



## ASSISTANT PROFESSOR HELPS SOLVES GREAT WHITE SHARK RESILIENCE MYSTERY

By Kristen Finley

In February, a band of dedicated and brilliant scientists - among them was our very own Assistant Professor of Natural Sciences Nathaniel Jue - worked tirelessly together to complete a genetic profile on the notorious great white shark, a task that, until now, was never done. While the actual task of completing the genetic profile was a noteworthy feat in itself, what was significant was what that profile was able to tell them: one of the ocean's most feared predators also had an impressive, natural resistance to cancer.

"What we found was that [great white sharks] had these signatures of really highly molecularly adapted proteins related to things like DNA repair, responding to DNA damage and even scheduled cell death," Jue said. "This is important because if a damaged cell is allowed to persist, that's how we get things like cancer. A shark has evolved to come up with a way to deal with that. The technical term for it is apoptosis."

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Nathaniel Jue with the jaws of a great white shark. Photo by Jim Gensheimer/ special to SF Chronicle

*As we learn more about sharks and other organisms, it helps us better understand ourselves.*

## Widespread changes redesign curriculum

*Every change coming to the CSUMB curriculum was made with the students' best interest in mind.*



Senators and guests reviewing voting options at the EO 1100 GE curriculum meeting on Feb. 26, 2018. Photo by Ashley Orcutt.

By Hailey Hill

Many students at California State University, Monterey Bay (CSUMB) have heard that widespread changes are coming to the school curriculum; however, not many students have a clear understanding of what changes are being made and how it may affect their academic pathway. Understandably, many students have a lot of questions about what is truly being changed and what is simply rumor.

One of the main areas of confusion for students is what is happening concerning the language and culture study requirement, something every CSUMB student must fulfill as part of their general education. Kris Roney, associate vice president for Academic Programs and dean of University College and Graduate Studies Academic Affairs explained, "Students in bachelor of science or the Liberal Studies bachelor of arts degree programs are required to complete one semester of language and culture study at the 101 level or higher.

"Students may complete the requirement with a lower-division general education Area C2 language course or with a new upper-division C Spanish or Japanese 350 course. In addition to the proficiency-level change, no degree programs have exemptions for transfer students on the basis of "high unit" status," continued Roney.

Before, all students had to reach "the successful completion of '201 level' or higher, which is about intermediate-low in the standards outlined by the American Council on the Teaching of Foreign Languages," according to Roney. Although meeting this requirement varied depending on the student, as it could be partially satisfied through previous work such as "Advanced Placement exams or international schooling in languages other than English," many students counted on taking up to three semesters of language and culture study. With the new curriculum, students in bachelor of science or Liberal Studies bachelor of arts degree programs are now only required to complete one semester, in contrast to as many as three.

Additionally, "the language requirement is now called the 'World Culture and Language' requirement. Faculty considered feedback from student surveys and the needs of degree programs with the commitment to making the requirement common across a degree program."

Roney also explained that "students in most bachelor of arts programs are required to complete either the 201 or higher level or one of the new Japanese or Spanish 340 courses that have the same prerequisite as 201 (a C- or higher in the 102 of that level). The 340 courses also meet upper-division C. The lower-division pre-requisite courses meet lower-division C2."

The changes to CSUMB's curriculum do not stop with the new language requirements. Currently, most courses are either three or four units; however, almost all courses will be three units in the redesigned curriculum. This will have a direct effect on time spent in the classroom; a three-unit course will "typically [be] scheduled for either three 50-minute, two 75-minute or one 150 [minute] meeting per week," says Roney. "There are, of course, some variations due to the structure of courses [such as ones with integrated labs]."

Roney also explained the general effect of the changes being implemented, "General education at CSUMB will have the same structure as other CSUs and the California Community Colleges. That is, 39 lower-division general education units (or 40, if B3: Laboratory Practices is not integrated) will be distributed across five subject areas, largely in three-unit courses. Students will then have nine units upper-division general education requirements, distributed across three areas: B (Integrated Scientific Inquiry and Quantitative Reasoning); C (Integrated Arts & Humanities); and D (Integrated Social Sciences). There is no upper-division A area. GE courses that are not 3-units double count with a major and/or other university requirement."

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# CAMPUS

## Gradfest coming to campus April 3 & 4

By Jessenya Guerra

Attention all graduating students! This year's GradFest will be held April 3 and 4 from 9 a.m. to 6 p.m. in the University Center Ballroom. For those who are not familiar with GradFest at California State University, Monterey Bay (CSUMB), it is a "one-stop shop for graduating seniors," according to the CSUMB GradFest website.



Seniors can "purchase [their] cap and gown, order Commencement invitations, have graduation portraits taken, elect to keep [their] CSUMB email and socialize with other graduates," continues the website. Graduating students can also pick up their tickets for graduation. This year each student can have up to six tickets to their respective ceremony and two free parking passes for their guests.

Also present at GradFest will be "representatives from the Alumni Association, Campus Service Center, Financial Aid, Career Development, and University Development ... to answer questions and get you ready for your big day," says the website.

