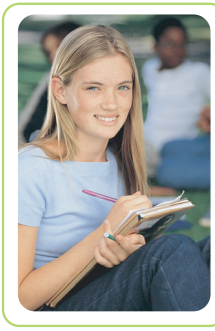
DAVIDSON

FELLOWS



Davidson Institute
for Talent Development

2005 Davidson Fellow Laureates

$50,000 Scholarship Recipients

Karsten Gimre (Music)

An 11-year-old young man from Banks, Oregon, Karsten Gimre creates a musical conversation during his piano performances, conveying a deeper meaning of universal themes common to all human beings. At the age of 6, Karsten earned first place in the International Young Artists Concert at the Kennedy Center and at 7 won the Russian-American Young Virtuosos Competition at Carnegie Hall. With mastery of a voluminous repertoire, Karsten has performed with the Portland Chamber Orchestra, Oregon Symphony and the Miami International Piano Festival.

Heidi Kaloustian (Literature)

A 17-year-old young woman from Canton, Michigan, Heidi Kaloustian wrote a portfolio entitled, "The Roots of All Things," which explores the intertwining themes of universal, social and individual perspectives. By seamlessly blending the roots of these thematic levels in every piece, Heidi links the tree-trunk of personal identity to family, heritage, culture and humanity in a way that illustrates the complex interconnections and undercurrents beneath the surface of our lives. Her distinctive prose enables the reader to connect with and relate to her characters in a deeply emotional way.

Tiffany Ko (Technology)

A 16-year-old young woman from Terre Haute, Indiana, Tiffany Ko designed a computerized security system based on electric field sensing, an emerging area of semiconductor technology. Tiffany built a prototype circuit board and programmed a novel capacitance-based computer system that is user-friendly and able to store collected data while providing an essentially foolproof security program superior to those customarily used today. Her technology may be used in numerous settings, including home and business security systems, high security safes and to monitor the whereabouts of people within a building without expensive surveillance equipment.

Milana Zaurova (Science)

A 17-year-old young woman from Fresh Meadows, New York, Milana Zaurova researched the deadliest form of brain cancer, malignant glioma, which is the most invasive and recurrent type of adult brain tumor with no viable treatment options. With a creative, multi-disciplinary approach blending chemotherapy and gene therapy, two areas of neuro-oncology, Milana studied transgenic mouse embryonic stem cells in combination with a chemotherapy drug as an effective method to fight brain cancer. Her method shows promise as a new treatment that can help save lives.

2005 Davidson Fellows

$25,000 Scholarship Recipients

Maia Cabeza (Music)

A 12-year-old young woman from Chapel Hill, North Carolina, Maia Cabeza was born in Japan to Argentinean parents and started violin lessons in Toronto when she was 4. Studying with faculty members at the Manhattan School of Music and the University of North Carolina at Chapel Hill, Maia has performed in the United States and abroad receiving accolades for her technical proficiency and musicality, as well as first-place awards in the Chapel Hill Philharmonia and Triangle Youth Philharmonic competitions. Through her music, Maia hopes to promote communication across all cultural and language barriers.

Brett Harrison (Mathematics)

A 16-year-old young man from Dix Hills, New York, Brett Harrison proved a long-standing problem in the field of graph theory called Seymour's conjecture, which was formulated in 1993 by a Princeton mathematics professor about the square of an oriented graph. Using a combinatorial method, Brett developed a proof that is more precise than the conjecture itself, proving the existence and location of certain objects in a graph. Brett's findings have broad implications in the fields of communications, computer networking and structural design.

Tudor Dominik Maican (Music)

A 16-year-old young man from Bethesda, Maryland, Tudor Dominik Maican composed a portfolio containing orchestral, chamber and solo pieces, demonstrating a strong creative inner voice, mature handling of emotion, decisiveness and the formation of an imaginative musical personality. The recipient of the American Society of Composers, Authors and Publishers (ASCAP) 2003, 2004 and 2005 Morton Gould Young Composers Award and a student at Juilliard, Dominik was commissioned by the Dumbarton Musical Society to compose a large piano solo, *D'un Monde a l'autre*, for which he researched folkloric music while exploring his French and Romanian heritage.

Justin Solomon (Technology)

A 17-year-old young man from Oakton, Virginia, Justin Solomon developed a new method for computerized object and facial recognition based on differential geometry concepts. Justin designed an algorithm to facilitate identification of objects and faces capitalizing on their unique three-dimensional features - such as concavity, ridges and curvature - whereas commonly-used recognition programs only extract two-dimensional features. Using three-dimensional scans of a subject increases the likelihood of accurate identification and has potential applications in security and personalization systems as well as in shape analysis, robotics and artificial intelligence.

