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When she's not studying biosensors at Case Western Reserve University, Joanne Wang plays drums with a friend from Hathway Brown High School in Shaker Heights, Ohio. Wang is one of 20 members of the annual All-USA High School Academic First Team.

By Gregory D. Ruffing for USA TODAY

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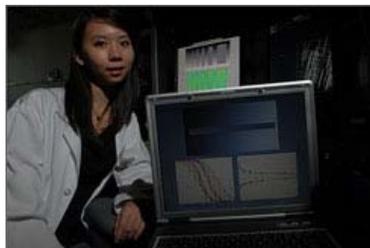
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By Tracey Wong Briggs, USA TODAY



Enlarge | By Laura Segall for USA TODAY

As a student research volunteer, Veronica Shi spent months designing an experiment trying to measure how people's perception of brightness is affected by contrast and size.

After hitting one roadblock after another, she looked at the optical illusion she was working with and had a light-bulb moment. A constant gray bar seems light against a black background and dark against a white one — just as how a person sees the world depends on his or her perspective.

"When I am faced with obstacles, the frustration and hopelessness that I feel often amplifies the illusion that the circumstances are much darker than they actually are," Veronica wrote in her nomination form for the All-USA High School Academic Team. "What seems like an impossible situation can actually be quite the opposite when viewed in an optimistic light."

PHOTOS: Meet the top 20 students in this year's competition

A concerto competition winner, award-winning essayist and winner of science research awards in three different disciplines, the 17-year-old senior at Corona del Sol High in Tempe, Ariz., is named today as a winner in USA TODAY's recognition program for outstanding high school students. She and 19 other members of the 21st annual All-USA High School Academic First Team win trophies and \$2,500 cash awards as representatives of all outstanding students. Forty more are named to Second and Third teams.

FIND MORE STORIES IN: [High School](#) | [Academic](#) | [First Team](#) | [Case Western Reserve University](#) | [Overachievers](#) | [Scott Molony](#)

"USA TODAY is honored to recognize the extraordinary accomplishments of this year's All-USA High School Academic Team," editor Ken Paulson says. "Their impressive achievements in both their classrooms and communities are a testament to their intellect, energy and enthusiasm."

OTHER OVERACHIEVERS: [Meet the Second Team](#)

"An impossible situation can actually be quite the opposite when viewed in an optimistic light," said Veronica Shi, a student researcher and member of the All-USA High School Academic First Team for 2007.

ALL-USA HIGH SCHOOL ACADEMIC TEAM

2007 winners: Sky's the limit for these passionate seniors | [First Team photos, profiles](#) | [Second Team](#) | [Third Team](#) | [Honorable mention and judges](#)



About: USA TODAY's All-USA High School Academic Team honors seniors as representatives of all outstanding high school students in the country who not only excel academically but also extend their abilities beyond the classroom to benefit society.

▪ **Applying for '08:** Nominations accepted starting in December



▪ **FAQ:** For students and faculty

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FIRST TEAM BY THE NUMBERS

- 11 girls, nine boys
- Average 3.98 unweighted grade-point average on maximum 4.0 scale
- Three from California (including two at Palos Verdes Peninsula High) and two each from Alabama, Ohio and Pennsylvania
- Average SAT of 2,346, with six earning the 2,400 maximum score; three scored 36 on the ACT
- 14 headed to Harvard
- Two at private schools; 18 public
- Six Presidential Scholars; three won state awards for placing the highest on the most AP tests.



[Enlarge](#) By Sara D. Davis, for USA TODAY

Arnab Tripathy won a gold medal at the International Math Olympiad in Slovenia in July. He also gave a solo piano recital that raised more than \$2,300 for his Chapel Hill, N.C., school music program.



[Enlarge](#) By Kevin Moloney, for USA TODAY

All-USA Academic First Team member Meredith MacGregor is an aspiring scientist as well as one of the best long distance runners her age in Colorado.