There are three graduation ceremonies this year at CSUMB: the first on Friday, May 17 at 3:30 p.m. for the College of Education and the College of Science; the second on Saturday, May 18 at 9:30 a.m. for the College of Arts, Humanities and Social Sciences; and the third on Saturday, May 18 at 3:30 p.m. for the College of Business and the College of Health Sciences and Human Services.

the **lutrinae**

lutrinae: (loo' trih-nā') n.  
a subfamily classification,  
scientific name for the otter.

The *Lutrinae* is a weekly campus newspaper covering CSUMB and its neighboring areas. Here at *The Lutrinae*, our goal is not only to educate and inform the public, but to entertain, to spark creativity, to encourage diversity of opinion, and to build a sense of community on campus and with the neighboring cities.

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## Sports recap

By Chike Okafor

### Softball

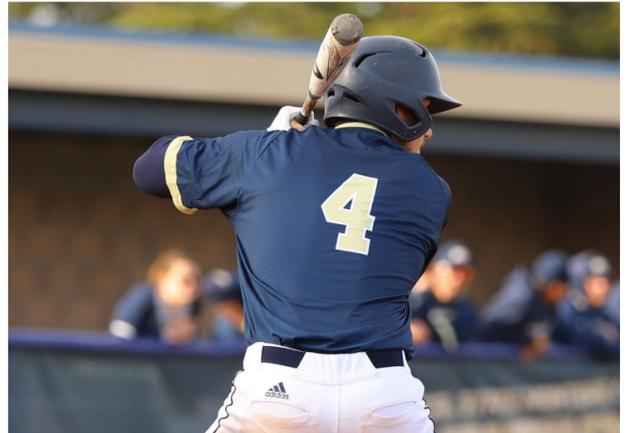
California State University, Monterey Bay (CSUMB) came out on top against California State University, East Bay (CSUEB) in their first game on March 8 with a score of 2-1, but lost during their second game against them. They let their lead of 4-0 at the beginning of the game slip through their fingers, allowing CSUEB to win 8-4. CSUEB were able to tie the score 4-4 during the fourth inning and managed to score an additional four points during the last inning.

On March 9, the Otters dominated CSUEB with a score of 15-1 in the first game and 11-5 in the second game.

During the first game, the Otters scored seven points during the first inning and four points during the second and fourth inning, while CSUEB managed to score only one point during the fourth inning. During the second game, the Otters had a lead of 3-0 during the second inning and managed to score seven runs during the sixth inning.

### Baseball

CSUMB went up against California State University, Stanislaus (CSUS) on March 8 at the Otter Sports Complex. The game went into overtime after both teams ended up having a score of four points at the end of the seventh inning. Neither team scored any points during the eighth or ninth inning. During the tenth inning, Brian Morley hit the ball toward the middle of the field, allowing Kokko Figueiredo and Kyle Dean to score the final two points. On March 9, CSUS beat CSUMB with a score of 10-5. The Otters had a 2-0 lead during the first inning and tied with



Kokko Figueiredo at bat during a home game against Stanislaus State on March 9. Photo courtesy of Otter Athletics.

Stanislaus 4-4 after the fifth inning. There was an hour long delay due to rain and during the sixth inning, CSUS was able to score five points which secured the win for them.

### Women's Golf

At the Time Tiemey Pioneer Shootout Tuesday at the Corci Golf Course on March 4 and 5, CSUMB women's golf team scored sixth place out of 19 teams. California State University, San Marcos scored first place with a score of 598, while the Otters had 621 points.

### Men's Golf

The Otters scored fourth place at the 69th Southern California Intercollegiate Tournament at Carlton Oaks Golf Course. First place was Sonoma State University with a score of 867 points, while CSUMB had 884. At the Olympic Club Intercollegiate, the Otters finished in 11th place out of 13 teams.

## Art Treasures at CSUMB



"Tree Sculpture" by CSUMB alumnus Ryan Bugarin, located on Inter-Garrison Road outside of VPA building 73.

Photo and story by Yollette Merritt

What does California State University, Monterey Bay (CSUMB) have in connection with Ansel Adams, Eileen Auvil, Jamie Brunson, Charles Eckhart, Amy Ellingson, Joel Gambord, Barry Masteller, Chiura Obata and Alison Stilwell? These individuals are all artists of at least one of the current 52 pieces of art donated - or on long-term loan - to CSUMB. The two-tier collection is overseen by two committees, the University Art and the Student Art Committees, chaired by Dean Ilene Feinman of the College of Arts, Humanities and Social Sciences.

The committees are "both intended to facilitate the university vision of art and its realization through a professional vetting process that is outlined in the two policies," stated Feinman. "CSUMB has built our policy on acquisition of art to reflect the University's commitment to the principles, goals and ideals described in the Vision Statement and to its core values," continued Feinman. "I am honored to facilitate this process for the university and rely on my committees in both instances to provide the art practice and art history expertise for our deliberations and recommendations to the President."

There are five principles - supported by the recommendations of the International Council on Museums and the American Association of Museums - that guide the committees in their recommendations for acquisition of art into the CSUMB collection:

- Artistic excellence: The artwork should be of sufficiently high artistic merit, usually a unique piece by an artist of established reputation or recognized potential.
- Scope of collection: Priority is given to California artists.
- Appropriateness for the site and university setting: The artwork must support the educational

mission and/or be of special interest to the CSUMB community.

