

**Caroline Hemphill**

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October 7, 2022

To the faculty of the Professional Writing Minor,

Throughout the process of completing my biology degree, I came to realize that I enjoyed talking, reading, and writing about science more than I enjoyed doing lab work. I have a lifelong passion for writing, and endless curiosity about science. I hope to go into the science communication field and combine my two passions. I am interested in writing science education and outreach materials, as well as potentially doing science reporting or feature writing. I want to explore the possibilities for careers within science communication, which I have already begun doing with some of the internships I have taken on.

There are many skills I hope to learn from the Professional Writing Minor. An important one is determining what science is interesting enough to share with the public, and then finding those stories. I have been working on writing about impactful, relevant scientific issues while still finding a niche and not repeating what has been said many times. In past classes, I have learned how to take a topic and determine the best audience and format for it. I would love to build on both of these foundational skills. I want to learn about more formats my writing could take, and explore the many different niches of science writing. In my career, I want to simplify the science enough to be understandable by my target audience without sacrificing accuracy.

Because I am interested in writing primarily about science, science communication is my first track preference. I hope to learn about many different forms of science writing in this track, which is important to me. The science communication track will help me develop the skills of translating complicated topics to different audiences, as well as identifying topics to write about that are different enough from existing content, but relevant enough to garner interest.

Because of my interest in science reporting, journalism could also be a good fit. I would love to gain more skills in reporting, and would hope to focus on scientific topics if I was admitted to this track. Multimedia communication is my third choice because I have lots of experience with promotional writing, as well as writing for websites and social media. Multimedia skills are crucial to any writing career, especially with the rise of web platforms.

Thank you for your consideration, and I look forward to hearing from you soon.

Sincerely,  
Caroline Hemphill

## Caroline Hemphill

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### EDUCATION

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#### **UCSB: BA in Biology. Expected Graduation: June 2023**

2019-present

- BA in Biology from the University of California, Santa Barbara's College of Creative Studies

#### **Liberal Arts and Science Academy High School: High School Diploma**

2015-2019

- Graduated with the Magnet Endorsement Distinguished Level of Achievement

### WRITING/COMMUNICATIONS EXPERIENCE

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#### **Communications Intern for UCSB Sustainability**

September 2022-present

- In charge of UCSB Sustainability social media, Sustainability Weekly Bulletin, and writing articles for Sustainability Scoop newsletter

#### **Digital Content Intern with The Nature Conservancy**

June 2022-August 2022

- Summer internship in Marketing and Communications with The Nature Conservancy
- Began a story and content analysis project, wrote copy for Nature.org and Nature News email newsletter

#### **CCS Biology Alumni Speaker Series (C-BASS)**

July 2020-June 2021

- Was one of five student founders of a speaker series featuring alumni of UCSB's College of Creative Studies (CCS) Biology. Helped establish C-BASS as an official program with CCS.
- Contacted alumni, conducted interviews, wrote publicity materials, wrote speaker introductions

#### **Editor in Chief: *The Composer* Literary Magazine, LASA High School**

2019

- Reviewed, edited, and curated pieces for the magazine. Acted as creative director.

### RESEARCH EXPERIENCE

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#### **Undergraduate Researcher under Dr. Brooke Gardner at UCSB**

May 2021- June 2022

- Researched Ire1 mutations and their effect on the Unfolded Protein Response in yeast

### LEADERSHIP EXPERIENCE

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#### **VocalMotion Music Director**

July 2022-present

- Teach music, part of core leadership team

#### **VocalMotion President and Treasurer**

June 2021-July 2022

- Organized events and led rehearsals and cabinet meetings, responsible for club funds
- Attended meetings with campus officials for funding, RCO certification

#### **VocalMotion Women+ A Cappella Publicity Chair**

June 2020- June 2021

- In charge of social media, event publicity
- Wrote publicity materials for auditions, fundraisers, events, music releases

## Copywriting Assignment: Nature.org Who We Are Page Highlights

<https://www.nature.org/en-us/about-us/who-we-are/>

### 5 Ways We Conserve Quickly and Durably

We have to work quickly to conserve nature. Though we have a limited amount of time, it is vital that our conservation projects last. Helping to launch a sustainable tuna company. Raising coral embryos to serve as marine habitats. Partnering with local communities to conserve important habitats. In all of these ways, TNC aims to implement strong conservation frameworks that can be upheld by the next generation.

