



# Science Club for Girls



Science  
Club  
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**Science Club for Girls (SCFG)** is an out-of-school-time program for girls designed to increase their confidence and literacy in science, technology, engineering, and mathematics (STEM). SCFG provides free programs that offer fun hands-on learning, teaching, and leadership opportunities, with adult scientists guiding girls from elementary to high school.

Girls in general, and particularly those in disadvantaged communities, face negative stereotypes and often develop a sense of inadequacy in math and science subjects, despite their actual ability. The gap between their confidence and ability leads girls away from academic study and professional careers in STEM fields. SCFG creates a platform that brings together age-appropriate, hands-on curricula, leadership development, adult scientists, and a near-peer mentoring model serving both young and teen girls in a community setting. Through programming that begins in kindergarten and continues through high school, SCFG's "whole girl" approach transforms girls' attitudes, identities, and confidence as STEM learners, broadening their horizons and instilling a belief in their ability to succeed in whatever field they choose.

**Founded 1993**

**\$400,000**  
Current Organization Budget

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## INVESTMENT OPPORTUNITY

In order to increase the number of Science Clubs offered in Boston and Lawrence, expand the SCFG curriculum in middle school grades, and deepen the program's mentoring component, SCFG is seeking a \$1.4 million investment over the next two years.

### THE NEED

According to the Census Bureau's 2009 American Community Survey (ACS), women comprise 48 percent of the U.S. workforce but just 24 percent of STEM workers. Because the STEM workforce is crucial to innovation and competitiveness, this gap represents an untapped resource as females choose not to pursue STEM professions.

- Despite actual achievement levels, girls experience a lack of confidence in their ability in science and math, leading them away from education and career opportunities in STEM fields
- Most school science curricula do not adequately expose girls to how science and engineering are applied in the world, a key aspect to engaging girls in science
- Despite an increased understanding of why girls have less confidence in science and what they need in order to improve their attitudes, gender disparities in science education and STEM fields persist

### THE OPPORTUNITY FOR SOCIAL IMPACT

Studies have shown that programs that present science and engineering in informal, collaborative environments hold the greatest promise in closing gender disparity in science learning.

- SCFG creates an environment designed to unlock girls' potential and broaden their imaginations, thus enabling girls to identify themselves as scientists and engineers
- Elementary-grade-level science clubs intervene to engage girls before negative self-perceptions take hold
- Teens experience opportunities for leadership as they co-teach science clubs and deepen their STEM learning through internships and competitions
- SCFG engages volunteer, adult mentor-scientists who serve as role models, enabling girls to picture themselves in STEM careers
- SCFG's protocol for siting clubs in communities, leveraging university and corporate resources, and applying expertise in youth development enables replicability

### TWO-YEAR GOALS

- Increase the number of girls served by 50% to 600 per year
- Expand at current club sites
- Replicate the model at new sites
- Add middle-school club curriculum
- Deepen the mentoring component of SCFG programs
- Increase by 50 percent the hours girls spend with mentor-scientists
- Facilitate internships for junior mentors

### WAYS TO INVEST

- Financial**
  - \$25,000 – Funds middle-school curriculum development
  - \$10,000 – Funds the launch of a new science club site
  - \$1,500 – Supports a junior mentor for a year
- In-Kind**
  - 2,000 square feet of office space to house SCFG operations
  - A van to transport students and equipment

*"Girls' achievements and interests in math and science are shaped by the environment around them."*

—Why So Few? Women in Science, Technology, Engineering, and Mathematics  
American Association of University Women

## SOCIAL INNOVATION IN ACTION: TRANSFORMING GIRLS' SELF-IDENTITY

SCFG has developed a formula designed to create a learning environment in which girls beginning as early as kindergarten and continuing through high school can thrive.