- Durability and non-hazardous nature of the materials: The artwork must comply with applicable codes and regulations.
- Maintenance requirements: CSUMB is able to give proper care and maintenance to the artwork.

In addition to its policy on acquisition, art has always been an integral part of CSUMB's academic footprint. The Visual Public Arts Department (VPA) will be celebrating its 25th anniversary next year, as it was established at the founding of the university. Currently staffed with ten instructors, hundreds of students have graduated as VPA majors and thousands have enrolled in courses which range from drawing and painting to sculpture and video as art. "We are proud of our cultural entrepreneurship model that nurtures the development of future leaders within the visual and public art areas of social practice and community engagement," stated Angelica Muro, chair of the VPA Department and associate professor of Integrated Media & Photography.

The role of art on university campuses is part of an on-going national conversation to either view art as a purely academic subject and/or a teaching tool or in another role. There is an 18th century American tradition reportedly starting with Thomas Jefferson, that if one does not create an inspiring, beautiful place, learning doesn't take place as effectively. The mission of VPA, as stated on their website, is to "provide students with a lifelong set of skills that synthesize studio and community arts approaches to artistic production, exhibition, and education."

Not favored with multi-million dollar endowments that has graced some of our larger private and public universities, CSUMB students and faculty have leveraged their resources and used their talents and expertise to enrich the local communities. To view a treasure trove of student projects, visit <https://www.visualandpublicart.com>.

# CAMPUS

## Redesign curriculum

Continued from page 1

University requirements “have also changed either in content or distribution.” In summary, according to Roney:

- First Year Seminar for incoming freshman students with 15 units or fewer: courses continue to also meet a general education requirement at the lower division.
- World Culture and Language: different requirements based on degree program, and all courses double count with Area C at the upper or lower division.
- Upper Division Service Learning: courses may double count with the major or with General Education.
- Ethnic Studies: courses double count with GE or major requirements.
- Graduate Writing Assessment Requirement (GWAR): courses also meet major or general education requirements.

Every change coming to the CSUMB curriculum was made with the students’ best interest in mind, said Roney, “Because of the changes in general education and university requirements, majors have necessarily responded with changes to reflect the new, streamlined

curriculum. In this work, the faculty developed some cutting-edge and creative opportunities. We are creating structures to minimize complexities for students who are moving through two general education models, including crosswalks between requirements.

“These structures will facilitate moving to the new catalog without the appearance of needing to repeat a requirement or content, and some students will be hearing from me regarding the most efficient pathways to complete general education in the Otter Model (the current GE) or between it and the new one,” continued Roney.

Roney would also like to remind “students who have concerns regarding the changes [to] contact Academic Advising or submit them through the FAQ request on the Curriculum Change website.” The curriculum change website may be reached at <https://csumb.edu/ucgs/fall-19-ge-course-crosswalk>.



## Great white shark

Continued from page 1

Jue was quick to point out that this was surprising in the scientific community, as it was once thought that animals that were larger than humans were more susceptible to getting cancer. However, when taking a gander at another large cartilaginous fish, the whale shark, it produced the same result - the gentle giant is a stranger to cancer.

“Animals like the great white shark or the whale shark ... are large animals that live a long time - typically 70 years or so. Humans have a big genome, but their’s are bigger than ours, meaning they have a lot more cells and more DNA, but we don’t see the same sort of incidences of genetic disorders like cancer like we see in ourselves.”

Jue says a great white shark’s secret to keeping cancer at bay are what he calls “repetitive elements,” that are naturally occurring viruses that affect an organism’s genome. In

white sharks, they have many copies of a specific repetitive element that’s evolved to respond to genetic issues quickly and effectively.

What’s significant about these findings is that now we’re able to compare the genome of the great white shark to that of humans, look at how the proteins responsible to cell and DNA repair respond, and why we’re more susceptible to getting cancer.

“If we’re able to understand what it is about the system of a great white shark and how it’s so resilient to cancer, it paves the way for us to understand our own system - and the more we understand, the greater chance there is to make giant leaps in treatment. All it takes is a better understanding,” said Jue.

## Monterey’s Legacy of Diversity

By Yollette Merritt

California State University, Monterey Bay (CSUMB), located on the site of the former Fort Ord, has one of the most diverse student body compositions of the 23-member California State University system.

