

# LINK

VICTOR  
VALLEY  
COLLEGE

A VICTOR VALLEY COLLEGE FOUNDATION PUBLICATION | SUMMER 2014

## Ground Breaking

CONSTRUCTION BEGINS ON THE NEW  
DR. PREM REDDY HEALTH & SCIENCES BUILDING

## the power of scent

VVC STUDENTS PARTICIPATE IN NATIONALLY  
RECOGNIZED BLOODHOUND RESEARCH



## FOUNDATION LINK

### CHAMPIONS OF EDUCATION

LOCAL COMPANIES SUPPORT VVC

See our growing list of friends

PAGE 4

### CONGRATS CLASS OF 2014

VVC ALUMNI STAY IN TOUCH VIA



SAVE THE DATE!

10:00 am - 7:00 pm

Saturday  
September 6, 2014

2nd Annual

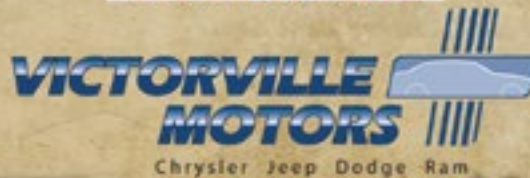
DESERT  
ROCKS

Film & Music  
Festival


MOVIES MUSIC  
FAMILY FUN

CINEMA WEST THEATRE ♦ CIVIC PLAZA 12  
& HESPERIA CIVIC PLAZA PARK  
9711 NINTH AVE  
HESPERIA, CA 92345

-BROUGHT TO YOU BY-



WWW.DESERTROCKSFAME.ORG  
FILM AND MUSIC EVENT INC.

FOLLOW US ON 

# Content Summer 2014

## at VVC I LEARNED



### GROUND BREAKING

Construction begins on the new Dr. Prem Reddy Health & Sciences Building

## QUICK LINK

### 05 THE POWER OF SCENT

VVC's Bloodhound Clud researches the power of scent.

---

### 07 CEMENTING CHEMISTRY

Mitsubishi Cement and Cemex discuss the importance of Chemistry when it comes to making cement.

---

### 11 SCIENCE WINTERSHIPS

VVC students to participate in NSF sponsored research program at CSUSB.

---

### 13 OPERATIONS INTERN

Victor Valley Wastewater Reclamation Authority Operator Bobby Hesse dicusses why math & science are important.

---

### 14 CAREER LINKS

Outlook on jobs for career ladders and the Victor Valley College programs that prepare graduates to get them.

---



When I started at VVC three years ago, I did not know division. Since then, I have mastered Calculus and will be receiving my degree this year.

**Ben Elmagarisy**

**Major:** Biomedical Engineering



I learned that my motivation must be forceful in order to overcome obstacles that can come my way.

**Alyssa Zuiderveld**

**Major:** Physicians Assistant



I learned to surround myself with open-minded people that motivate me to get a deeper understanding through education.

**Valentin Pishchanetskiy**

**Major:** Respiratory Therapy



The LINK is a publication of the

Victor Valley College Foundation

18422 Bear Valley Rd., Victorville, California 92395  
760.245.4271 ext. 2522 | www.vvcfoundation.com



# Victor Valley College



## Board of Trustees

Dennis Henderson, President  
 Joseph W. Brady, Vice President  
 John Pinkerton, Clerk  
 Lorrie Denson, Trustee  
 Brandon Wood, Trustee  
 Evelyn Blanco, Student Trustee

# Victor Valley College Foundation

## Board of Directors

### Officers

Don Brown, President - Lee & Associates  
 Frank Robinson, Vice President - Town of Apple Valley  
 Eric Schmidt, Vice President - Exquadrum, Inc.  
 Dawn Serbus, Vice President - Citizens Business Bank  
 Caroll Yule, Vice President - Shear Realty  
 Donna Wells, CPA, Treasurer  
 Val Christensen, Past President - Johnnie D's Restaurant  
 Peter Allan, Superintendent - Victor Valley College

