



# STEMBoost Newsletter

Issue II

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## Press Release

Editor in Chief: David Smith  
Editor in Charge: Ryan Li

STEMBoost is an organization founded by Kennedy Science Olympiad national/state medalists and alumni to empower 5th-9th graders through STEM for exciting careers of the future.

This past summer STEMBoost offered a variety of STEM workshops and donated \$6,000 towards COVID-19 relief, bringing the total donation to \$10,000 (\$4000 was donated in the spring). STEMBoost summer workshops had 820+ registrations, totaling 5,400 instruction hours. Participants in the online workshops were students from the Cupertino Union School District, other bay area communities, and from out of State. The donation to Valley Medical Center Hospital Foundation (<https://vmcfoundation.org/>) will help battle COVID-19.

These workshops were led by David Smith, STEMboost President, a 17-year-old senior at Stanford Online High School. He managed a team of 29 high schoolers in the planning and execution of this event.

The workshops included topics like Genetics, Forensics, The Science of Being Happy, Moving Earth, Constellation, Moon Mining and Lunar Base, Movie Editing, Cybersecurity, Physics, Java, Anatomy & Physiology, Herpetology, and more. Feedback from parents and students have been positive, and many parents and students requested for more such workshops in the future.

### Organizers:

David Smith (Lead Organizer) currently at Stanford Online HS, Grace Kuo, Dylan Yang at Monta Vista High School, and Flora Huang currently at Lynbrook HS.

### Instructors who authored and conducted the workshops:

Saarang Kashyap (Curriculum Head), Conner Yin, Eshani Patel, Flora Huang, Grace Kuo, Nishanth Arumugam, Aseem Rajopadhye, Deetshana Parthipan, Dylan Yang, Edwin Xie, Leelavathi Srinivas, Ryan Li, Amol Rama, Angela Zhang, Anusha Chittari, Arthur Perng, Daphne Guo, Eric Ju, Iona Xia, Jai Sharma, Joseph Lee, Varun Kamaravelu, Gavin Yu

### Teaching Assistants:

Ashley Zhou, Andrew Zhou, Anish Bayyapu, Ishanvi Kommula, Pranav Annapillai.



### Fun Fact

Who has more bones? Babies or Adults?

(See answer in the back)

## Editorial – Medical Miracle

Ryan Li

Very often we take the simplest things in life, for example the ability to eat and drink, for granted, rarely thinking about how our lives would be impacted should these basic human functions be taken away. This was the

disposition I was in when I first heard about Salma Bashir, a 17-year-old Egyptian teenager, who is currently living without these exact functions due to an accident when she was only five years old.

In a tragic turn of events while she was on vacation in Alexandria, Egypt, Salma had her small intestines ripped out of her five-year-old body when she sat on a kiddie pool's suction valve, which was unfortunately uncovered (truly). After quickly being rushed to the hospital for immediate care her doctors determined that she would need a new small intestine in order to survive. It was also impossible for Salma to eat or drink as that portion of her digestive system had to be removed, so she had to rely on intravenous nutrition (TPN) to survive, which wasn't readily available in Egypt, thus pursuing medical care in the US was found to be the best fit for her (Salma's lifesaving transplant).

The process for receiving a transplant is a lengthy and time-consuming one. First off, you need to have the money to pay for the associated costs of the procedure from either your own pocket or using medical insurance. After all, there is a large amount of preparation and expensive tests needed to determine which donor best matches one's own traits (i.e. blood type, height, and size of organ needed), along with the pre, intra, and postoperative hospital care costs. After a patient completes the financial portion and testing, they are then placed on the transplant list and have to then wait for a suitable donor, or a person who's donating the required organ, to present themselves. For reference, a living organ donor can donate a kidney, a lung, or a portion of the liver, pancreas, or intestine, while a deceased donor, who can come from a variety of fatal situations including gunshot-fatalities and some car accidents, can donate the heart, liver, kidneys, lungs, pancreas, hand, face, or intestines (What Can Be Donated). This waiting period can last from less than a day to several years (Frequently asked questions), so the patient must always be ready to travel to the operating room for if an organ does become available there is only a limited amount of time (often less than a day) in which the organ is still in viable condition (Staff, 2016), especially for deceased donors in which there is no longer blood flow sustaining the cells within the organ. There is also always the risk of a patient experiencing an organ rejection, which is when the body's immune system attacks the newly transplanted organ because it views the organ as a "foreign" and potentially harmful object, which makes sense since that organ came from another human being with a different immune system. This can happen even if the donor's organ nearly matches up with the recipient/patient's body traits and is usually treated with immunosuppressant medication. The fight continues for the patient even after transplant surgery as they would need to take the medication for the rest of their lives in order to suppress their immune system to prevent further rejections, making them more vulnerable to diseases such as the common cold.

