When his vehicle wrecked in East Africa on May 25, 2009, Joel Peters was on his way to administer first aid to fellow Marines injured by an accidental mortar explosion. He wasn't wearing the dated Humvee's seat belt because it wouldn't fit around his torso. He was thrown from the truck, hitting his head and injuring hisrotator cuff, ribs and back. Peters suffered a severe traumatic brain injury and spent two weeks in a coma. His family was told to prepare for the worst. Past forward five years, Peters and his wife Darcy, also a former Marine, are now living in Timnath and expecting their third child. He's hoping to graduate from Colorado State University in summer 2016 with a bachelor's degree in social work. And he doubts he could have done it without the New Start for Student Veterans program in CSU's Center for Community Partnerships and one of its student-veteran coordinators, Erica Schelly.

"If she wasn't there, and the program wasn't there, I'd be less motivated," Peters said. "Sometimes I need that extra push. "

Peters had a long road recovering from his brain injury. After a couple of months in the naval hospital in Bethesda, Md., he spent five months doing rehab in Palo Alto, Calif. Then he was stationed with a Wounded Warrior Battalion at Camp Pendleton in southern California for three years. Despite the doctors who said he would never again speak intelligently or be able to drive a car, one of his only lingering symptoms now is an occasional loss of balance — the room spins briefly when he lies down. But he was told at Camp Pendleton that he'd never be able to achieve his dream of following in his father's footsteps and working with parolees in a counseling role. His father still serves as an inspiration.

"When I would go on ride-alongs with him, he always treated people like human beings," he said. "I think now I'm more confident than I was before." Peters credits New Start with helping him keep that dream within reach. "I'm so happy with how it's turned out."

The outdoor instruments, which include xylophones, pugadob and contrabass drums, were made by Durango-based Freesotes Harmony Park. In addition to the instruments, the garden features a memorial bench, and Freesotes also designed a new "musical garden" for children, thanks to the support of two dear friends. Peters credits New Start with helping him keep that dream within reach. "I'm so happy with how it's turned out."

The CSU Early Childhood Center has a new "musical garden" for children, thanks to the support of two dear friends. The Bea Romer and Peggy Noland Children's Musical Garden, which features a variety of outdoor musical instruments designed for children and adults, was funded through a donation from former Colorado First Lady Bea Romer (’51) and her close friend Peggy Noland (’51), who met as freshmen in 1947 at what was then known as Colorado A&M.

Both studied child development in the College of Home Economics, now the College of Health and Human Sciences. Early childhood education was Romer's focus when her husband, Roy Romer, served as Colorado governor for three terms in the 1980s and 1990s.

"The idea of creating the musical garden arose during a tour of the Early Childhood Center last year. Noland had traveled to CSU from California to join in the celebration as Bea Romer received the 2013 College of Health and Human Sciences Honor Alumna Award from the CSU Alumni Association.

"There's something about the sound of a children's musical garden," Romer told the audience at the dedication ceremony for the new garden. "I'm so happy with how it's turned out."

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The CSU Early Childhood Center is housed in the Department of Human Development and Family Studies, and has been a training site for students interested in careers related to early childhood since 1929. It also provides opportunities for research related to children, families and early childhood education; find more information at www.ecc.colostate.edu.

Peters came to Colorado to get a fresh start and began taking classes at Front Range Community College, where he was referred to Schelly. Among Peters' experiences with New Start has been whitewater rafting trips with fellow student veterans, which he describes as "the time of my life." And he hasn't given up on his dream of becoming a police officer.

"I think now I'm more confident than I was before," he said. "It's a very valuable tool for disabled vets."
How to connect S, T, E and M dots

BY CHANCE JOHNSON

There has long been a difficulty for some to learn subjects like math and science, often resorting to the age-old question: “When will I ever use this in life?” Students can become disheartened by not seeing the practical applications of these courses.

Michael De Miranda, professor in CSU’s School of Education, is working to address this issue through his research in STEM learning.

