Application

1. **How does your project address one of the core elements of the Break Free from Plastic Pledge (highlight one or more element listed below)?**
    - implementing strategies to annually reduce single-use plastic use;
    - using viable alternatives to single-use plastic and implementing purchasing guidelines to eliminate the procurement of unnecessary single-use plastic in the future;
    - investing in education, resources, and infrastructure to reduce single-use plastic use on individual and institutional levels;
    - and increasing effort to eliminate plastic bags, plastic straws, and Styrofoam on campus in accordance with Atlanta's Ordinance 19-O-1418.

2. **Team and Project Information: fill out the chart below.**

Team Leader	**Shoichiro Ono**
Title of Project	**Implementing re-autoclavable polycarbonate flasks for bacterial cultures**
Funding Amount Requested (Maximum $5,000)	
Associated Department, Lab, Office, or Student Organization	**Department of Pathology, Ono Lab (Green Lab)**
Building and Room Number	**Whitehead 165**

3. **Project Personnel: For each team member, please submit the following information:**

Name	Role	Email Address
Shoichiro Ono	**Principal Investigator**	**sono@emory.edu**
Adriana Ramirez	**Research Specialist**	**adriana.ramirez@emory.edu**
Angela Kwok	**Research Specialist**	**angela.kwok@emory.edu**
Hansi Thadiparthi	**Undergraduate Student**	**hansi.thadiparthi@emory.edu**

4. **Provide a short summary (2-3 sentences) of each team member's skills and experiences as relevant to the completion of the proposed project. If your project requires any guidance, approval, or partnership from parties beyond the team described here, please identify those parties and needs.**

Shoichiro Ono – He has over 30 years of experience in research in the field of molecular biology, cell biology, and biochemistry. His research focus is on the mechanism of cytoskeletal regulation. The Ono lab has been participating in the Green Labs Program since 2015 when it was still a pilot program.

Adriana Ramirez – She has been working in the Ono lab since 2023 performing research using molecular biology and biochemistry. She has extensive experience in working with bacterial cultures.

Angela Kwok - She has been working in the Ono lab since 2023 performing research using molecular biology and biochemistry. She has extensive experience in working with bacterial cultures.

Hansi Thadiparthi - She has been working in the Ono lab since 2024 performing research using molecular biology and biochemistry. She has closely worked with Adriana and Angela and has extensive experience in working with bacterial cultures. She is currently the Community Reach-out Director of the Plastic Free Program at Emory.

5. **Is this project being proposed by a student and/or implemented by an all-student team? -** No.

6. **If the application is an all-student team, please provide the contact information for your faculty/staff advisor below after getting their consent.**

   Faculty/staff advisor's name:

   Email:

   Faculty/Staff advisor expectation: As an advisor to this project, I accept the role of guiding this student or student team as they develop a proposal, as they respond to additional requests from the Office of Sustainability Initiatives Team, as they implement their project, and as they complete a final report.

   Date of faculty/staff advisor's acknowledgement of this expectation:

7. **Project Description:** Provide a detailed description of the goals, activities, methods, and success indicators of the proposed research, project, or behavioral change.

   The major goal of this project is to test and implement the use of **reusable and re-autoclavable polycarbonate Erlenmeyer flasks for bacterial cultures**. Bacterial cultures are one of the most commonly performed practices in research laboratories in the biological and biomedical fields and require sterile containers (tubes, bottles, or flasks) and sterile culture media. For the containers, one-time use plastic tubes, bottles, or flasks, which are sold pre-sterilized, are often used. Many plastic materials including PET, polystyrene, and polyethylene, cannot be reused for this purpose because these cannot be sterilized by autoclaving. Alternatively, many labs use glass tubes, bottles, or flasks, which are reusable and re-autoclavable, for bacterial cultures. Although glass containers are durable, glasses are physically breakable, and broken glass pieces are dangerous for the users. Therefore, we will test whether **polycarbonate** Erlenmeyer flasks withstand repeated cycles of autoclaving with culture media at 121 ^{0}C, growing bacterial cultures with shaking at 15 – 37 ^{0}C, and cleaning using Alconox detergent. The benefit of polycarbonate is that it is autoclavable, transparent, and physically unbreakable under normal use. However, polycarbonate can be physically deteriorated over repeated autoclaving. To test the durability, we will purchase polycarbonate Erlenmeyer flasks (2-liter capacity), repeat our normal bacterial cultures at least 10 times, and examine how these flasks withstand repeated uses under our normal procedures. At the end of 10 cycles, we will examine physical integrity of the flasks including any visible cracks, leaks, and coloration of the material to determine whether we can still keep using these flasks for additional cycles. If successful, other researchers can implement polycarbonate flasks or other containers as durable and safe alternatives to one-time use plastics or glasses for bacterial cultures.

