

Research Opportunities for Science Educators (ROSE)



Organizers

Jeff Rack, CCB, A&S
Eva Chi, CBE, SoE
Susan Atlas, CCB, A&S

Steve Cabaniss, CCB, A&S
Carolyn Hushman, EdPsy, CoEHS
Sarah Rascon, Program Coordinator

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Mission

The ROSE Program energizes and enhances science teaching in New Mexico by leveraging the research resources of the University of New Mexico (UNM) and the educational resources of the State of New Mexico Public Education Department (PED). The central activity is an authentic research experience in which teachers (ROSE Scholars) join ongoing projects for first-hand participation in discovery-based research. The embedded Scholars see firsthand “how science is done” and the interdependence of various disciplines and subfields while working with faculty and student researchers. Scholars are selected based on the underrepresented minority (URM) and economically challenged student populations of their schools and their own scientific interests and background. They return to their classrooms bringing new ideas, tools and enthusiasm to share with students. From this core experience, ROSE will assist Scholars statewide in building a community to share experiences and educational resources.

ROSE will

- improve the quality of science education in NM schools by refreshing knowledge and inspiring confidence in middle and high school teachers
- forge connections between UNM and schools by acquainting teachers with university resources and educating UNM faculty on issues facing the schools
- incorporate K-12 and higher education faculty into a collaborating community of STEM educators statewide.

ROSE Annual Report for 2024

Executive Summary

ROSE continues to provide high-quality research experiences to science teachers from across New Mexico, improving their content knowledge and confidence while helping to build ties across the STEM education community.

The fourth summer of the ROSE program attracted over 70 applicants and brought 28 of these to UNM as Scholars (increase from 22 in summer 2023). Most (85%) of the Scholars teach at schools with over 70% minority enrollment, and most (>60%) teach at schools with >50% economically challenged students. About 80% of the Scholars teach at schools outside the Albuquerque metropolitan area. Scholars worked on research projects with an expanding faculty pool of 21 mentors from Arts and Sciences, Engineering, Pharmacy, Medicine and Education and Human Sciences.

The summer research session ran for five weeks from Monday June 10 to Friday July 12, 2024; roughly 3/4 of the Scholars stayed in the UNM (University of New Mexico) dormitories. Research projects ranged from the computational sciences (molecular modeling, evolutionary theory) to molecular synthesis, to organismal biology and ecology. Scholars presented their results to each other as posters which could be taken back to their classrooms for the academic year; in addition, tours allowed Scholars to visit other UNM labs and hear from other mentors about the longer-term research goals. Scholars also toured the Museum of Southwestern Biology and attended workshops on grant proposal writing and research mentoring.

Contact with Scholars continued during the academic year to variable degrees, including campus visits and online discussions. In the follow-up survey in Fall 2024, all responding Scholars indicated that ROSE had changed the way they teach, with new classroom activities and approaches and increased self-efficacy regarding teaching science concepts (50%) and practices (67%). Most (87%) indicated that ROSE increased their motivation to teach science, and one Scholar wrote that “I walked into the summer burned and questioning my life choices. I left ROSE excited for the upcoming year and teaching high school science.”

ROSE organizers continued to pursue a stable funding model with the state of New Mexico, requesting expansion funds from the HED (Higher Education Department) RPSP (Research and Public Service Program). However, no additional HED funds were obtained and PED (Public Education Department) will not provide ROSE funding in FY25. ROSE now has a formal reporting path to the UNM office of research and has hired a quarter-time program coordinator to assist with logistics, but lack of stable funding is a threat to the continuation of the program.

Priorities for the coming year include establishing a stable, ongoing funding model, developing methods for Scholars to implement more research-based activities in their classrooms, and developing longer-term methods to evaluate program impact on teachers.