



**Davidson Fellow Laureate  
Madhavi Gavini**

(\$50,000 Scholarship Recipient)



**Personal Info**

Madhavi Gavini  
Age: 17  
Starkville, Mississippi

**School, College and Career Plans**

Madhavi is a recent graduate of the Mississippi School for Mathematics and Science and will attend Johns Hopkins University where she plans to major in Cellular and Molecular Biology. Madhavi hopes to become a biomedical researcher.

**Davidson Fellows Submission (Science)**

In her project, “Engineering a Novel Inhibitor of Biofilm-Encapsulated Pathogens,” Madhavi engineered a method to inhibit the growth of biofilm-forming pathogens. *Pseudomonas*, an opportunistic, multi-drug resistant pathogen, produces biofilms that protect it from antibiotics and is a leading cause of death among patients with compromised immune systems. Through the combination of traditional Indian medicine and molecular biology, Madhavi identified a compound capable of penetrating and inhibiting the growth of the biofilm. This compound will be used in inhalers and antiseptic sprays and treat millions of people suffering from chronic *Pseudomonas* bacterial infections.

**Biography**

Madhavi became interested in her research after learning a friend had been diagnosed with Cystic Fibrosis. Cystic Fibrosis, as well as many other diseases, compromises the immune system of the patient, possibly leading to a secondary infection caused by the bacteria *Pseudomonas aeruginosa*. Wanting to help, Madhavi started with what she knows best, herbs.

Madhavi began with her grandfather’s book *Indian Medicinal Plants* and eventually her research led her to the herb, *terminalia chebula*, which contains a compound capable of inhibiting the growth of *Pseudomonas aeruginosa*. Madhavi plans on publishing her research so her findings are freely available.

Madhavi’s work has earned her the Young Scientist Award from the Intel International Science and Engineering Fair, a scholarship from the Siemens Foundation and a grant from the Department of Homeland Security.

In her free time Madhavi enjoys playing the flute and gardening.

*Please see next page.*



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(Cont.)

**Honors/Awards**

- 2007 Davidson Fellow Laureate
- 2007 Finalist Siemens Competition
- 2006 National Finalist for the International Science and Engineering Fair
- 2005, 2006 Navy Award for Research
- 2006 Young Scientist Award (ISEF)
- 2006 First Place for Clinical Chemistry (ISEF)
- 2006 US Patent Office Award (ISEF)
- 2006 United States Department of Homeland Security Scholarship
- 2006 Best of Fair in Mississippi Science Fair
- 2006 Mississippi History Day First Place
- 2005 James Worth Bagley Image Award

**Community Activities**

Madhavi was a member of her high school's Quiz Bowl and Science Bowl teams. She was also a member of the Mu Alpha Theta mathematics honor society as well as a member of the Organic Vegetable Garden Club. Madhavi tutors elementary school students in mathematics and Spanish.

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