

# Crystallizing Student-Interest in Biochemistry

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Crystallizing inorganic, organic and macromolecular molecules for structure determination is one of the key strategies for drug discovery. Through growing high-diffraction-quality crystals of nucleic acids and their protein complexes, the structures can be determined, revealing the functions. With the elucidation of their structures and functions, small molecules (such as inhibitors) can be designed to target these macromolecules related with diseases, so that the adverse effects of diseases (such as cancers) can be reduced.

While intricate crystal-growing is used for performing cutting-edge research, crystal-growing can also be used for spurring scientific creativity in the student community, especially in the middle and high schools. There is an inherent beauty in faceted and clear crystals. At STARS (Structural Nucleic Acid Anticancer Research Society), we take advantage of these aesthetic properties to help spur the scientific passion and creativity of K-12th grade students. The growth of large and beautiful crystals is rewarding, and we share this enjoyment and love for crystallography with students by hosting the crystal-growing activities and competitions to let them experience, first-handedly, the excitement of crystal-growing. We prepare crystal-growing instructional videos for students, introduce how to grow glow-in-the-dark UV crystals, teach how to record detailed crystal growth observations, and explain how to make a seed crystal, among many other skills. These competition skills encompass many of the same fundamental skills that any scientist would need for being successful in research. Having close experimental observations, detailed lab notebook notes, a passion and drive for the exciting science, are all key elements that are important for scientists.

In the last two years, STARS, in collaboration with Timber Ridge Elementary School and Dodgen Middle school, hosted the 2021 Timber Ridge Crystal-Growing Competition and the 2022 Cobb County Crystal-Growing Competition. The elementary students were very excited about growing crystals and had so much fun growing colorful salt and sugar crystals. Meanwhile, the middle school students had so much fun learning about the purpose of crystallography, growing the creative crystals for the competition, and playing Kahoots with king-sized candy bars as prizes (Event photos can be found here: [starsanticancer.wixsite.com](https://starsanticancer.wixsite.com)). With the generous sponsorship from the ACA, STARS hosted an award ceremony this year with numerous prizes and awards prepared for the student winners to celebrate their hard work and perseverance in their crystal-growing activities and endeavors. We hope that with our continued efforts in hosting these local crystal-growing activities and competitions, we may further spread our love and passion for crystallography to more students in the community, sharing with them the significance of crystallography in a fun yet exciting way.

**Figure 1. Image of STARS team members with one of the 8th grade Advanced Physical Science classes at Dodgen Middle School for the 2022 Cobb County Crystal-Growing Competition.**



**Figure 1**