SANDIA LABNEWS
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Apollo 11: Sandia's role PAGE 3

Dragonflies: A lesson in missile defense

By **Troy Rummler**

Be grateful you're not on a dragonfly's diet. You might be a fruit fly or maybe a mosquito, but it really wouldn't matter the moment you look back and see four powerful wings pounding through the air after you. You fly for your life, weaving evasively, but the dragonfly somehow tracks you with seemingly instant reflexes. For a moment, you think you've gotten away, just as it closes in swiftly from below for the kill.

Then, as the dinosaur-era predator claws into you with spiny legs and drags you into its jaws midair, you might wonder to yourself, "How did it catch me with such a tiny brain and no depth perception?"

Sandia is homing in on the answer with research showing how dragonfly brains might be wired to be extremely efficient at calculating complex trajectories.

In recent computer simulations, faux dragonflies in a simplified virtual environment successfully caught their prey using computer algorithms designed to mimic the way a dragonfly processes visual information while hunting. The positive test results show the programming is fundamentally a sound model.

The Sandia research is examining whether dragonfly-inspired computing could improve missile defense systems, which have the similar task of intercepting an object in flight, by making on-board computers smaller without sacrificing speed or accuracy. Dragonflies catch 95% of their prey, crowning them one of the top predators in the world.

Computational neuroscientist Frances Chance, who developed the algorithms, presented her research earlier this month at the annual meeting of the Organization for Cognitive Neurosciences in Barcelona, Spain. She will also present at the International Conference on Neuromorphic Systems, July 23–25, in Knoxville, Tennessee.

Research replicates dragonfly's highly efficient brain

Frances specializes in replicating biological neural networks — brains, basically — which require less energy and are better at learning and adapting than computers. Her studies focus on neurons, which are cells that send information through the nervous system.

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DRAGONFLY AI — Sandia scientist Frances Chance is revealing insights into how dragonflies intercept their prey in flight, which might be useful for missile defense.
Photo by Randy Montoya

Personalized medicine software vulnerability uncovered by Sandia researchers

Discovery led developers to software fix

By **Melissae Fellet**

Sandia researchers have identified a weakness in one common open-source software for genomic analysis that left DNA-based medical diagnostics vulnerable to cyberattacks.

The researchers notified the software developers, who issued a patch to fix the problem, and the issue has been fixed in the latest release of the software. While no attack from this vulnerability is known, the National Institutes of Standards and Technology recently described it in a note to software developers, genomics researchers and network administrators.

The discovery reveals that protecting genomic information involves more than safe storage of an individual's genetic information. The cybersecurity of computer systems analyzing genetic data is also crucial, said Corey Hudson, a Sandia bioinformatics researcher who helped uncover the issue.

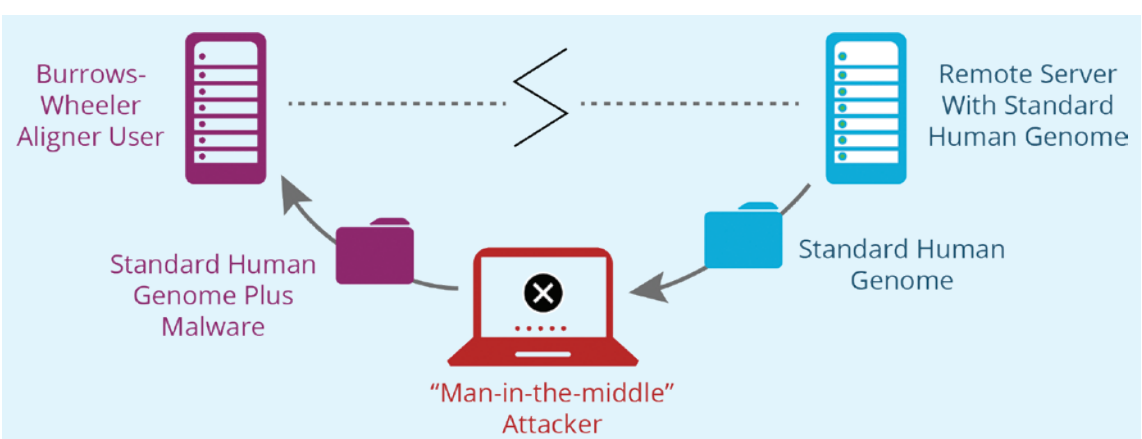
Personalized medicine — the process of using a patient's genetic information to guide medical treatment — involves two steps: sequencing the entire genetic content from a patient's cells and comparing that sequence to a standardized human genome. Through that comparison, doctors identify specific genetic changes in a patient that are linked to disease.

Genome sequencing starts with cutting and replicating a person's genetic information into millions of small pieces. Then a machine reads each piece numerous times and transforms images of the pieces into sequences of building blocks, commonly represented by the letters A, T, C and G. Finally, software collects those sequences and matches each snippet to its place on a standardized human genome sequence. One matching program used widely by personalized genomics researchers is called the Burrows-Wheeler Aligner.

Sandia researchers studying the cybersecurity of this program found a weak spot when the program imported the standardized genome from government servers. The standardized genome sequence traveled over insecure channels, which created the opportunity for a common cyberattack called a "man-in-the-middle."

In this attack, an adversary or a hacker could intercept the standard genome sequence and then transmit it to a BWA user along with a malicious program that alters genetic information obtained from sequencing. The malware could then change a patient's raw genetic data during genome mapping, making the final analysis incorrect without anyone knowing it. Practically, this means doctors may prescribe a drug based on the genetic analysis that, had they had the correct information, they would have known would be ineffective or toxic to a patient.

