



# Developing a STEM Role Model-Rich Environment for Girls



CENTER FOR RESEARCH ON GIRLS  
AT LAUREL SCHOOL



# The Center for Research on Girls (CRG) at Laurel School

Mission: To put the world's best research to work for girls

Vision: Teachers learning like doctors. Doctors are able to improve their practice by staying abreast of medical research--CRG wants to empower teachers to stay “current” in the very best ways to teach girls.



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# CRG...

- *DEVELOPS* progressive educational initiatives and curricula based on cutting-edge academic research
- *SPONSORS* original research studies on the development and education of girls
- *CONNECTS* faculty and parents with well-established salient and meaningful research on girls and their education



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# What the Research on girls/women and STEM tells us

- Significant gender gap in STEM fields—most striking in Computer Science and Engineering
- Interview data from women in – *or out of* - STEM fields
  - Carnegie-Mellon Project on Gender and Computer Science
  - American Association of University Women
- Four major reasons for the serious gender imbalance in STEM fields





# Gender imbalance results from:

- Lack of female role models
- Misperception that STEM work is conducted in isolation
- Misperception that STEM work is reality-distant
- Lack of interest in tinkering





# To impact gender imbalance in STEM fields we should...

- Provide opportunities for girls to tinker
- Provide a role-model rich environment for girls
  - Helps to correct girls' misperceptions about STEM
  - Particularly important in K-12 as college prep





Shaping the STEM curriculum with:

# ROLE MODELS



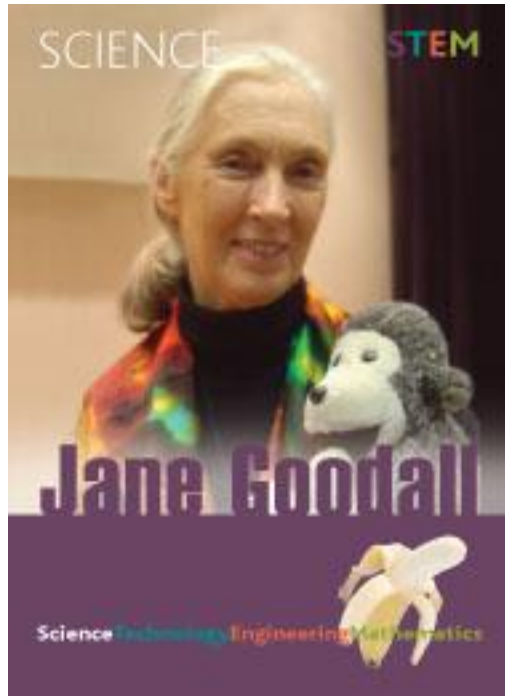
- Who undercut negative stereotypes about STEM fields
- Who exist across the spectrum from “mythic” to “just like me”
- Who help to combat stereotype threat



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# Creating a role-model rich environment: Famous Women of STEM Trading cards



## Jane Goodall

- Born 1934 in Great Britain
- Ph.D. in ethology from Cambridge University (1964)
- Animal rights activist and leading authority on primates
- Studied chimpanzees' social and family structure over 45 years at the Gombe Stream National Park in Tanzania
- Won Kyoto Prize in basic science in 1990
- Named a United Nations Messenger of Peace in 2002
- Named Dame Commander of the Order of the British Empire in 2004
- Declared a member of the French Legion of Honor in 2006

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- Student/faculty committee oversight
- 100 nominations from girls in grades K-12
- Designed by Upper School CAD class and Laurel's Graphic designer
- 3<sup>rd</sup>-7<sup>th</sup> graders interviewed for input
- teachers to distribute in various ways



