

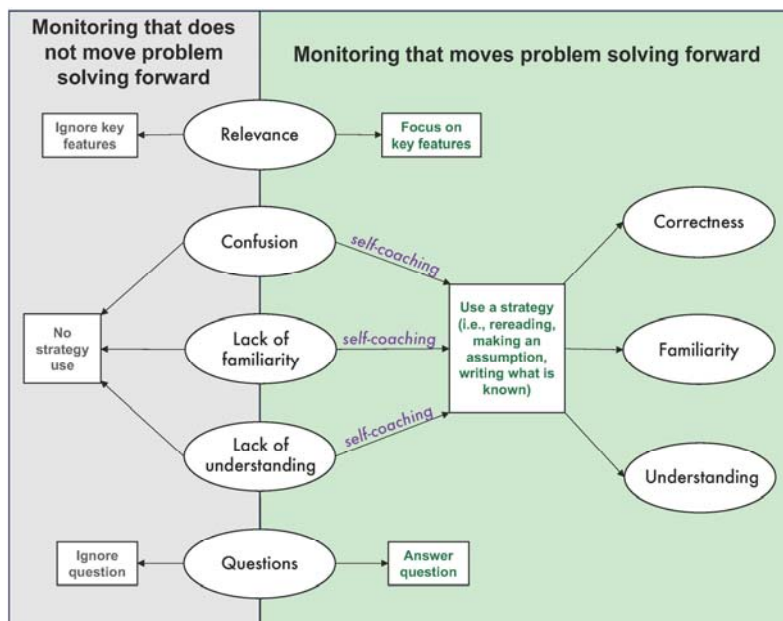
Biology Seminar

Speaker: **Stephanie Halmo, Ph.D.**

University of Georgia | Postdoctoral Research Associate | Stanton Lab, Department of Cellular Biology
<https://stephanie-m-halmo.owlstown.net/>

"Oh, that makes sense!": Metacognitive Regulation in Individual and Collaborative Problem-Solving

Wednesday February 14, 2024 | 11:30AM PST | GNOM S060



Stronger metacognition, or knowledge and regulation of thinking, is linked to increased learning, problem solving, and academic achievement. Metacognition has primarily been studied using retrospective methods, but these methods limit access to students' in-the-moment thoughts and actions. Using in-the-moment methods of think aloud interviews and discourse analysis, we investigated first year life science students' individual metacognition while they solved challenging

problems and upper-division biology students' social metacognition during small-group problem solving. Guided by the metacognition framework, we asked: 1) What metacognitive regulation skills are evident when first-year life science students solve problems on their own? and 2) What metacognitive statements and questions do upper-division biology students use during small-group problem solving? Our results reveal that first-year life science students monitor in a myriad of ways and that certain forms of monitoring move problem solving forward. Importantly, when students encouraged themselves through self-coaching this helped them move past the discomfort sometimes associated with being metacognitive in order to take action. In our study on social metacognition, we identify four types of metacognitive statements and questions associated with higher-quality reasoning as students solve problems in small groups. Based on our findings, we offer recommendations and suggestions for biology educators interested in helping their students strengthen their individual and social metacognition to achieve improved problem-solving performance.