BUTTON: 5 Conservation Projects

### Saving Energy And Fish

When we design with nature in mind, we accomplish more. Like making thriving marine habitats out of offshore wind turbines. They fight climate change and can act as artificial reefs. TNC scientists are helping research materials and designs that will properly anchor offshore wind turbines while also supporting marine life and biodiversity.

BUTTON: Engineering For Nature

### Burning to Keep Forests in Check

Fire can be a force of restoration. Wisconsin Oak trees rely on fire to burn away competing plants. Controlled burns decrease the severity of wildfires. TNC partners with local organizations and Indigenous leaders to perform controlled burns and help maintain native plant populations.

BUTTON: The Forest Needs to Burn

### Reducing Emissions with Nature

To avoid catastrophic changes in our climate, we need to dramatically reduce carbon emissions. One third of these emission reductions can come from natural solutions. Technology will take us a long way, but without protecting and managing forests and wetlands, we will never reach our emissions goals. TNC works with decision makers and land stewards to consider the science. If we take action to protect nature, it will in turn protect us.

BUTTON: Natural Climate Solutions

### Kenya's Mangrove Guardians

Mangrove forests are strongly tied into North Kenyan ecosystems and culture. Mangroves prevent coastal erosion and protect against storm surge, and locals depend on them for resources. They even help climate change—They absorb about four times more carbon than terrestrial trees. Mangrove forests are threatened by overexploitation. TNC and partners support and strengthen communities, like the Matangawanda Women's Association in Kenya, to help restore these vital mangrove forests.

BUTTON: Restoring Mangrove Forests

Caroline Hemphill  
06/09/2022  
Writ 109ST

## **Systematic Literature Review: The Makeup of the Gut Microbiome and Food Allergy**

### **Introduction**

In recent decades, the prevalence of food allergies has been significantly increasing (Nwaru). Some treatments, like oral tolerance, have been developed, but many still struggle with serious food allergies past childhood. The immunological mechanism of allergy is fairly well-understood. It is a misactivation of an immune response. When a person has food allergies, they have IgE antibodies that recognize antigens from foods that are foreign, but are not harmful. This then leads to inflammation, a standard part of any immune response (Haahtela). In allergic disease, however, this can lead to anaphylaxis and asphyxiation, and can be life-threatening. Even if not life-threatening, inflammation resulting from allergy is often serious and requires medical intervention.

Despite being increasingly common (Haahtela), the reason for food allergy development is still not well-understood. The rise in allergic disease seems tied to lifestyle changes, based on the fact that genetically similar populations who live in different places have different rates of allergy (Haahtela).

This has lead scientists toward the biodiversity theory of allergy, stating that a lack of species diversity in microbes leads to a high risk of inflammatory disease, including asthma and allergy (Haahtela). Another theory that ties in well with this one is the hygiene hypothesis. The hygiene hypothesis states that the lack of exposure to a diversity of microbes in early life can cause food allergies (Frei). This would be a partial explanation for where the decreased biodiversity that causes inflammatory disease comes from.

One reason the microbiome's biodiversity is being studied is because the microbiome, in both the gut and the rest of the body, has also been shown to be of immunological importance (Frei). If allergies may be caused by lack of exposure to microbes, and the biodiversity of the microbes living in the body has been shown to be related to immunity, there is a logical next step. This is to ask whether the makeup of one's own native gut microbiome could cause, or be tied to, food allergies (Haahtela).