Forensic labs and genome sequencing companies that use this mapping software were also temporarily vulnerable to having results maliciously altered in the same way. Information from direct-to-consumer genetic tests was not affected by this vulnerability because these tests use a different sequencing method than whole genome sequencing, Corey said.



CYBERSLEUTH SAVE — Sandia researchers uncovered a vulnerability in open-source genome-mapping software that has now been fixed by developers.
Graphic by Brent Haglund

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LABNEWS Notes

OUR STORY

Acceptance and advocacy for LGBTQ

By ***Mark Sellers***
Associate Labs Director

Our family's story starts nine years ago on a rainy night in Charlottesville, Virginia. We were in the driveway of our son Brian's small rental property, where he lived while attending college.

Brian had been honored with membership in an academic society at the University of Virginia earlier that evening. His brother and sister were with us in the car as we dropped him off following the dinner and recognition ceremony held under the rotunda at President Jefferson's university.

As we said our goodbyes before the long drive home to northern Virginia, Brian indicated he had something to tell us before sprinting through the rain to his front door.

His comments were well-prepared and rehearsed as he explained his childhood struggles and his reservations about confiding in us after all this time. "I'm gay," he said, "and it is something I've known about myself since my early teens."

Associate Labs Director Mark Sellers
Photo by Stephanie Blackwell

Brian told us that his risk of disclosure was greatly reduced now that graduation was imminent and we were beyond the financial burdens of college. He had watched other friends come out to their families, only to be ostracized and cut off from financial support. He thought that, given our family's strong Catholic faith and active support of the church, he could not risk a similar fate. I still cringe when I think about the anxiety he must have felt.

I like to think that love conquers all. That was the case in our family, as we embraced Brian with acceptance. While Brian's disclosure seemed to be no surprise to his brother and sister, his mom was a different story.

I recall a lot of crying on the way home — grief for the life she thought her son would have, concerns over the difficulties and challenges associated with being gay in today's society — all of those heavy emotions were mixed in with the tears. The most bitter sting, however, came with the knowledge that Brian had to hide all those years from his own family, and the recognition that we helped create the environment that made hiding necessary.

That was the beginning of our transformation into acceptance of and advocacy for the LGBTQ community. The concept of duality resonates with us, both as devout Catholics and as LGBTQ advocates. We want the same happiness for our son as any parents want for their kids. We want Brian to have a fulfilled life and someone to love. We are overjoyed that he married his longtime partner, Steven, in June. We love Steven and have welcomed him to our family with open arms.

But that doesn't mean the hardship for our family is over. Recently, I've watched as rifts developed in my wife's family over the nuptials. Many of her immediate family chose not to attend. Gay marriage is legal across the United States, and while not a Catholic Church sacrament, Brian and Steven's ceremony showcased the beauty of a typical wedding and subsequent reception — most notably a public expression of love and the accompanying celebration. We can't help but be hurt by what seemed like rejection in the name of religious convictions, and I wonder about the lasting effects on family relationships.

Creating a safe and supportive workplace

My wife, Ann, and I have been open about our story because we hope it helps create an environment of greater awareness, understanding and acceptance in our community.

LOVE CONQUERS ALL — From left, Steven, Brian, Ann and Mark pose for a family picture at Brian and Steven's wedding in June.
Photo courtesy of the Sellers Family

I am an LGBTQ ally who is committed to engendering an inclusive workplace at Sandia, free of discrimination on any basis, especially sexual orientation or gender identity. We can all do more to be more welcoming and encouraging of our LGBTQ colleagues.

Whether you or a close friend or family member identifies as LGBTQ or you don't know someone personally but want to learn more about what it means to be an ally, I invite you to learn more about the important work of our employee resource group, the Sandia Pride Alliance Network.

SPAN works actively to help create a safe and supportive environment. We want our LGBTQ colleagues to be able to bring their whole selves to work at sandia, and not be left feeling like they have to hide part of their identity. SPAN provides resources for greater learning and awareness of LGBTQ issues and fosters open discussions that help dispel common myths and stereotypes. This is an important step toward increasing greater understanding and respect in all of our lives.

I still believe love conquers all in the end — no matter your journey. As for me and my family, we rejoice in having welcomed a new son into our family this summer.

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Albuquerque, New Mexico 87185-1468
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Tonopah, Nevada | Nevada National Security Site
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Tim Deshler, Editor 505-844-2502
Angela Barr, Production 505-844-1388
Laura Hatfield, Production 505-845-0612
Randy Montoya, Photographer 505-844-5605
Paul Rhien, California Site Contact 925-294-6452

CONTRIBUTORS

Michelle Fleming (ads, milepost photos, 505-844-4902), **Neal Singer** (505-846-7078), **Stephanie Holinka** (505-284-9227), **Kristen Meub** (505-845-7215), **Michael Baker** (505-284-1085), **Troy Rummler** (505-284-1056), **Manette Fisher** (505-844-1742), **Valerie Alba** (505-284-7879), **Meagan Brace** (505-844-0499), **Melissae Fellet** (505-845-7478), **Lucian Frank** (505-844-2020), **Darrick Hurst, team lead** (505-844-8009), **Jim Danneskiold, manager** (505-844-0587)

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LAB NEWS ONLINE: sandia.gov/LabNews

LABNEWS Notes

EDITOR'S NOTE: Lab News welcomes guest columnists who wish to tell their own "Sandia story" or offer their observations on life at the Labs or on science and technology in the news. If you have a column (500-800 words) or an idea to submit, contact Lab News editor Tim Deshler at tadeshl@sandia.gov.

