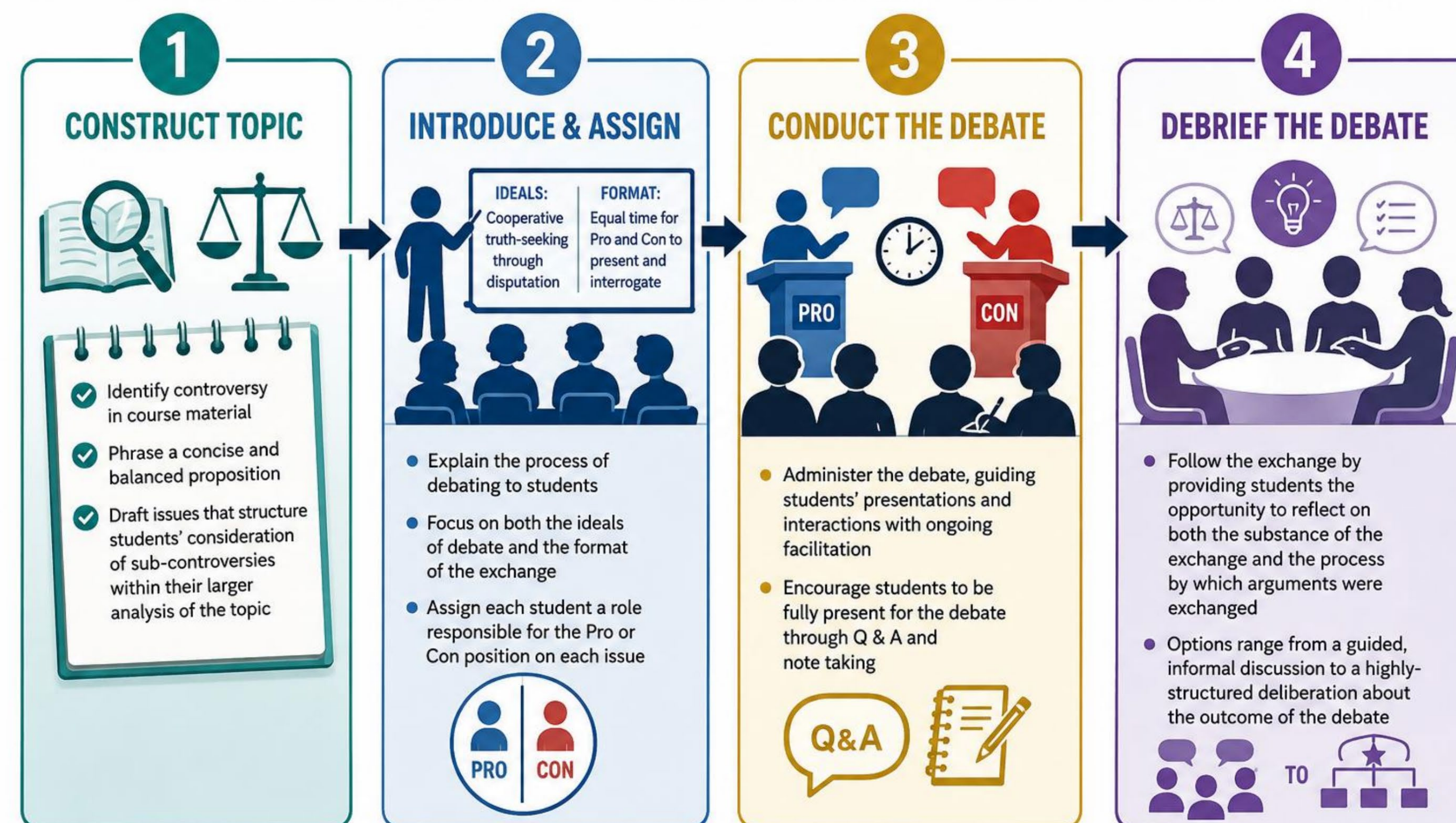


WHY DEBATE ACROSS THE CURRICULUM?

