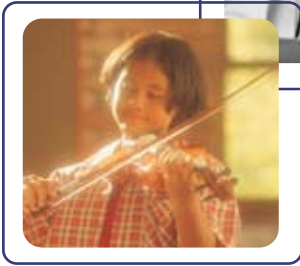
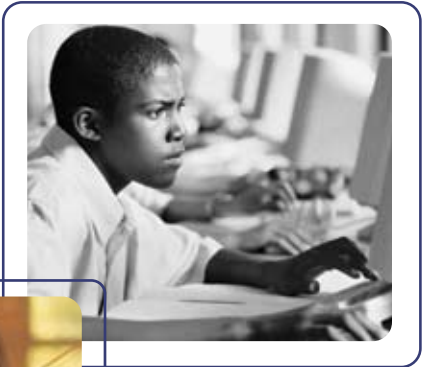


DAVIDSON FELLOWS



2006 Davidson Fellow Laureates

\$50,000 Scholarship Recipients



Heather Engebretson (Music)

A 16-year-old young woman from Tuscaloosa, Alabama, Heather Engebretson views music as a method of communication and a tool for social progress. Heather's portfolio, "Music as Universal Communication," is a collection of vocal pieces showcasing her range from musical theater to operatic arias, highlighting both the intricacy of language and the temporal aspects of music. She earned first place in the Regional National Association of Teachers of Singing, the Mississippi Symphony Young Artist's Competition, the PRIDE Talent Search and won Vanderbilt University's Blair School of Music scholarship. Heather played the violin in appearances on NPR's "From the Top" and with the Interlochen Intermediate Divisional Symphony Orchestra.



Shivani Sud (Science)

A 16-year-old young woman from Durham, North Carolina, Shivani Sud developed a technology to deliver chemotherapeutic molecules to cancerous cells with increased efficiency. Her findings can assist with more efficient drug delivery by overcoming cell membrane barriers, one of the greatest challenges facing conventional chemotherapy. Through protein transduction, Shivani developed a drug delivery system focused on an amino acid region of the HIV-1 Tat protein that allows larger medicinal molecules to pass into the cell. Particularly relevant to controlling tumors in areas where surgery is not an option, this research can help combat cancer and infectious diseases through more effective chemotherapy treatments.



Michael Viscardi (Mathematics)

A 17-year-old young man from San Diego, California, Michael Viscardi solved the Dirichlet problem with rational holomorphic boundary data. The Dirichlet problem was originally formulated in the 19th century to study the thermal equilibrium of a heated metal plate. Today, Dirichlet boundary conditions are applied to airplane wing design on airfoils, the two-dimensional cross-sections of the wings. Michael developed a formula providing an exact, explicit solution and, using four seemingly unrelated mathematical concepts, proved a new theorem that extends previous results in two dimensions. Michael's work can potentially aid in next-generation aircraft design, aerodynamics, medical imaging, astronomy, heat flow and fluid dynamics.

2006 Davidson Fellows

\$25,000 Scholarship Recipients



Stephanie Chen (Music)

A 17-year-old young woman from Austin, Texas, Stephanie Chen is dedicated to making a difference in the world through music's power to unite.

Capturing the audience's hearts and imagination, Stephanie explores each piece in her piano portfolio, "A Musical Painting," by creating images in her mind and then, in her performance, conveying this passion to the audience. She was named a Young Master by the Texas Commission on the Arts and in 2006 Stephanie won the 14th Annual International Frederick Chopin Piano Competition.



Kyle Dacuyan (Literature)

A 16-year-old young man from Sterling, Virginia, Kyle Dacuyan illustrates his ability to empathize with other viewpoints throughout his portfolio, "What Have You Been, Where Have You Gone." Comprised of short stories, poems and nonfiction, Kyle's work examines familial relationships, complexities and oddities.

Kyle's portfolio includes an unflinchingly honest look at pride, love and social class that shows exceptional courage and insight. Through interior monologues, Kyle's insight into deeply personal relationships pushes readers to consider perspectives other than their own.



Sheela Krishnan (Science)

A 17-year-old young woman from Suffern, New York, Sheela Krishnan analyzed *Paenibacillus larvae*, the bacterium that causes American Foulbrood Disease (AFB), a fatal disease that attacks honeybee larvae.

Sheela used the antimicrobial properties from the bees' honeystomachs to create a safe, non-invasive and inexpensive preventative measure to protect honeybees *in vivo* from AFB. Because honeybees are critical to the pollination of flowering plants, including agricultural crops valued at billions of dollars per year, their continued survival is essential to ecosystems and economies worldwide.



