

# **Supplemental Material**

*CBE—Life Sciences Education*

Barnes *et al.*

## Questionnaire

How long have you been in your PhD program?

- Less than one year
- One year
- Two years
- Three years
- Four years
- Five Years
- Six years
- More than six years
- I have finished my PhD program

What degrees do you currently hold and what was the focus of each degree?

What would be your ideal career once you graduate?

Which denomination of Christianity, if any, do you affiliate with currently?

How often do you go to church?

- Never
- Sometimes - less than once per month
- Regularly – more than once per month
- Most weeks or every week

How often do you pray?

- Never
- Sometimes - less than once per month
- Regularly – more than once per month
- Most weeks or every week

On a scale of 1-10, to what extent do you consider yourself religious?

- 1 (not at all)
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 (extremely)

On a scale of 1-10, to what extent do you consider yourself a science person?

- 1 (not at all)
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 (extremely)

On a scale of 1-10, to what extent did you experience conflict between your Christian identity and your science identity during middle school?

- 1 (not at all)
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 (extremely)

On a scale of 1-10, to what extent did you experience conflict between your Christian identity and your science identity during high school?

- 1 (not at all)
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 (extremely)

On a scale of 1-10, to what extent did you experience conflict between your Christian identity and your science identity during undergraduate?

- 1 (not at all)
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 (extremely)

On a scale of 1-10, to what extent did you experience conflict between your Christian identity and your science identity so far in graduate school?

- 1 (not at all)
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 (extremely)

What is your parents' highest completed level of education? If you have more than one parent with differing levels of education, choose the higher of the two.

- Less than high school completed
- High school diploma or GED
- Some college but no degree
- Associate degree (for example: AA, AS)
- Bachelor's degree (for example: BA, AB, BS)
- Master's degree (for example: MA, MS, MEng, MEd, MSW, MBA)
- Higher than a Master's degree (for example: PhD, MD, JD)
- Decline to state

I most closely identify as:

- Female
- Male
- Non binary
- Decline to state
- Please describe your gender identity if the best option is not listed:

Do you hold an LGBT+ identity?

- Yes, please describe:
- No
- I'm not sure, please describe
- Decline to state

What is your race/ethnicity? Please select all that apply:

- American Indian, Native American, or Alaskan Native
- Asian or Asian American
- Black or African American
- Hispanic or Latino/Latina
- Native Hawaiian or Other Pacific Islander
- Middle Eastern
- White or European American
- Decline to state
- Other not listed, please describe:

Please indicate your political identity:

- Very liberal
- Liberal
- Slightly liberal
- Moderate
- Slightly conservative
- Conservative
- Very conservative
- Decline to state

Please indicate which of the following statements most closely represents your *personal view*, based on your personal opinion:

- All forms of life were first brought into being in their present form by God 6,000-10,000 years ago at the same time.
- All forms of life were first brought into being in their present form by God at different times over billions of years.
- Some forms of life evolved from earlier forms, but God created groups of organisms such as reptiles, birds, mammals, and humans separate from one another and organisms that currently exist have evolved slowly from those first creations.
- Almost all forms of life evolved from earlier forms, but humans were created by God in their present form separate from the rest of life.
- All forms of life evolved from earlier forms, but God intervenes from time to time to shape or override evolution.
- All forms of life evolved from earlier forms, but God set up evolution from the start in a perfect way so that it would fulfill God's purpose and no subsequent intervention was necessary.
- All forms of life evolved from earlier forms, but life and evolution were first set in motion by God without a specific purpose or plan.
- All forms of life evolved from earlier forms, but I can't say whether any God was involved in evolution.
- All forms of life evolved from earlier forms, but no God has ever played a role in evolution.

## Interview script

“You took a survey before the interview and you were asked the extent to which you experienced conflict between your Christian identity and science identity, on a 10 point scale, at various points in your academic career. Can you walk me through why you put the number you did for middle school, high school, undergraduate, and graduate school?”

“Now I am going to ask about your experiences as a Christian student in the academic biology community. The academic biology community is your mentors, instructors, other students in your courses and research lab, and colleagues and friends at conferences and academic events. Do you have any questions about that?”

