. Dubbin specializes in the areas of machine learning and natural language processing applications. His recent dissertation explores the applications of particle filters in unsupervised and semi-supervised part-of-speech induction.

He has ties to the Central Florida region, having received his bachelor's in computer science from the University of Central Florida and his master's in computer science from the University of Oxford, where he also recently received his Ph.D. He has interned at BAE Systems and at Motorola.

He was born in Boston, but grew up in Boca Raton, Fla. He said he was very interested in the sciences in general as a child, especially physics. But he got interested in computer science in high school. He joined the school's robotics team, and was put in charge of programming a robot the team built for a national competition.

"I'm really enjoying the challenge at IHMC, and the chance to learn from everyone here," he said.

Dr. Dubbin is married (Jen) and lists his outside interests as spending time with friends and playing video games. But, he said, "I haven't had that much free time lately, I was finishing my thesis."

Dr. Kristy Hollingshead-Seitz

Dr. Kristy Hollingshead-Seitz joined IHMC at the Ocala faciliy in December as a research scientist from the Department of Defense, where she worked on analytics for deep understanding of large collections of text.

She previously held a postdoc at the University of Maryland in College Park, working on machine translation pipelines. She received her Ph.D. and master's in computer science from Oregon Health & Science University (OHSU), and her bachelor's in English-creative writing from the University of Colorado. She was an NSF Graduate Research Fellow from 2004-2007.

In Ocala, Dr. Hollingshead will focus on using natural language processing to model the syntactic and phonetic characteristics of people with neurological disorders such as Alzheimer's and amyotrophic lateral sclerosis (ALS). Her work is concentrated on the development of automated methods for quantifying signals of health from a multi-modal array of features, including both written and spoken language, as well as pattern of life, social engagement and physiology.

She was born near Oamaha, Neb., and grew up in Denver. Calling herself "a total bookworm" as a child with no interest in science, she said her mother insisted she take a programming course in college, "and I loved it."

She's married to Tristan, a golf professional who is "really excited" to be living in Florida.

BILL KLYN

Bill Klyn told his Ocala audience that the world is on an unsustainable path in terms of natural resources. The good news is that customers are demanding more leadership from business, and they are responding. His talk: "The Responsible Economy–The Environment is the Economy."

Klyn said there is growing evidence of significant shifts in thinking on how businesses must position themselves for success in the future. Still, global indicators of the health of our planet continue to move in the wrong direction.

Klyn is the international business development manager for Patagonia, the global outdoor clothing company. He was a founding member of the American Fly Fishing Trade Association and the Recreational Boating and Fishing Foundation. He helped create "Buccaneers and Bones," a show featuring celebrity anglers on the Outdoor Channel.

LARRY SMARR

We are outnumbered ... in our own bodies. The 10 trillion cells composing our bodily form host another 100 trillion microorganisms, yet medical science knows little about them. Changing that is the goal of the National Institutes of Health's Human Microbiome Program, part of the burgeoning field of medical research spurred by the use of Big Data to reveal the secrets of the human genome.

Larry Smarr has been collecting massive amounts of data on his own body for that research. He detailed the world of computer-driven research in Pensacola in his talk, "The Human Microbiome and the Revolution in Digital Health."

Smarr is founding director of the California Institute for Telecommunications and Information Technology. He has been quoted in The New York Times, Wall Street Journal, Business Week and CNN.

DR. THOMAS DAYSPRING

Forget cholesterol–for a healthy heart, cut carbohydrates instead. New research fingers carbs as the culprits in heart disease. That's the message delivered in Pensacola by cardiologist Dr. Thomas Dayspring, in his talk, "Arteriosclerosis: It's the Cholesterol, Stupid–or is it?"

Dr. Dayspring dismisses talk about "good" or "bad" cholesterol or worry about the size of cholesterol particles. He said research shows that it is far more important to measure lipoproteins and the total number of particles in the blood.

Dr. Dayspring is a Diplomate of both the American Board of Internal Medicine and American Board of Clinical Lipidology. He is a clinical assistant professor of Medicine at Rutgers Biomedical and Health Sciences, New Jersey Medical School.

ESTHER GOKHALE

Treating neck and back problems costs billions of dollars every year. Much of that cost could be prevented if people simply used proper posture. That's the message Esther Gokhale (pronounced Go-clay) delivered in both Ocala and Pensacola.

Gokhale argues that people in industrialized countries have adopted postural habits dramatically different from those still found in non-industrialized peoples. Restoring a healthy posture requires a return to natural alignment. She teaches The Gokhale Method® for attaining this. Her own crippling back pain led her to develop this approach to restoring proper posture. She and certified trainers teach it around the world.