STAR fellows 2019

STEM ALL-STARS — Sixteen public high school students are learning about STEM careers first-hand through the STAR (Science, Technology and Research) fellowship program. Teachers nominate students from underserved schools who plan to pursue a STEM career, have demonstrated their interest through their academic achievements and would most benefit from the program. Participants are selected by former STAR fellows who are now Sandia employees. **Photo by Tineca Quintana**

Man on the moon

Sandia scientists gave Apollo 11 mission a boost

CLEAN SLATE — Ed Powers of NASA, left, and Sandian Vernon Arnold inspect the sterilization of an interplanetary lander in this 1965 photo.

By ***Stephanie Holinka***
Photos courtesy of ***Lab News Archives***

On July 20, 1969, nearly 650 million people watched as Neil Armstrong took "...one small step for a man, one giant leap for mankind," when the Apollo 11 mission landed the first man on the moon. This year marks the 50th anniversary of that mission, and Sandia was part of the team.

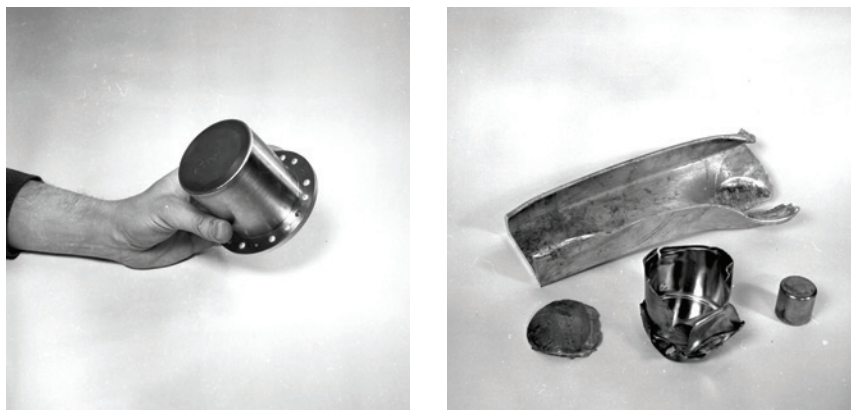
Sandia's role in the mission was out of the spotlight, but important to the success of the science mission. Sandia scientists consulted with NASA on the planetary quarantine program that sterilized items sent into space to prevent Earth contaminants from ending up on other planets.

Sandia scientists also provided testing of the nuclear heaters designed by Mound Laboratories to keep the "moonquake" instrumentation warm and functioning during the cold, approximately two-week-long lunar nights. Using the rocket sled track and other environmental test facilities, scientists conducted heat, pressure, vibration and shock testing, simulating the environment that the units could encounter in service and during an accident.

For the subsequent Apollo 12 mission, Sandia historian Rebecca Ullrich says Sandians provided technical direction for Systems Nuclear Auxiliary Power 27 development, and got to load the SNAP 27 plutonium 238 fuel capsule onto the landing module.

Rebecca also said that Sandia Labs Director John Hornbeck was appointed to NASA's Aerospace Safety Advisory Panel in 1968. The panel was created in response to the Apollo 1 accident in 1967.

One could argue that the success of the space program benefited Sandia for years after the Apollo program. The space race propelled generations of young people into engineering fields, and Sandia and the nation benefited greatly from their inspired, hard work.



BEFORE AND AFTER — Sandia scientists tested a heat source with stainless steel outer container and aluminum mounting plate. The heat source was riveted onto the Apollo lunar surface instrument package.

Dragonfly missile defense

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"I try to predict how neurons are wired in the brain and understand what kinds of computations those neurons are doing, based on what we know about the behavior of the animal or what we know about the neural responses," she said.

For example, a dragonfly's reaction time to a maneuvering prey is a mere 50 milliseconds. A human blink takes about 300 milliseconds. Fifty milliseconds is only enough time for information to cross about three neurons. In other words, to keep up with a dragonfly, an artificial neural network needs to be done processing information after only three steps — though, because brains fire lots of signals at once, each step may involve many calculations running at the same time.

Missile defense systems rely on established intercept techniques that are, relatively speaking, computation-heavy. But rethinking those strategies using highly efficient dragonflies as a model could potentially:

- Shrink the size, weight and power needs of onboard computers. This would allow interceptors to be smaller and lighter, and therefore more maneuverable.
- Reveal new ways to intercept maneuvering targets, such as hypersonic weapons which follow less-predictable trajectories than ballistic missiles.
- Reveal new ways to home in on a target with less sophisticated sensors than are currently used.

Dragonflies and missiles move at vastly different speeds, so it's unknown how well this research will ultimately translate to missile defense. But developing a computational model of a dragonfly brain also could have long-term benefits for machine learning and artificial intelligence.

AI is used throughout wide-ranging industries, from self-driving transportation to prescription drug development. These fields stand to gain from highly efficient methods for constructing fast solutions to complex problems. Ongoing research at Sandia is refining Frances' algorithms and determining where they're most applicable.

Her research is funded by Sandia's Laboratory Directed Research and Development program.

Genomic software vulnerability

CONTINUED FROM PAGE 1

To find this vulnerability, Corey and his cybersecurity colleagues at the University of Illinois at Urbana-Champaign used a platform developed by Sandia called Emulytics to simulate the process of genome mapping. First, they imported genetic information simulated to resemble that from a sequencer. Then they had two servers send information to Emulytics. One provided a standard genome sequence and the other acted as the "man-in-the-middle" interceptor. The researchers mapped the sequencing results and compared results with and without an attack to see how the attack changed the final sequence.

"Once we discovered that this attack could change a patient's genetic information, we followed responsible disclosure," Corey said. The researchers contacted the open-source developers, who then issued a patch to fix the problem. They also contacted public agencies, including cybersecurity experts at the U.S. Computer Emergency Readiness Team, so they could more widely distribute information about this issue.