“Within the culture of biology, how do you think people see Christians? Why?” (*cultural stigma*)

“If you were to tell someone in the biology community that you are a Christian, would you worry about what they would think about you? Why or why not?” (*anticipated stigma*)

“When you are interacting with scientists, are you ever reminded of your Christian identity?” (*salience*)

“To what extent do people in the biology community know that you are Christian?” (*outness*)

“Can you tell me about instances in the biology community when you have had the chance to reveal that you are a Christian, but decided not to?” (*concealing*)

“Can you tell me about instances when you have revealed that you are Christian to someone in the biology community?” (*revealing*)

“Have you revealed your Christian identity to your advisers or mentors? Why?” (*concealing/revealing*)

“How do you decide whether to tell someone in the biology community that you are Christian?” (*concealing/revealing*)

“Are there particular ways you talk about your Christian identity in the biology community to avoid any negative perceptions?” (*impression management strategies*)

“Has anyone in the biology community ever done anything that made you feel like they did not value your religion?” (*experienced stigma*)

“Has anyone in the biology community ever done anything that made you think they valued your religion?” (*improving experiences of Christian students in biology*)

“Given your Christian identity, what are positives to continuing in biology?” (*Impression management strategies*)

“Given your Christian identity, what are negatives to continuing in biology?” (*experienced stigma*)

“What advice would you give another Christian student who is going into a biology graduate program?” (*improving experiences of Christian students in biology*)

“How might the biology community increase participation of Christian students in biology?”

## Final Coding Rubric

**CENTRALITY:** Student describes how the centrality of their Christian identity impacts their experience as a Christian student on biology.

**Being less/more religious creates less/more conflict:** Student describes that their Christian identity is not central to their identity and therefore they do not experience as much conflict with science or the scientific community, or they describe that their identity is very central which has made conflict with science or the scientific community greater.

**PERCEPTIONS OF CULTURAL STIGMA:** Student describes perceiving some kind of cultural stigma against Christians in biology

**Variation:** Student says there is variation in how biologists see Christians

**Unintelligent:** Student says biologists see Christians as ignorant, unintelligent, less critical thinkers, unable to accept facts, dumb, crazy, and/or irrational.

**Extremists/lumping Christians together:** Student thinks biologists stereotype Christians as Evangelical, Fundamentalist, or radical Christians and/or as having socially conservative political beliefs and/or as being unaccepting of science. Student may worry about perceptions among their LGBT+ colleagues who may think they are anti-LGBT+.

**Incompatible w/science:** Student says that people in the biology community see Christianity as incompatible with science.

**ANTICIPATED STIGMA:** Student describes anticipating stigma if they were to reveal their Christian identity and/or directly before or directly after revealing their Christian identity.

**Extremists/lumped with other Christians:** Student says they are worried about being stereotyped as Evangelical, Fundamentalist, radical Christian, or politically conservative.

**Social hierarchy:** Student says they worry about perceptions of their Christianity among more prestigious biologists or people who are “higher up” or they are worried about more stigma if they become someone higher up in biology. This includes more senior graduate students OR student describes being more comfortable revealing their Christianity when they are in an environment when they are higher on the social hierarchy - this includes when teaching and when with more senior graduate students.

**Less scientifically capable:** Student says they worry that someone would question their scientific ability/credibility if they were to reveal that they are Christian.

**Academic Applications:** Student says they are concerned about listing achievements on academic materials that might out their religious identity (i.e., mission trips or theology classes) or student describes revealing their identity through activities listed on their academic applications.

**EXPERIENCED STIGMA:** Student describes an instance in which they experienced stigma about Christians in the biology community.

**Mostly neutral/positive experience:** Student says that most experiences they have with biologists revealing their Christian identity are positive or neutral.

**Surprised reactions/assumed incompatibility when student reveals:** Student says people in the biology community are surprised that they are Christian and/or do not think that they can be both Christian and a biologist.

**Jokes/negative comments about religious people:** Student describes that people in the biology community make negative statements about Christians or jokes about Christians.