Varun Kumar (Science)

A 17-year-old young man from Bellaire, Texas, Varun Kumar determined how to improve diagnostics in the field of medicine through more effective magnetic resonance imaging (MRI). Varun researched and built compounds that could be used to form a new class of MRI contrast agents, responsive to proteins

instead of water concentration. By showing the distribution of proteins throughout a living system, these new agents could add a powerful dimension to MRI. The implications of Varun's research could provide a more comprehensive and less invasive form of diagnosis in almost every field of medicine.



Adam Solomon (Science)

A 16-year-old young man from Bellmore, New York, Adam Solomon studied the optical and near-infrared spectra of brown dwarfs, celestial bodies that resemble stars but emit little light because they are too small to ignite the central fusion of hydrogen. By looking at near-infrared spectral signatures that seem to be caused by low pressure, Adam created an analytical tool for estimating a brown dwarf's age and mass. Adam's research can help unlock clues about stellar evolution and formation, the history of our galaxy, and the formation of planetary systems.



Yi Sun (Mathematics)

A 17-year-old young man from San Jose, California, Yi Sun applied combinatorial mathematics to derive a formula for the expected winding number of a random walk on a unit lattice. Yi's work characterizes the tendency associated with random walks, or taking successive steps in random directions. When this research is applied to the growth of polymers, scientists can predict how many times the polymer will coil around an obstacle, or rod, thus indicating the strength of the polymer. This research can be used in physics, computer science and material science.

\$10,000 Scholarship Recipients



Travis Johnson (Music)

A 13-year-old young man from Milwaukie, Oregon, Travis Johnson has been studying classical guitar since he was 8. His portfolio, "Trails of Hope: The Importance of Adding New Music to the Classical Repertoire," includes an original piece composed by a music professor specifically for Travis, titled *Boppin.* Travis has performed at the Northwest Guitar Festival, and as a soloist with both the Portland Festival Symphony and Marylhurst Symphony. In 2005, Travis won the Guitar Foundation of America's First Annual National Youth Solo Guitar Competition.



Drew Petersen (Music)

A 12-year-old young man from Oradell, New Jersey, Drew Peterson believes that if he can reach an audience through his piano performances, he will inspire them to become more active and engaged listeners in all areas of their lives. Drew currently attends the Manhattan School of Music Precollege Division, and has performed at Carnegie Hall and Lincoln Center. In 2005, Drew won the Manhattan School of Music Concerto Competition and has been a featured performer on NPR's "From the Top."



Albert Shieh (Science)

A 16-year-old young man from Paradise Valley, Arizona, Albert Shieh created a computational tool used to analyze genetic sequence variability in humans. Albert's novel, dataset-specific clustering algorithm will result in a better understanding of gene linkages on chromosomes using single nucleotide polymorphisms (SNP), or the DNA sequence variations that occur when a single nucleotide in the genome sequence is altered. By assigning biological meaning to numerical data, this technology holds promise to find the genetic basis for Alzheimer's disease, autism and bipolar disorder with highly targeted, personalized treatments.



Anna Stalker (Literature)

A 15-year-old young woman from Birmingham, Alabama, Anna Stalker addresses the persistent search for truth through different literary expressions and experiences in her portfolio, "The Reincarnation Journals." Anna's separate narratives are bound by recurring symbols and ideas, blending to ultimately become one story told from many perspectives. In imagistic works, the author explores the search for truth and beauty through depictions of human interaction and the interactions of the larger cosmos. When Anna's individual pieces are gathered, a larger meaning emerges.



Anarghya Vardhana (Mathematics)

A 17-year-old young woman from Beaverton, Oregon, Anarghya Vardhana worked in the field of number theory to develop new starting values for the Lucas-Lehmer primality test. Her theorem can be used to further understand Mersenne primes and their properties through simple and efficient computation of Jacobi symbols. By allowing for easy computation, Anarghya's method can directly contribute to the pharmaceutical, chemical, materials, financial and information technology industries. Her theory also has broad implications in cryptography, specifically enhancing encryption systems to protect against identity theft.



Xin (Cindy) Wang (Science)

A 17-year-old young woman from Geneva, Illinois, Xin Wang identified a gene responsible for complete colorblindness in mice. By measuring the electrical activity on the surface of the mouse eye, called electroretinography, and mapping the mouse DNA, Xin isolated the mutation on the gene *Cnga3* responsible for colorblindness and the protein acting as the biochemical component. Spanning genetics and ophthalmology, her results may one day be used to help people with achromatopsia 2, the most severe form of colorblindness, in which people can only see in shades of gray.