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TECHNOLOGY STEM

# Hedy Lamarr

ScienceTechnologyEngineeringMathematics

## Hedy Lamarr

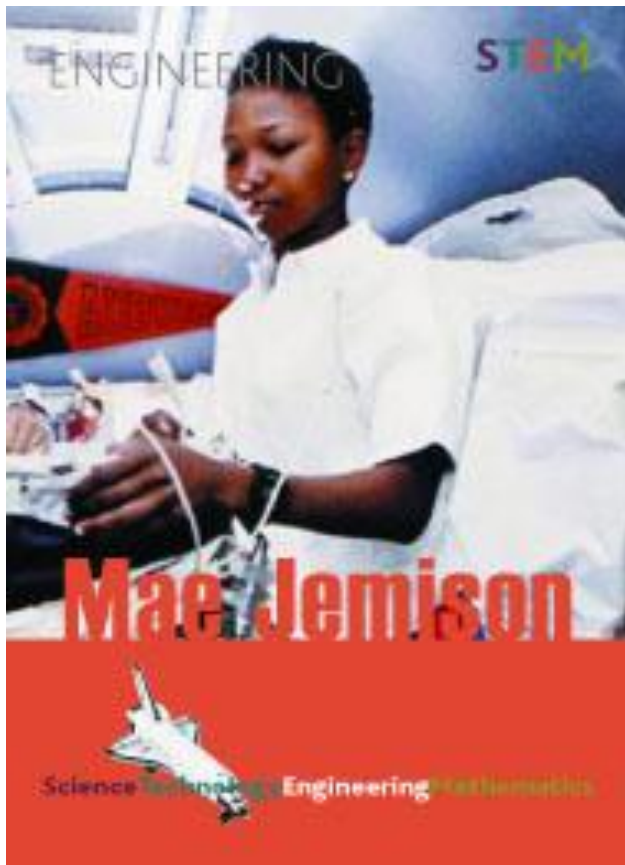
- Born 1914 in Austria, died 2000
- Acted in German and Czech films before leaving Austria in 1937
- Became a movie star in Hollywood USA
- Co-invented an early form of spread-spectrum communications technology (frequency hopping) used to guide torpedoes and missiles
- Her patented work laid the groundwork for key components in wireless communication and cordless and wireless phones
- Posthumously recognized in 1997 with an award from the Electronic Frontier Foundation

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# Mae Jemison

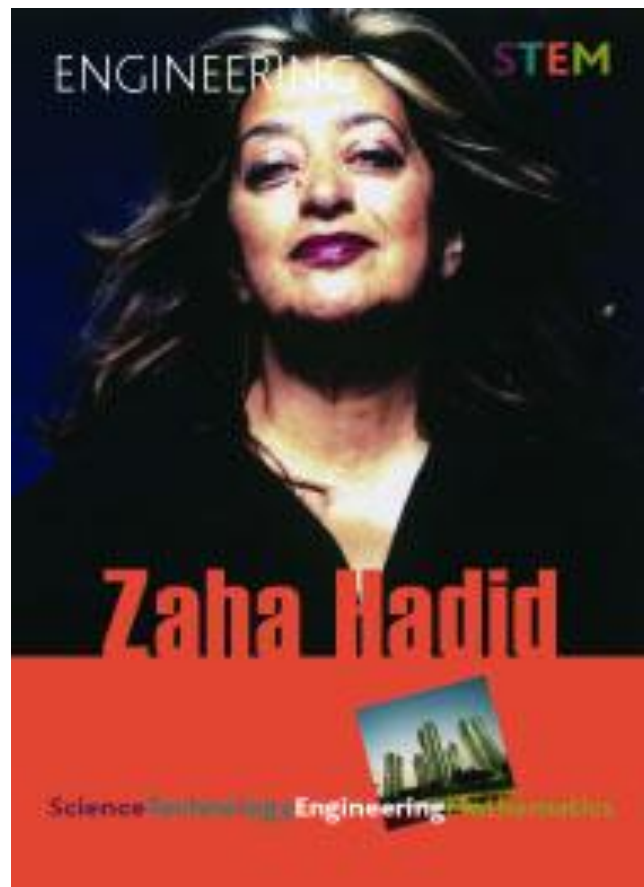
- Born 1956 in USA
- B.S. in chemical engineering and B.A. in Afro-American Studies from Stanford University (1977)
- Medical degree from Cornell University (1981)
- In 1987, on her second application to NASA's astronaut program, Jemison was one of only 15 selected out of 2000+ applicants.
- First African-American woman in space; left NASA in 1993
- In 1999 founded Biosentient Corp, working on a portable device that allows mobile monitoring of the involuntary nervous system
- 1993 inductee into the National Women's Hall of Fame
- Given the 2003 Intrepid Award by the National Organization for Women
- 2004 inductee into International Space Hall of Fame

