

Remote Supergroup for Chemistry Undergraduates

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The COVID-19 pandemic precluded many in-person undergraduate research opportunities, presenting a unique challenge for scientific research that typically takes place in the laboratory and necessitates hands-on experience. During summer 2020, faculty in the chemical sciences were encouraged to transform projects from the laboratory to a remote setting and continue summer research with undergraduate students.

To provide an opportunity for chemistry students to engage in high-impact practices remotely, the Remote Supergroup for Chemistry Undergraduates (RSCU) was established. This supergroup brought together student and faculty scientists from 18 public and private institutions that primarily serve undergraduates, spanning 14 US states and one other country. The group was intentionally kept to a modest size for the effective realization of RSCU's goals, which included (1) networking across institutions and fostering a scientific community, (2) promoting student understanding of the chemical literature, (3) informing students about further educational and career opportunities, and (4) facilitating discussions of equity and inclusion in science. Furthermore, RSCU provided faculty with a support network as they navigated the ever-changing teaching and research environment in the age of COVID-19.

The highlight of the RSCU program was the weekly virtual meetings, which were conducted synchronously via Zoom. Over a nine-week summer series, participants convened for research seminars, professional development panels, and/or breakout discussions. For seminars, impactful speakers from various chemistry subdisciplines were invited to present research to the supergroup. In preparation for the discussion, students read research articles authored by the speaker, enhancing their comprehension of both the presentation and the literature. Students also had an opportunity to share their own work with the group in flash presentations. To help students clarify their pursuit of science and aid faculty who advise students pursuing various career paths, other meetings featured panel discussions focused on graduate school, professional school, and careers. Importantly, RSCU participants were encouraged to ask questions and interact with speakers and panelists, and students engaged in further discourse in small groups. Each meeting also included a discussion of equity and inclusion issues in science, which further developed students' scientific identity and resulted in many student-generated, actionable ideas to support underrepresented groups on their respective campuses.

Although a remote program cannot replace practical laboratory experience, the supergroup collaboration has achieved important cognitive and affective benefits of undergraduate research by organizing meaningful activities and establishing a scientific community for students and faculty. Indeed, participants have expressed interest in continuing RSCU beyond this summer, as the network and programming provided may supplement in-person undergraduate research

experiences at primarily undergraduate institutions. Moreover, the aims, implementation, and outcomes of the supergroup are readily applicable to other disciplines and may prove effective in forming personal and professional connections among participants from diverse backgrounds, especially amid disruptive events.