

Reseda Charter High School Reflections

Reseda Charter High School began our collaboration with CSU Channel Islands during the 2015 – 2016 academic school year, working under the direction of Cause Hanna and Coastal Marine Biolabs. Student groups travel to Santa Rosa Island twice each year, in the Fall and the Spring. Our students collected indicator species on the island and used DNA Barcoding to monitor biodiversity on Santa Rosa Island while the University carried out its restoration project. The student research is published on BOLD-SDP (see the sample Specimen and Sequence pages below) and NCBI. While on Santa Rosa Island, the students have carried out sandy beach monitoring, assembled wattles for the cloud forests, performed photographic monitoring of vegetation, and collected seeds for reseeding native plants. This submission is a collection of reflections of the students' memories and experiences during our trips to the island.

Specimen Page

BOLDSYSTEMS

Specimen - Reseda Charter High School-10-12-DNA Barcoding (2018-2019) [SDP860] [Print](#)

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IDENTIFIERS

Sample ID:	RH-111
Process ID:	SDP860003-19
Institution Storing:	*unvouchered
Field ID:	RH-111
Museum ID:	
Collection Code:	

TAXONOMY

Identification:	Apinae
Rank:	Subfamily
Identifier:	Student
Identification Method:	barcode
Identifier Institution:	
Identifier Email:	
Taxonomy Note:	
Rank:	Current Record (RH-111)
Phylum:	Arthropoda
Class:	Insecta
Order:	Hymenoptera
Family:	Apidae
Subfamily:	Apinae
Genus:	
Species:	
Subspecies:	

SPECIMEN DETAILS

Voucher Status:	
Tissue Descriptor:	
Sex:	
Reproduction:	Sexual
Life Stage:	Adult
Extra Info:	
Note:	
Associated Taxa:	
Associated Specimens:	
Reference Link:	
Contributors:	• Specimen: Natalia Padilla, Tania Peymany • Image: Nimangie Weerakoon • Trace Run Site: Generic Commercial Lab • Trace Upload: Natalia Padilla, Tania Peymany, Nimangie Weerakoon • Sequencing Run Site: Generic Commercial Lab • Sequence Upload: Natalia Padilla, Nimangie Weerakoon, Tania Peymany

COLLECTION DETAILS

Collectors:	Navpreet Multani, Nimangie Weerakoon
Collection Event ID:	
Date Collected:	26-Nov-2016
Date Accuracy:	
Time Collected:	
Site Code:	
Habitat:	
Sampling Protocol:	
Coord. Source:	
Coord. Accuracy:	
Elevation:	327 m
Elevation Accuracy:	
Depth:	
Depth Accuracy:	
Collection Notes:	

PHOTOGRAPHS


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License Holder: Unspecified, Reseda Charter High School

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Unspecified



GEOGRAPHY

Country:	United States
Province/State:	California
Region/County:	Sylmar
Sector:	
Exact Site:	12640 Little Tujunga Canyon Sylmar, CA 91342
Lat/Lon:	34.2884, -118.368



Sequence Page

BOLD SYSTEMS

Sequence - Reseda Charter High School-10-12-DNA Barcoding (2018-2019) [SDP860]

Print

IDENTIFIERS

Sample ID: RH-111
Process ID: SDP860003-19
Identification: Apinae

COI-SP

SEQUENCE DATA

Genbank Accession:
Translation Matrix: Invertebrate Mitochondrial
Last Updated: 2020-02-06

[Clear Sequence](#) [Edit Sequence](#)

NUCLEOTIDE SEQUENCE

Sequence: 684 bp

TCATAAAGATATTGGGATCTTTATATATTCTAGCTTTAATGATCTGGAACTAGGATC
ATCAATGAGACTTATTATTCGAATAGAATTAAAGATCCCGAGGATCATGAATTAGCAATGA
TCAAATTTTATAATACAATTGTTACTAGTCATGCATTCTCTAATAATTTTTTTATAGTTAT
ACCAATTTTAAATGGAGGATTTGGAAATTTGGCTTATTCCTTTAACTAGGATCACTGGA
TATAGCATTCCTCCGAAATTAATATATAGATTTTGAATACCTCTCTCTGATATTTAT
ACTTTTATTAGAAATTTATTTTATCCAGACAGGAGGATGGATGACAGTATATCCACC
ATTATCAGCATATTTATATCATCTTTTCACTTCAGTAGATTTTGCATTTTCTCTTCA
TATATCAGGATTTCTCAATTTAGGATCAITTAACCTTATAGTTACAAATTTATAATAT
AAAAATTTTCTATAAATATAGCAAAATTTGATTTTCCATGATGAGTTTTTATATAC
AGCAATTTTATTAATATATCAITTACCTGTATTAGCTGGAGCAATTACTATCTATTATT
TGATCGAAATTTTATATACATCATTTTTCGATCCTATAGGAGGTGGAGATCCAAATCTTTA
TCAACATTTATTTGATTTTGGN