Through studying music, which reinforced the idea that hard work pays off, and math competitions, which taught her that you have to try different approaches to problems, she also learned you have to have a bit of faith: "You have to believe something will work. If you ever start thinking this won't lead me anywhere, you kind of fore-doom yourself to failure."

First Team members do acknowledge they've been fortunate. A number of them have had opportunities to work with wonderful mentors in top-notch scientific labs, travel internationally or have master classes with great musicians. With those advantages, some have succeeded to a greater extent than they could have imagined.

Put to work on ideas to improve bioethanol efficiency, Scott Molony and two Oak Ridge (Tenn.) High classmates ended up developing an algorithm to screen out irrelevant genetic data. Their project helped the Oak Ridge National Laboratory get an \$800,000 research grant and won the students \$100,000 in scholarships as the national team winners of the Siemens Competition in Math, Science & Technology.

"The work can be really hard, and sometimes you get something, and sometimes you don't," Scott says. "Ours happened to work out beautifully. But we were the exception and not the rule."

Scott brought the tenacity of a distance runner to the task. In cross-country, he was so far last in his first race six years ago they took down the finish line before he got there. But he stuck with it and went on to earn two varsity letters.

First Team members were selected from almost 1,200 members of the high school class of 2007 nominated by schools nationwide. Judges in a two-step process considered academic records, leadership, breadth and depth of activities, and how students have extended their intellectual abilities beyond the classroom.

First Team members have put their talents to work serving society in wide-ranging ways:

- As a middle school student, Jason Vartikar-McCullough got a job cleaning the studio of a Pittsburgh neighbor, renowned artist and art school dean Martin Prekop. Under Prekop's tutelage, Jason, now a senior at Fox Chapel Area High, became the first high school student to have solo photography exhibitions at the Pittsburgh Center for the Arts Filmmaker's Studio Gallery and Carnegie Mellon's Hewlett Gallery of Art.
- Working in the Electronics Design Center at Case Western Reserve University since her freshman year, Joanne Wang set about trying to make a biosensor for fast and inexpensive detection of liver disease. Joanne, a senior at Hathaway Brown School, a private school for girls in Shaker Heights, Ohio, has had work published in scientific journals and has submitted two patent applications to CWRU for her designs.

- After being on a middle school math team with limited resources, Johnny Hu embraced the chance to join the Rocket City Math League, a student-run online competition. Johnny, a senior at Virgil I. Grissom High in Huntsville, Ala., has logged more than 550 hours in leading efforts to expand the competition from 10 schools nationally to more than 250 worldwide. He also has won more than \$15,000 in grants for the program.

Beating the odds

First Team members all excel in the classroom; many max out the course offerings at their schools and still finish high school with straight A's. But their success goes beyond academic talent and a passion for what they do. Along the way, First Team members have learned how to take risks, work hard and persevere, in some cases against wildly improbable odds.

As Veronica Shi notes, it is a matter of perception.

First Team member Amelia Lin, who explored the potential of using carbon nanotubes for drug delivery, had the highest combined score out of 55,000 seventh-graders taking the SAT for the 2002 Duke University Talent Identification Program. She attends the Texas Academy of Mathematics & Science, a selective residential program at the University of North Texas in which students simultaneously complete their last two years of high school and first two years of college.

But Amelia thinks the toughest academic coursework she ever took was an elementary gifted program in Carrollton, Texas. Frequent projects and presentations stressing creativity and challenges, such as a fourth-grade teacher's promise of bonus points for finding grammatical errors in her worksheets or researched questions she couldn't answer, taught her to work hard and think expansively.

"I credit that program with probably 90% of the abilities I have," she says. "That program made me work so hard, but they emphasized creativity above all else."

"I got there by hard work. It's the same kind of thing in science. Sometimes you have to sweat it out," he says.

Even if the computer science project hadn't panned out, Scott was buoyed by the notion they were making a contribution, if only to save someone else making the same efforts later.

"It's the experience of it. Science has this annoying reputation as being inaccessible and hard to reach. What this experience helped us realize is real research is not like that. It's down and dirty, it's frustrating, it makes you want to pull your hair out, but it's very accessible. We didn't have a post-doctorate background, but we could make some kind of contribution."

