This just in…

As we were going to press, we received an email from Nobel laureate Dudley Herschbach, emeritus professor of chemistry at Harvard University, where he's taught for more than 40 years. Herschbach has long been involved with efforts to enhance K-16 science education. He's quoted several times in the article featured in this annual report.

Herschbach wished to inform us of a brief essay on science education he'd read by Madison, N.J., high-school student Megan Blewett, 17, whom he met at a recent Intel Science Talent Search competition.

"I've long thought that youngsters like Megan are the best ambassadors for science, and I want to find more ways to bring their voices to the forefront," Herschbach wrote.

Research Corporation heartily agrees, which is why we've included Blewett's essay, appearing on the flip side of this insert, along with our annual report.

Blewett was in sixth grade when she asked her parents for a neurology textbook, and ever since has been researching what causes multiple sclerosis (MS) and amyotrophic lateral sclerosis (ALS), coupling epidemiology and biochemistry. After testing more than 10,800 compounds, Blewett has discovered five that may be candidates for the treatment of MS and ALS, according to a U.S. government press release issued when Blewett testified before Congress recently on the need for more money for institutions supporting young researchers.

The Broad Institute of Harvard and MIT – where Blewett conducted her research — is using her work to launch additional studies, according to Intel Science Talent Search.

Blewett says she expects to pursue both a doctorate and a medical degree, and to work on a cure for MS and ALS for the rest of her life. She has been accepted at Harvard University. Like Hershbach, we find her essay to be precisely on point regarding the need for quality science education in America today; and we're confident we're giving you the opportunity to read the work of one of our nation's great scientific minds very early in her research career.

James M. Gentile,

President, Research Corporation

Speaking Science

By Megan Blewett

As a high school senior, I've come to realize that science should be treated and taught as a language. I noticed the overlap between language and science after spending this summer working at a research institute. The desire to encounter new cultures that motivates some students to pursue studies in language also leads others into the compelling culture of science. The thrill of exploring frontiers and interacting in new communities fosters linguists and researchers alike.

I've been able to experience that thrill firsthand. For five years I've been researching multiple sclerosis and, in the process, made some surprising, and somewhat lucky, discoveries. Now my world is divided into two realms: high school and research. I split my time between studying for exams and furthering my research by giving talks, writing papers and contacting scientists around the globe. As a result I find myself with the opportunity to compare the world of scientific research with the world of science education.

The analogy that science is a language struck me as I was discussing secondary education with a local university professor who has taught me Chinese for the past four years. I've also been taking chemistry at the university. An interesting question came to mind: Why is it that one year of freshman chemistry leaves most students satisfied with their understanding of the subject? Very few students would claim to speak Mandarin Chinese after having studied it for the same period of time. They know intuitively that studying a language is useless if it cannot be applied; the ultimate goal of studying any language is fluency.

But is there a fluency equivalent for science? Is there a literacy exam to determine whether we can make sense of research? What we must recognize in order to answer these daunting questions is that science is truly a language, and it should be taught that way. Unfortunately, many of today's high school students and teachers harbor a genuine fear of science. Too often students feel scientific terminology is confusing and believe that their understanding of it must be "innate." I have discovered that beliefs such as these are both incorrect and damaging.

The average American teenager would be a bit overwhelmed to be handed a book in Chinese in a first-year course and expected to understand it, let alone perform well on graded exams. Similarly, in science, there is vocabulary (terminology) to learn, as well as grammar (the underlying principles and mathematics). And, as with language, the ultimate goal of science should be fluency; for me, fluency is not ingesting everything I've been taught, but being able to carry on a dialogue and produce something new. Fluency is being exposed to, and successfully navigating, the world of scientific research; it is the art of using the words and principles I've already learned to envision and invent.

Most of all, students and teachers should realize that the prospect of fluency in any field is exciting. The purpose of toiling over chemical structures and differential equations is to contribute something new to the field—yes, even to add more facts to current textbooks. Mastery of science doesn't come after an introductory freshman course, nor even after a multi-year set of courses; mastery comes when the science learned is applied to scientific problems. Just as we cannot predict the questions someone will ask us (or we will need to ask others) when we visit a foreign country, likewise we cannot predict the obstacles we will have to surmount in research. Being able to solve the problems we encounter is the art of speaking science.

In the end, mastery is all about creating something new. It's about extending our frontiers. It's about dreaming and exploring. This, in essence, is art, and it takes many forms, from linguistics to chemistry. In every case, though, art demands passion. Go past the terminology, past the grammar and mathematical symbols, and at the roots you will find both a love of exploration and the passion, the need in us all, to produce new dialogues.

So, while few Americans may speak French or Russian, even fewer speak science. Science, and not Mandarin Chinese, is the world's fastest growing language. If educators don't pick up on this soon, American youth could find themselves less literate, when compared to their global competitors, than expected. Worse yet, they will miss out on some of the greatest dialogues of their time. This prospect leaves me asking a single question: Does anyone here speak science?