The research, funded by Sandia's Laboratory Directed Research and Development program, will continue to test other genome-mapping software for security weaknesses. Differences between each computer program mean the researchers might find a similar, but not identical, issue, Corey said.

Along with installing the latest version of BWA, Corey and his colleagues recommend other "cyber hygiene" strategies to secure genomic information, including transmitting data over encrypted channels and using software that protects sequencing data from being changed. They also encourage security researchers who routinely analyze open-source software for weaknesses to look at genomics programs. This practice is common in industrial control systems in the energy grid and software used in critical infrastructure, Corey said, but would be a new area for genomics security.

"Our goal is to make systems safer for people who use them by helping to develop best practices," he said.

Sandia/New Mexico innovators honored at annual celebration

*Photos by **Lonnie Anderson***

Sandia/New Mexico hosted its 10th annual Innovation Celebration in Albuquerque May 16 to recognize innovators from the New Mexico site. The annual event honors Sandians who generated intellectual property in the previous year. At this year's event, nearly 300 innovators were recognized for their patents, copyrights, technical and innovative contributions to national security, entrepreneurial talent and development of unique solutions to complex scientific challenges.

HONORING INNOVATORS — About 200 people attended Sandia/New Mexico's 10th annual Innovation Celebration at the Indian Pueblo Cultural Center in Albuquerque May 16.

SPIRIT OF INNOVATION — Associate Labs Director Mark Sellers recognized the talented staff and continued tradition of technical innovation and engineering excellence.

Praising Sandia's culture of innovation

Sandia/California honors innovators at annual Innovation Celebration

*By **Paul Rhien***

Sandia/California hosted its annual Innovation Celebration in Livermore May 16 to recognize innovators from the California site. The celebration honored individuals who received patents, copyrights or licensed royalties, or created other intellectual property in 2018.

The annual event celebrates those who, in the previous year, developed innovative technical solutions to the nation's most pressing national security needs – spanning areas across biology, computer science, energy and more.

Amanda Dodd, senior manager of computational science and analysis, served as master of ceremonies for the evening's program, and spoke about the contributions honorees have made to Sandia's intellectual property portfolio.

"Your accomplishments showcase our capabilities and expertise at Sandia," Amanda said. "Your valuable work enhances the Labs' reputation and attracts partners from industry, academia and government. As you move your innovative technologies to the marketplace, you help broaden Sandia's impact across the nation and across the globe."

Event organizers described the Innovation Celebration not as a single event, but as an acknowledgment of a culture of innovation at Sandia.

Former Sandia/California vice president and head of Sandia's energy portfolio Rick Stulen gave the keynote address at the event.

"This celebration should not be a once-a-year kind of thing. Rather, it's something much bigger," Stulen said. "There is so much capability at Sandia, so many bright people. The future is ours if we continue to encourage and build this culture of innovation."

Stulen urged attendees to develop an innovator mindset: always be irresistibly curious, persistent in the face of failure or setbacks, problem- and purpose-focused and appreciative of diverse perspectives and accomplishments. He also encouraged Sandians to reach across organizations and embrace collaboration at all levels.

During the celebration, former Sandia researcher Greg Sommer was honored for his recent induction into Sandia's Entrepreneur Hall of Fame, which recognizes entrepreneurs who have taken Sandia technology out of the Labs and produced a commercial success with significant impact on the country's economy or quality of life. Sommer's research focused on the development of several point-of-care diagnostic technologies.

EXPANDED PORTFOLIO — Sandia/California innovators who received patents, copyrights or licensed royalties, or created other intellectual property in 2018 were recognized at the site's annual Innovation Celebration. **Photo by Randy Wong**

The evening closed with remarks from Sandia mechanical engineer Chuck Mueller, who shared his personal journey with innovation as principal investigator.

Chuck described his experiences with each step in the innovation process. "You start by getting an idea and deciding to act on it," he said. "As you face resistance, you must decide to stick with your idea and see it through to success. This involves hard work, but great learning and transformation can come from crisis. The truth can, and eventually will, rise to the surface."

"Your innovations can work, and they can change the world for the better," Chuck said.

HALL OF FAMER — Then Associate Labs Director Dori Ellis, right, congratulates former Sandia researcher Greg Sommer, who received a plaque commemorating his induction into Sandia's Entrepreneurial Hall of Fame. Sommer's work in male fertility point-of-care diagnostic technologies has earned industry accolades. **Photo by Dino Vournas**

Erik Webb testifies before Congress on fossil energy research

*By **Paul Rhien***

Sandia geoscience research and application senior manager Erik Webb provided testimony before the U.S. House of Representatives Committee on Science, Space, and Technology in Washington, D.C., on June 19. Erik's testimony focused on the importance of fossil energy research.

"The research done in fossil energy subsurface and surface infrastructure systems has been essential to our nation's move toward energy security, sustainability and stabilizing carbon emissions," Erik said in his opening remarks. "Sandia National Laboratories is proud of our heritage and the investments we have made to sustain our nation's subsurface energy science capabilities.

"We are energized by the challenge and complexity this field of science affords. It is essential our nation fully utilizes the capabilities and investments embodied in the national laboratories to meet these challenges," he said.

Erik focused his testimony on four key points. First, subsurface science is extremely complex and requires the integration of both basic and applied research. Second, science that helps understand and control the subsurface is applicable across multiple national needs. Third, the complexity of Earth systems motivates and facilitates advances in cutting-edge research. Finally, the nation benefits from the use of all of our national laboratories' technical capabilities.