First Team members don't perceive their youth as an obstacle.

Megan Blewett was a sixth-grader when she first read about multiple sclerosis in a textbook. Although she didn't know anyone with MS, something about the depth of the medical mystery — it was described 600 years ago and doctors still don't know what causes it — appealed to her.

"Maybe I was naive or overambitious, but I'd like to contribute to the knowledge of this disease," she says. In eighth grade on her own initiative, Megan started mapping multiple sclerosis cases to help understand the disease's environmental triggers.

Megan's research, which found common geographic patterns between MS and Lou Gehrig's disease, earned her a \$50,000 scholarship as a winner of the Young Epidemiology Scholars competition last month. She also did chemical biology research at the Broad Institute at Massachusetts Institute of Technology, focusing on a protein implicated in susceptibility to MS and Lou Gehrig's disease.

Megan sees her youth as being a huge advantage in asking big questions. Even though she has been taking college-level courses since her freshman year, she still may not have the academic background graduate students and post-docs have. But she also doesn't face their pressures.

"In graduate school, in order to get a Ph.D., the pressure to find results often encourages people to be safer," she says. "Especially when you're asking big questions, the risk goes way up. The greater the importance of the result, the higher the risk of not getting those results."

Paradoxically, some First Team members find focusing on the work itself and not the results actually helps lead to better results.

"It's tough, and there are a lot of obstacles along the way, but if you have a good mind-set and are determined to work through it all, you can get really far," says Veronica Shi.

She credits years spent at the piano bench for helping her develop that frame of mind.

"Most people think of music and science as sort of opposite areas, but I think they're closely related," she says. "You face the same kind of obstacles, and the process you work through to overcome those kinds of problems is really similar. You have to be self-disciplined to push yourself to think of different ways to solve a problem."

That focus came out in 2005 when she chipped a fingernail during the final round of the Phoenix Symphony Guild Young Musicians Competition.

Veronica kept focused on the music even as her finger started bleeding on the piano. It took organizers 10 minutes to clean the piano after she played, but she took home the grand prize.

For Veronica, it was about the music more than the prize. Moving someone to tears with her playing meant more than winning the competition: "I think the process of learning and discovering new things is much more important than winning awards."

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mlkjgrr wrote: 22h 53m ago

OMG These people are SOOOO smart. This is so unbelievable!! These people must sacrifice a lot to become this successful.

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inachu wrote: 1d 22h ago

yep some parents are some passion killers. My father when I was with him always demanded I take up automotive when my heart was into computers. I refuse as a kid to have my parents tell me what music to listen to or what hobby I should have.

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SCarolinian wrote: 4d 23h ago

mom99, the girl who didn't get to swim makes me sad. Her mom just singled her out and made her an outcast with one decision. She should have let her swim and have fun. I agree that is just wrong. It happens alot though, little Johnny and Susy go to the library on Saturday and Sunday to read a few extra books. Can't they just play? Oh, I liked your Superman sarcasm too.

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SCarolinian wrote: 4d 23h ago

Duane, I like what you wrote. And, you are right I did not reach my potential in high school nor was I challenged to my ability. So in college I saw my first failures until I realized how to work harder and differently. But I was very balanced in high school with friends, sports, and other activities. I was always conflicted because I was bored in honors classes and knew I could handle alot more work and I always felt like I was pretending to act like my peers because what I was thinking was much more complicated than what my friends were thinking. They saw black and white and I saw every shade between. I think in college, for me personally it all worked out for the best, I learned how to achieve a high level of success.....but first I had to fail. I want my children to be challenged as hard as possible but not so hard as they cannot find the time to be kids. My girls have been offered college level classes for credit but they are not in high school yet. I think they are not mature enough for that experience. Will they succeed at that level.....yes. We also did not allow them to take the SAT's to be Duke scholars, all but 5 kids in their class took them. I guess I am in the minority. I found that several parents were more concerned how scores and achievement made them feel and look. I don't think it matters at their age. I know my kids are intelligent and they do to, that is what matters.....and hanging out with their friends. They have plenty of time to over achieve and develop some wonderful science break through. They will be kids once. But, don't misunderstand, my kids are not lazy sitting back and not learning how to work. They are taking high level classes and each does additional arts outside of school. They are by no means underachievers. Education is an everyday thing here. You sound like a great dad. Realistic expectations is a key. Our saying here is "Do the best you can at the time, no matter what that best is."

