

Dharwadker uses heart condition to inspire creation



Sammie Thompson
Managing Editor

Sitting in the room of a doctor's office under the bright white LED lights, junior Rohan Dharwadker couldn't believe what he was hearing.

Dharwadker had just been diagnosed with an arrhythmia, or irregular heartbeat, which means that as his heart beats, the electrical currents that are

emitted throughout it are not working properly.

Arrhythmia can often be treated with medicine. In order to determine how to treat a specific case of arrhythmia, a tool called an electrocardiogram (ECG) can be used to measure the exact electrical activity of the heart.

"I can't always feel the irregularity but when it's more severe I can," Dharwadker said. "I want to know how often it's happening and when I need to up my medication and stuff like that."

At the beginning of the school year, Dharwadker took matters into his own hands. He decided to create a

3D-printed mini-ECG device in his independent study computer science class that could record his heart's rhythm and send the data to software on a computer for him to look at.

"The device is kind of like what you see in hospitals with the graphs and stuff," Dharwadker said. "I did a lot of research on which components I needed to use, but it was a big challenge to get ones that will make it smaller but still as effective."

The independent study computer science class is a course in which students like Dharwadker can work together to build creative projects without the barriers of a curriculum.

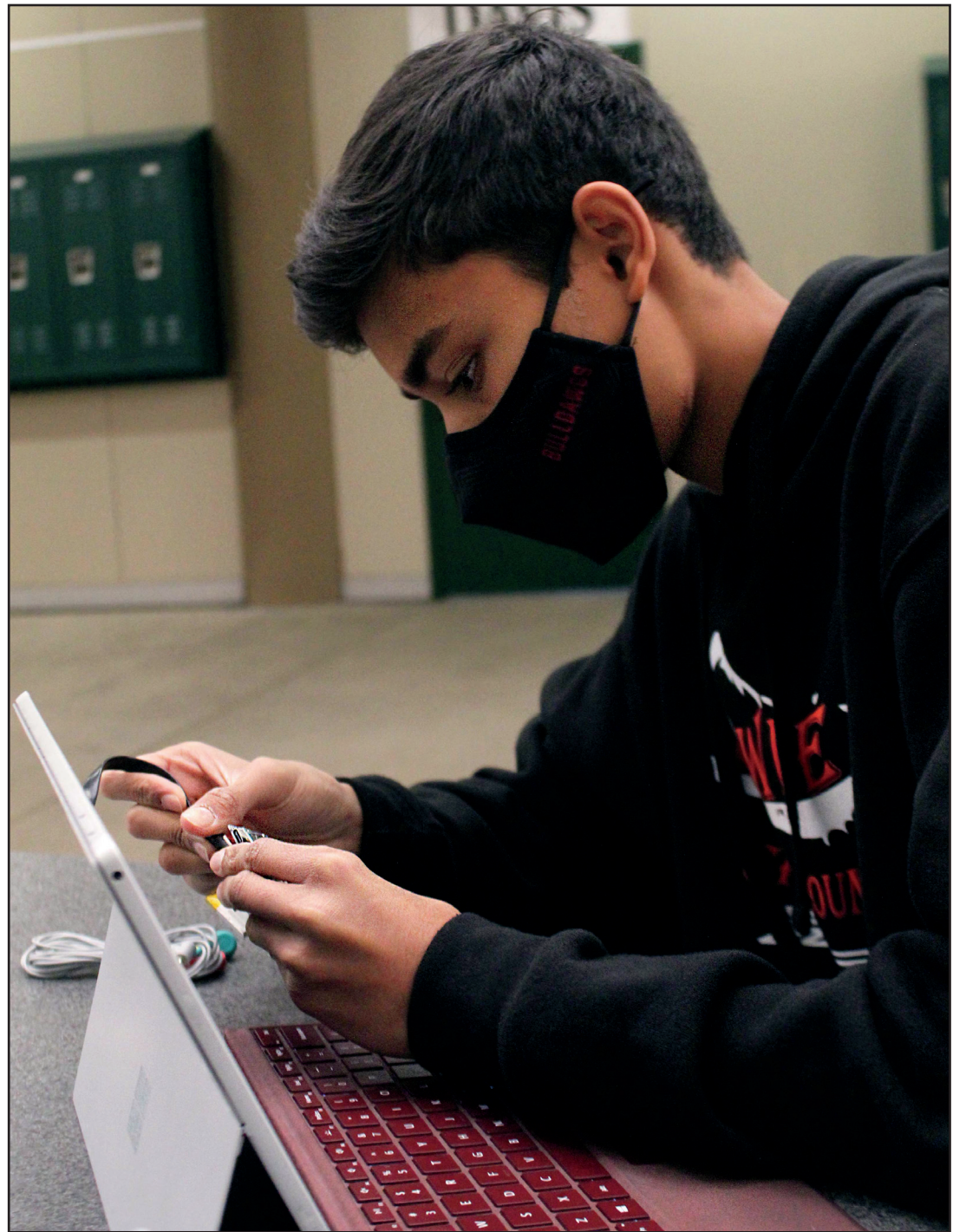
"In the independent study class, I see myself as a facilitator and the students are the teachers, providing constructive feedback and useful resources to their classmates," computer science teacher Kris Maniscalco said. "Our goal is to build a community of learners with a passion for computer science that can support and encourage each other to continually expand their knowledge and understanding of various computer science concepts."