Gokhale studied biochemistry at Harvard and Princeton, and acupuncture at the San Francisco School of Oriental Medicine. She consults with physician groups and athletic teams, including in the NFL and college teams.

DR. GERI RICHMOND

Although the special properties of water have been valued for centuries, scientists remain perplexed by its molecular makeup. Equally perplexing is the surface of water, involved in some of the most important reactions in our atmosphere, and our bodies. Dr. Geri Richmond specializes in understanding water's surfaces, the subject of her talk in Pensacola: "Surf, Sink or Swim: Understanding Environmentally Important Processes at Water Surfaces." IHMC co-hosted the lecture with the University of West Florida's William D. Smart Seminar Series in Chemistry.

Dr. Richmond is the Richard M. and Patricia H. Noyes Professor in the Department of Chemistry at the University of Oregon. She received her Ph.D. in chemical physics at the University of California, Berkeley. She is a fellow of the American Physical Society and the American Academy of Arts and Sciences.

DR. BRUCE AMES

The low quality of the food many people consume means most of us are deficient in at least some critical nutrients. The body, faced with shortages of key nutrients, quietly sacrifices long-term health for short-term survival. The result is age-related diseases like cancer, heart disease, immune dysfunction and cognitive decline.

Those are the conclusions of researchers like Dr. Bruce Ames, emeritus professor of Biochemistry and Molecular Biology at the University of California, Berkeley, and a senior scientist at Children's Hospital Oakland Research Institute. He discussed the research findings in his talk in Pensacola, "Vitamin and Mineral Inadequacy Accelerates Aging-associated Disease."

Dr. Ames is a member of the National Academy of Sciences and served on the board of directors of the National Cancer Institute and the National Cancer Advisory Board.

CAPTAIN JOSEPH R. HIBBELN, M.D.

Capt. Joseph R. Hibbeln, M.D., told an Ocala audience that the negative impact of not getting enough of the right nutrients is real, and can affect everything from pregnancy to mental health. His talk: "Nutritional Armor–Brain and Behavior."

His observation that nutritional support for higher IQ from eating fish in pregnancy outweighs the risks of trace mercury is cited as foundational by The Dietary Guidelines for Americans 2010, the World Health Organization and the FDA.

Dr. Hibbeln is acting chief of the Nutritional Neurosciences Laboratory of Membrane Biophysics and Biochemistry at the National Institute on Alcohol Abuse and Alcoholism at the National Institutes of Health. He is board-certified in Psychiatry and Neurology, a lipid biochemist, a nutritional epidemiologist, and has authored more than 120 peer-reviewed scientific articles.

BILL SHEPHERD

Bill Shepherd commanded the first expedition to the International Space Station in 2000. He and two Russian cosmonauts brought the station to "life" on their 141-day mission. He brought an informative video to accompany his reminisces about the ISS and his long career in the space program. His Pensacola talk: "Flying the First Expedition to the International Space Station."

Shepherd is a Naval Academy graduate and has graduate degrees in mechanical engineering and ocean engineering from M.I.T. He is a former Navy SEAL who served with Underwater Demolition Team Eleven, SEAL Teams One and Two, and Special Boat Unit Twenty. As a civilian he was assigned to the Naval Special Warfare Command to help develop new capabilities for the SEALs and Special Boat Sailors of Tomorrow. His numerous awards include the Congressional Space Medal of Honor.

DR. DOMINIC D'AGOSTINO

Dr. Dominic D'Agostino, a researcher and assistant professor at the University of South Florida's Morsani College of Medicine, and a visiting senior research scientist at IHMC, is on the leading edge of research showing that a ketogenic diet can have powerful therapeutic value in fighting cancer, controlling seizures and possibly preventing neurodegenerative diseases. His Pensacola talk: "Metabolic Therapies: Therapeutic Implications and Practical Application."

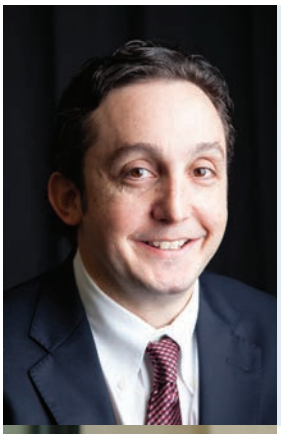
Dr. D'Agostino holds a Ph.D. in physiology and neuroscience from the University of Medicine and Dentistry of New Jersey. At USF his emphasis is on biochemistry, neuropharmacology and nutrition. His research is focused on developing and testing nutritional strategies for healthy weight loss and enhancing cognitive and physical performance, and to develop specific metabolic therapies and supplements for neurological diseases and cancer.