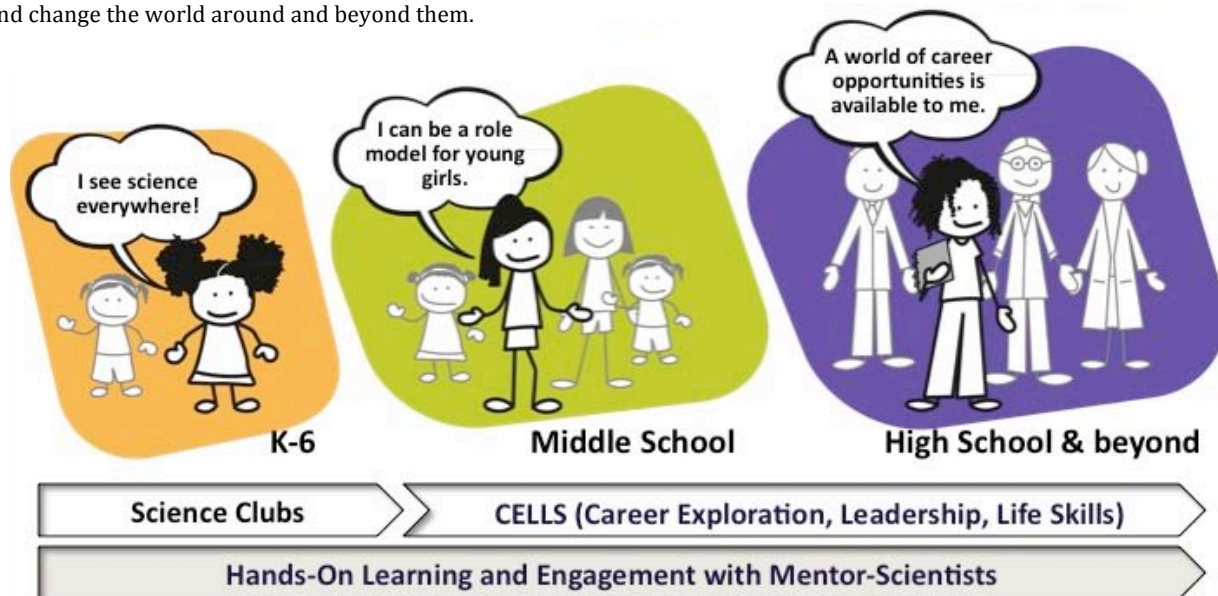
*The four elements of the SCFG formula combine to help girls develop confident attitudes towards science.*

### The SCFG Formula



**The Junior Mentor Program** develops girls' leadership skills and understanding of STEM by training them to serve as co-teachers and near-peer mentors in the Science Clubs. Junior Mentors (JMs) act as role models for younger girls and gain confidence in public speaking through leading activities in the clubs. JMs meet with mentor-scientists after clubs to evaluate that day's proceedings and plan for the following week's activities.

**Sister Circles** consists of regular workshops offered to JMs, and an annual, full-day retreat offered to all girls in the CELLS program. Sister Circles allow girls to become aware of traditional and novel careers in science and engineering and to reflect on their academic, physical, social, and emotional development; the societal forces that shape their experiences; options open for their future selves; and the power they have to give back and change the world around and beyond them.



### Additional Science Programs:

**Challenge Teams** offer girls the opportunity to engage in STEM-focused projects, such as the Science Journalism/Media Team, Rocket Team, or Girls with a Z (to study and teach zebrafish biology) to develop specific technical skills and other 21st-century skills. SCFG's Vacation Week Science Program serves 60-80 girls in grades 1-5 with workshops and recreational activities. Show Me the Science Fairs are held in collaboration with girl-serving programs such as Big Sisters Association. Girls and their parents interact with scientists and are exposed to science and engineering, many for the first time.

### Keys to SCFG Success:

**Volunteers and Community Partners.** Over 200 volunteers dedicate approximately 10,000 hours each year, leading explorations at Science Clubs and vacation week programs, or serving as one-time speakers, field trip hosts, or hosts for demonstrations at SCFG outreach events. In addition, SCFG has forged two college partnerships, one at Northeastern University and one at Harvard University. Site partners include Boston, Cambridge and Lawrence public schools, Esperanza Academy, Lawrence CommunityWorks, Boys and Girls Club (Yawkey, Middlesex and North Central Mass), and Myrtle Baptist Church. SCFG is a founding member of the Boston Area Girls STEM Collaborative, and SCFG is the co-lead for the Southern New England Girls Collaborative Project.