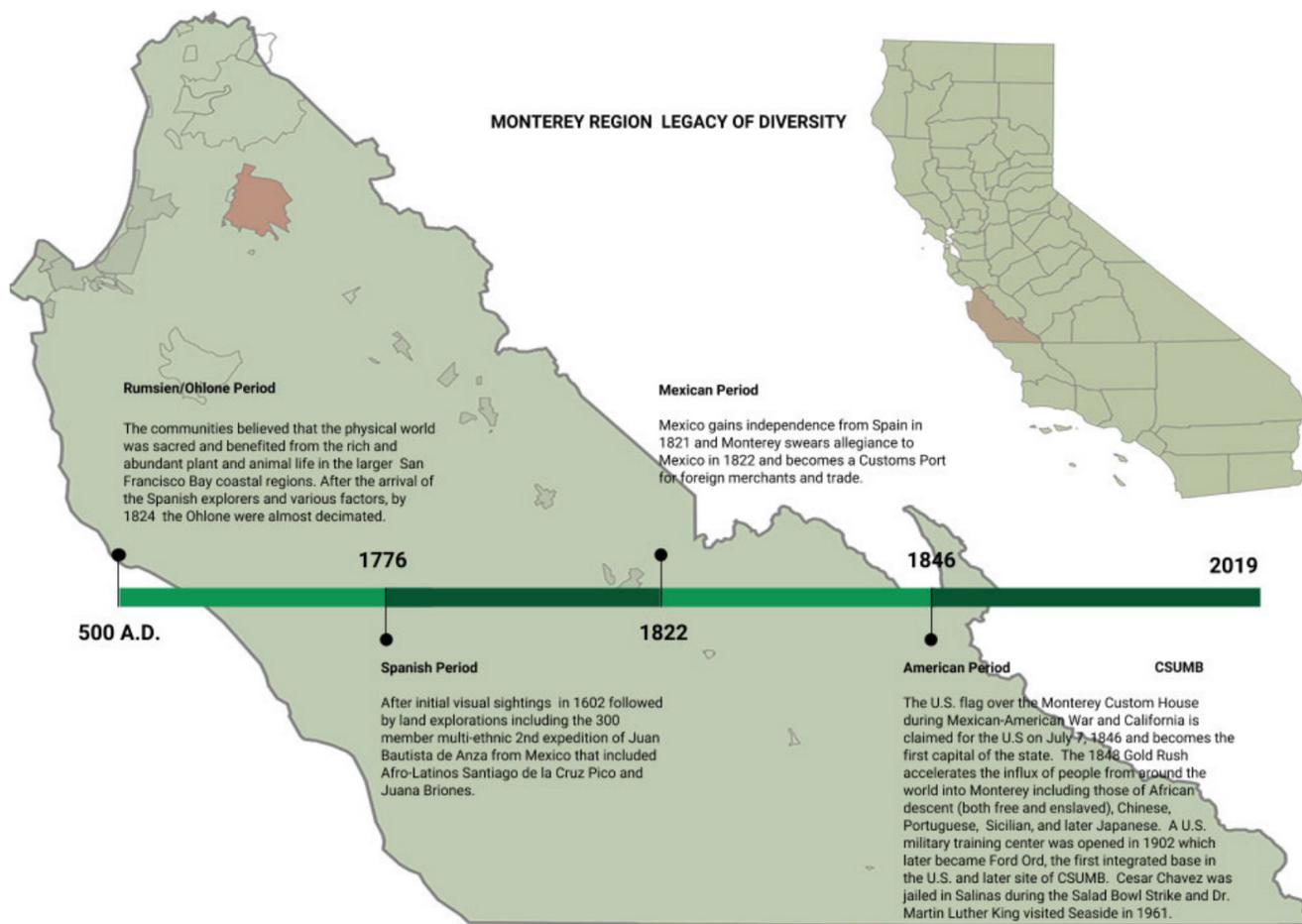
In addition to students coming from the local communities and throughout the state of California, there are some who come from out of state, as well as hundreds who come to CSUMB to study from countries all over the world in Africa, Asia, Australia, Europe, and South and Central America. CSUMB is truly a cosmopolitan and diverse community that enriches the legacy of diversity in the region.

In 1948, Ford Ord became the first integrated military base in the country. An interesting side note is that concrete bunkers - some still visible on the property owned by CSUMB

- were built by German World War II prisoners of war. The cities closest in proximity to CSUMB - Marina (incorporated in 1975 and the newest city in the county) and Seaside (incorporated in 1954) - have the most diverse populations in Monterey County. Marina was named by the U.S. Chamber of Commerce in 1994 as the seventh most diverse city in the nation. Seaside saw its greatest demographic change during World War II with the influx of diverse military personnel, including those of Filipino and African descent. The largest minority in both cities are those of Hispanic descent. Although never in a majority, the city of Seaside has the largest population of African descent in California between the cities of Oakland and Los Angeles. Rosa Parks and Dolores Huerta, as well as Dr. Martin Luther King, Jr. in 1961 made visits to Seaside.

Taking a walk back into history, diversity is nothing new for the Monterey region. The Rumsien/Ohlone peoples, thought to have migrated from the San Joaquin-Sacramento River area, were the original inhabitants of the Monterey and northern California coastal regions prior to the invasion of the Spaniards that began with the maritime explorer Sebastian Vizcaíno in 1602. The Spanish acquisition of land started in 1769 with the expedition of Gaspar de Portolá y Rovira who met up with Junípero Serra y Ferrer and his party traveling up from Mexico to the San Francisco Bay with a diverse group of participants who arrived in Monterey on June 3, 1770.