DR. JEFF VOLEK

Dr. Jeff Volek told an Ocala audience that an explosion in new research into diets that severely restrict carbohydrates is bringing the ketogenic diet into the nutritional mainstream, especially to curb obesity. He explored the growing research in his talk, "The Many Facets of Keto-Adaptation: Health, Performance and Beyond."

Keto-adaptation is a metabolic state that can have widespread, profound therapeutic and performance-enhancing effects, ranging from reversing type 2 diabetes to shrinking tumors to allowing ultra-endurance runners to set course records.

Dr. Volek is a professor in the Department of Human Sciences at The Ohio State University. His research includes understanding how ketogenic diets affect the gut microbiome, adaptations to training and overall metabolic health. He has authored/co-authored four books and delivered over 100 invited presentations on low carbohydrate diets around the world.



DR. MICHAEL OKUN, M.D.

As many as 1 million Americans suffer from Parkinson's disease, with another 60,000 diagnosed with the disease each year. It can be an unsettling diagnosis, but there are ways to mitigate its impact and preserve quality of life. That's the message Dr. Michael Okun, MD, delivered in Ocala in his talk, "Parkinson's Treatment: 10 Secrets to a Happier Life."

Dr. Okun has been referred to as "the voice of the Parkinson's disease patient." He has an international following on the National Parkinson Foundation's Ask the Doctor web-forum.

Dr. Okun is highly respected as a world's authority on Parkinson's disease treatment. He is administrative director and co-director of the University of Florida Center for Movement Disorders and Neurorestoration. He has been supported by grants from the National Parkinson Foundation, the National Institutes of Health, the Parkinson Alliance and the Michael J. Fox Foundation for Parkinson's Disease Research. His published works can be found in the New England Journal of Medicine, at the National Parkinson Foundation and www.parkinsonsecrets.com.

DAVID WAGGONNER

Pensacola suffered historic flooding in April 2014. To help find solutions to prevent future floods, IHMC brought in New Orleans architect David Waggonner, the leader of an international team that designed a $6.2 billion water-management plan for New Orleans. His talk: "Watershed Planning–Framework and Scales."

Waggonner developed a process that examines history, soils, biodiversity, infrastructure networks and urban space, along with the forces of water, as the foundation for watershed management. He initiated the Dutch Dialogues, an exchange between Dutch design professionals and their American counterparts.

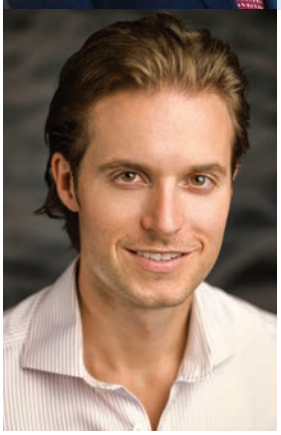
Waggonner is president of Waggonner and Ball, an award-winning, internationally active architecture and planning practice in New Orleans. The firm's architectural work varies from historic preservation to modern institutional projects, including museums, foundations and educational facilities. He is a Fellow of the American Institute of Architects, has taught or lectured at numerous universities, and spoken about sustainable water-based urban design worldwide.

DR. OTIS BRAWLEY

When doctors put more credence in what they believe than what they actually know, health care suffers. With medical care suffering from the failure to go where science points it, "Do we get what we pay for" in the U.S.? No, says Dr. Otis Brawley, chief medical and scientific officer for the American Cancer Society.

In his Pensacola lecture, "Cancer Control in the 21st Century," Dr. Brawley said 18 cents of every dollar spent in the U.S. goes to medical care, more per person than in any other nation. Yet other nations often do a better job of applying advanced research results from the U.S. to improve their own health care outcomes. He calls for evidence-based care to drive treatment, using assessments that tell us which approaches work best, including in terms of return on the medical dollar.

Dr. Brawley is professor of hematology, oncology, medicine and epidemiology at Emory University, and a medical consultant to CNN. He is on the Centers for Disease Control and Prevention Advisory Committee on Breast Cancer in Young Women, and a former member of the CDC Breast and Cervical Cancer Early Detection and Control Advisory Committee.



DR. COLIN CHAMP

Someday physicians might prescribe diet as commonly as they prescribe drugs to help fight disease. As research uncovers new ways to get at what ails the body, scientists are learning that there is more than one way to augment a cure. That's the message Dr. Colin Champ delivered in Ocala in his talk, "Augmenting Cancer Therapy with Diet."