### Directors

Merlin Aalborg - Heritage Victor Valley Medical Group  
 Tim Anderson - El Dorado Broadcasters  
 Casey Armstrong - Armstrong Fairway Insurance  
 Magdalen Chavez - VVC Classified  
 Larry Cusack - Apple Valley Communications  
 Steve Davison - Chino Commercial Bank  
 Dianna Donofrio - Apple Valley Physical Therapy  
 Bruce Ebmeyer - Ebmeyer Charter  
 Craig Garrick - ComAv  
 Norm Hurst - Community Member  
 GH Javaheripour - VVC Administration  
 Scott Jones - VVC Faculty  
 Jerry Klein - State Farm Insurance  
 Jason Lamoreaux - Coldwell Banker Commercial  
 Scott Nassif - Napa Auto Parts  
 Deedee Orta - VVC Management  
 Suzanne Richards - Victor Valley Global Medical Center  
 T. Kirk Riding - Capstone Consulting  
 Bill Scott - Scott Turbon Mixer  
 Paul Stanton, MD - Ultimate Sports & Orthopedics  
 Thurston Smith - Community Member  
 Evonne Torres-Tirado - VVC Student

### Emeritus

Percy Bakker, Emeritus  
 Bruce Fay, Emeritus  
 Janice Olson, Emeritus  
 Joe Range, Emeritus

### Staff

Ginger Ontiveros, Executive Director  
 Catherine Abbott, Assistant Director  
 James Johnson, Contract Education Manager  
 Rhea Deroian, Grant Development Manager  
 Glennis Duncan, Executive Assistant / Finance  
 Jesika Pomponio, Special Events & Volunteer Coordinator  
 Gabriela Callender, Advancement Assistant



These generous organizations have made an annual commitment to support the events and activities that fund the important work of the Victor Valley College Foundation



# You can change lives...

Your tax deductible gift to the Victor Valley College Foundation will change lives. Donations provide scholarships for deserving students, purchase training equipment for classrooms and allow students to participate in life-changing extra-curricular activities.

Gifts can be made easily online at the Foundation website:

[www.vvcfoundation.com](http://www.vvcfoundation.com)



Thank **YOU** for Caring

at VVC  
**I LEARNED**



I learned how to palpate a horses ovaries.

**Karyssa Dennison**  
 Major: Applied Sciences

# The power of scent

## VVC students participate in nationally recognized bloodhound research

Imagine a loved one going missing without a trace. No word, no clues, no witnesses, just gone. What would you do? Who could help find someone with no evidence to go on? The answer: Bloodhounds, the next generation of detectives. Dr. Lisa Harvey, VVC Professor and Biology Department Chair, is a leading bloodhound expert in the United States. Her bloodhounds have been used to find numerous people and assist in countless police investigations. Her dogs follow the trail no one else can. In fact, Dr. Harvey's research shows that bloodhounds can trail a scent from a fired shell casing, trails that have been contaminated (walked and driven across) by more than a million people, trails at least 40 miles long, and even follow a scent trail of a person in a car. It's not magic or "dog voodoo", it is just a remarkable skill that can be honed for the benefit of society.

VVC's Bloodhound Club, managed by Dr. Harvey, is dedicated to establishing the scientific literature behind the ability of the bloodhounds to trail human scent. Bloodhounds are used widely by law enforcement to trail criminals, prove a suspect's guilt, or to find abducted children. Another use for bloodhounds is to locate human remains in case of earthquakes or other disasters.

The club consists of a group of students enrolled in BioH295 (Biological Science Reserach) who are trying to gain experience in the field of scientific research. Students in the course conduct field studies and document their research to create a repository of information that can help humans

understand the abilities of these canines. They also work hands-on in training and trailing exercises with the bloodhounds, which often start training as young as seven to eight weeks old. Bloodhounds take about 18 months to be fully trained and gain a veteran status. Often they will have specialty types of scents they track, from trailing abducted children, to narcotics,

arson, search and rescue, human remains, or bomb detection.

These little detectives are not just smart and talented, they are dedicated too. In one study conducted by Dr. Harvey, veteran bloodhounds were able to trail a scent with 96% accuracy despite the trail being laid up to 48 hours earlier with varying weather conditions, including 1.5 inches of rain and winds up to 60 miles per hour.

A bloodhound's nasal cavities, where scents are identified, are significantly more impressive than any other dog breed. Bloodhounds have four billion olfactory (scent) receptor cells compared to only five million in humans.