STEM — an acronym for science, technology, engineering and math — is intended to help students recognize how each subject plays a role in the development of a certain technology.

“The S and the T and the E and the M all have a connected relationship,” De Miranda said. “The STEM literate and capable person is able to fluidly connect the dots.”

De Miranda designed a collaborative project by building teams of STEM teachers with the goal of teaching projects that use all four subjects at once.

“When students are taught STEM subjects in a collaborative, interdisciplinary way centered on a relevant engineering design project, the low-scoring students are constantly showing statistically significant gains in their integrated STEM scores,” he said. Part of his research is centered on scale development to measure how students “connect the STEM dots.”

One example of STEM in practice was through implementation at Berthoud High School.

“The kids’ problem was to build an iPod music docking station,” De Miranda said. “The math teacher talked about amplifier gains. The physics teacher covered waves, electromagnetism and electronics. Those are three physics units. And in engineering, the teacher taught them how to design circuits, test and build it. We’ve brought engineering into the schools as the design thinking and utility price.”

Another high school had the kids build a device to test bicycle helmets. So they made crash dummy heads, tested and built different helmets loaded with sensors, and gathered data. Another school had the students develop a project that tested the difference between running barefoot and running with shoes by building a sensor device that measured pressure.

Recently, the project has scaled up by partnering with engineering-oriented organizations Northrop Grumman and Intel, and is funded by the National Science Foundation. A STEM summer camp, held in Cherry Creek at Grandview High School, involves working with 45 teachers. This intensive and immersive STEM experience consists of teaching students cybersecurity, biomedical science, clean energy and C++ programming.

STEM learning has been developed in lockstep with the technological boom of the past decade.

“The ways in which humans think are fundamentally different because of the technological revolution. It’s life now,” De Miranda said. “It’s about unlocking that technological literacy of our nation. When we start to talk to kids about how this stuff works, they’re excited about it.”
Working like a dog

Research on canine exercise physiology may provide answers for aging humans

For the past three years, CSU professors Karyn Hamilton and Ben Miller have spent a significant amount of time in Alaska studying competitive sled dogs, known as Alaskan Huskies, in search of clues about how to slow the aging process. The dogs, which race in events such as the Iditarod, are extraordinary in their ability to sustain a large amount of work over a prolonged period of time. The research team has largely worked at the kennels of legendary musher Martin Buser and current stars Aliy Zirkle and Allen Moore. Miller and Hamilton say that one trip to the kennels is enough to convince you that these dogs are among the happiest in the world, given the love and care they receive and the dogs’ enthusiasm when doing what they love to do — run! The large purpose of the research has been two-fold: to train better military working dogs and to apply lessons learned from sled dogs to the modern soldier. According to Miller and Hamilton, the remarkable physiology of sled dogs makes them a valuable model for research aimed at human health. First, they are extremely aerobic animals capable of sustaining exercise for prolonged periods. The average person has a peak oxygen uptake (VO2max), the measure of aerobic capacity, of around 30 to 45 ml/kg/min. The trained Alaskan Husky is somewhere around 240 ml/kg/min.

Second, the sled dogs seem to gain their fitness at a remarkably quick rate. It has been shown that some compensatory changes in response to exercise happen within just a couple of exercise bouts. For the human, this would mean being able to adapt both how much new muscle is made and how well mitochondria function, the researchers are hoping to slow the aging process. This research, supported by the National Institutes of Health, has allowed the TRACD team to make important insights into fundamental cellular processes that lead to aging and how to slow that process.

More recently, Hamilton and Miller have been able to apply some of the observations from their studies of aging to the sled dogs. Mitochondria are the cellular organelles that allow for aerobic energy production, and mitochondrial dysfunction is widely thought to contribute to the aging process. Using techniques to measure both how fast new mitochondria are made and how well mitochondria function, the researchers are hoping to find out more about the amazing ability of the canine. The lessons learned from the dogs contribute to the growing understanding of potential ways to slow aging and prolong human health.