The 300 members of the second Juan Bautista de Anza Expedition had soldiers, as well as settlers, recruited from northwestern Mexico towns including Culiacán, Villa Sinaloa, Altar and Horcasitas. They arrived in Monterey on March 10, 1776 at a site not far from CSUMB. The group included a significant number of Afro-Latinos who later gained prominence in the



Monterey Region Legacy of Diversity, Yollette Merritt

Mexican-era California and included Santiago de la Cruz Pico, the grandfather of the future California Governor Pio Pico, and Juana Briones, a woman of mixed African, European and indigenous heritage who later became a prominent personage during the Mexican and early American periods.

Prior to Mexico gaining independence from Spain in 1821, Argentinians under the leadership of Hipólito Bouchard seize Monterey from 1816 to 1818. After Mexico gained independence from Spain in 1820, Monterey swore allegiance to Mexico in 1822 and became the Port of Customs for foreign merchants who made Monterey their home. Twenty-four years later in 1846 with the Mexican-American War, the U.S. Navy Commodore John D. Sloat raised the U.S. flag over the Monterey Custom House on July 7 and claimed California for the United States. That was the beginning of a major influx of individuals from the eastern and southern states, which included some of African descent, both free and enslaved. Added to the mix, especially after the start of the Gold Rush in 1848, hundreds of individuals came to the region from countries all over the world including Chile, Peru, France, Germany, England, the Sandwich Islands (Hawaii) and Russia.

Members of the Chinese community traveled to California to participate in the gold rush and some came to Monterey in 1851 to set up fishing camps, initially at Point Lobos then at Pescadero (now called Stillwater Cove) and Point Alones (near today’s Cannery Row). There were 500 to 600 Chinese fisherman by 1853 at Cabrillo Point, known as “China Point” (the site of today’s Hopkins Marine Station) and they launched the first commercial fishing industry in Monterey. Monterey was unique in regards to Chinese settlement, as they settled with families and not only single men as was true for the mines and railroads. It was common to see the

uniquely designed Chinese squid and abalone fishing boats in the bay waters. The 1850s also saw members of the Portuguese community establish whaling stations on Monterey Bay. The Chinese Exclusion Act of 1882 opened the door to Japanese immigration and it was during this period also that Sicilian fishing families began moving to Monterey.

The change in the workforce mirrored a change in the focus of the catch which moved from squid and abalone to salmon and sardines. By 1919, there were about 400 Sicilians with expertise in sardine fishing. Between 1915 and 1950, Monterey was known as the “Sardine Capital of the World” - the largest fishing industry in the U.S. with a catch of about 235,000 tons of sardines a year. Before the second World War, Sicilian and Japanese Americans dominated the fishing industry with Japanese Americans owning more than half the fishing companies on Fisherman’s Wharf, but in 1942, Monterey’s Japanese Americans were forced to relocate to detention camps.

Another milestone in the legacy of diversity in the region is that of Cesar Chavez, incarcerated during the Salad Bowl Strike of 1970 in the old jail in Salinas, not far from CSUMB. Initially a farm worker who later became a national labor leader and civil rights activist, Chavez co-founded with Dolores Huerta in 1962 the National Farm Workers Association, later called the United Farm Workers union (UFW). The UFW led to significant improvements for farmworkers not only in the Monterey region, but also throughout the United States. Space limits recounting additional examples of the rich legacy of diversity which has left its impact on CSUMB and the surrounding communities. Some of the examples are painful and some deserving of accolades, but all contributes to the fabric and history of the region.

# COLUMNS

## What makes driving while under the influence of marijuana dangerous

### Car-ticle

By Kristen Finley

First thing's first, I want to make this very clear: this not an anti-weed argument. I am not against marijuana for either medical or recreational purposes by any means - the whole point I aim to prove is that driving while high is still choosing to drive while impaired and doesn't award a high driver any higher moral ground over the driver who gets behind the wheel after drinking two beers. Both on and around campus, I see a disheartening amount of drivers my age partaking in marijuana from behind the wheel. My hope is this unbiased information will enlighten people of the dangers posed to other drivers, and the drivers themselves, when choosing to drive while high.

A common misconception cultivated by some drivers is the belief that marijuana gives a driver improved awareness or function while under the influence. What we know now is that it's simply not possible. Data from the National Highway Traffic Safety Administration and the Fatality Analysis Reporting System showed that of all the fatal U.S. accidents back in 2016, 38 percent of the fatally-injured drivers tested positive for marijuana. After the legalization of recreational marijuana in Washington in 2012, the number of marijuana-positive drivers involved in fatal accidents rose from 8 percent in 2013 to 17 percent in 2014 and is expected to rise, as the number of those who indulge in marijuana continue to increase across the state.

In 2018, researchers at the Dalhousie University in Nova Scotia, Canada, analyzed nine different studies in addition to a recent publication from the British Medical Journal and concluded that driving high increases the likeliness of an accident by twice of that of a sober driver. So, next time you hear someone declare that they drive better while high, rest assured - it's without a doubt completely false.

Let's take a look at what marijuana takes away from a capable driver. Benjamin Hansen, an economist at the University of Oregon in Eugene and at the National Bureau of Economic Research, studied the relation

between marijuana and the number of car accidents extensively. Hansen concluded that while the number of fatalities or accidents isn't comparable to those racked up by drunk driving due to the relation being only recently looked into, it doesn't mean that driving high is necessarily safer than driving drunk.

