

## **Yihe Dong's National Junior Science & Humanities Symposium Blog**

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### **Introduction**

In February and May, I was privileged to participate in the Junior Science and Humanities Symposium (JSHS) at the regional and national levels. The experience was extremely unique and inspiring. Not only was I able to observe eye-opening science and research, but I also became very inspired by the people I met along the way. They made my participation in JSHS a truly life-changing experience. It is for these reasons that I want to share this exciting experience with you.

The national Junior Science and Humanities Symposium is a highly recognized national competition for high school students, encouraging them to conduct original research in areas of science, mathematics, and engineering. Participants are selected from across the United States, so this competition is also a great opportunity to meet other students who share an interest in science and research. Each year, over 12,000 young researchers participate in JSHS, of whom 240 students advance to the national level to compete for significant military-sponsored scholarships and awards.

I encourage everyone to participate in JSHS, not just for the great research experience, but also for the chance to learn about other young people's research discoveries. You will exchange ideas with and get inspired by people who are equally passionate about science and research, and you will be able to tour various science facilities and meet renowned professional scientists, which is an amazing experience. As a bonus, all participants' research abstracts are published in the National JSHS publication "Abstracts of Research Finalists." Finally, the top-notch presenters at the national level can claim up to \$16,000 of undergraduate scholarship money and an all-expenses-paid trip to the London International Youth Science Forum.

### **Preparing for the Georgia Junior Science and Humanities Symposium**

Before reaching the national competition, I needed to work my way through the Regional Symposium. In October, I started doing a research project on the effects of dietary restriction on fruit flies (the same as my science fair project). The fascinating topic of aging has always interested me, and diet has become a very eminent issue in our society nowadays.

Completing my research project was full of challenges and difficulties, but I really think that it was well worth all the time and effort I spent. In fact, my research adventure was so fascinating to me that it didn't even seem like work. I enjoyed conducting research, and I learned so much about science and research during the process. After finishing my project, I was more interested in biology and research than ever before.

To enter the Georgia JSHS (Regional Symposium), you must first submit a research abstract and research paper. These submissions are then reviewed by a panel of independent judges who select the top research projects for presentation at the Regional Symposium. If you are selected as a presenter, you will need to prepare a PowerPoint presentation to compete at the Regional Symposium. There are national rules about how these should be written, and it is a good idea to give yourself at least a month to write the abstract and paper. Submission deadlines for the abstract and paper differ from region to region, so be sure to check the JSHS website for information about your specific region.

In Georgia, the top 50 research papers are selected and the students are invited to present at the Georgia Junior Science and Humanities Symposium (GJSHS). Along with the presenters, 50 runners-up are selected to observe at the symposium. Last February, I was very excited to find out that I had been selected to present.

This meant it was time to prepare a 12-minute PowerPoint presentation (please see my suggestions about making PowerPoint presentations at the end of this article). The PowerPoint is basically a brief and elegant summary of your paper, except with more graphics and vividness.

To make a PowerPoint presentation, I started off by covering all the relevant information in the presentation (which put my presentation way over the time limit). Then I went over it again and again to gradually cut the presentation down. From talking to more experienced presenters, I learned that in the presentation, the results, discussion, and conclusion are more important than the background or procedure. After all, the judges want to learn about your new discoveries, not someone else's from two decades ago. As for the exact procedures, the judges can always refer back to your paper if they have specific questions. My PowerPoint presentation took around two weeks to complete. I finally settled on one after working out five different versions. Leave yourself sufficient time to work on the PowerPoint once you know you are going to present.

Once finished, I practiced my presentation many times (with a timer) both in front of a mirror and with my teachers-something that proved to be extremely helpful. No matter how well you think you know your presentation, speaking it out loud several times makes you sound more natural and more confident during the real run. Also, it is OK if you occasionally glance at some notes during the actual presentation, but you always leave a better impression by speaking freely and making eye contact with your audience.

One thing I found very helpful when making a presentation was asking people (friends, teachers, parents, etc.) to look over the presentation. They were able to point out my mistakes and helped me cut down some irrelevant information. And it is always a good idea to talk to more experienced presenters and past winners from your region. Good advice is not hard to find, you just have to actively look for it.