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# Zaha Hadid

- Born 1950 in Iraq
- Degree in mathematics from American University in Beirut
- Studied architecture at the Architectural Association School of Architecture in London
- Held Kenzo Tange Chair at Harvard University's Graduate School of Design
- First woman to win the Pritzker Architecture Award in 2004
- Member of the editorial board of the *Encyclopaedia Britannica*

Photograph by Steve Double

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# Randi Altschul

- Born 1961 in USA
- Invented and patented first disposable cell phone made from recycled paper products in 1999
- Working on paper laptop
- Ranked one of top 70 inventors in the world
- Author of the memoir *Financiers, Lawyers and other Assorted Snakes™ An Entrepreneur's Story*

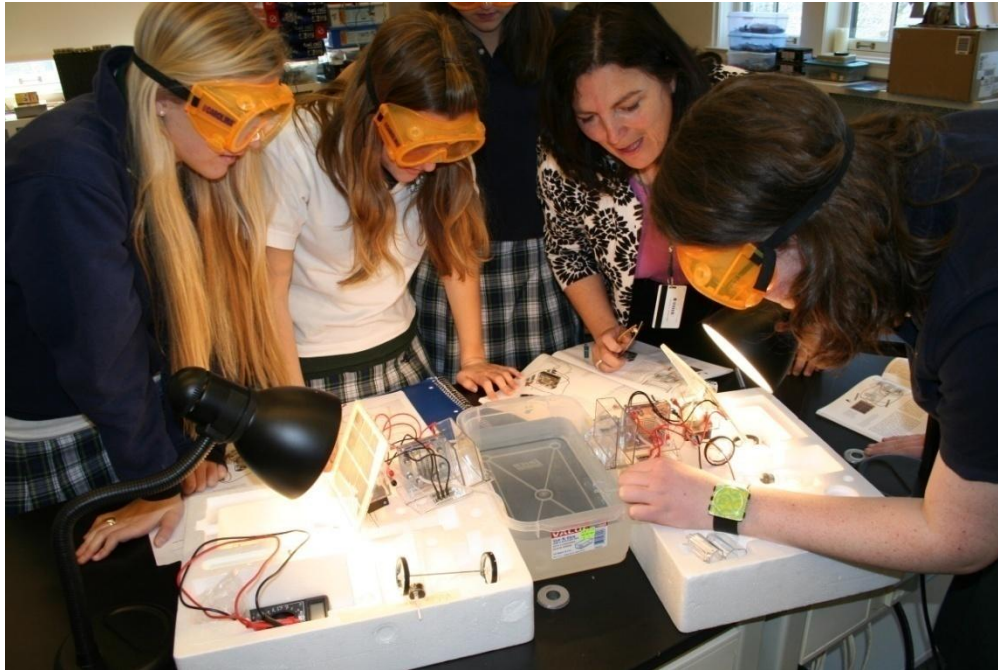
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# Creating a role-model rich environment: Mentoring Program



- Juniors/Seniors paired with 2nd year CWRU students
- Event topics include
  - multicultural women and STEM
  - biomedical and mechanical engineering
  - alternative energy
  - Gaming
- Laurel students also spend a day shadowing their mentors.
- Mentors and mentees communicate frequently.



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# Creating a role-model rich environment: Touchpoints

- **Students as role models**
  - Look for internal role models
  - AP Chemistry / Honors Biology students teach a lesson to First Grade girls
- **Adults as role models**
  - CWRU graduate students and “The Secret Life of Trees” day



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# Other ways to create role model-rich environments?

- What does your school do?



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