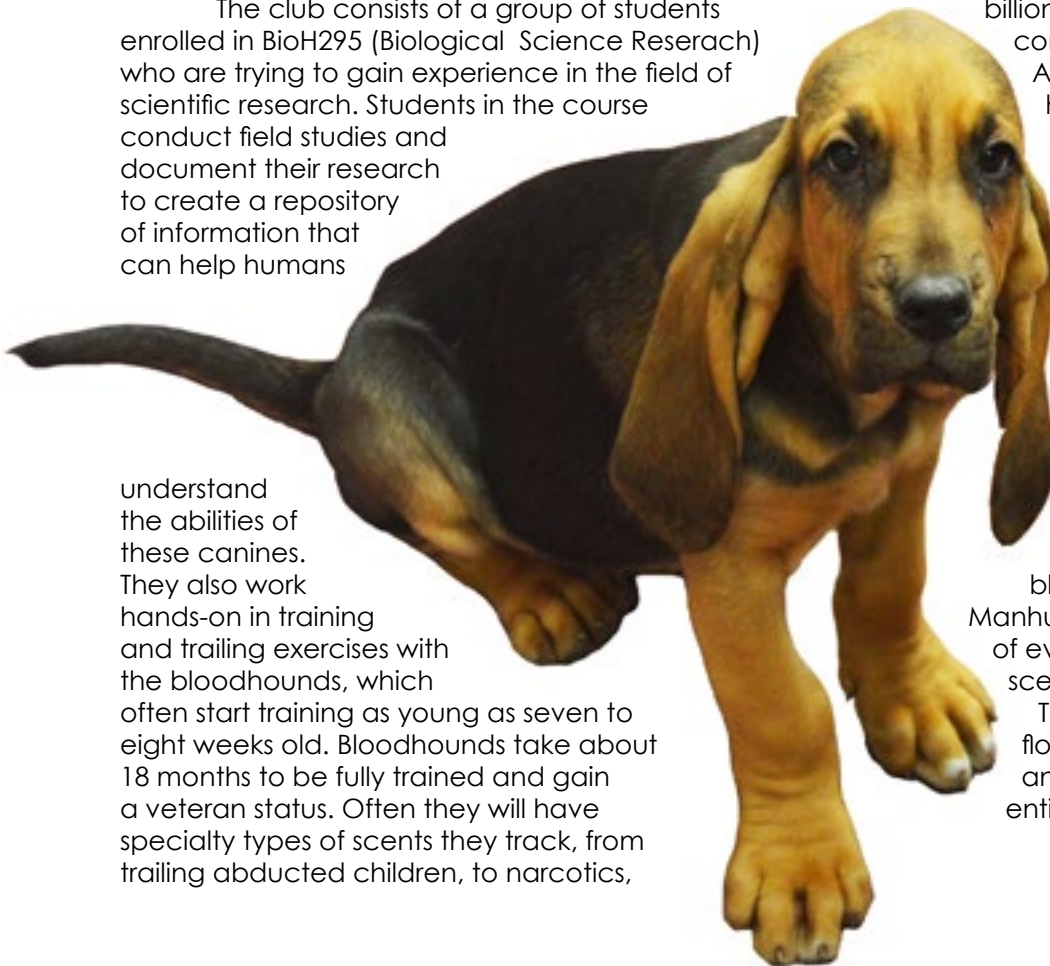
A bloodhound olfactory epithelium has a surface area of 59 square inches, compared to human's olfactory area of 1.55 square inches, 10 square centimeters. The substantial, long sagging ears help to thwart wind from displacing nearby skin cells while the bloodhound's nose is on the ground; the wrinkles around the mouth and neck, called the shawl, function to capture stray scent particles in the immediate area as the dog is scenting, reinforcing the particular scent for the canine.

William Tolhurst, a master bloodhound handler, said in his book *Manhunters* (1984): "Scent is the one piece of evidence that must be present at the scene of a crime.