Finally, at the end of February, the long-awaited Georgia Junior Science and Humanities Symposium arrived. From February 26-28, the top student researchers in Georgia got together to showcase their hard work, to learn from each other, and of course, to have fun. Regional Symposia are usually held on university campuses. The Georgia JSHS is usually held at the University of Georgia. All presenters and observers stayed in hotels, and everyone stayed in rooms of four (which was a great way to make friends and exchange ideas. I learned so much from my roommates who were from other parts of Georgia).

In the first round of competition, all student presenters were divided into different presentation rooms based on the category of their research. Each person had 12 minutes to present to a panel of judges. The judges included scientists, college professors, and military personnel. (For presenting advice, please see the end of this article.) Following each presentation, there was a 3-minute Q&A (question-and-answer) session with the judges and sometimes the audience. Out of the 50 presenters, 12 were selected to proceed to the second round of the Regional Symposium.

My presentation was selected to be the last of the day. Worried that the judges might be tired after an entire day of intense concentration, I tried my best to make my presentation interesting by emphasizing the important words and phrases and varying my pace of presentation. The 12-minute presentation went by very quickly, and I thought that I did pretty well in the Q&A session.

Later that day, I was exhilarated to find out I made it to the top 12! The competition was suddenly getting very intense. At that point, it was very important to have a positive attitude. I believed that every one of the top 12 had done some great and interesting research, so it would be very difficult for the judges to rank our projects. The final decision might come down to our way of presenting and our answers to the judges' questions. I was already satisfied to make it to the top 12 in Georgia because the research had been an amazing experience for me. So even if I didn't advance, I was content that I'd gained so much.

After a celebration dinner with some new friends, I went back to the hotel and attempted to polish up my presentation for the last time. Luckily, I got back my judging comments, which greatly helped me to improve my weak points and enhance my strengths. During this final round of practice, my presentation went slightly over the time limit, so I had to rush through my discussion and conclusion. Rushing through those parts is definitely not a good idea, since they are the most interesting and essential part of any research. The obvious solution-I needed to trim down my presentation. Having a hard time finding non-essential content to cut down, I was fortunate to have two chaperoning science teachers and their students there to help me revise my PowerPoint. Together, we produced a new version that was far more succinct than the original one.

The next day, the top 12 entered the battlefield to compete for the medals-the first five would win an all-expenses-paid trip to the national JSHS, and the first two would also earn the honor of presenting at the National Symposium.

This time, I was selected as the second-to-last presenter. I was a little nervous right before my presentation, but as soon as I started talking, I regained confidence. Sure enough, the countless practice time was definitely not wasted! In fact, I found presenting very fun and rewarding-it felt great to share my ideas and findings with a group of people as interested in my topic as I was.

I found it very helpful to read through the judges' comments after the competition. Even if you think that you can't get any better, the judges always see something that you can improve on. So it is a good idea to track down the judges' contact information and ask for some feedback.

Finally, after a long, nerve-wracking wait, it was time for the award ceremony. With a certain mystique, the symposium director announced the winners, slowly, as if testing our patience. And finally, I heard my name! I made it to number four! I was sooo excited!

Even though only the top two had the opportunity to present at the National Symposium, I was still exhilarated that I would have the opportunity to advance to the national level as an observer.

### **Preparing for the National Junior Science and Humanities Symposium**

This year, the National Junior Science and Humanities Symposium (JSHS) took place in Huntsville, Alabama-a place famous for its technology, space, and defense industries. Some famous sites there are the Army's Redstone Arsenal, NASA's Marshall Space Flight Center, and Cummings Research Park. As part of the JSHS, we were able to tour all of them. You can imagine my excitement.

Off we went to Alabama!

If the GJSHS was competitive, then the National Symposium must be classified as cutthroat. After all, the National Symposium features the top two student researchers from all 48 Symposia around the United States. There are over 250 participants, about 100 of whom present, and the rest observe.

I was excited to be able to immerse myself in such an energetic and passionate atmosphere. The participants were all very outgoing; I met many people and made many new friends immediately.