Composition: A (224), G (79), C (102), T (279)

Ambiguous Characters: 0

Identify Sequence Using:

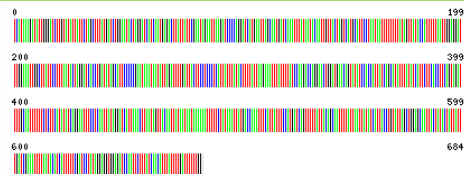
[Full DB](#) [Species DB](#) [Published DB](#) [Full Length DB](#)

AMINO ACID SEQUENCE

Sequence: 248 residues

HKDIGILYIILALWSGMLGSSMSLIIRMLSSPGSWISNDQIYNTIVTSHAFIMFFMVM
PFLGGFGNWLIPMLGSPDMAPFRMNISFWLLPSEMLLSNLFYPSPTGWTGVYPP
LSAYLVHSPSVDFATLSHSGTSSMSGLNLTMMGNTSNNVQISLFFWVSFTT
ATLLMSLPLVAGATMLLFDRNFNTSFFDMGGGDIYLQHLFWFFX

ILLUSTRATIVE BARCODE



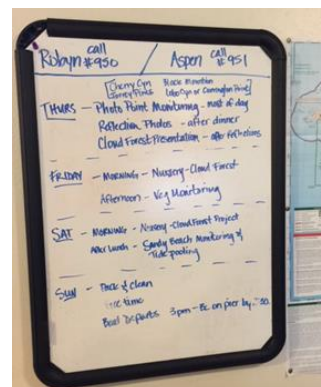
SEQUENCING RUNS: Generic Commercial Labs

Run Date	Direction	Trace File	Seq Primer	Quality
PCR Primers: M13F-20/M13R				
☐ 2019-05-15	Forward	111-F_M13F.ab1	M13F-20	high
☐ 2019-05-15	Reverse	111-R_M13R.ab1	M13R	high

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ANNOTATION

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Irina Harutyunyan

I have done the DNA Barcoding program and been to Santa Rosa Island twice now and I loved it. The program taught me the importance of bees firsthand in the maintenance of terrestrial ecosystems. In addition, the program solidified my understanding of ecological concepts like where species like bees would be located based on favorable environmental conditions. The trip was a breathtaking experience: on our way, we were able to see a whale, sharks, and hundreds of dolphins in the ocean. On the island, we were able to climb Black Mountain and bask in the incredible view, overlooking the island. We analyzed the change in the environment over time by using our GPS coordinate to locate and take pictures of specific sites to compare to previous years. The ambitious but also fun trip made me a lot more aware of the environment around me. Now, I am more mindful of the amazing plants I see, the mountains I once merely skimmed past, and the incredible qualities of bees. I am confident that I will actively look for and partake in environmental studies programs in university to further explore my interest in learning about the wonders of nature.

On Santa Rosa, I took many photos of the amazing nature but there is one in particular that I truly connect to. In the image you see, the differences in elevation shape this curvy path to a certain point on the coast. The



picture symbolizes the meditative power of nature: one can look to nature to find a purpose in life. Santa Rosa and such tranquil sites are where I find my peace of mind to deeply reflect on my present life and my future dreams and goals.



Narinderbir Singh

The DNA Barcoding program and trips to Santa Rosa Island were the biggest highlight of my high school journey. They provided me an opportunity to experience hands-on learning in biological sciences. Data collection at Santa Rosa Island and the DNA barcoding program sparked an interest in biological sciences research which I am pursuing to this day. The DNA barcoding program provided me the skills that opened many doors for me in the coming years. As a freshman at UC San Diego, I was able to get a research position and now as a junior, I am in the process of co-authoring my first research paper. All of this is owing to my early exposure to research-based learning facilitated by the DNA Barcoding program and our trips to Santa Rosa Island.

Priyanka Ray



Participating in DNA Barcoding and visting Santa Rosa Island gave me the skills I need to succeed in a lab and collect field samples. I made new friends, grew more independent, and learned how researchers collaborate to learn about the environment. I learned more about nature and grew more mindful of the impact of my habits. Activities like collecting and barcoding bees and beach monitoring gave me the research experience I would have never gotten in high school. I made a lot of fun memories while gaining valuable experiences.