The association between gut microbiome biodiversity and food allergy is, indeed, being studied. Some propose that the link between the two could be a big missing piece in how we understand and treat allergy. If biodiversity of the gut microbiome, or the species makeup, is related to food

allergy, this finding could go hand in hand with the hygiene and biodiversity hypotheses (Haahtela).

Additionally, learning about the link between the gut microbiome and food allergies could lead to more effective therapies. As of now, the most prominent treatment to allergy is exposure to the allergen. It is possible that exposure to particular microbes, or to a diversity of microbes, would help mitigate allergies or decrease their severity. This would be a promising and less dangerous treatment. It could also help in the creation of preventative treatments to intervene before food allergies can develop.

This systematic literature review sets out to discover the state of research on the relationship between the makeup of the gut microbiome and the presence of food allergies, as well as potential applications of that research.

## **Methodology**

This study was conducted by establishing research questions, defining keywords, and establishing inclusion and exclusion criteria. Before any of this was done, the state of the literature was scanned to see what types of research were being conducted. Two main types of studies stood out. The first assessed whether the diversity of the gut microbiome affected food allergies. The second was whether the presence of any particular species in the gut microbiome affected allergies, or the type of allergy. Both types of studies were read and included in this review to give a more complete overview of the state of the research.

Based on preliminary research, the following three research questions were established.

**RQ1:** Does the diversity of the gut microbiome affect the presence or absence of food allergies?

**RQ2:** Does the makeup of species in the gut microbiome affect specific types of food allergies?

**RQ3:** Does the presence or absence of specific species in the gut microbiome cause or contribute to food allergies?

Based on these questions, inclusion and exclusion criteria were established. Some exclusion criteria were arbitrary, to reduce the volume of papers that needed to be sorted through in the time given.

Papers were included if

- They were published in the journal *Allergy*
- They discussed the link specifically between the biodiversity of the gut microbiome and food allergy

Papers were excluded if

- They addressed other diseases, such as asthma
- They were not published in the journal *Allergy*
- They were literature reviews
- They were published before 2017

The study was contained to the journal *Allergy* because it is a premiere journal in the field, as well as for limiting the amount of applicable studies due to time constraints.

Based on all of these criteria, search terms were used to optimize the variety of data found. Search terms included “gut microbiome and food allergy,” “gut microbiome diversity and food allergy,” and “gut microbiome and hygiene hypothesis.” These search terms allowed for selection of relevant and timely papers.

## **Results**

### **1. Short Chain Fatty Acids**

The first category of studies focused on the correlation between metabolites that are produced by the gut microbiome and allergy. They sought to either see if allergic children had enriched or were lacking in these metabolites, or to see if administration of metabolites could help reduce allergic symptoms.

The first article in this category is by Roduit, et al. The study found that children with high levels of butyrate and propionate, two common short chain fatty acids, in their guts had less atopic sensitization. Atopic sensitization is similar to food allergy, but less severe, and can be a precursor to fully-developed allergy. This study aimed to look into whether children with and without allergies had different levels of short chain fatty acids in stool samples. The rationale behind this is that in the past, studies had been done to see if any foods decreased the likelihood of developing asthma or atopic dermatitis, diseases similar to allergy. It was found that foods containing a large amount of short chain fatty acids (SCFAs) did decrease the likelihood of developing these diseases. They have also, according to the article, been shown to have anti-inflammatory properties. The researchers also treated mice orally with SCFAs. They found that this treatment reduced severity of allergic reactions in mice. The study concludes by suggesting that oral administration of SCFAs could be an effective treatment in children with allergies, whose gut microbiomes may not be producing sufficient amounts of SCFAs like butyrate.