This research, sponsored by DOE and in partnership with commercial industry and academia, establishes the foundation for the U.S. to remain energy independent, Erik said. "It facilitates both our current use and expanded environmental management of fossil resources, and integrates national security, renewable portfolio and basic science foundation."

Erik and his Sandia team address national security challenges at the complex intersection of Earth and engineered environments. Their work improves the fundamental understanding of the Earth's subsurface coupled with advanced engineering to address national security, oil and gas, geothermal energy, waste disposal, environmental cleanup and other national issues.

TALKING FOSSIL ENERGY — Erik Webb, right, visits with Rep. Conor Lamb, House Science, Space & Technology Subcommittee on Energy chair, following the committee hearing June 19. **Photo by Annie Chavez**

National Senior Games attracts Sandia athletes

By ***Jennifer Sawayda***

Sandians from all over the Labs participated in this year's National Senior Games in Albuquerque in June. With participants ranging from 50 to 103 years old, this year's games offered Sandians and their families a chance to test their athletic abilities against some of the best senior athletes in the country.

With the vision "to promote healthy lifestyles for adults through education, fitness and sport," the National Senior Games are held every two years. To participate in the National Senior Games, athletes must first qualify in their state's senior games.

"It's a lot of fun to participate but also challenging, as you are competing against people from across the country who were top players in their states' games," said safety basis engineer Mark Wong, who competed in volleyball. Mark has competed in the games six times.

National Senior Games participants can compete in 20 sports, ranging from swimming to track and field to volleyball. Each sport is separated by age brackets of five-year intervals. More than 13,700 athletes competed in the Albuquerque games.

Mechanical engineer Tommy Goolsby and his wife were first-time competitors at the national games, in tennis and table tennis, respectively. Tommy played six singles matches at the Jerry Cline Tennis Center.

This year was the fourth time for fire protection engineer Laura Draelos, who competed in race walking and won a gold medal in both the 1,500 meter and five kilometer races.

"I've won gold in these events before, but this year there was more pressure since I was participating in my hometown," Laura said.

Many Sandians were excited that the games were being held in New Mexico and wanted to represent their state. This year, New Mexico competitors won 681 medals, more than any other state.

However, not all Sandians were representing New Mexico. Kauai Test Facility site manager Mark Howard and his wife competed in pickleball for the state of Hawaii. Pickleball is a paddle sport that combines elements of tennis, table tennis and badminton.

"We didn't learn to play pickleball until we moved to Hawaii in 2016," Mark said. "Hawaii is a mecca for older people who play sports, and pickleball is very popular."

Participants could play in up to two sports. Some Sandians took this opportunity to try out a new sport. Integration engineer Tammy Pluym participated in both the triathlon and the hammer throw in track and field, even though she wasn't familiar with the hammer throw before the state games. Mechanical engineer Cliff Ho tried badminton in addition to tennis. Although he won gold in tennis, he struggled to get points in badminton.

"I never played badminton competitively before," Cliff said. "But even though I was a novice, the other players were supportive and gave me many suggestions on how to improve my game."

Sandia competitors enjoyed meeting people from across the country and participating in a highly supportive environment.

"The atmosphere was incredibly positive," Tommy said. "Even though these were fiercely competitive matches, everyone cheered each other on."

Sandians also contributed to the games by volunteering. Technical writer Lori Goldstein was one of 42 Sandians and family members who volunteered for the track and field event.

"The National Senior Games really spoke to me, so I volunteered as a lap counter at the track and field event," Lori said.

This year's event had the highest participation rate since the games began three decades ago. "The National Senior Games are important because they motivate seniors to remain active, exercise and compete," said manager Bob Paulsen.

"I think these games are inspirational because they show that life doesn't end when you turn 50," Tammy said. "In many ways, it's just beginning."

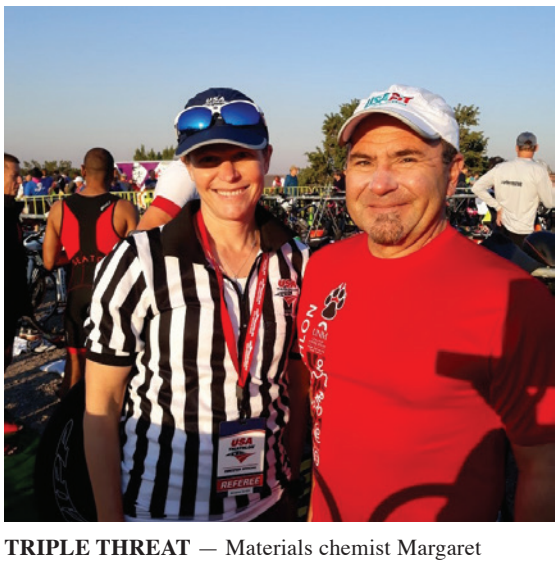
WALK TO WIN — Fire protection engineer Laura Draelos won gold medals in the 1,500m and 5k walk races. **Photo by Mandy Owens**

MATCH, SET, GAME — Mechanical engineer Cliff Ho, center, took home a gold medal in tennis. He also competed in badminton. **Photo by Erica Ho**

GOLF GOLD — Business management professional Annette Sieben, right, won a gold medal in golf. She was joined on the medals podium by Mary Taylor, a competitor from Michigan. **Photo courtesy of Annette Sieben**

HAMMER SLAMMER — Electronics technologist Gary Whitlow earned 10th place in the men's hammer throw event with a throw of 29.39 meters. **Photo courtesy of Nancy Whitlow**

WALDOS FIND GOLD — Manager Geoffrey Freeze, third from left, joined other volleyball players from Albuquerque, Phoenix and Chicago on the volleyball team Killer Salsa (aka the "Waldos"). The team won gold in men's volleyball. **Photo by Kathy Freeze**



TRIPLE THREAT — Materials chemist Margaret Gordon, left, officiated the sprint triathlon, and classification technical reviewer Ted Borek competed in the event at Cochiti Dam. **Photo by Brenda Borek**

Family Day memories

EARLY INSPIRATION — Sandia materials engineer Laura Montoya Ashton's first Family Day in 1992 included a look at a parabolic trough solar installation from atop her mom Catherine's shoulders at Sandia's National Solar Thermal Testing Facility. Family Day is Saturday, Sept. 7, in New Mexico, and Saturday, Sept. 14, in California. Active employees can visit the internal Family Day website to register by Friday, Aug. 30.

