Introduction
A major focus in our department has been to develop a set of learning goals for each course that define what students should be able to do upon completion of a course. While the development of these learning goals has been well received by our faculty, many question the value of sharing such goals with their students. More specifically, faculty are uncertain if, and how, students will utilize the learning goals. To determine how students value and use learning goals, we administered an online, open-ended survey to physiology students in four upper-division courses at the University of Colorado at Boulder.

Methods
• All students were surveyed immediately after the first exam and prior to receiving their exams scores.
• Each student comment was coded and categorized by three independent scorers.
• Inter-rater agreement averaged 76-91% for each survey question.

Example learning goals
Course A: Diagram the steps involved in transcription beginning from binding of TFDP to the TATA box and ending at creation of RNA by the polymerase.
Course B: Given clinical data, predict where the defect in the pathway occurred and propose a viable treatment option.
Course C: Differentiate between the functions of the cilia, gastric, and intestinal phases of digestion.
Course D: Given a change in a parameter that influences net driving force, equilibrium potential, or resting membrane potential, predict how this influences current across the membrane.

Electronic copies of these learning goals can be found at: http://www.colorado.edu/pal/departments/integrative-physiology.htm

How are learning goals used by faculty? • Students in Course C recognize that faculty use learning goals to create exams and are repeatedly reminded about the goals throughout the semester.
• Students in Courses A and D recognize that faculty use learning goals to structure their course materials.
• Students in Course B are conscious that faculty do not use the learning goals.

Specific reasoning category Example student response
Course A: “The instructor used the learning goals on the review sheets for exams.”
Course B: “He included the learning goals on the review sheets for exams.”
Course C: “I noticed that the learning goals were incorporated into the course materials.”
Course D: “I was not aware of the learning goals.”

Student suggestions for making the learning goals more helpful
1. Add more details to the learning goals, including adding sub-goals and/or page numbers.
2. Provide example or practice problems to supplement the goals.
3. Offer feedback on the goals (e.g., provide an “answer key” or review in class).
4. Provide guidelines or directions on how to use the goals.

Conclusions
• Physiological students find value in detailed, course-specific learning goals.
• Physiological students most commonly use learning goals to help focus on the most important material for studying, to organize their notes, and as a tool to test their knowledge.
• Our results are consistent with previous work by Simon & Taylor (2009) who demonstrated that students and faculty in Computer Science and Microbiology/Immunology at the University of British Columbia find value in learning goals.
• Results from this survey will be used to develop an “instruction manual” that will help faculty understand how students perceive and use learning goals.