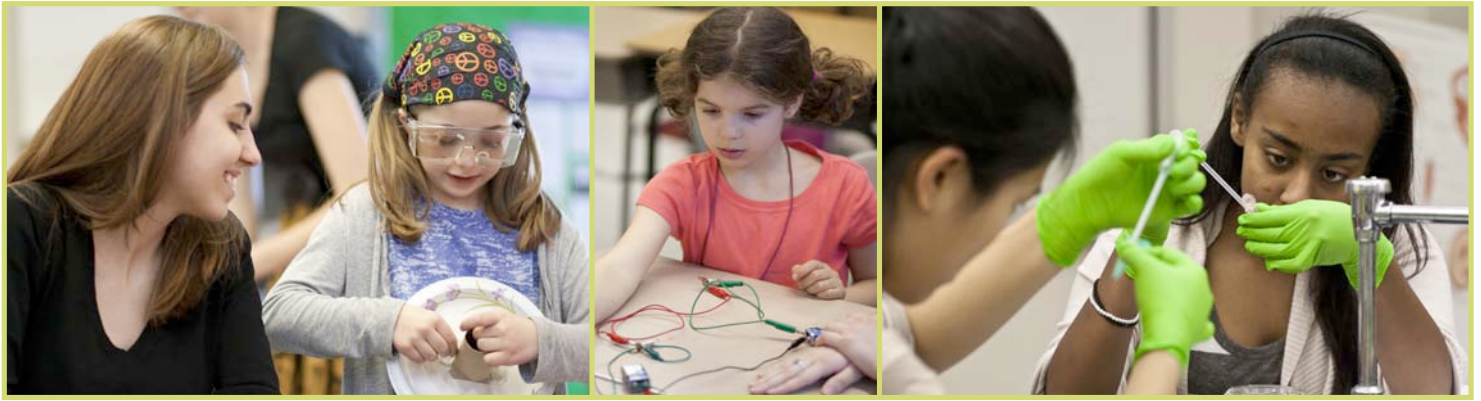
**A Viable Platform.** SCFG combines its formula for youth development with a time-tested protocol for siting and building clubs. Site selection includes an evaluation of need, available space, suitable community settings, proximity of corporations and institutions from which mentor-scientists may be recruited, and committed schools and parents who assist in enrolling girls in clubs and mentoring activities.

### Experiencing Science:

**Science Clubs** for girls in grades K-6 nurture their curiosity for the world and familiarize them with the process and tools of science, technology, and engineering. Participants are engaged in hands-on activities led by women mentor-scientists. Curriculum themes include chemical change, oceans, and structural engineering. Girls engage in reflection through conversation or journal entries and participate in a "Science Fest" held at the end of each semester.

### Career Exploration, Leadership, and Life Skills:

**CELLS** (Career Exploration, Leadership, and Life Skills) encompasses a palette of STEM and leadership programs for girls in grades seven to 12. Girls try on different STEM-related identities and are given the space to explore their own development and affirm their academic careers through multiple pathways.



### TEAM AND GOVERNANCE

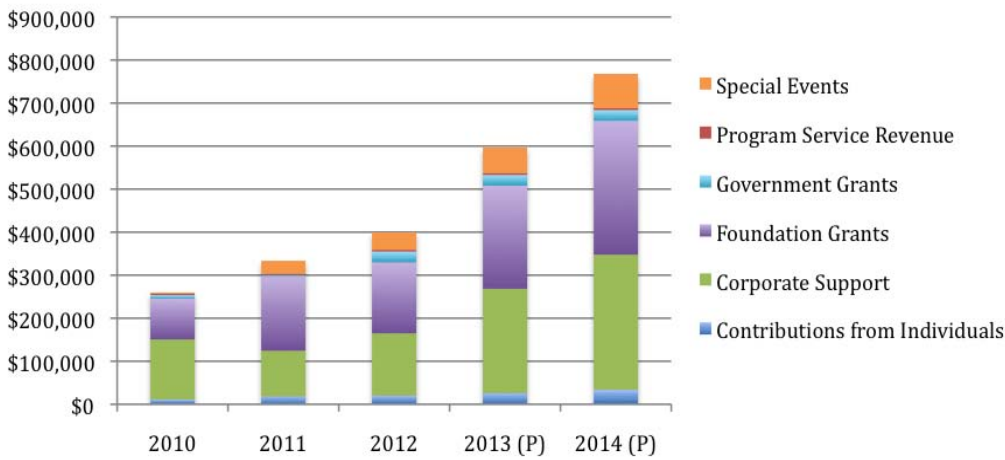
Connie Chow, a PhD scientist and educator, joined SCFG as executive director in 2006. Connie oversees all aspects of SCFG operations, including fundraising, planning, program development, and evaluation. A committed team of professionals and volunteers support her, assisting in developing the curriculum and delivering program components. K-6 Program Director Karen O'Neill oversees the management of Science Clubs. Teen Program Director Erika O'Bannon, a specialist in youth development, oversees the Junior Mentor and other teen programs. Volunteer Programs Manager Allison Smith ensures that volunteers are trained and supported in their roles. SCFG works closely with partner site staff or site-based steering committees, enabling SCFG to recruit girls who are in particular need of their programs. An eight-member board of directors comprised of scientists, academics, and business people stewards the organization.

### FINANCIAL SUSTAINABILITY

SCFG has evolved in its 18 years of operation. Offering only elementary-grade-level Science Clubs in its early years, SCFG added the peer mentoring component to address the unique needs and interests of teen girls. SCFG offers its programs free of charge and has cultivated a range of revenue streams to support its spectrum of programming.