John Zhou (Science)

A 16-year-old young man from Northville, Michigan, John Zhou used yeast cells to study the role of proteins in DNA with results that suggest a new molecular model for proliferating cell nuclear antigen (PCNA) of translesion DNA replication. The same molecules that have the ability to let the DNA replication process occur may also be a source of mutations. John's results will help scientists learn to enhance or suppress the function of these molecules, which is important in a wide variety of cancer treatments.

$10,000 Scholarship Recipients

Kadir Annamalai (Science)

A 17-year-old young man from Saratoga, California, Kadir Annamalai created straight and aligned growth of wires from the metal Germanium at the nanoscale, approximately the width of two molecules. Since these wires are so small, they must be grown chemically by vaporizing the metal and letting it cool down molecule by molecule on a piece of silicon. Kadir optimized this growth process so these wires could then be used in future thermoelectric devices such as power generators and circuit boards.

Stephanie Hon (Science)

A 17-year-old young woman from Fort Myers, Florida, Stephanie Hon researched Alzheimer's disease based on the extracellular deposition of beta-amyloid in the cortex and hippocampal regions of the brain that result in neuritic amyloid plaques. Stephanie investigated a different way to deliver antibodies into the lateral ventricle, which is a cavity in the brain filled with cerebrospinal fluid. Her findings suggest that it may be possible to reverse the effects of Alzheimer's by reducing the beta-amyloid deposits through intracerebroventricular passage immunization followed by an intraperitoneal treatment.

Benedict Shan Yuan Huang (Science)

A 17-year-old young man from Coram, New York, Benedict Shan Yuan Huang developed a technique of determining charged particle multiplicity during high energy nuclear collisions by studying Quark Gluon Plasma, a form of matter that only existed naturally during the first few nanoseconds after the Big Bang. Simplifying the handling of data in this area of particle physics, Benedict's technique reduces intrinsic errors and promises to supplant previous techniques to analyze Quark Gluon Plasma, leading to faster and more accurate results in the investigation of the fundamental structure of matter.

Lucas Moller (Science)

A 16-year-old young man from Moscow, Idaho, Lucas Moller studied the physics of dust particles to provide data in the design of exploration and support systems for Martian spaceflight missions. The accumulation of wind-blown dust can significantly reduce the lifetime, durability, and performance of support systems, including solar panels and other mechanical devices. Lucas examined the static and dynamic properties of mineral dust in a simulated Martian environment. His experiment has been incorporated in two Mars lander missions, by NASA in 2001 and the European Space Agency (ESA) in 2003.

Nimish Ramanlal (Technology)

A 16-year-old young man from Winter Springs, Florida, Nimish Ramanlal studied quantum computing, a computer that performs multiple computations simultaneously and exponentially faster than a conventional computer. Currently, quantum computer limitations include both the lack of standardized programming and a generalized methodology for arbitrary search algorithms. Nimish overcame these limitations by developing a von Neumann-type architecture for writing algorithms. His findings could lead to the advancement of quantum computing, which could aid scientists in a number of fields such as advanced physics, medical research and nanotechnology.

Tony Wu (Technology)

A 16-year-old young man from Irvine, California, Tony Wu designed a new and more efficient way to search the Internet, rank relevant Web sites and gather information. Utilizing a complex Round Robin learning and ranking algorithm, Tony indexed more than 40,000 web pages as training and testing data, and used this information to calculate the optimal decision boundary and Euclidean distance for categorizing web pages. Tony's new Internet search method has tremendous implications in an information-based society, including potential uses in tracking terrorist activity on the Internet and academic research.

Fan Yang (Science)

A 17-year-old young woman from Davis, California, Fan Yang discovered a way to reduce the risk of eye infections to contact lenses wearers and cataract patients who have intraocular lenses. By identifying three compounds that possess antibacterial adhesion properties, Fan demonstrated the feasibility of a compound-grafted lens to prevent bacteria and biofilm formation. In the future, anti-adhesion contact lenses and intraocular lenses could be developed to fight lens-related infections. Moreover, the use of anti-adhesion therapy could be applied to eye diseases and other health care problems.

Marc Yu (Music)

A 6-year-old young man from Monterey Park, California, Marc Yu has been studying piano and cello since the age of 3. He currently attends the Colburn School of Performing Arts in Los Angeles. At the age of 5, Marc passed the California Certificate of Merit piano and cello exams and was the winner at the National Piano Guild Audition two years in a row. At the 2004 Southwest Youth Music Festival, he won first place in cello and second place in piano. In 2005, he was the youngest participant in the Virginia Waring International Piano Competition master classes.

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.

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.

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.

OUR 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 and financial assistance, visit www.DavidsonYoungScholars.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.

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.

GT-CyberSource

Learn what's 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

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