TABLE 1

Goals and process for the integrated journal club.

Objective	Implementation	Assessment mechanism
Develop problem-solving skills.	Analyze and mirror patterns in research across the discipline.	Preclass written analysis; in-class oral explanation of designated figure
Develop scientific communication skills (oral and written).	Prepare written preclass analysis of paper based on pre-designated roles and figures. Present in-class oral presentation.	Individual preclass analysis; written communication Ability to identify the experimental technique used, define its purpose, and describe the results in class as part of a group Ability to ask/answer questions by peers
Promote critical thinking and analysis of literature.	Conduct analysis of a specific figure.	Ability to articulate experimental approach and validity in both verbal and oral forms
Apply scientific methods.	Have students participate in preclass analysis and in-class discussion.	Ability to describe research question and experimental design and relate results to hypothesis

TABLE 2

Recommendations for the implementation of a successful integrated journal club.

Timing	Who	Action
Before class	Instructor	Select primary article related to course theme. Identify student roles for preclass analysis. Identify student roles for in-class discussions. Introduce theme in lesson prior to journal club.
	Students	Complete written preclass analysis based on pre-designated role. Prepare oral explanation of designated figure or role. Coordinate with the group as needed.
During class	Instructor	Provide initial instructions (2–3 minutes). Allow the group leader/assistant to direct journal club. Provide guidance and questions during the presentation as needed.
	Students	Provide oral explanation of designated figure(s) or context. Provide necessary background or context of study. Describe how the figure supports the research question. The assessment team will score student presentations and participation.
After class	Instructor	Review assessment team scores from in-class presentations. Grade written submissions. Enter grades for preclass and in-class portions. Prepare for the integration of journal club as an extension of the next lesson.
	Students	Raise remaining questions on the theme at the following lesson. Identify conceptual ties from journal club to the following lesson.

Note. Students are encouraged to have a prominent role in both discussions and preparation.

TABLE 3

Student self-assessment comparison.

Q1. I am confident in my abilities to:		Preclass mean	Postclass mean	*p* value	Norm gain
a	Integrate data to make scientific conclusions.	5.39	6.37	**	0.38
b	Analyze scientific research design.	5.50	6.43	***	0.37
c	Appreciate differences between association and causation.	5.67	6.51	**	0.36
d	Read and understand primary scientific literature.	5.67	6.40	**	0.31
e	Distinguish knowledge from primary and secondary sources.	5.89	7.17	***	0.61
f	Evaluate hypotheses using appropriate tests.	5.50	6.03	**	0.21
Q2. I am confident to lead scientific discussion on:		**Preclass mean**	**Postclass mean**	***p* value**	**Norm gain**
a	Bioethics.	3.64	6.77	***	0.72
b	Gene editing.	3.69	6.86	***	0.73
c	Bioinformatics.	2.81	5.97	***	0.61
d	Transmission genetics (Mendelian & non-Mendelian).	3.42	6.51	***	0.68
e	Genetic counseling.	2.58	6.71	***	0.76

Note. Students ranked their individual proficiency for scientific analysis and abilities to lead discussions on a scale from 0 (low) to 8 (high) for each question listed in the table. Mean reflects the average of pre- and postcourse student self-assessments ($n = 36$). P values reflect students' t-test, 1-tailed, paired (*$p < 0.05$; **$p < 0.005$; ***$p < 0.0005$). Normalized gain is [(post − pre)/(8 − pre)].