"Marijuana impairs all the cognitive abilities needed for safe driving, including tracking, motor coordination, visual function and divided attention," said Hansen. In addition, the United States Government, Drug Enforcement Administration added, "[Marijuana] slows reaction times, impairs a driver's concentration and attention, and reduces hand-eye coordination."

With alcohol, the nationally recognized blood alcohol concentration is .08 g/mL. As of right now, there isn't a way to test for THC levels in drivers via breathalyzer, due to the lack of national standard for THC. The only way to confirm that marijuana is the inarguable cause of a driver's inability to drive normally is by testing blood, urine or saliva. Steps are being taken to develop a way to test a driver's saliva for THC concentration.

Make no mistake - the absence of an acceptable range doesn't mean it's not illegal. In fact, it's a criminal offense to drive high in all 50 states. In California, driving while high falls under the same parameters of driving drunk. Shouse Law Group, a California law firm, cites that the first offense earns a debilitated driver up to 6 months in jail, a \$390-\$1,000 fine, three to nine months of DUI school or a license suspension ranging from six to 10 months - and that's just based on the first offense. Driving reaches felony levels after the third offense.



*Driving high is a decision best left unmade. Graphic by Kristen Finley.*

I want to acknowledge that there is a long list of good reasons - even scientifically proven ones - that any regular marijuana user will have in regards to their choosing marijuana over alcohol. However, as science improves, evidence points to marijuana being a hindrance to drivers as opposed to the aid it was built up to be.

To reinforce my earlier declaration - I am not against marijuana. I am only against driving while using marijuana.



## NOW OPEN

### GRAND REOPENING

#### Seaside Goodwill Store

After completion of a major renovation project, the Seaside Goodwill store celebrated its grand reopening on **Friday, March 22nd**.

The store at **729 Broadway Avenue** in Seaside is now open to the public.

**Come by and see what's new!**

**goodwill**  
**central**  
**coast**



Donate Stuff. Create Jobs.®

# COLUMNS

## Students face difficulty finding work

### Opinion

by Sam Tanner

At California State University, Monterey Bay (CSUMB), any student looking for a chance at a new job is pointed to the website Otter Jobs. The site provides jobs based on a student’s interest and focus, as well as availability. Depending on a student’s financial situation or their academic standing, some may be more eager or even desperate to find a job, and a comprehensive resource like Otter Jobs is appreciated.

However, for some students, employment at CSUMB itself is not particularly clear-cut. Opportunities are not always consistent, depending largely on what students know of the system and when they apply for a job. The window of opportunity is most open in the first weeks of the semester, or at the very end if one is applying for the next semester.

Unfamiliar with the Otter Jobs system of employment, Clarence Gabriel Parker was unable to procure a job for himself during his first semester at CSUMB. However, Parker managed to find greater success the following March. Having learned from last time around, Parker expanded his search and gained a job at the local Target

store in Marina. Since then, Parker attests that one must keep one’s search for a job broad and be as proactive as possible.

Another lucky student is Sebastian Mireles, who first came to CSUMB in the Fall of 2017. Having applied early enough for a job as a campus tour guide, Mireles was hired without any difficulty. The year after, he applied for a different job in the spring, toward the end of the semester. Once again, his proactiveness paid off and he worked as a CLC tutor. Mireles says that having applied well ahead of time was key to his success. Julianna Navarini’s story is markedly different than the other students listed here, as she decided to focus on her academic studies and skip job-searching altogether. She said that she has already planned to find a position in the fall.

Navarini is one of perhaps many students who already have the means and resources to go a semester without the need for a job. Not all students have that luxury, however, being in greater need of money to pay for housing or other expenditures. For Parker and Mireles, the chance to earn and save up money could not come soon enough.

When asked what could be done to help make employment easier for students at CSUMB, several ideas were shared. One student suggested that information about Otter Jobs simply be made more available when first transferring to CSUMB. Another idea was to extend the hiring period further into the semester. In any case, Mireles noted, the issue was nothing that could not be solved.

In many cases employment on campus is merely an option, something that can be put on hold. But for others, the need is far greater. Otter Jobs continues to supply that need, even as some stress over the narrow window of opportunity given to them.

## Organizations seek to influence public perspectives on farm-raised fish *TrueBlue*

By Josh Bowman

With technological developments in the global aquaculture industry, it would seem that many issues for fish farmers are in the past. However, concerns about antibiotics, dyes and bioaccumulative toxins from fish feed continue to turn potential customers away from purchasing farm-raised fish. Randy Lovell, the state aquaculture coordinator for California Department of Fish and Wildlife, believes their mistrust is misplaced.

“The negative stigma against farmed finfish is outdated and I’m surprised it is perpetuated,” said Lovell. “The technological challenges have largely been overcome, aquaculture has more of a storytelling issue than a sustainability one.”

In the last 30 years, technological innovations have significantly changed the way major aquaculture producers handle their production. In Norway for example, the leading global producer of farmed salmon, farmers have circumnavigated use of antibiotics by switching over to vaccines for their fish.