- Higher education asks students not merely to acquire information, but to:
 - *test claims,*
 - *weigh evidence,*
 - *examine assumptions,*
 - *encounter competing explanations, and*
 - *revise conclusions when better arguments emerge.*
- DAC integrates structured dispute into courses across subject matters: repeated practice in the **habits of intellectual inquiry**:
 - *constructing and defending claims,*
 - *interrogating evidence,*
 - *listening seriously to opposing arguments, and*
 - *reasoning toward conclusions that can withstand scrutiny.*
- Students now encounter knowledge in an *information environment dominated by fragmented ideas, algorithmic feeds, short-form media, and artificially-generated content*
- Emerging research raises concerns for **sustained attention, deep learning, and critical engagement**
- Access to information is abundant; the disciplined practices required to evaluate it need to be purposefully cultivated
- Universities must **expose students to complex ideas AND deliberately teach students how to inquire**
- DAC provides a structured space where *disagreement becomes an intellectual resource, and truth-seeking becomes something students actively practice together*

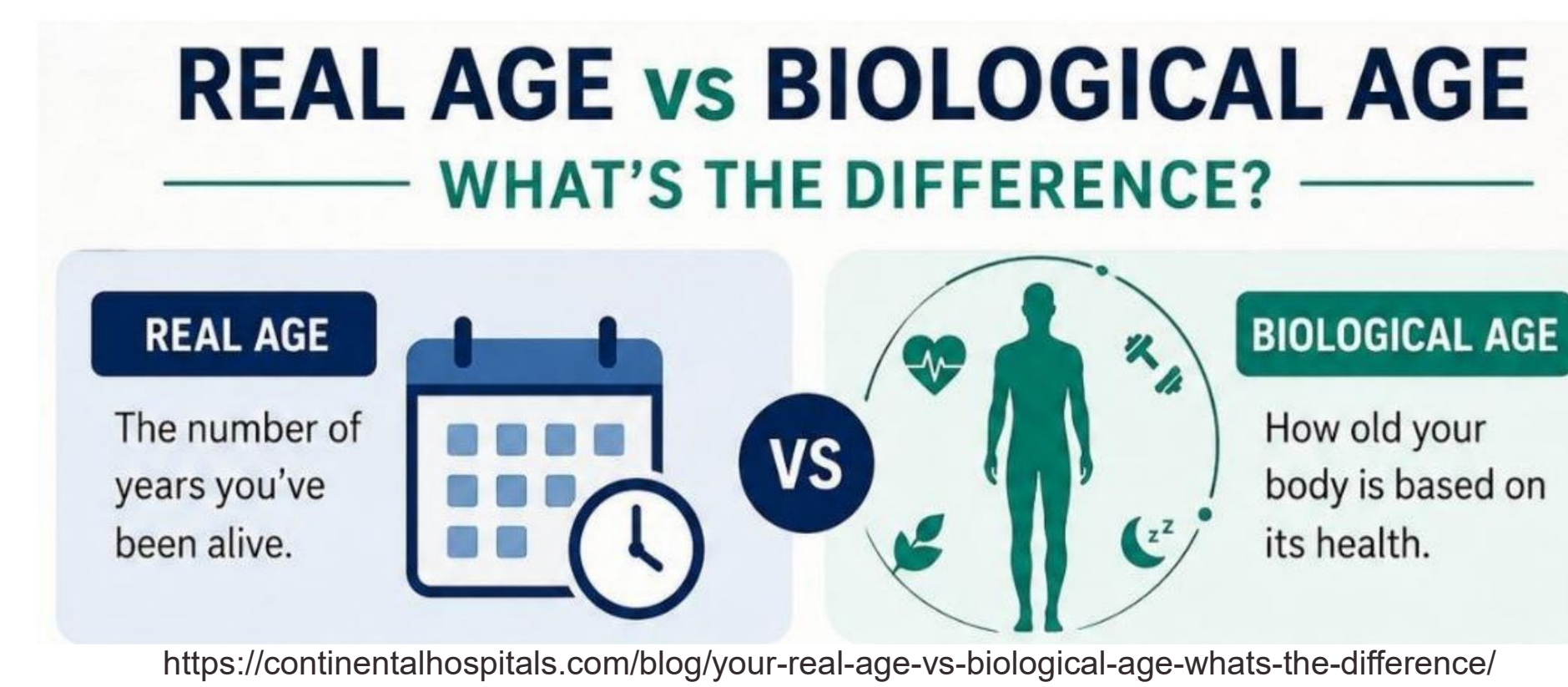
DEBATE ACROSS THE CURRICULUM PROCESS



Goal: Develop critical thinkers who engage respectfully, listen actively, and pursue truth through reasoned argument.