The criminal may walk on a concrete floor and leave no tracks, wear gloves and leave no fingerprints, but unless the entire area has been burned,



**Dr. Lisa Harvey and Aston Martin, the Bloodhound.**



**Continued page 12: Bloodhounds**

# 1994-2014



**Emergency | Heart Center | Senior Services  
Maternity | da Vinci 3D Robotic Surgery**

1994-2014

DESERT VALLEY HOSPITAL



**20 YEARS OF  
CARING**

**GENERATION TO GENERATION**

16850 Bear Valley Road, Victorville, CA 92395 760-241-8000 [www.dvmc.com](http://www.dvmc.com)

# Cementing Chemistry



The Hoover Dam weighs 6,600,000 tons, the Chesapeake Bay Bridge in Maryland is one of the longest bridges in the world spanning 22,790 feet and a famous wonder of the ancient world "The Great Pyramids" are made up of approximately 2,500,000 stones. What do all of these monstrous iconic structures have in common? They are all made out of millions of tons of concrete. While concrete is a simple mixture of paste and aggregates (or rocks), it must have the right "Chemistry" to support these "mega structures" we now benefit from.

You may be surprised to know the High Desert has the highest concentration of Cement plants on the West Coast. There is a very good reason why. If you look around the region, you will notice a valley surrounded by mountains. Embedded deep in those mountains are decades worth of available limestone. This sedimentary rock is the basis of making cement which ultimately becomes concrete.

If you have ever thought of a career as a Chemist, this is an industry to consider. At the Mitsubishi Plant in Lucerne Valley and Cemex in Victorville, chemists are very hands on. Every hour, they are tinkering away closely sampling the materials to protect the integrity of their crushed and heated materials. Plant Manager and Chemist, Jim Russell says, "the key to achieving the strong and durable product rests in the careful proportioning and mixture of the ingredients by the means of frequent chemical and physical tests." In the past, cement analysis was carried out using wet-chemical techniques. Now, the days of flasks bubbling away over bunsen burners in the laboratory are largely gone and are replaced by X-ray analysis equipment of various types.

The process begins in the quarry mines where a few times a week rock is blasted from the mountain. While visiting the Mitsubishi Plant, a group of elementary students on a field trip were in luck. They were given the responsibility of pressing the button which detonated the dynamite and blew apart the hillside! Gigantic dump trucks then pick up the three to six foot rocks and deliver their load to a crusher where the rock is reduced to roughly six inches in size. While six inches seems small the material is still too large to be introduced to their massive 2500 degree kilns. A secondary crusher (raw mill or hammer mill) does its job to further reduce the rocks to three inches or smaller. "The raw mill grounds the material to basically a powder



cemex chemist



kiln at cemex

# VVC breaks ground on He

May 16, 2014 marked a momentous day for Victor Valley College with the groundbreaking of the Dr. Prem Reddy Health and Sciences Building. Dr. Reddy, a longtime Victor Valley resident and CEO of Prime Healthcare Services, is a substantial supporter of education and donor to the college. Friday celebrated Dr. Reddy's recent \$2 million gift, the largest single charitable gift in the college's 53 year history, to outfit the new building with state of the art classrooms and equipment.

"I am humbled and honored by this event. I'm committed to helping in education because it has been so valuable in my life. I would like to help others to realize their goals." Dr. Reddy said in his address at the ceremony. The new 22,000-square-foot facility is expected to be completed by the fall of 2015 and will house several classrooms and mock hospital labs. The facility will help to decrease wait lists for students enrolling in the institution's impacted science and health courses.

Reddy has spent most of his adult life in the Victor Valley; he built Desert Valley Hospital in Victorville in 1994 and has been committed to regional development since. He said the High Desert community has contributed to his growth while practicing medicine as a cardiologist for more than 25 years. In 2004, Reddy donated \$1 million to VVC in what was then the largest gift in the college's history. The funds were used for programming in several allied health subjects, and the college honored him by creating the Dr. Prem Reddy School of Health Sciences, an academic umbrella which unites several health care programs including respiratory therapy, paramedic/EMT, and allied health. Since that time Dr. Reddy has contributed through gifts, student scholarships, and partnership contracts bringing his contributions to the college to a grand total of \$5.5 million.




---

**"I'm proud to see so many nursing and allied health students in the school that bears my name and to be a part of their success."**

- Dr. Prem Reddy

---

"Dr. Prem Reddy's friendship with Victor Valley College has already helped thousands of our students to build better lives," said Peter Allan, Victor Valley College Superintendent & President. "His gift now is helping us to strengthen our programs with better facilities that will serve countless more. We are proud to recognize him with the naming of the Dr. Prem Reddy Health and Sciences Building."