Nutrition research shows all body fat isn’t created equal

BY SHANNON DALE

What makes one fat deposit “good” and the other so “bad”? This question has inspired the research of Department of Food Science and Human Nutrition assistant professor Michelle Foster, who studies the behavioral differences between visceral fat (central body or belly fat) and subcutaneous fat (fat on the lower abdomen, near legs).

With obesity-related diseases like hypertension and type 2 diabetes more prevalent in those with visceral fat, Foster is investigating why certain fat deposits carry a higher risk for these diseases. Research has shown that subcutaneous fat, considered “good fat” or “protective fat,” is not associated with the same health risks. By removing different fat deposits, Foster can see what the fat’s effect is on the entire body.

Foster has studied fat deposits in mice to better understand why certain fat deposits cause health issues. By studying two groups of mice — one group with gradual accumulation of body fat being fed a Western diet (butter and sugar) and a lean group fed a chow diet (low-fat) — Foster learns how the body reacts to subcutaneous fat removal. When fat is removed from one part of the body, fat redistribution occurs and can potentially affect several different tissues within the body.

Supported by a Colorado Nutrition Obesity Research Center grant and the National Institute of Diabetes and Digestive and Kidney Disease within the National Institutes of Health, Foster’s research has revealed that subcutaneous fat protects the muscle from insulin resistance, as well as higher fat content in leg muscles close to the area of fat removal.

“Last year, the Colorado Nutrition Obesity Research Center awarded a grant to Foster to study dogs, and now she’s working on dogs here in Colorado,” saidCSU professor Karyn Hamilton. “Michelle Foster is doing great work.”

Foster’s research appeared in the journal Adipocyte.

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“Michelle Foster believes that subcutaneous fat is “a protective fat.”

The behavior of certain fats will provide insight into glucose intolerance and insulin resistance in patients with high amounts of visceral fat. Foster’s research is beginning to focus on mechanisms for gaining visceral fat and how to avoid the growth of these fat deposits.

“Body fat regulation is all about how fat deposits communicate with one another,” says Foster. “By understanding this communication, we can hopefully learn how best to decrease the fat and promote the good.”

Foster’s research appeared in the journal Adipocyte.
Urban Lab launches design competition for Mason Street

The revitalization of the Mason Street transportation corridor has been an exciting development taking shape in Fort Collins. Now a group based at Colorado State University wants to make it even better through a sustainable design competition. The Urban Lab is in the process of developing the guidelines for a public design competition to be launched in early 2015. The competition invites local, national and international students and designers to propose improvements, excluding the railroad right-of-way. The goal of the competition is to inspire design possibilities that create a unique and memorable experience for those who visit the area and enhance vehicle safety and the pedestrian environment.

At the Dec. 3 Front for Art Walk, the Urban Lab solicited feedback from the public on the proposed format of the competition as well as the specific requirements that competitors should prioritize. More than 200 members of the community participated, leaving their ideas as words and pictures, and by the end of the event, over 300 square feet of drawing paper was covered with community input. Other current Urban Lab initiatives include the installation of a demonstration “living wall,” scheduled for this spring, and the development of design guidelines for a Nature in the City Program, both in cooperation with the City of Fort Collins. Visit urbanlab.colostate.edu for updates on the competition and to provide ideas and feedback on the online message board.

The Urban Lab grew out of the 2013 UniverCity Connections initiative that brings together CSU, city departments, community groups and local citizens in hopes of benefiting our community. To date, faculty and students from the programs of Landscape Architecture, Horticulture, Sociology, Construction Management, and Historic Preservation at CSU have collaborated with local planners, architects, the DDA, and various departments within the City of Fort Collins. To learn more about the Urban Lab and the Mason Street competition, contact Colin Day, Urban Lab Coordinator at the Institute for the Built Environment at CSU. (970) 491-5941, Colin.Day@colostate.edu.