Janelle Judge

Given the circumstance we are in today, my experiences on Santa Rosa Island would most likely be the best memory I have in high school. It made me explore the natural world outside of my usual environment. Everything I did along with my friends and teachers were beyond what I had imagined. From looking at the microorganisms under the sand to collecting bees, it was truly fascinating to see that such organisms exist in places I did not anticipate. Apart from the activities we did, the view from the hill and the beach were breathtaking. My competitiveness to collect the most number of bees even until sunset was what made me realize that this kind of opportunity is what I would love to be part of in the future. The DNA Barcoding collaboration with CSUCI allowed me to envision myself as a researcher who travels to different parts of the world and analyzes the microorganisms living there. Seeing the scenery from different areas of the island made me wonder how other places of the world would look like. The memories I have made on the island will always live in my mind and heart to serve as a motivation and a reminder of my first journey in the real world outside the four corners of a classroom.



Richard Coca

When I look back on my time on Santa Rosa Island, I often remember the memories made there and realize how fundamental those trips were to nurturing my desire to 'make sense' of the world through science. Whether we were collecting bees for barcoding or doing data collection in the field, it was great exposure to science as a whole. I remember partnering with a CSUCI alum who was doing research on dudleya and hypothesized that the dudleya on south-facing slopes would be more stressed compared to those on north-facing slopes. The reasoning stood that north side dudleya would have more moisture because there is less direct sunlight on that side. The data we collected suggested otherwise. When I was asked to speculate why, I remembered one of the topics from the previous night's lecture: nurse plant theory. Seeing theory practiced in the field sparked an interest in research.



Tania Peymany



My first time at Santa Rosa Island was in ninth grade. I loved my experiences the first time so much I wanted to experience it again and again, and so I also came in 10th grade and again in 11th until I couldn't go due to the coronavirus. At Santa Rosa, we cooked our meals, cleaned up after ourselves, and did fieldwork for our research. This was the first time I was away from home and had certain responsibilities that I never had before. I matured as a person, and I learned the importance of preserving nature, and I learned about science in a way I never knew before. My experiences only made my interest in science deepen and made me want to pursue science even now. I thank those at Santa Rosa for giving us the opportunity and giving students a chance to experience different aspects of science that they would have otherwise never experienced.



Kamely Coca

In my junior year first semester as curriculum for AP Biology, I along with my classmates were able to travel to Santa Rosa Island Research Station. We partner up with California State University Channel Island to conduct research on the biodiversity and ecosystem of the island. Many activities were done to carry out the research such as hiking to areas on the island to do photo point monitoring and as well as sand beach monitoring. My favorite activity throughout the days that were spent there researching was when we went down to the beach to conduct the sand beach monitoring. I found it very interesting looking at all organisms that were found in the sand and identifying them along with looking into a cave that was found nearby. My love for the ocean made this activity very fun and educational. Doing research like this on the island made me realize that I wanted to pursue a career in biology more specifically marine biology. The beauty of this island made me appreciate it as it is not a common view that people can experience. It opens my eyes to how our choices can affect nature such as the island's history.

Abner Jiwanmall

At Reseda High school, we are used to exciting labs and using all the equipment involved, but the DNA barcoding experience allowed me to actually collect the specimens we would later use in these labs. The process of understanding the part of the research that is done as fieldwork was exciting and invigorating. I have been on the island twice and would go back a hundred times more. Because of my positive experiences with the various studies we helped with including the beach monitoring and the monitoring of flora on the different hikes, I definitely want to continue fieldwork later in my academic journey, if not my career.



Vaibhavi Patankar

Trips to the Santa Rosa Island Research Station with my school instilled in me a great desire to promote the conservation and proper care of natural resources. We play a key role in promoting the welfare of our environment, and the beauty of Santa Rosa Island really opened my eyes to a world beyond the city life that I was accustomed to. Over the three years that I was able to spend working on the DNA Barcoding project, I

was able to grow my knowledge on laboratory and biotechnology techniques as well understand the importance of keeping an inventory of species biodiversity. Being able to present our sequencing data and simultaneously bring awareness to the preservation of biodiversity on Santa Rosa Island was a truly enriching experience. I remember spending a week during the summer after my freshman year, learning from a graduate student who was conducting research on song sparrows. Some of my favorite moments included assisting undergraduate students from CSUCI with their research on nutrient accumulation on beaches, differences in shrub oak variety based on the surrounding environment, and the measurement and occurrence of different types of grasses and shrubs near the island bluffs. Most importantly, I learned how to work as a team and gained a newfound appreciation for my natural surroundings. I will always cherish the memories I made on the island and at the research station. I can't wait to go back and visit one day.