The next article in this category is by Yamagishi et al. This study found that children with egg allergies had fewer butyric acid-producing bacteria (BAPB) in their guts, as well as fewer circulating regulatory T cells (Tregs). Namely, children with allergies had higher Enterobacteriales and lower Lactobacillales. This study is similar to the first in that it also focuses on the effect of short chain fatty acids on food allergies, but has a different rationale.

While Roduit claimed that SCFAs have anti-inflammatory properties, Yamagishi claims that butyric acid induces the maturation of Tregs. Tregs are immune cells that are believed to suppress allergic disease and other excessive immune response. Thus, presence of Tregs could correlate with reduced allergies. This paper also takes a different approach than the first, in that it looks at microbial species in the gut microbiome that produce SCFAs, rather than looking for SCFAs themselves. This gives an idea of one of the ways the metabolic pathways of gut microbes could contribute to the presence or severity of allergy.

The final article in this category is by Paparo, et al. The study found that treatment with butyrate reduced allergic response in animal models. Butyrate also promoted precursors of several types of immune cells, including Tregs (along with M2 macrophages and dendritic cells). The article took a similar approach to Roduit. Working off of the knowledge that the gut microbiota produce butyrate, and that butyrate can assist in gut barrier integrity, they assessed whether butyrate could be a protective factor against food allergy. They specifically looked at butyrate levels in human milk (HM) to see if HM could be an effective protective factor. This study is relevant because it is showing that butyrate can protect against allergy. This suggests that the gut microbiome's lack of ability to produce butyrate could be a factor in allergy development.

All three of these studies found that there seems to be an inverse relationship between presences of SCFAs and presence of allergies. Two of the studies have found that treatment with SCFAs can reduce severity of allergies, which is a promising therapy.

## **2. Gut Microbiome Diversity and Species Makeup**

The second category of studies looks more closely at the makeup of the gut microbiome. These studies analyzed differences in gut microbiota populations between children with and without allergies, or between children in populations with different frequencies of allergy.

The first study in this category is by Fazlollahi et al. Interestingly, it was found that children with egg allergies had increased diversity in their gut microbiome compared to non-allergic children. Bacteria from the genera *Ruminococcus*, *Lactococcus*, and *Leuconostoc* were more abundant in children with egg allergies. Additionally, it was found that subjects with the egg allergy had decreased metabolism of purine, a compound found in some foods. It was predicted that this was the functional pathway that was common between the bacterial groups that were associated with allergy. The authors acknowledge that the finding that increased diversity is associated with allergy seems counter-intuitive. They suggest that overall diversity is not what needs to be studied, but prominence of individual taxa and interactions between them, as well as more specific metabolic effects. This study analyzed fecal samples and profiled them by 16S rRNA sequencing, which allows for identification of species in a sample.



Another study in this category is by Savage et al. It found that some genera bacteria were less abundant in children with food sensitization. These were *Haemophilus*, *Dialister*, *Dorea*, and *Clostridium*. Genera less abundant in children with food allergies were *Citrobacter*, *Oscillospira*, *Lactococcus*, and, again, *Dorea*. Like the Fazlollahi study, this study used 16S sequencing to analyze the makeup of species in the microbiomes of subjects. Unlike Fazlollahi, however, this study found overall gut microbiome diversity to be similar between children with and without allergy. This was counter to what the authors expected, as an inverse association between diversity and risk of disease has previously been seen.

The third study in this category is by Sjödin et al. It found that children with allergies showed underrepresentation of *Ruminococcus*, *Bacteroides*, *Prevotella*, and *Coprococcus* compared to children without allergies. In allergic 8-year-olds, *Bifidobacterium* was enriched and *Lactobacillus*, *Enterococcus*, and *Lachnospira* were depleted. The study suggests that therapeutic treatment involving expanding gut microbiome taxa diversity could be a successful strategy. In this study stool samples from children were analyzed for their gut microbiota population by 16S rRNA sequencing, as in the Fazlollahi and Savage studies. Like the previous two studies, it was found that some specific genera of bacteria were enriched or depleted in subjects with allergies compared to those without.