This community has proven to be helpful for Dharwadker, as he has faced several challenges while going through the process of creating the device.

"Soldering all of these components [in the device itself] together was tricky because the size is really small," Dharwadker said. "As I'm putting more stuff in, the old stuff would break."

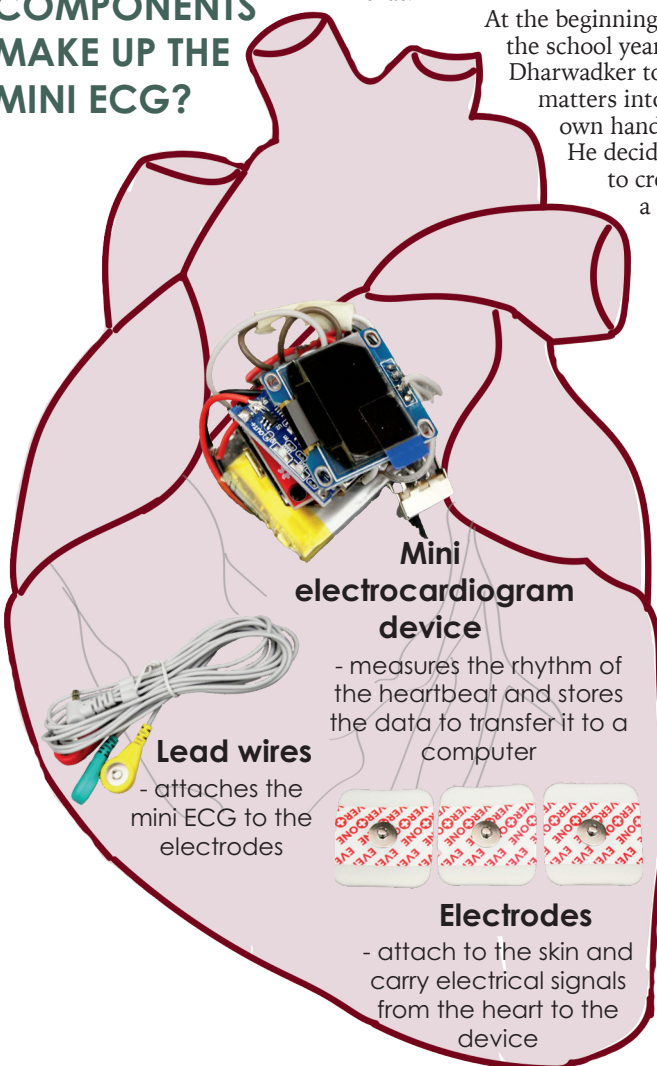
Dharwadker emphasizes that he couldn't have made the mini ECG without the support and constructive criticism from his peers or the tools provided to him from Maniscalco.

"I had a few inputs from classmates," Dharwadker said. "My teacher was definitely really helpful. She gave me some resources like access to soldering equipment, which I have, but it's



COLLECTING IMPORTANT DATA: Junior Rohan Dharwadker plugs his 3D printed mini electrocardiogram device into his computer. Dharwadker was diagnosed last February with an arrhythmia, or irregular heartbeat, and made the device so he could know the exact electrical activity of his heart at a given moment. **PHOTO BY** Sammie Thompson

WHAT COMPONENTS MAKE UP THE MINI ECG?



ART BY Sammie Thompson

nice to have it at school too."

While he only received a diagnosis last February, Dharwadker's condition is caused by a genetic mutation that he has likely had his whole life. He believes that his creation could help others know early if they have a heart condition, and if so, how severe it is.

"Heart disease is the leading cause of death so it's helpful to know your heart's rhythm because a lot of times you won't be able to tell if it's dormant or it's so small that you won't be able to feel it or know that something's wrong," Dharwadker said. "If I hadn't been diagnosed, I wouldn't have known something is wrong, I would've assumed that that's what the

normal is."

Junior Gavin Letulle sits next to Dharwadker in the independent study class and has felt inspired watching him create his device.

"Sitting next to Rohan has been nice because it's cool looking over to see what he's working on every now and then," Letulle said. "We help each other with homework and most of the time we just work on our own independent projects while listening to music."

Letulle appreciates the freedom that the independent study class allows.

"Independent Study is one of the best classes you can take at Bowie because you get to work on whatever you want the whole

year," Letulle said. "No one is telling you what to do and you can be independent."

Dharwadker isn't done with his project yet. He is currently working on creating the software for the ECG's data to go into by measuring heart rhythms and deciding what constitutes a regular and irregular heartbeat. He is also planning to make an enclosure for the device to make it wearable, likely as a watch.