Dr. Champ said research indicates that a ketogenic diet–high in fat, moderate in protein, and low or severely restricted in carbohydrates–can have a profound impact on cancer cells. It has been long known that glucose is a primary fuel for cancer cells, and he said that restricting glucose may, in a sense, "starve" cancer. Current studies in animals have revealed an additive effect of a ketogenic diet with standard treatments like chemotherapy and radiation. Along these lines, diet could emerge as a key component of cancer treatment. This is supported by nearly a century of data revealing the impact of diet on cancer.

Dr. Champ is a radiation oncologist and assistant professor at the University of Pittsburgh Cancer Institute and University of Pittsburgh Medical Center.

DR. SHIRLEY POMPONI

The explosion of data has people seeing new scientific frontiers everywhere from the edge of the visible universe to the microbiome inside our own bodies. Dr. Shirley Pomponi points to the oceans, a place humans might see as familiar, but which remains 95 percent unexplored.

That so little is know about the ocean speaks volumes not just about its size, but the size of the challenge involved in exploring its depths. But where humans fear to tread, robots can shine. Dr. Pomponi examined the transformative future of oceanic exploration in her talk in Ocala, "Telepresense and Robotics: New Paradigms for Ocean Exploration?"

Dr. Pomponi is research professor and executive director of the NOAA Cooperative Institute for Ocean Exploration, Research, and Technology at Harbor Branch Oceanographic Institute, Florida Atlantic University, and professor of Marine Biotechnology at Wageningen University, Netherlands. She co-chairs the National Academy of Sciences committee on the Decadal Survey of Ocean Sciences 2015.

DR. ALESSIO FASANO

Gluten-related disorders affect approximately 1 in 133 people, a rate that has doubled in the U.S. every 15 years over the past 35 years. Dr. Alessio Fasano is a world-renowned, ground-breaking researcher on celiac disease. He founded the Center for Celiac Research in 1996 to provide a state-of-the art focus on gluten-related disorders, including celiac disease and gluten sensitivity, which affects an estimated 6 percent of the U.S. population.

He reviewed the new research on the microbiome of the human intestinal system in Pensacola in his talk, "The Gut is Not Like Las Vegas: What Happens in the Gut Does Not Stay in the Gut."

Trained in Naples, Italy, as a pediatric gastroenterologist, Dr. Fasano was recruited to the University of Maryland School of Medicine in 1993 and founded its Division of Pediatric Gastroenterology and Nutrition. His latest book, "Gluten Freedom," is written for general readers to help dispell confusion about gluten, celiac disease and gluten sensitivity. It was named one of Amazon's Top 100 health books for 2014.

DR. JONATHAN CLARK

Dr. Jonathan Clark was the medical director for the Red Bull Stratos team that riveted the world's attention in 2012 with a record-setting parachute jump from 128,000 feet. On the way down the parachutist, Felix Baumgartner, reached supersonic speed at Mach 1.25 (843.6 mph). Dr. Clark discussed the project at his talk in Pensacola, "Surviving a Supersonic Stratospheric Freefall: The Red Bull Stratos Project."

A six-time Space Shuttle crew surgeon, Dr. Clark spent 26 years with the U.S. Navy, and headed the Spatial Orientation Systems Department at the Naval Aerospace Medical Research Laboratory at Pensacola Naval Air Station. While in the Navy, he qualified as a Naval flight officer (NFO), flight surgeon, diver and Special Forces free-fall parachutist.

Today, Dr. Clark is an assistant professor of Neurology and Space Medicine at Baylor College of Medicine and teaches operational space medicine at its Center for Space Medicine. He serves as space medicine advisor for the National Space Biomedical Research Institute at Baylor, as well as chief medical officer for Excalibur Almaz, a commercial space company.

DR. ROBERT KNIGHT

Florida is blessed with some of nature's finest water resources, but has managed to steadily deplete and pollute them. Dr. Robert Knight, one of the leading voices for protecting those resources, dissected the state's "water economy" for an Ocala audience in his talk, "Florida's Springs, Aquifer and Water Economy."

Unfortunately, he said, protection of Florida's springs, rivers, lakes and wetlands has taken a back seat to providing free groundwater to for-profit enterprises. The cost of correcting the mistakes made in managing these resources may be in the billions of dollars, a price tag that nonetheless is less expensive than continuing to destroy them.

Dr. Knight is the founder and director of the Howard T. Odum Florida Springs Institute, a non-profit supporting science and education necessary for wise management of Florida's artesian springs. He is an environmental scientist with more than 38 years of professional experience in Florida, including detailed ecological studies at more than 20 large springs. He is working with state agencies in developing restoration plans for a number of major springs.

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