Nimangie Weerakoon



Doing fieldwork to collect the bee samples gave the final product, a DNA barcode, more value as it constantly reminded me how I was involved in this process from the initial collection of raw data. Learning about the environment of Santa Rosa Island through conducting beach monitoring by analyzing the beach sand organism composition was another highlight of the trip. Understanding how different environmental conditions affected what organisms would be present, gave me a simpler way of understanding how seemingly minor changes in an environment could create major changes in the life that inhabits that area. This concept helped me understand that the bees are also subject to adapt biologically according to environmental changes as well which we can detect genetically.

Going into high school, I had no intentions of pursuing research, until I explored the uses of biotechnology and bioinformatics in this program. The field work and labs sparked my interest in molecular biology. It has even been an influential factor in my decision to apply to colleges as a molecular biology major with hopes of becoming a physician-researcher.

Stefan Peekhaus

I've gone to Santa Rosa a few times, I've done land surveys, beach biodiversity surveys, and specimen collection while I was there. I think the most impactful part of this experience was not the actual work, but instead how I was treated, and the responsibility, I was treated like an adult for the first time and was responsible for myself and getting on time for what I have to do. As long as we did our work we were free but also had to assign jobs like cooking, cleaning, and preparation work. By working as a team we were able to get more work done and without much argument. I think the cooking and cleaning part will greatly help me in my future, especially in college, I can adapt faster than many of my peers to being by myself.

Not only was this a great way for me to learn how to act when I get older, but also gave me a love for hiking and getting out more, it was an amazing experience, and it never got boring. There was always something exciting to do. The nights were especially amazing, on a clear night, the sky would light up with stars I would never normally get to see from night pollution. This was an experience I'll be keeping for the rest of my life.

Andrew De La Cruz

Santa Rosa Island Research Station and the island itself are depots of knowledge and experience. Going to Santa Rosa Island afforded me invaluable knowledge and real-world experience. From learning about the history of the island to conducting meticulous research, the expedition was by far the most effective form of student-led research for the money. The most impressive part of the study was the DNA Barcoding program,

where I collected bees to extract their DNA. This program enabled a deeper understanding of life's complexity and allowed me to experience what it was like to conduct an actual study by collecting data and specimens. Although I moved away from a research-driven education and career, the lessons and skills learned on the island are life-changing. I changed my perspective on how I live by being more environmentally friendly, reducing waste, and conserving water. The experience alone is impressive, as I put it in my resume, which showed that I had excellent critical thinking skills and had ambition. It helped me excel in my interview for my career training. Learning how to tie a square knot at the island, making wattles, actually proved valuable for real world experiences, which I have used since my trip to the Island. Despite being a biologically-focused expedition, the Santa Rosa expedition provides life-altering skills and learning experiences that propel students further and afford an advantage in their education and future careers.



Evan Jackson

Taking part in the DNA barcoding lab series and visiting Santa Rosa Island was an awesome experience, it was easily my favorite research experience that I have done. Completing the labs and having work published felt great because I know that my hard work of collecting the bees and using DNA barcoding to identify the species of each bee has paid off and will be added to the database. Visiting Santa Rosa Island to collect bee specimens was super awesome, it gave me a chance to know what field research is like, and I love it! I plan on pursuing a career in marine biology. The DNA Barcoding lab series played an important role in solidifying my choice, and making me comfortable gathering information in a lab environment.

Daniela Valenzuela

I've had the absolute pleasure of visiting Santa Rosa Island four times and every time I fell more and more in love with everything the island has to offer. Not only did DNA Barcoding enhance my level of education and instilled the basic understanding of laboratory skills but the landscape of Santa Rosa engaged my spirit of adventure with all of its beautiful scenery. Having a chance to work with bees and their migration from place to place as well as being able to see how time and humans change the geography of the landscape are just somethings that I learned on my trips and emphasized the impact of change over time and the changes we need to make to further positively impact our environment. The alluring nature made me more aware of the things we need to do to maintain such a tranquil and effortless flowing ecosystem. Every visit I had to the island I brought back more memories and lessons to enrich my everyday life. I am one of the very lucky students that was granted such a wonderful opportunity and I hope to keep visiting Santa Rosa for more years to come and see the impact time has on the landscape. It's been an absolute pleasure to have had the experience that has shaped me into the person I am today and the type of career I want to pursue. I hope that this program will forever further touch the lives of others just like it did mine.