Dr. Joseph Morris, Director of VVC's Associate Degree Nursing Program, stated the new building is "an amazing opportunity for the High Desert. Dr. Reddy's contribution shows his continued support to educate our





# alth & Sciences building



students and to produce quality nurses and allied healthcare professionals. He has a long history of supporting allied health programs at VVC and we applaud and appreciate his generosity and dedication to promote student success." Dr. Morris believes the new building, complete with simulation equipment and a mock hospital, will prepare graduates to take care of some of the most complex health care cases.



The donation, which was facilitated by the Victor Valley College Foundation, was accepted by VVC's Board of Trustees who then authorized the permanent naming of the new building. "He's not only a major contributor, but a visionary," said VVC Trustee Joseph Brady of Dr. Reddy. "He has a vision and he shares that vision with the entire High Desert medical industry. In the big picture, it takes people like him that can help push us and make those opportunities happen." His latest contribution will be made through the Dr. Prem Reddy Family Foundation, which Reddy and his family established

in 1986. The Foundation provides scholarships, supports public health care education, and free community clinics.

The new building will serve as a conduit for STEM related programs, especially nursing. It will meet the needs of the students for future science courses too and prepare them for the workforce of tomorrow.

"Education is very close to my heart. Without it, I wouldn't be here. I was the first to go to school, any school, in generations in my family. I've seen what the value of education can do for someone." Dr. Reddy stated at the ceremony. "I'm proud to see so many nursing and allied health students in the school that bears my name and to be a part of their success."



*Thank You*



# Head of the Class!

Southwest Gas salutes the **Victor Valley College** for providing individuals with the opportunity to achieve their highest educational and professional goals!



## Omnivore Biogas Renewable Energy Ribbon Cutting

Unprecedented technology  
**First of its kind in the  
United States**

**OPEN  
TO THE  
PUBLIC**



**Friday, September 26<sup>th</sup> 2014**

**9:00am to 11:00am**

20111 Shay Rd.  
Victorville, CA 92394

**Energy Neutrality**  
Produces significantly more biogas  
which can be used for  
energy production

**Congressman Paul Cook** will join us to celebrate Energy Neutrality at VWVRA

RSVP by **July 4th** ~ space is limited  
Kbeyer@vwwra.com (760) 523 - 1781



# Science Winternships

## Grant partnership gives VVC students new research opportunity

Imagine a student working side-by-side with NASA scientists writing or evaluating code, or being given the freedom to conduct their own chemistry experiments. For most students, learning about science happens inside the pages of a text book. That is until now. For a few qualified physics and chemistry students at Victor Valley College, these hands on opportunities are ready to jump off the page.

Victor Valley College has been named as a partner in a five year, \$5 million grant from the National Science Foundation (NSF) secured by Cal State San Bernardino. The funding comes through NSF's Center for Research Excellence in Science and Technology or CREST. The program provides support to enhance the research capabilities of minority-serving institutions through the establishment of centers that effectively integrate education and research for faculty and students in the STEM disciplines.

For most community college students, valuable hands-on research is unlikely and will not take place until they reach the University level. Laboratory Aide and Instructor in the Physical Science and Chemistry Department, John Hoskins, explains why this grant provides a unique and exciting opportunity.

"Community colleges in general are not supposed to be research oriented, but we have multiple research opportunities happening and we can say we are a full research facility for the science field," Hoskins said. "Hopefully that will have students looking and wanting to come here for the science field."

VVC Professor Michael Butros will also be involved in the research leading his team of students from the physics department. Butros, a former student at VVC during the late 1980's, said when he transferred (to University) he had no idea about

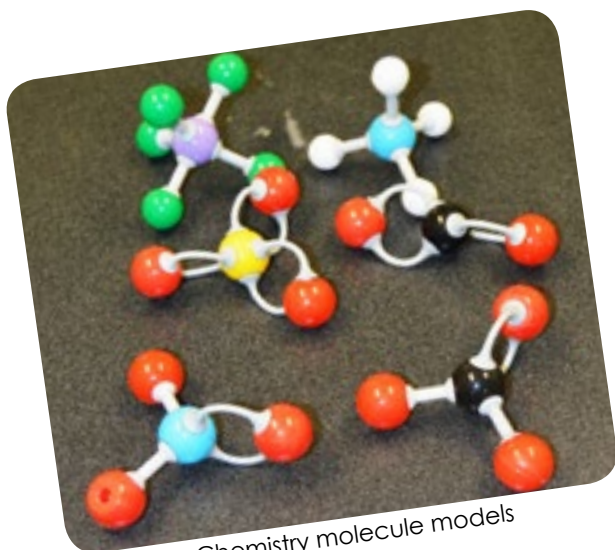
undergraduate research.

