

## OVERVIEW

In order to promote **long-term research** and improve **environmental stewardship**, I have created **two databases** to archive the information collected by Kent Denver's **student researchers**. The data bases will connect younger students with the work of their predecessors.

## ENGAGEMENT WITH GREATER COMMUNITY

Environmental stewardship has been at the center of my mission at Kent Denver. During my sophomore summer, I interned at the Audubon Society of Greater Denver assisting in children's programming and summer camps learning about wildlife, birding, and **conservation**. This experience reminded me of the power of developing a strong relationship to nature at a young age and how that promotes a sense of **social responsibility** for the next generation.

Additionally, I have been volunteering for the Denver Museum of Nature and Science for the past two years. My job title at the museum is "community scientist." I assist in gathering and analyzing research for the Genetics of Taste Lab.

The Genetics of Taste Lab is the first community scientist-driven human genetics lab in the country. I was able to learn a plethora of lab techniques including DNA extractions, PCR, and nanoscoping along with learning more about community driven data collection and promoting diversity in the scientific process.

## STUDENT-DIRECTED RESEARCH AT KDS

Throughout my time at Kent Denver, I have had the privilege of partaking in student-led research through independent studies. One of my independent studies was a group research initiative to better understand frogspawn corals' symbiotic relationship to the photosynthetic microorganism, zooxanthellae.



FIGURE 2: The Kent Denver Ocean Lab, where we conduct the coral research.

As a group we worked on creating lab procedures for coral tissue extraction and began collecting data. One of the biggest issues was making sure the research team was on the same page and that the data was collected in a uniform location for all to access.

Additionally, I started an independent study to better understand the health of the adjacent reservoirs. One of the biggest problems I faced was the fact that there was no record of past health to compare my findings to. In the process of doing my research, I was able to press a plant and submit it to the Denver Botanic Gardens' Herbarium database. This sparked my interest in the **preservation of data collection**.



FIGURE 1: An empty Genetics of Taste Lab located at the Denver Museum of Nature and Science

## A NEW TOOL

### CONNECTING STUDENTS WITH PAST RESEARCH

For my project, I have created two databases for Kent Denver student research. This process took a lot of trial and error as I tested out different platforms measured against various goals:

- Ease of access for all students
- Ability for archiving data
- Maintaining low upkeep
- Robust data protection

After examining and experimenting with a platform called LibreOffice, I realized that there were too many roadblocks for students to access the information.

I also discussed creating a website format, but that consists of vast knowledge of coding and routine uptake that I cannot ensure after graduating.

After weighing my options, I decided to create a shared google drive. Since every student has a Kent Denver sponsored google account this forum is the most accessible to students with few roadblocks. The online platform allows student work to be automatically protected and saved and there is very little maintenance required for teachers and students running the database.

In each database, I have uploaded all of my data and findings while also publishing my procedures and any tutorial I believe is helpful. For the lake research database, I have included maps of my field sites and all my interviews with ground staff and any verbal historic records I was told.

All this information is in one place and is run by the science department who can grant access to interested students.

## THE LEGACY

I hope that the my data collection has created a foundation for future Kent Denver student researchers and that the databases will help the **transfer of knowledge** as new students find new passions and graduating students take their next steps.

FIGURE 3: Left: a form I created in LibreOffice that allows users to input their data. Right: three different database softwares I tested out.

Photo Sample	2/26/19	3/14/19	3/8/19	4/3/19	4/5/19	4/8/19	4/18/19
1	75	33	160	141	45	31	184
2	76	30	198	129	64	40	32
3	79	32	163	132	65	37	20
4	80	29	95	131	40	41	47
5	84	13	87	97	62	50	27
6	65	27	118	118	38	28	72
7	43	19	111	112	40	19	22
8	47		109	156	42	20	72
9	65		103	174	56	18	29
10	72		171	187	54	18	113
11	90		126	104	59	20	30
12	111			111	54	26	131
13	157			129	184	23	26
14	168				30	45	22
Average	86.5714	26.1428	131	132.3846154	59.5	29.714	59.071
Temperature of Tank (°C)			24.555556	24.222222	25.222222	24.28	24.611
pH of Tank	8	8	8	8	8	7.9	8
Collected By	S. Wagner	A. Haymons	M. Grewe	A. Haymons	S. Wagner	S. Wagner	S. Wagner
Additional Notes		The tentacle was relatively small			The light above the tanks weren't on	Lights not on over weekend	

FIGURE 4: A portion of the Spring 2019 Zooxanthellae Counts table that can be accessed in the database.