Since she isn't an US citizen, Salma wasn't applicable for medical insurance to cover the expensive operation. Luckily, a financial donor stepped up, and after being on the transplant waiting list for 18 months, she finally underwent the procedure. Sadly, after just two weeks post-op Salma began experiencing a series of rejections on her transplanted small intestine which ultimately spread to her large intestines as well, resulting in both of them being removed. During this operation her bladder was also ruptured leading to urinary incontinence, and as if things couldn't get any worse, the incision made during the operation couldn't be closed completely, resulting in an open wound in her stomach which leaked fluids constantly. The doctors discharged Salma from the hospital without any plans for another surgery, and she lived for the next 12 years on TPN nutrition in this miserable state, unable to swallow food and in constant pain. She did, however, find a new passion for creating makeup tutorials to distract herself from the large physical discomfort and posted them onto her Facebook account (Salma's lifesaving treatment).

Two years ago, she decided to create a GoFundMe account to raise funds for this second transplant surgery, effectively restarting the transplant process. This time Salma needed not only a small intestine but also a large intestine, stomach, pancreas, and liver, the last three having been severely affected by her condition. The cost for this multivisceral transplant was astronomical: a stunning \$4 million that needed to be raised before she could even begin the preliminary tests and make it onto the transplant list. During this time some of the media picked up on Salma's story, including truly, a YouTube channel dedicated to "celebrating difference, maintaining a sense of wonder and confronting the extreme". It was through this channel's video on Salma's life which I first

heard about the teenager's incredible story. I soon found out that there was an entire community backing Salma, and through two viral tweets her GoFundMe exceeded \$500,000 last month. However, our efforts to attract celebrities' and the wealthiest' attention on social media were futile. This was slightly discouraging for there was still a large sum of money left to be raised, and Salma's condition had deteriorated even further. Her tube in which the TPN nutrition was delivered had become infected, but this had already happened with the other three possible locations in which this delivery of nutrition was possible, meaning that this was the last port in which this life-sustaining fluid could be delivered. Salma had also been hospitalized for liver failure and pancreatitis on multiple occasions during this past June and July, and her physical pain levels were higher than ever.

I myself felt discouraged, thinking that the countless millionaires or billionaires could have donated a fraction of their net worth and all of Salma's medical expenses would have been taken care of. I couldn't begin to imagine how much anguish and suffering Salma and her family were going through; even with all of the love and support coming from her community the one thing which actually had a chance to improve Salma's life drastically, money, wasn't available.

Just when all hope seemed to be lost, in early August Salma announced on her Facebook page that she finally received insurance covering most of her transplant expenses, and after undergoing the preliminary evaluations/tests she was placed on the transplant list two weeks ago. Finally, after an entire twelve years of being impeded by her tragic accident and subsequent organ rejection, Salma has begun her transplant process again, providing newfound hope to the otherwise dire and grim situation.

Salma's story is one of incredible resilience and courage. To be able to persevere and motivate oneself after such a horrific accident is by no means an easy feat. It is also an important reminder once more to be thankful for what you already have, even if it is as basic as being able to eat and drink. You never really know when all of that can disappear without a moment's notice.

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ANSWER: Babies have around 100 more bones than adults