Antibiotics are used in fish pens to prevent outbreaks of bacterial infections, which can impact the quality of the fish and lead to reductions in harvests. During the switch from antibiotics to vaccines, Norway’s total annual salmon production went from 200,000 tons in 1990 to 1.2 million tons in 2016. The effectiveness of the vaccines allowed production to increase six times while antibiotic use fell by 95 percent.

Reduction in antibiotic use is just one of the ways salmon farming in Norway has improved. Other improvements include: eliminating pesticide use, low levels of pollutants (such as PCBs) when compared

to other food items, zero added growth hormones, increased space within pens and treatment processes for built up fish waste.

Yet in the United States, farmed fish still hold a negative stigma with many seafood consumers, some of which refuse farmed fish altogether. Prominent figures within the small inner circle of people pushing for aquaculture in the United States believe that farmed seafood products have been unfairly painted as the villains of seafood sourcing.

Vivian Krause, a former corporate development manager for Nutreco Aquaculture, goes so far as to accuse billionaire American non-profits for the negative perceptions on farmed fish in the United States as well as Canada. In an article published by Aquaculture North America, Krause names several nonprofits including the David and Lucile Packard Foundation for funding efforts to sabotage farmed salmon products and promote wild Alaskan salmon instead.

This holds a bit of a conflicting narrative because the David and Lucile Packard Foundation founded the Monterey Bay Aquarium, which promotes and advocates for sustainable aquaculture.

The article does allude to an important question, however: with so much interest and money at play on both sides of marine aquaculture, where can seafood consumers go for reliable information? Unfortunately, there is no easy answer. The best we can do as consumers is continue to press industries to deliver environmentally-friendly and sustainable products and services. This can be as simple as asking about how the seafood has been sourced and what ensures it is sustainable.

The collective buying power of consumers has a ton of influence on how a market operates. The push to rebrand aquaculture as sustainable, if anything, is a showcase of how consumer demand has transformed an industry whose future now depends on operating with scientific and environmental integrity.

While there are good examples of aquaculture which demonstrate how it is possible to greatly reduce environmental impacts of farming fish, there are also many other bad examples causing much more harm than good. As long as there continues to be bad examples of aquaculture, then consumers will be reluctant to trust in the product, unlike wild fish products, which people are familiar with and have accepted for thousands of years. If the aquaculture industry wants people to trust their products, what it needs is consistency.

The fact remains that seafood has many advantages over land meat in terms of environmental impact and resource efficiency. Both wild-caught and farmed seafood require zero land or freshwater, and are much higher in protein, vitamins and minerals when compared to land meat. There is no doubt that seafood production will be an essential part in creating a sustainable future for society.

However, the best way to move forward regarding seafood sourcing is still up for debate. In addition to operational considerations and a growing population with a growing middle class, there is the constant threat of a changing marine environment due to climate change. In order to keep a working waterfront where economies built around the marine environment thrive, it is certain that both wild fisheries and fish farms will need to work together to produce food for a world growing in size, appetite and concern for environmental health.

## Upcoming concerts

### Music Maven

By Jenna Ethridge

As we are welcomed by the arrival of spring and warmer weather, many artists are also announcing new music and tours throughout the Bay Area. The Catalyst in particular this month is hosting several shows worth the short 45-minute drive to Santa Cruz for!

In anticipation of her new album “Titanic Rising” being released on April 5 through Sub Pop, Weyes Blood will be performing in Santa Cruz at The Catalyst on April 2. Cass McCombs will be performing with Sam Evian in Santa Cruz at Moe’s Alley on April 4 and in San Francisco at The Fillmore on April 5. His latest album “Tip of the Sphere” was released on Feb. 8.

On April 8, Still Woozy will be performing at The Catalyst in Santa Cruz. Soccer Mommy will be performing with Boy Scouts at Great American Music Hall in San Francisco April 17 and April 18. Earl Sweatshirt with Liv.E and MIKE in San Francisco at The Regency Ballroom on April 19 and in Santa Cruz at The Catalyst on April 20.

On April 22 and April 23, The 1975, Pale Waves and No Rome will be performing in San Francisco at Bill Graham Civic Auditorium. Their most recent album “A Brief Inquiry into Online Relationships” was released last November through Dirty Hit and Polydor Records. They are expected to release another album, “Notes on a Conditional Form,” later this year.

Santa Cruz will be hosting Last Dinosaurs on April 25 at The Catalyst, as well as Slim’s in San Francisco on April 26 and April 27. Their third album “Yumeno Garden” was released last October. SALES will be performing in San Jose at The Ritz on April 26 and in San Francisco at August Hall on April 27.

Do It Ourselves Fest is being held in Boulder Creek at Camp Krem from April 26 to April 28. This year’s lineup consists of The Mattson 2, Fruit Bats (solo), Vetiver (solo), Mapache and many more. On April 27, Chicano Batman will be in Santa Cruz at The Catalyst.

Tickets for all of the shows mentioned are available on Ticketmaster, Stubhub and the artists’ websites.