Photos by Randy Montoya

SCIENCE IN ACTION — A woman, top, watches her 3D bracelet take form, and a girl sets the axis on a materials experiment during the 2014 Family Day. More than 12,000 visitors attended the event at the New Mexico campus.

SANDIA CLASSIFIED ADS

AD SUBMISSION GUIDELINES

AD SUBMISSION DEADLINE: Friday noon before the week of publication unless changed by holiday.

Questions to Michelle Fleming at 505-844-4902.

Submit by one of the following methods:

- **EMAIL:** Michelle Fleming (classads@sandia.gov)
- **FAX:** 505-844-0645
- **MAIL:** MS1468 (Dept. 3651)
- **INTERNAL WEB:** Click on the News Tab at the top of the Techweb homepage. At the bottom of the NewsCenter page, click the **"Submit a Classified Ad"** button and complete the form.

Due to space constraints, ads will be printed on a first-come, first-served basis.

MISCELLANEOUS

LAWN MOWER, Troy-Bilt, 190 cc Briggs & Stratton, $140. Stubblefield, 505-263-3468.

DUST COLLECTOR, Oneida cyclone/HEPA RF, remote control, ~100-ft. of ductwork, w/hangers, $2,000 OBO; Royal Doulton bone china, 12 place settings, Esprit pattern, $75 OBO. Pedersen, 505-313-9343.

NEW TOOLS: scroll saw, $150; drill press, $85; work station, $33; all still in boxes; used Delta table saw, $100; call for details. Kercheval, 505-266-5833.

ENTERTAINMENT CENTER, American Furniture, 8-pc. glass/oak, up to 65-in. TV, $300; Cal Spa, 6-person, 30 jets for back, neck, shoulder, $2,300; text for photos. Williams, 505-459-3691.

RECLINER, Ashley Furniture, burnt orange, gently used, $100 OBO; text for photos. North, 505-715-7430.

FURNITURE: queen sofa bed, $200; Drexel 5-drawer desk, $100; 3 upholstered bar stools, $50; Bombay wooden plant stand, $15; all great condition. Hodapp, 505-299-2589.

SKI MACHINE, Nordictrack, Classic Pro, performance monitor, $200. Lorence, 505-237-1205.

BDR. SUITE, clear maple, full memory foam bed, mirrored dressing table, end table, chest of drawers, $350; Huntboard, $250. Bendure, 505-331-6344.

TIMESHARE, Steamboat Springs CO, sleeps 6, Oct. 5-12, $700/wk. Buck, 505-353-2667.

COFFEE TABLE, 3 END TABLES, glass/wood, American Furniture, photos available, $700 new, asking $400 OBO. Gallegos, 505-934-8072.

STEPPING STONES, 16, 18-in. square, tan, $2 ea.; 10-1/2-ft. white PVC square drain pipe, 5, $3 ea. Lewis, 505-323-7268.

POWER EDGER, Troy-Bilt, very low hours, runs great, $140 new, asking $50. Hanks, 505-249-1931, call or text.

TILE SAW, Harbor Freight, $150; Clipper Creek LCS-25P electric vehicle charging equipment, fits dryer socket, $300. Burton, 505-550-5534.

CHICKEN TRACTOR, mobile or stationary home for 6-8 hens, w/protected perching area & laying box, call for photos, $400. Passell, ziafarm.nm@gmail.com.

TRANSPORTATION

'16 TOYOTA COROLLA, 4-dr., dark gray color, 62K miles, clean car, only $13,000. Johnson, 505-720-6790.

'05 TOYOTA COROLLA, 1 owner, 115K miles, good condition, excellent for beginner/student, $2,900 OBO. Holmes, 505-873-5255.

'13 HYUNDAI ELANTRA LIMITED, sedan, metallic gray, original owner, 45K miles, $9,800. Smith, 505-263-0396.

'15 VOLKSWAGEN GOLF GTI, Autobahn I4 Turbo, AT, performance pkg., 45K miles, $16,900. Baca, 505-322-8999.

'08 FORD RANGER XLT, regular cab, long bed, 4-cyl., AT, red, 110K miles, runs great, NADA $7,100, asking $6,900 OBO, Romero, 505-307-9389.

'08 LEXUS IS250, 6-spd. manual, RWD, leather, black, new tires, 90K miles, great condition, $8,950 OBO. Chavez, 505-385-2574.

RECREATION

'19 HARLEY-DAVIDSON IRON 883, denim matte black paint, brand new, only 14 miles, $9,000 OBO. Witt, 505-220-7049

'OO KAWASAKI ZR7, blue, 7.7K miles, garage kept, new battery, great condition, $2,200. Ball, 505-797-4316 or jenandpatball@msm.com.