The final paper in this category is by Seppo et al. This study found that in Old Order Mennonites (OOM), subjects' stool was enriched with *Bifidobacteriaceae*, *Clostridiaceae*, and *Aerococcaceae* compared to control infants from Rochester, NY. Additionally, stool with *B. infantis* had higher levels of lactate and medium/long chain Fatty Acids. This connection with the first category of studies is of note. Additionally, allergic/atopic diseases were about five times more common in Rochester infants than OOM infants. Like the Savage study, it was found that the two populations had similar levels of diversity in the gut microbiome. The rationale for studying OOM is that OOM infants have a “traditional farming lifestyle” and are likely exposed to more microbes from livestock and plants than infants in Rochester. This is, thus, a sort of offshoot of the “hygiene hypothesis” of allergy. The study analyzed both infant stool samples and human milk samples, again by 16S rRNA sequencing.

## **Discussion**

In all three studies from Category 1, as well as the Seppo study, the presence of BAPB or SCFAs seems to indicate lower likelihood of allergy. It is interesting that this metabolite in particular has been found to be of such large importance, and surprising that this is not a more well-understood phenomenon. While researching relevant studies, no reviews were found specifically on BAPB and their relation to allergy. Two papers from this review also found that oral administration of fatty acids helped in decreasing severity of allergic reactions. Undoubtedly, this is a therapeutic

option that could prove incredibly beneficial. These findings imply one way that the makeup of the gut microbiome could be contributing to the development or severity of food allergies.

While there was not much consensus among the second category on which groups of bacteria are most linked to allergies, all seemed to agree that specific species makeup is far more important than overall biodiversity of the gut microbiome. In fact, it seems that biodiversity of the gut microbiome matters very little. Given this and the results from category one, it would be worthwhile to follow up on the results and see which genera that were found to be depleted or enriched in the subjects are fatty acid producing. Most of these papers had the goal of simply establishing whether there are bacterial families/genera differentially enriched in subjects with allergies, and determined that there are. The clear next step is to look for similarities between these species. The metabolic pathways that each of the bacteria take part in could be analyzed going forward, as well, to see if any other pathways can be linked to the presence of food allergy.

These studies largely showed that on the count of biodiversity, the hygiene hypothesis seems incorrect. Overall diversity does not seem to differ between subjects with and without allergies, but that does not mean the theory is all wrong. The Seppo study found that Old Order Mennonite communities had lower prevalence of food allergy. Seppo notes that theirs is not the only study that has found that communities with more “traditional” or less “westernized” lifestyles have lower frequency of allergy. The most notable difference between these communities and those with higher prevalence of allergy is the amount of time spent outdoors, in contact with animals and nature. It is very difficult to study whether this is the primary cause of allergy, but the correlation exists, and warrants further investigation.

Overall, these findings show that awareness of the link between the gut microbiome and food allergy is growing. It seems clear that there are differences between allergic and non-allergic subjects, but exactly what those differences are and why they matter is not determined. Looking into the metabolic pathways of differentially enriched bacterial families would be a good first step into determining how the gut microbiome affects allergy.

## Bibliography

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# Beach Tar at Coal Oil Point

## What is Beach Tar?

Tar balls come from **oil**. In the ocean, oil rises to the surface and then partially **evaporates**. A sticky substance is left behind, which then washes up on shore and becomes the inconvenient tar we are all too familiar with. The source of the oil can be an oil spill or a natural **oil seep**. Oil seeps are fractures in the sea floor in areas rich in oil and hydrocarbons. Oil escapes through the fractures and rises to the surface.