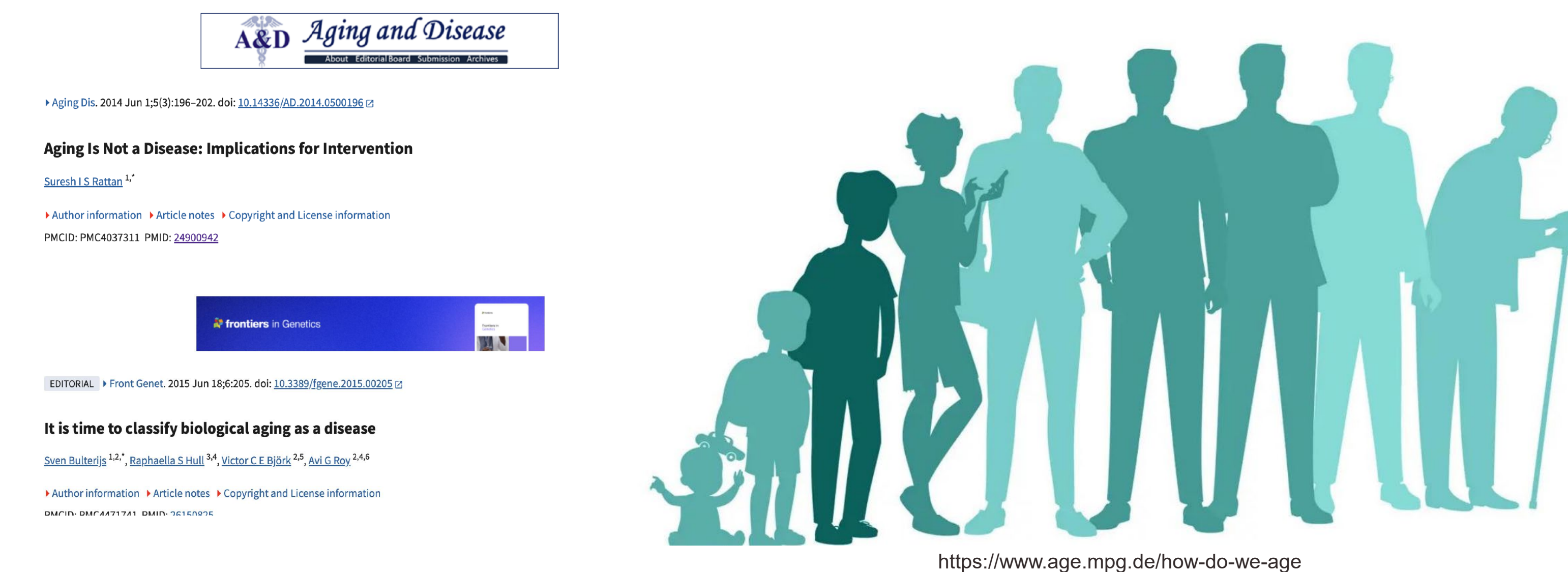
BACKGROUND

- Debate has been included in BIOL 3256 Advanced Anatomy and Physiology (undergraduate) since 2024
- General question: **“From a scientific perspective, should aging be considered a disease process to be treated or a life course stage to be maximized?”**
- Robust scientific literature supports both perspectives



Objectives of including debate: 1, 4, 5, 6

- Provide a structured experience by which students consider the real-world outcomes of their scientific knowledge;
- Support students in learning how to read, understand, and communicate scientific literature;
- Develop student skills in synthesizing scientific information from multiple sources;
- Cultivate and extend the ability of students to effectively engage in purposeful dialogue around challenging scientific topics and generate informed decisions.



Outcome	N	Pre-Test M(SD)	Post-Test M(SD)	Cohen's d	Magnitude
Learning					
Topic Knowledge (†)	1816	2.72 (.80)	3.46 (.71)	-.82	Large
Debate Usefulness (†)	1818	4.81 (.93)	5.06 (.93)	-.26	Small
Comfort Speaking					
Comfort Sharing Views – Instructor (†)	1819	3.94 (1.25)	4.50 (1.07)	-.48	Small–Med
Comfort Sharing Views – Peers (†)	1819	4.24 (1.17)	4.71 (.98)	-.43	Small–Med
Polarization					
Affective Polarization (↓)	1816	18.37 (28.15)	14.38 (27.45)	.17	Small
Topic Polarization (†)	1819	4.53 (1.42)	4.71 (1.33)	-.13	Small
Intellectual Humility					
Intellectual Humility (†)	1810	4.76 (.60)	4.85 (.62)	-.17	Small