After some time getting to know each other, it was finally time for the reason we were here-research presentations. I imagined that the research presentations would be fantastic, but what I found in Huntsville-the scope and the depth of the research-was far beyond what I initially expected. All of the projects are so incredible, so eye-opening, that after doing a research project yourself, you still wonder how those high school students managed to conduct all the cutting-edge research, in addition to spending time on their academics and extracurricular activities.

Just like at GJSHS, presentations were divided up into different rooms according to category, so presentations in several categories proceeded at the same time. The presentation format is also the same as at the Regional Symposium in Georgia-a 12-minute presentation and a 3-minute Q&A; session. As an observer, I was busy listening to presentations in various categories, trying to absorb a broad range of topics. I wished I could split myself up into multiple Yihe's, so I could see what everyone had to offer!

Besides the phenomenal research, there were many other exciting activities at JSHS. Most notable were the tours. Different tour destinations included the NASA Marshall Space Flight Center, Toyota, and Open Biosystems. These tours not only sparked interest within us, but they also gave us an introduction to science being applied in the real world.

Participating in the National JSHS was a great, great way to hear new ideas and to learn more about recent research topics and new technologies; such as, novel approaches to detect and cure cancer, tissue regeneration, hydrogen production, and neutron activation using fusion reactors. Listening to the interesting topics-some of which I had never heard of before-often left me speechless. Wow, that was...amazing.

After the presentations, a very pleasant surprise awaited all of us. To reward our hard work, we all got to see the premiere of Spider-Man 3 in IMAX! Of course, there could not be a better way to conclude the day than seeing Spider-Man 3 in IMAX, especially when you are a Spidey-fan like me. Afterwards, JSHS delegates toured the U.S. Space and Rocket Center (imagine how cool that was). Another highlight of the National Symposium is its fantastic guest speakers. During the first day, we had the privilege of meeting Dr. William McCorkle, who talked about his role as the director of the Aviation and Missile Research, Development, and Engineering Center (AMRDEC). On the second day, Paula Apsell, the Senior Executive Producer of PBS NOVA, came to speak to us. Here, I must say that as a devout fan of NOVA, I was always amazed by its ability to transform complex concepts into vivid, easy-to-understand motion pictures. Having had the opportunity to meet and talk to NOVA's executive producer, you can imagine my excitement. In her speech, Mrs. Apsell talked about overall science literacy among Americans, which is alarmingly low, and about the declining funding from the government devoted toward science research, all of which evoked deep thoughts within us. To top the visit off, Mrs. Apsell also showed us some future excerpts of NOVA. Yeah, that's the kind of "privilege" you get for working so hard.

On the last night, to celebrate all the challenges we went through and to have fun with our new friends, there was a mixer. The dance was very fun and a great way to unwind after working so hard and going through such an intensive selection process.

Competitions like the National Symposium always give me a unique opportunity to explore science research and to meet other talented, like-minded people from diverse backgrounds. The benefits are two-fold. Oftentimes, we would not only talk about our science research, but also about leadership, teamwork, community involvement, etc. And second, the National Symposium is a great place to share ideas and values, to get inspired, and to discover new possibilities. For example, I talked to a presenter from New York about her research experiences at Cold Spring Harbor Laboratory and one of her leadership experiences, which involved a school walkout, demonstrating the students' concerns for the crisis in Darfur. Not that I want to plan a walkout at my school, but these interactions truly impressed and inspired me, and I hope to bring these new inspirations back to my community. I am currently initiating a Student Constitution at my high school-the by-product of a casual conversation with a friend I met at JSHS.

As I mentioned before, the top six presenters from the National Symposium advance to the London International Youth Science Forum-an all-expenses-paid exchange program that brings together over 400 young scientists from 60 nations for two weeks of seminars, debates, lectures, tours, and social activities.

The next morning, it was time to leave. This is always the saddest part of any activity like the JSHS. All in all, the past five days had been full of intense competition and marvelous activities; it was an experience that I gained so much from that I will forever treasure. In fact, I made many friends at JSHS whom I still stay in contact with today. We still share our activities, research, and ideas. These friendships are the lasting legacies that all participants gain from the JSHS.