"In this class, students are encouraged to take risks and think outside the box," Maniscalco said. "Rohan challenged himself to design and create a mechanism that could save lives. It is impressive, to say the least, watching him take an idea and turn it into a reality." ■

Downtown cultural center pays tribute to student's family

Nic Lee's grandmother, Emma S. Barrientos, was a well-known Mexican American activist

Sophia Sanchez
Dispatch Reporter

It's 2009. Nic Lee's hands are linked with his mom's as they look at an old photo on the wall. An upbeat song is playing in the background as the rest of their family members dance. Lee, a current junior, and his family are honoring his grandmother, Emma Serrato Barrientos, following the anniversary of her passing.

Two years later, Austin's downtown Mexican American Cultural Center (MACC) was renamed after Lee's grandmother, who was a well-known cultural activist and Texas state representative.

"My grandma was always an advocate for the Mexican American culture being expressed," Lee said. "I know that she was always helping my grandpa with things and she wanted to have a proper representation of Mexicans in Texas."

Barrientos grew up in a modest neighborhood in Galveston, Texas with her four siblings and was introduced to multiple cultures at an early age.

"I can still remember the three-bedroom house she grew up in and the little corner store she visited as a child," Lee's mom Alicia Barrientos-Lee said. "With each visit to Galveston, my mom shared many stories of her youth. She was introduced to multicultural foods, music, and dance because of her neighbors and neighborhood. However, her exposure to the Mexican cultural arts was incomplete until she left Galveston."

After Barrientos' high school graduation, she and her new husband Gonzalo moved to Austin to start a family and attend college. Gonzalo went to the University of Texas.

"My mother was not only passionate about the arts, but also an activist, advocate, and leader of her communi-

ty," Barrientos-Lee said. "She was my father's biggest support and hardest worker."

Barrientos and her husband quickly became involved in Civil Rights issues with the growing racial discrimination in the late 1960s. They collaborated with many Mexican-American workers who sought for improvements in their industries.

"When she moved to Austin, she had a vision," Barrientos-Lee said.

"She wanted everyone to be able to better understand our culture, history, and traditions."

Barrientos' passion was to educate and share with her community about Mexican American culture.

"Acknowledging Mexican American history allows us to embrace other customs and expand our knowledge of Mexican American culture," senior multicultural acceptance club president Trinity Thompson said. "This brings our community together because so many people in the Bowie and Austin communities come from Mexican or Hispanic backgrounds."

Barrientos always loved museums and the arts, and became engrossed in the communities of local creators. Barrientos and other MACC supporters joined the non-profit Center for Mexican American Cultural Arts and contracted the city for operations.

"The City of Austin Bond proposal for a Mexican Cultural Center failed the first time in 1992, but passed in 1998," Barrientos-Lee said.

Combining her love for art and her culture, Barrientos used her voice to advocate for the Mexican American Cultural Center in Austin.

"It's important for the Bowie community to know that [the MACC] is a hidden gem," Barrientos-Lee said. "There is something for all ages, children, parents, and even events for the grandparents."

After years of effort organizing



THROWBACK: Current junior Nic Lee poses with his grandmother, Emma Serrato Barrientos. In 2011, the downtown Austin Mexican American Cultural Center (MACC) was named after Barrientos for her efforts as a cultural activist and Texas state representative. **PHOTO COURTESY OF** Alicia Barrientos-Lee

committees, attending meetings with organizations, and later becoming the first Mexican American state representative, Barrientos created a name for herself around Texas.

"I think my grandma left a good legacy of representing the Mexican culture and having to express it in Texas," Lee said. "It's important for Bowie

and the community to know [about Mexican American culture] because you don't want to know nothing about other people and other religions in the world out there."

Several years later, the opportunity to rename the Mexican American Cultural Center was proposed. Barrientos-Lee knew how hard-working and

dedicated her mother was and felt it was only right to have her mother's pride and joy be named after her.

"As the driving force behind the creation of a cultural center in Austin, she never gave up," Barrientos-Lee said. "She met with several organizations of different ethnic backgrounds and numerous elected officials for their support, not to mention the countless hours of research."

The Barrientos family all came together and contributed to the renaming of the MACC.

"When the discussion to rename the Mexican American Cultural Center arose, our entire family was involved," Barrientos-Lee said. "We sat in meetings, had discussions with community leaders, got petitions signed, went before the Austin City Council, and supported the center in any way we could. I personally curated an exhibit which shared the story of my mother, who she was, and her life."

In the end, the families' contributions were worth it. The Mexican American Cultural Center was named in honor of their family member in 2011.

"It honestly seems amazing to be related to someone who left such a impact on Mexican communities and influenced change," Thompson said.

Even after Barrientos' passing, her legacy continues to go on both within her family and at the center.

"Every year I go over to the Mexican American Cultural Center and make a mural for my grandma," Lee said. "On her birthday we always go to the center, pray, and look around."

Barrientos' actions and words have left a impact on the Mexican American community in Austin and beyond. According to Barrientos-Lee, her ideas and beliefs continue to inspire others.

"Her friends and family sometimes referred to her as a gentle sledgehammer," Barrientos-Lee said. "Her words and approach were always delicate and gentle but the results were always powerful." ■