

Latina SciGirls will test the hypothesis that the SciGirls program, when augmented to address specific barriers to STEM engagement of Latinas, ages 8-13, and their



families, will promote the development of positive STEM identities.

#### The program's objectives are to:

- Develop a six-episode Spanish-language television series following groups of middle school Latinas and their Latina STEM professional mentors
- Develop and evaluate a series of 12 Spanish-language role model video profiles of Latina STEM professionals
- Provide the SciGirls network of Latino-serving partner organizations with resources to connect Hispanic girls and families with Latina STEM professional role models.
- Investigate the development of positive STEM identities for Latinas, ages 8-13, and their families.



On Air: Latina SciGirls includes six half-hour television episodes of SciGirls filmed in Spanish, showing groups of girls and their Latina STEM mentors investigating culturally relevant science and engineering problems. Mentors and girls will be filmed in diverse communities across the U.S. and represent various cultural backgrounds and ethnicities. Episodes will air on PBS and Univisión.

Online: We will also create a series of family and girl-friendly online video profiles of Latina STEM professionals showing the daily life of a female scientist or engineer. These will be used in outreach programs with Hispanic youth and families.

**On the Ground:** We will provide opportunities to connect girls and their families with in-person Latina role models via community outreach in diverse communities across the country. Because family participation is crucial, outreach partners will engage siblings, parents, grandparents and other caretakers in *Familia Fiestas*, opportunities for hands-on activities, media viewing, role modeling and general STEM celebrations. We will help partner organizations recruit at least local Latina STEM professionals to speak to girls and families about their work and everyday lives in outreach programming and at Familia Fiestas.







Latina SciGirls: Addressing Barriers to Promote Middle School-Age Hispanic Girls' **Positive STEM Identity Development through Media, Outreach and Role Models NSF Award No. 1515507 PI: Rita Karl, Twin Cities PBS Co-PI: Dr. Brenda Britsch, National Girls Collaborative Co-PI: Dr. Alicia Santiago, Twin Cities PBS** 

## Latinas Underrepresented in STEM: Barriers to **STEM Engagement**

The Hispanic population is the largest ethnic minority group in the U.S. By mid-century, the Hispanic population is expected to reach 98 million, one-fourth of the total U.S. population. Hispanics account for one in four people under the age of 18. Hispanic children represent the largest segment of the nation's early childhood population, so their academic and professional success is crucial to the U.S. economy. Six million Hispanic children are living in poverty. Of these children, two-thirds have immigrant parents. STEM education addresses the cycle of poverty, giving Hispanics a path towards attaining a living wage, and providing a bridge to success. *Latina SciGirls* will confront these challenges by addressing specific barriers to STEM engagement among Hispanic girls including: gender and ethnic stereotypes, low exposure to STEM role models and professions, lack of knowledge of STEM fields. These barriers affect the ability of girls to forge deeper and more personally relevant STEM connections, key indicators of positive STEM identities.

culturally responsive	e can address some of the barriers to S	STEM engagement.	Latina STEM profes
Inputs	Activities	<b>Outputs</b> Participation	Short-teri
Prior SciGirls Evaluations SciGirls en Español, SciGirls en la Familia SciGirls Research and Publications Engaging Latino Families in STEM, SciGirls' Role Model Strategies, SciGirls Seven Partner Organizations National Girls	Create TV shows in Spanish in which Hispanic girls and mentors investigate culturally relevant scientific problems diverse Hispanic communities across the U.S. including those of Mexican, Central American, Puerto Rican and Caribbean descent. Create Spanish video profiles of diverse Latina STEM professionals that portray the life of a scientist or engineer.	On Air: National distribution of TV shows by Univision & PBS. Online: National distribution of TV show and video profiles via • PBS Kids • PBS Learning Media • PBS Parents • SciGirls CONNECT • SciGirls YouTube & SciGirls iTunes On the Ground: Nationwide dissemination of TV show and video profiles by Hispanic- serving organizations, science museums and STEM educators via afterschool programs, summer camps, family programs, school and community screenings.	Engage a diversity of organizations, institut and STEM professions engagement by 1) Providing culturally linguistically relevant 2) Exposure to Latina models in STEM; 3) Increasing STEM set esteem among girls; a 4) Increasing Hispanic knowledge of STEM f Increased awareness interest and motiva STEM among geographically and ethnically diverse H girls and families.
Project, Fab Fems, & SciGirls trainers and educators SciGirls Educational Resources STEM Expertise Advisory Board, SciGirls Staff	Provide mini-grants to Hispanic SciGirls partners and train educators in strategies to engage Hispanic girls and their families in STEM. Investigate the intended development of positive STEM-related identities for Hispanic girls/families through research and evaluation.	SciGirls outreach partners deliver girl- focused and family programs with Latina STEM professionals. FabFems recruits and trains Latina STEM professionals as live role models in SciGirls outreach programs strengthening the NGCP and the SciGirls network. Pre/post-post-post quantitative analysis of different participant identity impacts over time, and a qualitative analysis using individual case studies.	
Output Measures (Summative Evaluation): Latina SciGirls TV show broadcast on Univision (~96% of U.S. Hispanic households) and PBS (~15 Million gross viewer impressions); Online viewing at pbskids.org (~15 million views and ~1 million			Strengthened capa Latina STEM profes to be effective role