"I wish I had these opportunities," Butros said. "However, most of these students have not yet made up their mind as to what they want to do because they don't know how it (physics) is applied in the real world."

Both students and faculty will receive paid "Winternships" by Cal State through the grant and for eight hours a day intensive research will take place on the VVC Campus. In the summer of 2015, Butros plans on taking a few of his students to NASA – Dryden at Edwards Air Force Base and hopefully establish a research community. "This will give them the chance if they want to be an engineer, mechanical engineer or in the aviation field to work with a NASA scientist," said Butros.

Valuable hands-on programs such as these not only better prepares STEM students who plan on transferring to CSUSB or other Universities it makes them more competitive and is designed to increase retention and graduation rates for students in the STEM disciplines. Hoskins says participation in science research provides practical skills and knowledge that will jump start a student's educational and professional career.

"This will boost up their resume and be immensely helpful for them," said Hoskins. When the community college chapter closes for VVC students, Butros also emphasizes the impact this opportunity has on a student's resume. "Our students are going to get their foot in on heavy duty research that is going to help them throughout their careers as scientists," he says. "If I could fly right now I would fly! This is all about our students and to be able to offer them such a great opportunity is amazing!"



Chemistry molecule models



Ammonium Nitrate, Ammonium Chloride and Zinc Powder explosion

### Continued from page 7: Cement

consistency and then it is put into the kiln," said Cemex Plant Manager, Cesar Millan. "The kiln cooks the material and it becomes small balls which is called Clinker."

Millan's chemist is busy analyzing the dust and dirt looking to see if any iron ore, silica or other materials need to be added. "These are introduced in small portions," said Millan, "We are ensuring the clinker has the right composition and good characteristics." However, the product is far from making walls, bridges or even a freeway. Chemists must add gypsum, a product that gives cement



the setting time and flexibility construction workers need to set their concrete. "If you just add water to the cement without the gypsum the cement hardens right away, and you can't do anything with it," Millan explains.

Working as a chemist in a cement plant is unconventional compared to the sterile facilities in medical and research labs.

"It's not an exact science either, it's more of a broad stroke," Cemex's Quality Control Manger Jim Martin said. "This is not a clean lab, we are working with dirt and dust but our end result is bridges, buildings and roads. We have people's safety and lives at stake and we must meet all State and Federal Regulations."

Martin moved from his home state of New Mexico to put his Bio-Chemist Degree to work at the Cemex Quarry in Apple Valley. "I like seeing the results of my work, I love my boss and I love my job," Martin said.



### Continued from page 5: Bloodhounds

he still leaves scent... You can't see it. You can't photograph it. You can't dye it. You can't lift it like a fingerprint. You can't find it with a laser. You can't send it to the lab for analysis. But it's there, just waiting to be used." Later, he was even able to prove that scent particles can even survive on bomb fragments after an explosion and that bloodhounds are in fact capable of picking up and trailing that scent.

Dr. Harvey and her team have countless success stories of tracking missing persons or finding criminals. Shelby, one of Dr. Harvey's veteran dogs, was able to track down a missing infant in less than 12 hours. The child was abducted from a home located across the street from a school; Shelby and Dr. Harvey were on the scene within an hour. Shelby trailed the scent from the crime scene in San Bernardino, chasing a car trail all the way to the Metro-Link Station. She was then able to track the scent on the Metro-Link and whether the abductor got off at a specific stop or not. Shelby was able to lead detectives to the Los Angeles house where the child was recovered. On another occasion, Shelby trailed a scent throughout San Francisco Bay and located the victim underwater. Dr. Harvey stated, "Finding

missing children or people is always rewarding; catching criminals is even more so because they hurt so many people."

Dr. Harvey volunteers her time and takes her dogs to police departments all over California to help find these people and solve cases.