## Is it dangerous to my health?

Contact with tar is **not harmful** in small amounts. The NOAA recommends limiting contact as much as possible. The amount of tar you would regularly encounter when visiting a beach, however, is not dangerous. Tar can be removed from the skin with soap or baby oil.



image from Doc Searls Weblog



Image from Johnny Jet.com

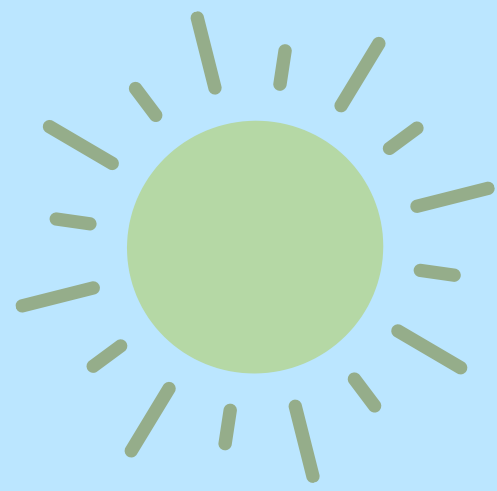
## The Coal Oil Point Seep Field

There is a natural seep field off the coast of Coal Oil Point. It produces a large amount of oil, and is considered one of the **most prolific** natural seeps in the world. The Woods Hole Oceanographic Institute estimates that **20 to 25 tons** of oil are released from the seep every single day. That's around the same volume as 1,168 tanks of gasoline. The tar that can be found on the beaches of Isla Vista and Santa Barbara is a product of this natural seep.

## Is it harmful to the environment?

Natural oil seeps are very old, and the one here at Coal Oil Point has likely been emitting oil for **thousands of years**. While the oil leakage is natural, it is still somewhat harmful to the environment. Oil from these seeps is **toxic** to marine life, and oil on the ocean surface can be harmful to sea birds. This being said, the natural oil seepage does not have such drastic effects as a human-caused oil spill, due to the comparably slower speed and the regularity of the emission.





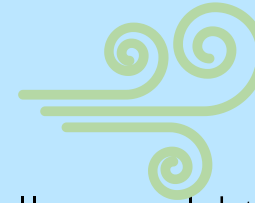
# Seasonal Variability of Tar



## Tar on Summer Vacation

If you've ever felt like just when beach tar seems to have been gone for months, it appears again? It's not just you- the amount of tar on the beach **varies** greatly, not only from day to day, but **season to season**. A group of scientists set out to see if there was a detectable pattern to this variability, or any underlying reason for it.

## Any Way the Wind Blows?



So, beach tar accumulates seasonally- could this be due to environmental factors? The study investigated the relationship between the direction of the wind and tar accumulation. They found that there was more **wind** blowing to the **north** during the spring and summer, which is when tar accumulates the most.

Because the Coal Oil Point beach faces **south**, this finding implies that wind could be helping push tar on the ocean **toward** the beach during the summer, and **away** from the beach during the winter.

They looked at our very own Coal Oil Point beach. They found that tar accumulated on the beach during the **spring and summer** much more than it did in the fall and winter. The amount of tar on the beach **doubled** between winter and spring, and then **again** between spring and summer. Just in time for summer vacation beach days!

## Choppy Waters

Besides the wind's direction, two other environmental factors seem to influence tar accumulation. One of these is the average height of large waves, also called **swell height**. It appears that, the larger the swell height, the **less** beach tar accumulates. The other factor is **surf zone activity**. The surf zone is the region of the water where waves crash and foam.

When the surf zone is more turbulent, oil on the ocean's surface is distributed over a larger area. When oil is more dispersed, **less tar** reaches the beach in the first place. Additionally, when combined with large swells, a turbulent surf zone will wash tar away from the beach **more often** throughout the day. This means that tar will stay on the beach for **shorter** periods of time.



# Coal Oil Point and Useful Research

## Beach Day Planning

Research on the seasonal patterns of tar will be useful for lots of people, including beachgoers! If we know that tar accumulates in the summer, with strong wind, or with calm seas, we can better **plan** for this. Community **awareness** of the patterns of tar accumulation will help people know what to expect on a beach day. This will, hopefully, also raise awareness on how to get rid of tar on the skin, and allow people to arm themselves with the proper **equipment** to do so.