**Extremists/lumped with other Christians:** Student says they have experienced being stereotyped as Evangelical, Fundamentalist, radical Christian, or politically conservative in the biology community.

**CONCEALING:** Student describes that they have concealed their identity in some context in biology in which it was relevant to them.

**Mental Labor:** Student describes concealing their identity due to the burden of having to explain their beliefs to those in the biology community (they do not want to “deal with it”).

**Anti-religious people:** Student describes concealing their identity when someone is very anti-religion, seems angry about religion, or is a generally skeptical, cynical or a judgmental person.

**Unprofessional:** Student says they think talking about their religion would be unprofessional.

**REVEALING:** Student describes that they have revealed their identity in some context in biology in which it was relevant to them.

**When relevant/if asked:** Student says they only bring up their Christian identity when it is relevant.

**To other religious individuals:** Student describes revealing their Christian identity when they know the other person is Christian.

**To “safe” others:** Student describes revealing their Christian identity when they have an established/trusting relationship with the other person or when the person seems genuinely interested in having a respectful discussion.

**To correct misconceptions:** Student says they reveal their identity when correcting misconceptions biologists have about Christians.

**When talking about church:** Student says they reveal their Christian identity when they reveal they go to church.

**Clothes/jewelry:** Student describes wearing religious shirts or jewelry such as a cross which may reveal to others that they are religious.

**OUTNESS:** Student describes how “out” they are about their Christian identity in biology.

**Not talked about/taboo subject:** Student says it is not a topic that is generally brought up or talked about. They may also say it is a taboo subject.

**Is covert:** Student says that they are not really comfortable revealing their identity and avoid revealing.

**Not outspoken:** Student says they are not outspoken or do not try to proselytize or go around talking about their Christianity a lot.

**Does not hide it/if they are asked:** Student says they do not hide their identity.

**Wants to be themselves:** Student says they do not hide their identity because they want to be able to be their true selves.

**IMPRESSION MANAGEMENT:** Student describes presenting their Christian identity in a way that reduces negative impressions.

**Keeps them separate:** Student describes that they keep their religious and scientific areas of their life separate from one another.

**Doesn't push religion on others:** Student says they do not want to push their religion onto others or “proselytize” or that they just try not to bring their religion up in conversations.

**Self-group distancing/assimilating:** Student describes distancing themselves from the stereotypes of Christians or emphasizes what they share with other biologists that are not like the stereotypical Christian.

***Politically liberal:*** Student says that they are politically liberal unlike other Christians or what other biologists may think about Christians.

***Accepts science/not a Biblical Literalist:*** Student says that they accept evolution and other mainstream science unlike other Christians or what other biologists may think about Christians they are not Biblical Literalists.

***Sympathizes with biologists' attitudes towards Christians:*** Student sympathizes with biologists' negative attitudes towards Christians.

***Integrating:*** Student describes positive aspects of Christians/Christianity in biology.

***Christians benefit biology in teaching:*** Student says Christian biologists can benefit the field of biology by being better communicators to Christian audiences. Student may also describe working with other Christian students to help resolve their conflict.

***Christianity as support in graduate school:*** Student says their Christianity helps them succeed in graduate school/biology.

**SALIENCE:** Student describes contexts that increase or decrease the relevance of their Christian identity in the biology community.

***Conferences/workshops/happy hours:*** Student describes a time when their identity comes up at conferences, workshops, happy hours, or events where alcohol is present.

***Church discussions/scheduling conflicts:*** Student says their identity comes up in discussions about church and/or scheduling conflicts with church.

***When teaching/learning biology:*** Student says their identity comes up in the context of teaching biology.

***Field matters:*** Student says the field they are in makes their Christian identity either more relevant or less relevant.

***Other identities matters:*** Student describes how other identities (gender, race, LGBT+, mental health, international) decrease or increase the relevance of their Christian identity in biology.

***Institution/region matters:*** Student describes how their institutional or regional culture either makes it easier or harder for them as a Christian in biology.

***Evolution and bioethics topics:*** Student describes the topics of evolution and bioethics as something that is salient to their Christian identity that comes up in the context of biology.