Her assistance is invaluable to the family of crime victims. She said her dogs are always successful in finding a clue at a crime scene that might have otherwise been missed often immediately leading the detectives in the right direction. Bloodhounds have been used by law enforcement since the 1960's, however, only recently have their testimonies been legally admissible in court. Thanks to Dr. Harvey's research and the great work of the VVC Bloodhound Club, the capabilities of these beautiful canines have been scientifically tested and validated, which has helped solve many cases. Tolhurst considers scent to be "the forgotten evidence," because detectives aren't usually aware of its presence. Scent is delicate, it cannot be identified well by humans, and isn't visible. However, it can be essential and in some cases, it might be the only accessible evidence. There is always a scent and bloodhounds can find it.



“Don’t underestimate the importance of math and science.”  
- Bobby Hesse



**Bobby Hesse**, VVWRA intern current VVWRA Operator (left) and **Brad Adams**, VVWRA Operator (right.)

# OPERATION INTERN

## So Bobby, what do you enjoy the most about your job?

Variety. I'm not one to just do a single task forever. I never have the same week here. One week I'm working with the lab running compliance samples. Another week I'm doing confined space entry or driving heavy equipment. It's never boring.

## Dynamic! Where have you used scientific knowledge?

Everywhere. Mostly in the lab with samples and fine-tuning the treatment process. We do BNR (Biological Nutrient Removal) but the bacteria we use to treat the water doesn't listen to us when we tell it what to do. You have to understand the bacteria to control the environment it lives in and get it to do what we want. You have to be able to identify the species currently dominant and know what it will and won't respond to. Science is everywhere at the plant. Without it we couldn't treat the water.

## What do you do on a typical day?

Depends. Like I said no two weeks are the same. I could be sampling, or working on the other side of the plant. Taking down the UV lights for cleaning. Running the front loader or dump truck moving solids. Fine-tuning the plant with our process control/lead operator. The plant never stops treating water so the needs of the plant are changing every day. I'm here for whatever the plant needs and I'm certified for almost everything that needs to be done.

## I'm sure you weren't always a pro at what you do. Tell us about a "newbie" mistake you've made!

Oh man. Well, when I worked for another sanitation district I was using a forklift to dump a full dumpster into a trash truck. I got a little cocky and was going too fast. Needless to say the dumpster fell off the forks and into the dump truck! I had to get my lead and have him and 3 other guys fish it out. They all laughed. I guess it was

a "rite of passage" at the plant. Everyone had done it by accident at one point. What's funny is it happened to one of my current VVWRA coworkers who's fresh into the field a couple months back. I guess it is a rite of passage!

## Dumpster-fishing; an Operator rite of passage! Speaking of which, do you have advice for future interns?

Don't underestimate the importance of math and science. Don't be afraid to get your hands dirty and jump into a program where you work for "free". Friends of mine thought I was crazy for working as an intern. It pays off. I'm only 25 and have an amazing career ahead because I made a sacrifice and gave up a little of my social life. When we are young we only have a short time to set the course for the rest of our lives. Make good decisions, stay in school and always keep a positive attitude. A little bit of sacrifice goes a long way.

- **Kate Beyer**, VVWRA PIO

# Career LINK science

## Registered Nurse



### CAREER DESCRIPTION:

Registered Nurses (RN) are the largest group among all the health care occupations. Most RNs work in acute care hospitals but some of them care for patients in private clinics or work in private homes. They evaluate patient's health problems and needs and provide nursing care to ill, injured, convalescing, and/or disabled patients. Registered Nurses must be licensed to practice in California by the California Board of Registered Nursing (BRN).

### JOB OUTLOOK:

The median wage for Registered Nurses in the Inland Empire Area was \$86,133 annually, or \$41.41 hourly. Nursing is one of the most in demand career fields with state projections showing a 19% increase in the field through 2022.

### VVC PROGRAMS:

VVC offers a world class Associate Degree Nursing (ADN) program that prepares graduates for rewarding careers as Registered Nurses. Armed with a degree in Nursing, students are poised to become an integral part of the healthcare industry.

<http://www.vvc.edu/academic/nursing>

## Geoscientist



### CAREER DESCRIPTION:

Geoscientists study the physical aspects of the Earth, such as its composition, structure, and processes, to learn about its past, present, and future. Geoscientists typically plan and conduct field studies, in which they visit locations to collect samples and conduct surveys, analyze aerial photographs, well logs (detailed records of geologic formations found during drilling), rock samples, and other data sources to locate natural resource deposits and estimate their size, and conduct laboratory tests on samples collected in the field.

