



**Davidson Fellow Laureate  
Nicole Ali**

(\$50,000 Scholarship Recipient)



**Personal Info**

Nicole Ali  
Age: 16  
Saint Paul, MN

**School, College and Career Plans**

Having graduated from St. Paul Academy, Nicole will attend Harvard College in the fall to major in physics and chemistry, where she hopes to establish a broad scientific background before applying to medical school. Nicole plans to pursue an M.D./Ph.D. in order to do medical research.

**Davidson Fellows Submission** (*Science*)

In her project titled “Twisted Gastrulation and Chordin Can Aid Primitive Human Hematopoietic Cell Expansion Ex Vivo,” Nicole worked on developing a process to grow blood-forming umbilical cord stem cells outside the body, rather than controversial embryonic stem cells. Nicole’s work with ex vivo expansion of hematopoietic cells could open the doors to more rigorous medical study that could help treat blood disorders, such as leukemia. Nicole also developed statistical software for more efficient analysis of data related to her research.

**Biography**

In addition to perfect SAT I scores and several perfect SAT II scores, Nicole has studied five years of Latin, intensive literature and writing courses, and advanced classes in American and World History. Having completed all available math courses at St. Paul Academy, Nicole designed her own Statistics and Calculus of Moments course. As part of a science-oriented advisory, Nicole learned how to build a theremin, created a vortex generator, and tracked Mars rovers as part of NASA’s Mars Exploration Student Data Team.

Having had little prior experience with coding, Nicole taught herself C++ computer programming and successfully applied it to a complex mathematical model that can be used to analyze biological data.

Nicole has been playing piano since she was five, composing music since age six, and playing violin since she was seven. She has also been a national finalist in the Minnesota Teachers National Association’s string performance, piano performance, and original composition contests, and has won numerous state and inter-state competitions. Nicole has played the National Anthem on the violin at Major League baseball games, and has given eight concerts at Orchestra Hall as a piano soloist with the Minnesota Orchestra.

*Please see next page.*



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*(Cont.)*

### **Honors/Awards**

- 2004 Davidson Fellow Laureate
- 2004 St. Paul Academy Faculty Bowl
- 2004 St. Paul Academy Science Book Award
- 2004 St. Paul Academy Cum Laude Society
- 2004 University of Minnesota Department of Medicine Research Day Undergraduate Poster Award
- 2004 Murray Glauberman Memorial Scholarship
- 2004 Intel Science Talent Search, Semi-Finalist
- 2004 National Merit Scholar
- 2003 Member of NASA's Mars Exploration Student Data Team
- 2003 State Robotics Tournament (First Lego® League), Presentation and Programming, First Place Team
- 2003 AP Scholar with Distinction
- 2003 Harvard Book Award
- 2003 Rensselaer Medal and Scholarship
- 2002 Minnesota Junior Science and Humanities Symposium, Best Overall Presentation Award

### **Community Activities**

Nicole was awarded a President's Student Service Challenge gold pin award in 2002 and 2004.

As a Senior Class Representative and as a member of her school's Service Learning group, Nicole has held several leadership positions in her school's community. As a member of the Technology and Global Service program, Nicole created interactive computer programs to teach chemistry and physics topics to students in Jamaica.

For the past four years, Nicole has taught an after-school science course at her former elementary school.

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**The Davidson Institute for Talent Development**

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