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sport wrote: 4d 23h ago

Duane - WOW !
Your kid is the smartest, he is good at sports, and the most popular girl in class likes him..... you forgot to say how handsome he is as well.
Sure your name really isn't Clark Kent. (You said you are foreign, although you are brilliant, in case you don't know - that's Superman)

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Larsmed wrote: 4d 23h ago

These are the Real role models kids today should be admiring. Not only are these kids intelligent, they are passionate about what they are doing. Also, they are truly unselfish, knowing that something they began in highschool, will become an enormous contribution for the improvement of life for all of us.

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Duane wrote: 5d 1h ago

SCarolinian, i think the best way to teach smart kids is to don't set unrealistic expectations. And unrealistic expectations have more to do with what other people do than any limits a smart kid has in his life. The fact is that they are not like everyone else. They will not fit in completely no matter what they do unless they pretend to be someone they are not. Kids are jealous. Kids are prejudiced. Some of this they get from their parents, some of this they get from their friends and some of it is just simply human nature. It is human nature to tease people who are 'different' and different can be extra smart or extra dumb, or blind or deaf or clumsy or musical.

My son gets frustrated because his friends at school automatically assume that he can't do anything related to sports or he will not have a girlfriend because he is so smart. Even after he throws a football to them, they still think of him as limited physically in their minds. Even though the popular girl in the class likes him, they still say he will not have a girlfriend. He doesn't like it but I tell him don't worry about it because it is not worth his time to change the way everyone thinks. The people who are important will learn who he is really like. And for those that don't, it doesn't matter because as he gets older and goes into high school and college, he won't see them anymore anyway.

Fear of failure is something that is learned. The fact that you never failed early in life means that you never reached your potential. You were never tested to your limits. Nobody every knows their limit until they reach it. I can never know how much weight I can lift until I put so much weight on the barbell that I can not lift it anymore. And that in itself can never be considered a failure. Am I a failure because I can't bench press 400lbs? Of course not. Nobody can change who they are, but they can change what they do. And exceptional people are always working to change themselves by working towards their full potential.

I have a my own description of failure. I tell my kids the only way you can fail is to stop trying. It is as simple as that.

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SCarolinian wrote: 5d 3h ago

Duane, No, of course not. High achievers are not the only ones unhappy, but in my case it is the group I am familiar with. I am sure other groups are unhappy for different reasons. In this particular group "high achievers", as a parent I have to work differently to help my children grow up accordingly. I ask this question about happiness because I am/was exceptionally "gifted" myself and struggled to balance my need for learning with my need to fit in. I can tell you I wanted to have friends and fit in as much if not more at times than I wanted my straight A's. I see the same struggles in my children as they mature. By the time I got to college I didn't know how to handle failure because I had never failed. We are not talking about below average kids struggling or average kids struggling with happiness, this article and forum is the "exceptional child". While these students achievements are amazing I guess the parent comes out in me. I want them all to feel good about themselves too. I am sure many do but equally as many are don't. These young adults minds do not work the way other kids minds do. It is a gift but it can be a curse to. I just want them all to be able to handle it in a healthy way, that's all.

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CanadohtaLake wrote: 5d 3h ago

equate

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CanadohtaLake wrote: 5d 3h ago

Happiness isn't something you "get."
Happiness is something you realize you had when you look "back."
BTW, being smart does not necessarily equate into making good choices.
My personal philosophy is that being diverse in myself is a good investment portfolio that has allowed me to enjoy, and sometimes laugh at the human experience we commonly refer to as life.

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