SCFG has a track record of growing revenue and expanding programming. It is now at a juncture requiring investment in the organization in order to address the growing demand for its service, increase the number of Science Clubs, and deepen the mentoring experience for SCFG girls. SCFG plans to engage a part-time director of strategic development in FY 2013 to focus in particular on expanding corporate contributions and income from private foundation grants. A focused effort on fundraising by a dedicated resource will help ensure that SCFG can grow and maintain revenue at a level able to support other essential staff expansion in the areas of teen programming, volunteer coordination, and community partnership development.

**SCFG Revenue by Category**



### KEY INVESTORS

- Amelia Peabody Foundation
- Anna B. Stearns Foundation
- Biogen Idec
- Cubist
- Dolphin Trust
- Genzyme
- Microsoft
- Motorola Foundation
- Novartis

*“Our science, technology, engineering, and math (STEM) workforce is crucial to America’s innovative capacity and global competitiveness. Yet women are vastly underrepresented in STEM jobs. That leaves an untapped opportunity to expand STEM employment ... even as there is wide agreement that the nation must do more to improve its competitiveness.”*

—“Women in STEM: A Gender Gap to Innovation,”  
U.S. Department of Commerce, August 2011



## PERFORMANCE MEASUREMENT

### Program Performance and Organizational Health:

Below is a summary of the key measures that SCFG will track to demonstrate progress, capture lessons learned, and make course corrections as needed. Note: Fiscal year is July 1 – June 30.

	FY 2012	FY 2013 (P)	FY 2014 (P)
<b>Program Performance</b>			
Number of Science Clubs	40	50	60
Number of girls participating in Science Clubs	400	500	600
Number of junior mentors	80	100	120
Number of mentor-scientists	80	100	120
Number of challenge teams/competitions entered	4	5	6
<b>Organizational Health/Capacity Building</b>			
Develop and implement middle-school Science Club curriculum	--	Engage consultant to build curriculum	Pilot curriculum at 4 sites
Increase program staff capacity	--	Add 1 FTE (teen programs)	Add 2 FTE (teen programs, mentor support)
Professionalize development and partnership building	--	Hire director of strategic development	--
Increase corporate support	\$145,000	\$245,000	\$315,000
Total revenue	\$400,000	\$600,000	\$775,000

### Social Impact:

In 2006, SCFG conducted an evaluation of its programs to determine how programming impacts girls' attitude toward science. Survey results showed a marked difference in attitude between SCFG girls and their non-SCFG peers.

Indicator of Science Attitude Transformation	Results
Confidence in ability to succeed in science	SCFG girls (6 <sup>th</sup> - 9 <sup>th</sup> graders) scored 5 points higher on average in science attitude survey than non-SCFG girls
Self-perception as science students (identity)	SCFG girls rated themselves higher (more positive) as science students than non-SCFG girls
Interest in STEM careers	10% more SCFG girls intend to pursue STEM careers than non-SCFG girls
Change in confidence, ambition and attitude toward science throughout high school	The percentage of SCFG girls who believe SCFG has improved their attitude went from 81% as freshmen to 85% as seniors (compared to national downward trend)

In a survey conducted during the 2009-2010 school year, over 95 percent of junior mentors who were not previously interested in science became more interested, especially in the science or engineering topics they were teaching. Teen girls who become junior mentors and co-teach Science Clubs with adult mentor-scientists gain important leadership skills and confidence that will enable them to thrive in college and beyond.

Junior Mentor Experience	Impact of Participants
<ul style="list-style-type: none"> <li>Complete junior-mentor training</li> <li>Co-teach Science Clubs with adult mentor-scientists</li> <li>Reflect on leadership and build life skills through Sister Circles</li> </ul>	<p>In the 2009-2010 school year, results show:</p> <ul style="list-style-type: none"> <li>96% learned to communicate their thoughts and ideas clearly</li> <li>100% learned how to be more responsible</li> <li>92% learned how to work as part of a team</li> <li>92% learned to be a mentor to a young child</li> <li>93% learned to solve problems and resolve conflicts better</li> </ul>

### SUCCESS STORY: EIGHTH GRADE SCFG PARTICIPANT

"I didn't think I had the brains to become a scientist [before I joined SCFG]... I learned it doesn't matter what your race, age, or appearance is. You can do anything and become anything you put your mind to... It's about having friends and peers to encourage you through your goal, which is the relationship I had with my team in SCFG. Science Club for Girls made me realize that I have the power and the knowledge to become a scientist and to help others' dreams come true."