Construction management students unveil community service projects

By Jeff Dodge

A young Timmahn boy who uses a wheelchair because of a birth defect now has a place to enjoy the outdoors with his family, thanks to Colorado State University students in the CM Cares program.

“The time, the energy, the resources that everyone puts into this work is just such a big deal to everyone receiving it,” said Nilia Walter, CSU’s Department of Construction Management’s Customer Relations manager.

This year’s project sponsors included Haselden Construction and ISEC Inc., Swinerton Builders, FCI Constructors, Haselden Construction and DEC Inc., along with contributions from more than 60 donors. Milwaukee Tool contributed several power tools that were especially helpful to the project teams.

“CM Cares is four years old and we’ve done at least three projects each spring,” said Chris Lefkierie, one of the student leaders of the Grashorn project. “That’s a lot of good going out into the world.”

CM Cares launched two other projects last spring. One team made accessibility improvements at the Sexual Assault Victim Advocacy (SAVA) Center in Fort Collins, constructing a ramp and making a bathroom compliant with the Americans With Disabilities Act.

The other student team, Jediah Aggerly, didn’t realize the impact of the project he was about to undertake until he saw a woman in a wheelchair who couldn’t get into the SAVA Center.

“She asked us for help, and we got her into the building,” he recalled. “That’s when we realized why we were doing this. We want to make a difference in this world that we’re in, and it’s the right thing to do.”

A third team made accessibility modifications to the home of Chris Walter, including bathroom handrails, a bay window with rollout garden boxes, a new driveway and a wheelchair ramp to the backyard to allow Walter to continue his passion for gardening.

“These students have vision,” said Nilia Walter, Chris’ mother. “They have good ideas, and I am really glad that we got to experience that. This is a great team, and we couldn’t have done this without them.”

A video about the Grashorn project is available at http://youtu.be/VI3-L4k8yfI. A video on the Walter project can be found at http://youtu.be/4eG1D37fPHE.

More information about CM Cares is available online at www.cm.chhs.colostate.edu/cm-cares.

New Avenir Museum has expanded designs on the future

By Gretchen Gerding

Perhaps you have seen the new construction behind the new Center for the Arts. The new building is the Avenir Museum of Design and Merchandising, slated to open in winter 2015-16. The expanded and remodeled facility is going up thanks to support from the Avenir Foundation and significant funding from other benefactors.

The Avenir Museum is evolving from a single gallery and classroom office and storage space within the UCA to a full-blown museum facility to house the Department of Design and Merchandising’s textiles and historic costume collection. The collection serves as a vital resource in teaching more than 525 design and merchandising students, as well as a means to preserve these beautiful textiles, many considered works of art. From traditional artifacts such as Mr. Blackwell’s dress to a large collection of Japanese kimonos, central Asian embroidered textiles to century-old lace, the museum is a repository for historically and culturally significant pieces.

The project includes remodeling approximately 8,000 square feet in the current Avenir Museum facility and adding 10,000 square feet, allowing for two galleries, flexible classrooms and seminar space; a conservation laboratory, and expanded collection storage and management areas. The transformation advances hands-on teaching and research access to the Avenir Collection, and brings the facility to the next level of museum best practices, professionalism and scholarship.

With the new premises expanding the possibilities for exhibits, courses and programs, the museum staff looks forward to making the Avenir a real crossroads of theory and practice for CSU students and community friends alike, where people and their stories come together – stories about textiles, dress and interior furnishings, how they are made and used, and what they mean to people.

Before the expected opening in winter 2015-16, the Avenue Gallery in the UCA is open and currently showing a stunning display of colorfull textiles called “Molas,” created by indigenous women in Panama. “Kuna Molas: Sewn Stories and the Interplay of Tradition and Change” will be featured through mid-2015. For more information and hours, see www.dm.chhs.colostate.edu/museum/.