On that misty Huntsville Sunday morning, our Georgia crew left the National Symposium.

It was...in one word...amazing.

Here are some of my tips for making a stellar PowerPoint presentation:

- Be as simple as possible-this is a professional science research presentation, so you don't want to distract the judges. It is not a good idea to impress them with your amazing sound effects instead of the purpose of your experiment.

- Be as concise as possible, and focus on the most essential parts! There are only 12 minutes of presentation time. You will regret it if you spend too much time explaining the background and then run out of time for the conclusion.

- Having 12-18 slides is common, so allow approximately 1-2 minutes per slide.

- If you go over time after repeated practice, then cut down some content (preferably in the introduction or methods, rather than in the results and conclusions).

- Everyone finds it difficult to cut down his or her presentation. So get someone (with some background knowledge) to help you, because it is usually easier for that person to spot something that's not absolutely necessary for your presentation.

- It is great to use visualization instead of too many words because it is easier for the audience to read. Good visualizations include pictures from your research, graphs, pictorial representations of research procedures, etc.

- Make sure that the font (on the projected screen) is readable, even from a distance. I used Arial in my presentation; the font was around 40 for the main titles and around 20 for the text.

- Ask someone to look over your presentation-teachers, friends, mentors, etc. Other people always have a sharp eye for catching your mistakes and can help you shorten the presentation.

- I found it very helpful to use bullet points instead of paragraphs to summarize my ideas.

- I used a different title for every slide

Below are suggestions for presenting and answering questions:

- Practice, practice, practice! Practicing your presentation makes you sound more natural, while making you less nervous during the real presentation.

- During the presentation, try to be interactive, such as asking questions and then answering them yourself. Questions easily make a point, while also attracting your audience's attention.

- Vary your tone of speech by emphasizing the important phrases and statements.

- Don't talk too fast! You want your words to have time to register with the audience. Besides, people have a tendency to blur their words while talking fast.

- You might even tell an (appropriate) joke related to your research to attract interest and relax the atmosphere.

- Be prepared: There is always a 3-minute Q&A; session (mandatory) at the conclusion of every presentation for the judges (and sometimes the audience) to ask questions about your research.

- It is always a good idea to prepare for the Q&A; session. Check with previous contestants about what kinds of questions are generally asked. Questions like "how did you come up with your project?" are fairly common.

- Don't be nervous! As always, YOU are the expert on your project. Even if the judges seem more knowledgeable in a particular area than you are, you understand the context of your project the best.

- If you don't know the answer to a particular question, DON'T panic; say something you know that might be related to the question.

- Sometimes the judges don't expect you to fully answer a question in depth, they just want to challenge you and see how much you do know (and also to see how you react). So speak naturally and feel free to elaborate. One national-level contestant elaborated very much on a question, and he ended up getting third place in his category (which is very good).

- Keep in mind, when it comes to such a high-level competition, the projects are generally all fantastic-so a little difference can make a big difference.

- Don't forget to get the judges' comments after the competition!

- As always, have a positive attitude about yourself. Winning would definitely be great. But you have just finished a great research project-you already learned so much. That's probably the most valuable gain from doing a research project.

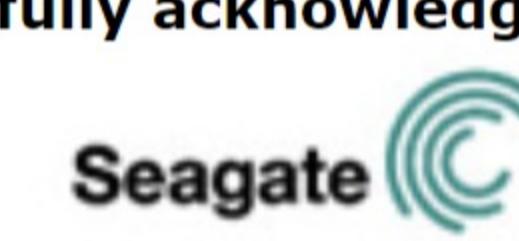
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The JSHS website provides great resources, such as official rules, presentation guidelines, and more. Please visit: <http://www.jshs.org/>.



Yihe Dong enjoys research and writing. She has received 1st Place and Best of Category Awards at the 2007 Intel International Science and Engineering Fair (ISEF), and a 1st Place Award at the 2008 ISEF. Yihe is a finalist at the 2008 Intel Science Talent Search (STS). She is very grateful to her research mentors at the University of Georgia and the dedicated staff at Science Buddies for making her dreams reachable. Yihe is a member of the Princeton class of 2012.

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