SciGirls is made possible by generous funding from the National Science Foundation.



engagement among Hispanic girls and their families TV shows and role model video profiles culturally relevant and eir families: e.g. research-based strategies for girl-friendly, family atinas in STEM fields, working in the community: real stories about **Outcomes** Medium-term Long-term



#### **About SciGirls**

SciGirls is a groundbreaking project designed to engage rls prefer STEM projects ar xperiences that. girls ages 8 -13 in science, technology, engineering and Embrace collaboration 2. Are personally relevant math, or STEM. At the heart of *SciGirls* is an Emmy 3. Offer hands-on, open-ended participation. Award-winning PBS television series, website and outreach initiative produced by Twin Cities Public 4. Accommodate preferred learning styles. Television in St. Paul, Minnesota. Each half-hour 5. Provide specific, positive feedback. SciGirls episode follows the STEM adventures of 6. Allow for critical thinking. real-life middle school girls mentored by female STEM 7. Involve role models & mentors. professionals. SciGirls episodes have been broadcast over 55,000 times on 492 PBS channels garnering an estimated 25.2 million gross viewer impressions and reaching 92% of U.S. TV households.

The NSF projects SciGirls en Español and SciGirls en la Familia engaged 1200 Hispanic girls and 1000 family members in STEM using research-based inquiry strategies and dubbed Spanish-language videos. Evaluation showed the programs positively influenced participants; raised families' awareness of opportunities available to their daughters; and increased awareness of Latino families' needs related to their daughters' science education and careers. Evaluation also indicated a strong desire for episodes featuring cience Identity Construction Zones (CZ) & Outcomes Spanish-speaking girls from Latino communities.

# **Research Study**

The research study conducted by the University of Colorado-Boulder will investigate the hypothesis: The **ATTITUDES & SELF-EFFICACY** PARENTAL/FAMIL SciGirls model, when augmented to ROLE MODEL address specific barriers to STEM engagement of Latinas ages 8 to 13 and their parents, will promote the development of positive STEM-related identities. In this capacity, *Latina* SciGirls will investigate the girls' personal experiences engaging with the project deliverables and how those experiences contribute to their STEM-related identity development against cultural and gender-based stereotypes and within the context of prevalent anti-science attitudes among American youth.

### **Project Evaluation**

An external evaluation by Knight Williams, Inc. will include front-end, formative and summative phases. The front-end evaluation will involve stakeholders in the development of a Spanish language program. Formative evaluation will include focus groups of girls offering their reactions to the program. Summative evaluation will capture the reach of the broadcast, online components and community events. Evaluation questions include:

1) To what extent do the girls and their family members find the girls and STEM professionals featured in the episodes, profiles and in-person events to be effective role models?

2) Do they find the programs' selected topics relevant to their everyday lives?

3) To what extent does the outreach program increase STEM awareness, interest and motivation such that the girls and their family members feel motivated to further explore some aspect of STEM or STEM careers as a result of participating?