Steven Wu (Science)

A 15-year-old young man from Folsom, California, Steven Wu developed a method to optimize quadrupole ion traps that sort ions by their mass-to-charge ratio using mass spectrometry for molecular analysis. Steven designed a computer simulation algorithm that produces superior results when compared with the current commercial software in terms of better simulation of ion movement due to more accurate electrical field data. Advancements in ion trap geometry can improve all areas of laboratory science through mass spectrometry, as well as better monitoring of atmospheric pollutants and detecting hazardous chemical substances.

SUBMISSION CATEGORIES

Davidson Fellows are outstanding young people who demonstrate the development of their talents with a prodigious piece of work in one of the following submission categories:

Science

A project in a specific area of science, such as physics, biology, chemistry, engineering, earth science, space science, environmental science or medicine.

Technology

A project in a specific area of technology, such as artificial intelligence or computer programming.

Mathematics

A project in a specific area of mathematics, such as calculus, fractals or number theory.

Music

A portfolio that is representative of the applicant's talent as a composer, vocalist, classical instrumentalist or jazz instrumentalist.

Literature

A portfolio displaying a number of literary styles and genres.

Philosophy

A portfolio presenting analyses of fundamental assumptions or beliefs relating to human thought or culture.

Outside the Box

A project that is university graduate level or comparable and completed with the supervision of an expert or experts.

Davidson Fellows are awarded scholarships of \$50,000, \$25,000 or \$10,000 and are recognized for their achievements at a special awards reception in Washington, D.C. at the Library of Congress.

Davidson Fellows are encouraged to make a personal commitment to support others in the development of their talents by serving as role models and mentors to other profoundly intelligent young people.

WHO SHOULD APPLY

Davidson Fellows applicants are individuals who recognize wisdom in the adage, "It's the journey, not the destination." They are passionate about their work and value the opportunity to learn. If you see these qualities in yourself and have been pursuing the development of your talents for an extended period of time, we encourage you to apply.

HOW TO BECOME A DAVIDSON FELLOW

Applicants must submit:

- A detailed project or portfolio that is considered a significant piece of work as outlined in each category's application.
- Essays about the work, such as why and how the work was pursued, the challenges that were encountered, and a description of why the submission is significant.
- Three copies of a 15-minute DVD/videotape, narrated by the applicant, describing and showing the work.
- Three nominating forms: one from a mentor and/or supervising scientist; one from a teacher, tutor or school administrator; and one from a professional in the field who is familiar with the applicant's work.
- A statement of commitment that, if named as a Davidson Fellow, the applicant and a parent/guardian will attend the awards reception in Washington, D.C. in September.

To download an application, please visit www.DavidsonFellows.org.

The Davidson Institute must receive Davidson Fellows applications by 5 p.m. Pacific Standard Time on the last Friday in March.

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ABOUT THE INSTITUTE

OUR MISSION

The mission of the Davidson Institute for Talent Development is to recognize, nurture and support profoundly intelligent young people and to provide opportunities for them to develop their talents to make a positive difference.

OTHER PROGRAMS AND SERVICES

Davidson Young Scholars

If you know of a profoundly intelligent student between 4 and 18 years old who could benefit from our FREE, individualized services, visit www.DavidsonYoungScholars.org.

The Davidson Academy of Nevada

If you would like to study with your intellectual peers, consider The Davidson Academy of Nevada. On the campus of the University of Nevada, Reno, the Academy is a public school offering an individualized learning program for each profoundly gifted student. Please visit www.DavidsonAcademy.UNR.edu.

THINK Summer Institute

If you are searching for a challenging summer educational opportunity, consider the THINK Summer Institute - a three-week residential college program for 12 to 15 year olds. Find out more at www.THINKSummerInstitute.org.

Educators Guild

If you are an educator or professional working in the gifted education field and are looking for a place to ask questions, share ideas and connect with other educators who are excited about meeting the needs of gifted students, take a moment to look at www.EducatorsGuild.org.

GT-CyberSource

Learn what is new in gifted education - whether it is finding resources, reading the latest news articles, or learning about gifted policies at www.GT-CyberSource.org.

Genius Denied: How to Stop Wasting Our Brightest Young Minds

Learn about this award-winning book that has been praised as "a manifesto for change" for gifted education, in addition to what you can do to help gifted students, by visiting www.GeniusDenied.com.