### JOB OUTLOOK:

Average hourly pay for Geoscientists is \$49.56, or \$103,084 annually in San Bernardino County. Employment of geoscientists is projected to grow 16% from 2012 to 2022, significantly faster than the average for all occupations.

### VVC PROGRAMS:

VVC offers an Associate's Degree in Math/Science which can be utilized to transfer to obtain a Bachelor's and a Master's degree in Geology.

<http://www.vvc.edu/academic/geology>

## Environmental Engineering Technicians



### CAREER DESCRIPTION:

Environmental engineering technicians carry out the plans that environmental engineers develop. They test, operate, and, if necessary, modify equipment used to prevent or clean up environmental pollution. They may collect samples for testing, or they may work to mitigate sources of environmental pollution. They also inspect facilities for compliance with the regulations that govern substances such as asbestos, lead, and wastewater.

### JOB OUTLOOK:

In 2013, the median wage in San Bernardino County was \$19.72 hourly, or \$41,017 annually. Employment of Environmental Engineering Technicians is projected to grow 18 percent from 2012 to 2022, faster than the average for all occupations.

### VVC PROGRAMS:

Victor Valley College offers an A.S. in Construction Technology as well as certificates in Public Works, Renewable Energy, Building Inspection, and several others.

<http://www.vvc.edu/academic/construction>

# Career LINK science

## Chemist



### CAREER DESCRIPTION:

Everything in the environment, whether naturally occurring or of human design, is composed of chemicals. Most Chemists are involved in research and development, production, or chemical analysis. In research and development, Chemists study the composition, structure, and properties of substances and the interactions between them. They determine ways to strengthen or combine materials or develop new materials for use in a variety of products. Chemists also work in production and quality control in manufacturing plants.

### JOB OUTLOOK:

Chemists in San Bernardino earned a median annual wage of \$56,306, or \$27.07 hourly. Employment of chemists and materials scientists is projected to grow steadily through 2022, with more opportunities for candidates who hold advanced degrees.

### VVC PROGRAMS:

An Associate's degree in Math/Science should be obtained to transfer to a University for a Bachelor's degree in Chemistry.

<http://www.vvc.edu/academic/chemistry>

## Biomedical Engineers



### CAREER DESCRIPTION:

Biomedical Engineers develop devices and procedures that solve medical and health-related problems by combining their knowledge of biology and medicine with engineering principles and practices. Many conduct research together with life scientists, chemists, and medical scientists, to develop and evaluate systems and products such as artificial organs, prostheses, instrumentation, medical information systems, and health management and care delivery systems.

### JOB OUTLOOK:

In San Bernardino County, the median wage for Biomedical Engineers was \$102,383 annually, or \$49.22 hourly in 2013. Employment of biomedical engineers is projected to grow 27 percent through 2022, much faster than the average for all occupations. Demand will be strong because an aging population and increased public awareness of biomedical engineering advances and their benefits.

### VVC PROGRAMS:

Students should obtain an Associate's degree at VVC in Math/Science followed by a Bachelor's degree in Biomedical Engineering.

<http://www.vvc.edu/academic/biology>

## Forensic Science Technician



### CAREER DESCRIPTION:

Also called Crime Scene Technicians, Forensic Science Technicians collect, identify, classify, and analyze physical evidence related to criminal investigations. They perform tests on weapons or substances, such as fiber, glass, hair, body fluids, and tissue, to determine their significance to the investigation. Many Technicians prepare written findings and displays for court presentations and may be called upon to present fair and impartial court testimony as a qualified expert witness.

### JOB OUTLOOK:

In California, the median wage in 2013 for Forensic Science Technicians was \$71,208 annually, or \$34.23 hourly. Employment is projected to grow steadily through 2022.

### VVC PROGRAMS:

An Associate's degree in Math/Science offered at VVC is designed to prepare students to complete a Bachelor program. A Bachelor's degree in forensic science, criminalistics, criminal justice, or one of the physical or biological sciences, such as biochemistry is generally required.

<http://www.vvc.edu/academic/biology/biotech.htm>