Image from All About Birds

## A Model for Oil Spills

A better understanding of tar's seasonal variability could help to **identify oil spills**. Even though the tar on these beaches almost always comes from natural seeps, it looks the same as it would if there had been an oil spill caused by humans. If the seasonal patterns of beach tar are understood, **anomalies can be identified** more easily. If there's a huge spike in beach tar in the middle of December, that is a **red flag** that there may be an oil spill nearby.

## Snowy Plover Conservation

Coal Oil Point is home to a protected population of shore birds called **Snowy Plovers**. There is a large effort to help these adorable birds, and protect them from natural and human-caused dangers. Tar and oil can be **dangerous** to birds, so understanding their seasonal patterns can help in creating **management plans** for keeping Snowy Plovers safe.



Image from LA Times



Image from NCBrunswick.com



# History of Coal Oil Point

## Platform Holly

One of the most recognizable landmarks at Coal Oil Point is **Platform Holly**, an oil platform located right next to the point. It can be seen plainly from all of the beaches in Isla Vista and at UCSB, and at night, lights up like a beacon. Platform Holly was placed in **1966**, and was producing oil for nearly 50 years before being **decommissioned in 2015**.



Image from LocalWiki



Image from Mission Blue

## Artificial Reef

Today, hundreds of **fish and invertebrate species** have turned Platform Holly's underwater structural elements into a home. The rig functions as an **artificial reef**, and is teeming with life under the sea. There are many possible futures for Platform Holly, but because of the marine life that depends on it, many object to its complete removal.

## 1969 Oil Spill

Today, Platform Holly brings back unpleasant memories of the infamous **1969 oil spill**, which occurred on Platform A just east of Holly. The spill released **80,000 barrels**, or over **3 million gallons**, of oil into the ocean, and spurred a wave of anti-drilling activism.

## Chumash Uses of Tar

The natural seep here has been producing oil for a long time, and long before Platform Holly was placed here to take advantage of that, humans have found uses for oil and tar. The **Chumash people** on the Channel Islands found many uses for hard, high-grade asphaltum, which they mined. This material is **harder and more durable** than the soft tar balls that are washed up on our beaches, and when mined from land-based deposits, was called *woqo*. Chumash people used *woqo* to **waterproof bottles and baskets**, and to **caulk redwood canoes**. *Woqo* was also mixed with pine resin, which resulted in *yop*, a useful **adhesive material**.

## Writing Sample Reflections

My first writing sample is some copywriting I did for Nature.org when I was working as the Digital Content Intern for The Nature Conservancy (TNC). The goal of these blurbs was to highlight the diversity of conservation work being done by TNC, as well as inspire readers to click through to the full stories being summarized in these short paragraphs. This writing is published at <https://www.nature.org/en-us/about-us/who-we-are/> at the bottom of the webpage. This piece shows my ability to work with strict character limits, to write for publicity, and to capture an audience while staying true to the content of the articles being highlighted. I never considered this type of science writing until I did it, and it made me want to learn more about the different types of writing I could potentially do in the future.

My second sample is from Writing for Science and Technology. I compiled and analyzed data from several scientific papers on the effects of the gut microbiome on the development of food allergy. This piece shows that I can write for an audience of scientists, and do research to inform my writing as well as back up my claims. I want to learn how to more effectively and efficiently do research, and how to translate it to my audience while still adding a fresh perspective into it.

The final sample is from Science Writing for the Public. These are designed to be informational on-site signs that would be located at the Coal Oil Point Beach. I had to think a lot about the audience when writing these signs. I was writing to the public, but a very specific subset of the public. These signs showcase the skills of keeping an audience interested while providing information, and of determining the most effective format to convey that information. I want to build on both of those skills, because writing for public audiences is what I want to do the most.