REAL ESTATE

7.62 ACRES, Casa Colorada, South Hwy. 304, Ricardo Rd., Belen, $30,000/acre OBO. Nestor, 505-865-6280.

4-BDR. HOME, 2 baths, 1,950-sq. ft., Ranch-style, 1.02 forested acres, Cedar Crest, MLS# 947560. London, yeffner@gmail.com or 970-823-2031.

4-BDR. HOME, 3 baths, 3,980-sq. ft., .86 acres, Four Hills, lush dream backyard, extraordinary, must see, $550,000. Garner, 505-489-0678.

5-BDR. HOME, 3 baths, 3,300-sq. ft., 3 acres, full basement, Tijeras, MLS# 947118, $599,000. Ryan, 505-274-3903.

3-4 BDR. HOME, 1 bath, renovated, ~1,253-sq. ft., catty-corner from park & community center, 11603 Summer NE, photos @zillow.com, $169,900 OBO. Christensen, irunia@hotmail.com.

WANTED

ROOMMATE, 2-bdr., 2 bath home, in Foothills. Rucobo, 505-980-6955.

AD RULES

1. Limit 18 words, including last name and home phone (web or email address counts as two or three words, depending on length).
2. Include organization and full name with ad submission.
3. Submit ad in writing. No phone-ins.
4. Type or print ad legibly; use accepted abbreviations.
5. One ad per issue.
6. The same ad may not run more than twice.
7. No "for rent" ads except for employees on temporary assignment.
8. No commercial ads.
9. For active Sandia members of the workforce and retired Sandians only.
10. Housing listed for sale is available without regard to race, creed, color or national origin.
11. Work wanted ads are limited to student-aged children of employees.
12. We reserve the right not to publish any ad that may be considered offensive or in poor taste.

Mileposts

New Mexico photos by Michelle Fleming
California photos by Randy Wong


John S. Smith 40


Robert Dankiewicz 35


Mark Jaska 35


Dave Brekke 30


Greg Hebner 30


Ronald Kidner 30


Kari Neely 30


Jeff Crowell 20


Somuri Prasad 20


William Erikson 20


Jaideep Ray 20


Gary Templet 20


Jon Berry 15


Joshua Leckbee 15


Michael Parks 15


Scott Rose 15


Melissa Schooley 15


Matthew Staten 15


John Teifel 15


Hy Tran 15


Kim Welch 15

Dave Clovis awarded Defense Meritorious Service Medal

In February, Sandia engineer and U.S. Navy Reserve Cmdr. Dave Clovis was awarded the Defense Meritorious Service Medal for distinguishing himself by exceptionally meritorious achievement as an engineer for a Joint Task Force operation, according to the citation. The medal was awarded by Patrick M. Shanahan, then acting Secretary of Defense.

Dave joined Sandia in December of 2003, and has been in the U.S. Navy Reserve since 1989. Prior to 1989, he served active duty in the U.S. Navy for six years. In July of 2017, Dave was recalled to active duty, and mobilized with the Joint Special Operations Command, serving overseas.

As command engineer, Dave was responsible for coordinating construction efforts of a multinational command. Per his citation, Dave was "critical to the establishment of an entirely new facility while executing critical upgrades and maintenance of major systems, which set the stage for future Task Force success."

The citation further stated that Dave's "accomplishments will have a long-lasting impact toward combatting global terrorism and strengthening United States alliances and partnerships."

Dave was reunited with his wife, Laura, and their three children last December and returned to Sandia in January to resume his duties as facility supervisor for the Annular Core Research Reactor.

"I greatly appreciate the support of my family, friends and Sandia in my service and am thankful to my TA-V family, who sent a care package into the theater for the troops I worked with," Dave said. "Sandia does a great job of supporting its guard and reserve members in such a way that we can contribute to and meet our nation's defense needs."

MERITORIOUS SERVICE — Sandia engineer and U.S. Navy Reserve Commander Dave Clovis visits the U.S. Navy Veteran monument at New Mexico Veterans' Memorial Park. He was awarded the Defense Meritorious Service Medal in February.

Photo by Randy Montoya

NETWORKING IN THE PARK — The annual intern welcome receptions offer students an opportunity to learn about upcoming events and meet representatives from Sandia's employee resource groups, Zero Waste, OPSEC and others.
New Mexico photos by Lonnie Anderson

WARM WELCOME — Nearly 800 interns attended a reception at Hardin Field to learn about Sandia and meet others in a fun, relaxed environment.

Sandia welcomes new class of interns

By ***Valerie Alba***

Sandia recently held two welcome receptions for the Labs' summer and year-round interns.

New Mexico hosted its annual intern welcome event at Hardin Field June 13. This year's theme was "Up, Up and Away." The event featured volleyball, beanbag toss, a photo booth, music and food trucks lining the field.

This year Sandia's Albuquerque campus has 1,176 year-round and 352 summer interns. The students represent 148 schools.

According to event organizer Alix Acevedo, nearly 800 students attended the reception, where they learned about Sandia's employee resource groups and networking opportunities. Representatives from OPSEC and the Zero Waste program talked to students about information protection and Sandia's goal to achieve zero waste by 2025.

Outside organizations also attended to educate the students about New Mexico culture and activities. Representatives from El Rancho de las Golondrinas, Explora, Quelab, Meals on Wheels of Albuquerque, Animal Humane New Mexico, Albuquerque Tourism and Sightseeing Factory and others greeted and chatted with the students.

Orbit, the Albuquerque Isotopes' mascot, and Lobo Lucy, the University of New Mexico's mascot, also made an appearance.

"Our event's goal is to get interns excited about Sandia and the Land of Enchantment," Alix said. "This is a chance for students to interact with local businesses, Sandia employee resource groups, local food trucks and most importantly, each other."