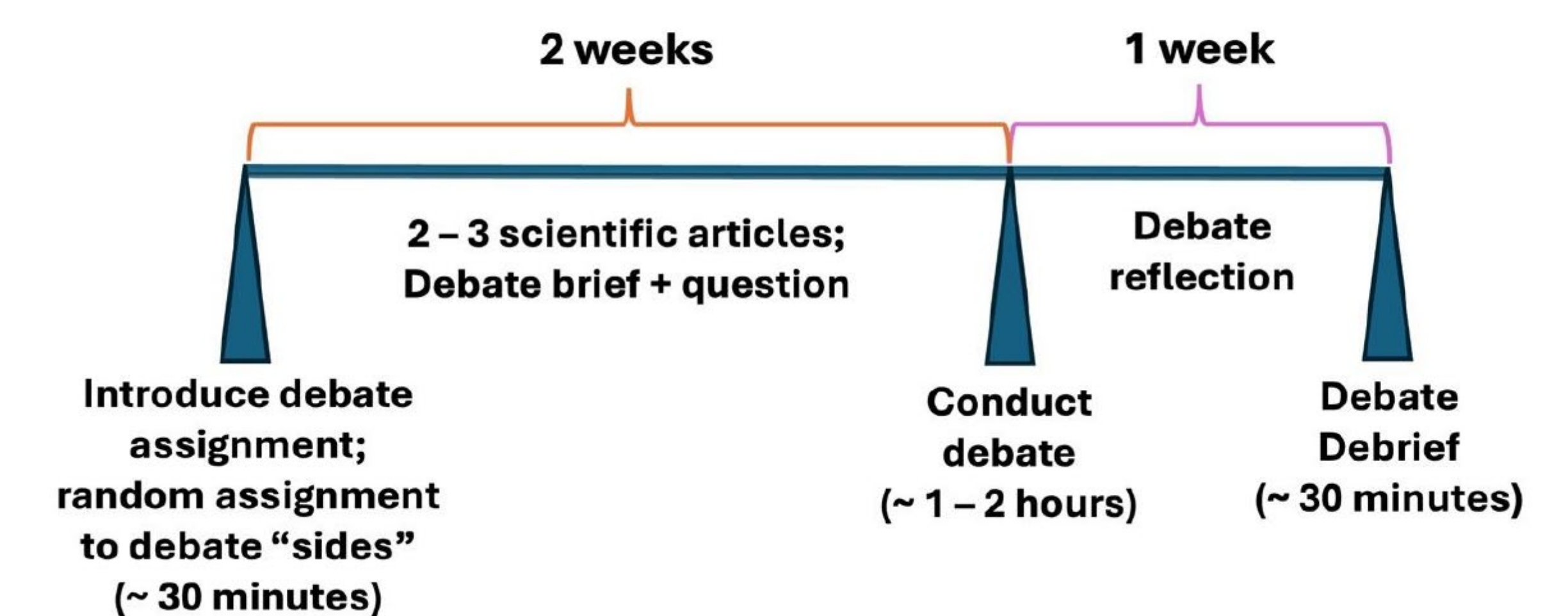
- Notes: (†) indicates the hypothesis predicted an increase from pre-test to post-test, (↓) indicates the hypothesis predicted a decrease from pre-test to post-test.
- N = all undergraduate students who have participated in at least one DAC across all academic programs at the University of Denver from Winter 2025 – Spring 2026.
- IRB approved study; IRB restriction prevented identification of results by discipline.

RESULTS

After participating in a DAC debate, general survey results (not STEM specific) show that students:

- Felt more comfortable sharing what they believed to be potentially controversial opinions with both peers and instructors;
- Report that they find debates to be of significant pedagogical value; and
- Report a decrease in feelings of topic and affective polarization.

Debate/Deliberation timeline



DISCUSSION/RELEVANCE

- Our largest effect — **the gain in what students know** — is real.
- Our 2 smallest effects call for caution:
 - **Reducing affective polarization is hard** 3, 7
 - ✓ Typical intervention effect: about 5 points on a 100 point feeling thermometer, most of it fading within two weeks.
 - ✓ DAC's approximate 4 point reduction is of the same order as the field's typical published effect.
 - ✓ *DAC's effect comes from inside the curriculum, reaching every enrolled student, term after term.*
 - **Intellectual humility is harder to judge** 3, 7
 - ✓ There is no agreed-upon measure, and self-report scales are known to diverge from how humility appears to others — the **“humility paradox.”**
- The lesson of these 2 effects is not that DAC underperforms; rather, that *the constructs are hard to move and instruments for measuring them are imperfect.*

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