## i Verde!

### Pledging to be sustainable

By Jen Becker

As I write this article, there are currently more than seven billion people on earth. Every second, the human population continues to grow. As the population rises, more resources are used to sustain new life. Sustainability has always been important, but we are just now noticing this needs to change.

Last month, I collected responses to understand how the student population here at CSUMB would respond to a sustainability pledge. I set up a table in front of the student center and asked participants to make a pledge about the sustainable actions they will take on during this semester and in the future. Here are the results that were gathered out of the 64 students who participated in the survey.

#### Resolution Tally:

Use reusable water bottle/cup	22
Promote sustainability	19
Cut down on single-use items	12
Unplug when not in use	6
Use less water	5

Implementing these small changes into your everyday life may seem like nothing, but slowly we can begin to change the world. Thanks to campus efforts, changes

are starting to become more prominent. The Dining Commons has created a program to eliminate single-use items for student organizations and clubs called Otterware. They offer plates, cups and utensils to be rented out for FREE! That’s right, you heard me. All you have to do is head into the DC and ask to check Otterware. All items must be returned within a 24-hour time frame.

Starbucks and Verve are also offering a discount on customers who bring their reusable cups for their beverages. By bringing your own water bottle with you, it’s possible to save up to \$260 per year by switching. Little things such as unplugging the charger when you are done can save energy and resources for the future. The energy costs of plugged-in appliances can really add up and unplugging these devices can save you up to \$100 to \$200 annually.

When we hear the word “sustainability,” we tend to think of renewable fuel sources, reducing carbon emissions, protecting environments and a way of keeping the delicate ecosystems of our planet in balance. In short, sustainability looks to preserve our natural environment, human and ecological health, while driving innovation and not compromising our way of life.

# Letterforms and Photography



(left) Luis Leon does a boneless in El Estero Skate Park in Monterey. (middle) Remick Letcher clearing the Asilomar stairs. (right) Jared Cox does a handplant in Auburn Skate Park.

By Mikko Mananghaya

Typography and photography are two artistic disciplines that I am exploring. As a communication design major, I try to blend the two together and see the relationships between letterforms and photography.

The subjects featured respectively are Luis Leon, Remick Letcher, and Jared Cox. This series focused on skating and the

# Creative Works

submit [creativeworks@thelutrinae.com](mailto:creativeworks@thelutrinae.com)

## Word Search

In honor of St. Patrick's Day, the theme of this week's word search is words affiliated with the Irish holiday.

K	C	O	R	M	A	H	S	Z	S	F	Q	L	I	M	E	R	I	C	K
F	P	A	R	A	D	E	U	T	X	D	K	D	X	I	Y	R	I	F	S
P	X	A	G	B	E	L	Y	K	J	M	L	L	O	K	Z	P	O	C	B
X	N	G	M	N	X	Y	L	L	M	R	B	O	P	G	L	C	N	I	S
H	M	Y	O	U	S	V	K	H	M	P	A	G	P	Y	S	K	P	T	K
S	L	C	K	D	H	Q	S	Y	T	N	I	A	S	G	J	U	G	L	Z
M	D	X	G	I	N	E	E	R	G	B	T	D	J	L	O	R	E	E	S
O	R	N	C	P	M	W	L	O	Y	R	R	Z	V	T	Q	K	H	C	P
E	E	H	A	V	V	L	M	Q	I	B	M	C	C	R	K	I	M	A	I
Z	X	K	L	L	I	O	V	C	U	H	R	E	V	O	L	C	K	H	N
R	E	V	U	K	E	F	K	W	M	Y	D	X	V	O	X	D	D	F	C
L	M	O	C	Z	T	R	J	W	O	I	M	U	U	S	A	U	Z	Q	H
J	E	N	K	O	L	D	I	U	U	R	G	G	P	S	H	B	L	R	M
C	R	U	Y	F	W	A	V	A	B	L	A	R	N	E	Y	L	Y	N	T
J	A	I	P	L	D	S	M	Z	N	N	I	Z	L	Z	L	I	R	W	S
N	L	T	D	H	N	N	U	A	H	C	E	R	P	E	L	N	X	V	I
S	D	Y	U	A	C	Q	R	A	I	N	B	O	W	N	M	P	Y	J	L
M	B	V	K	C	C	T	T	X	J	M	Q	U	T	F	D	C	N	E	J
M	L	E	N	H	T	E	S	X	X	A	V	K	N	P	A	E	V	X	K
R	S	K	N	A	M	V	B	D	B	W	M	K	Z	L	M	A	R	C	H

- |         |            |         |          |
|---------|------------|---------|----------|
| Blarney | Gold       | Lore    | Pinch    |
| Celtic  | Green      | Lucky   | Rainbow  |
| Clover  | Ireland    | March   | Saint    |
| Dublin  | Leprechaun | Parade  | Shamrock |
| Emerald | Limerick   | Patrick | Snakes   |

## Sudoku

6	1							
8		5		2				7
2	9			3				5
			5	7				
				6			8	
			2		1			
	2			5		8		
			3		2		1	
9		8					5	6

### Solved puzzles

6	1							
8		5		2				7
2	9			3				5
			5	7				
				6			8	
			2		1			
	2			5		8		
			3		2		1	
9		8					5	6