Planning the event is a six-month process that brings together the Talent Acquisition Center, ES&H, the Emergency Response Team, Safety Engineering and Facilities. "It was a great team effort, and the payoff was well worth it to see our awesome students having fun," Alix said.

Fun in the California sun

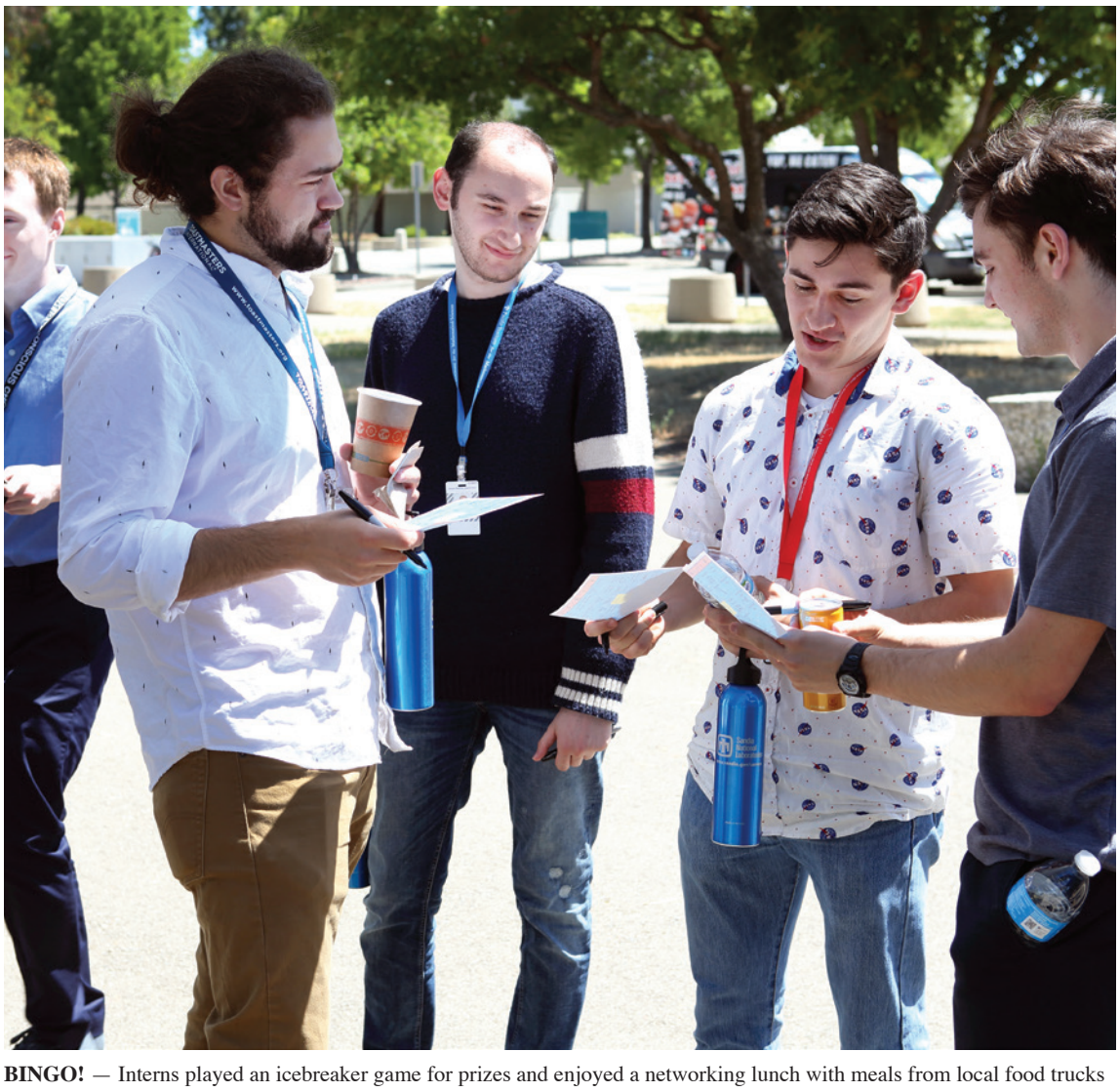
About 75 interns attended Sandia/California's welcome event, "Sandia Superheroes," June 25.

"The reception included a diversity discussion focused on comfort zones and stepping out of them," said California Student Programs lead Jessica Matto. Students also learned about the diversity groups and intern events available on campus, participated in a bingo ice-breaker, enjoyed a light breakfast and received a welcome from weapon systems engineering director Mike Hardwick.

This year Sandia's Livermore campus is hosting 70 summer interns and 47 year-round interns, representing about 50 schools.

"We want our interns to feel welcomed and appreciated. We want them to know what Sandia is all about and how their work is intertwining with the values and progress Sandia has towards tackling the nation's greatest challenges," said event coordinator Rachel Velasquez. "We want them to know the type of working environment they are residing in and how this will impact their futures."

Events for interns are held throughout the summer. Sandia also administers two closed Facebook groups for interns: Sandia Labs Students NM and Sandia Labs Students CA. Interns who want to connect with others are encouraged to join.



BINGO! — Interns played an icebreaker game for prizes and enjoyed a networking lunch with meals from local food trucks at the California campus welcome event.
Photo by Dino Vournas

COMMUNITY TIES — Outside organizations also attended the reception to educate the students about New Mexico culture and attractions. One such attendee was Explora museum, which offered a bubble-making booth.

SHOW OF STRENGTH — Interns tried their hand at various lighthearted contests on Hardin Field. The event also included volleyball, a photo booth, food trucks and music.