8. **Project Timeline:** Project teams will be notified on a rolling basis about funding of their proposals. All funds must be expended by June 26th, and all projects must be completed by August 31st, 2026. With these parameters in mind, please provide a detailed timeline for project implementation and completion.

May-June – As soon as the fund is available, we will purchase 2-liter polycarbonate Erlenmeyer flasks.

End of June – August – We will perform bacterial cultures once a week and repeat the procedure by reusing and re-autoclaving the same flasks with culture media for 10 times. If all or part of the flasks become unusable, we will test new flasks from the same case.

End of August – The outcome will be described by examining physical integrity of the flasks after 10 repeated uses or any number of cycles when the flasks become unusable.

9. **Project Outcomes:** Provide a list and/or description of outcomes should the project be successful. For example, answer the question "How will you demonstrate to campus community members that your proposed project has been successful and advanced Emory's sustainability goals?" Proposals with clear and compelling outcomes are more likely to be selected for award.

   This project will be successful if the polycarbonate flasks withstand 10 cycles or more of bacterial cultures including autoclaving with culture media at each cycle. After each cycle, we will examine any physical damages such as cracks, leaks, and changes in coloration. With the ~2-month period of the project, 10 cycles are the limit of our examination, but we hope that the polycarbonate flasks will withstand many more cycles of bacterial cultures.

10. **Budget:** In the chart below provide an itemized description of expenditures with short explanations and justification. $5,000 is the maximum for requesting funds.

    Where possible, please develop your budget via products available from Emory Express or Emory-approved vendors. This can increase negotiated rebates to Emory, reduce post-award delays, ensure we do not pay sales tax unnecessarily, and provide other benefits.

Item Description (Please include details on the specific item	**Website link to item (if applicable)**	**Unit Cost**	**Unit Count**	**Total Cost**

desired, with relevant information like make, model #, size, etc.)				
Polycarbonate Shaker Flasks (2000 ml), TriForest Enterprises, VWR Catalog # 10124-472	https://www.vwr.com/us/en/product/NA3375196/polycarbonate-shaker-flasks-triforest-enterprises	702.04	1 case (24 per case)	702.04
Tryptone, pancreatic, 1 kg, VWR Catalog #: EM1.07213.1000	https://www.vwr.com/us/en/product/NA2183256/culture-media-bases-milliporesigma	289.84	1	289.84
Total Request				991.88

11. **Budget Explanation and Justification:** In this section, please carefully explain the need and use for each item listed in the table above. If you already have received partial funding for this project from another entity, please list that entity below and which aspects of the project are already funded. If uncertainties exist in project budget, please note them here. Projects with incomplete budgets or justifications will not be considered for funding.

    Polycarbonate Shaker Flasks (2000 ml), TriForest Enterprises, VWR Catalog # 10124-472- We will purchase 1 case of 24 flasks and use 4 flasks with 1 liter each of culture medium at one trial. If the lot of 4 becomes unusable before 10 cycles, we will test another lot of 4 to determine whether there is variability among the flasks in the same case. We would like to have 24 flasks so that we can try as many as 6 trials. However, if the initial 4 flasks successfully withstand 10 cycles or more, the remaining flasks will be used for our future bacterial cultures as a permanent practice.

    Tryptone, pancreatic, 1 kg, VWR Catalog #: EM1.07213.1000- We routinely use M9ZB medium for bacterial cultures requiring recombinant protein expression. It is important to use the same chemical composition of the culture media for this project as our routine experiments. M9ZB medium contains 6 ingredients, and we only need to purchase Tryptone for this project. Our lab has enough stocks for other chemicals. For this project, we need 10 grams per liter of M9ZB medium. For 10

cycles with 4 liters of the medium per cycle, we only need 400 grams of Tryptone. However, the package of 1 kg is the minimum size for this product.

12. **Creating a Lasting Impact:** The BFFP Incentives Fund is a one-time-only funding opportunity. Please describe how your project will create or encourage a lasting impact despite the one-off nature of this funding (e.g., building funding into your regular budget for purchasing zero-plastic items in the future, reusing materials, doing educational outreach, etc.).

    Our project can make the research community aware that a certain type of plastic, like polycarbonate, are reusable and re-autoclavable many times in laboratories. We can spread the idea that, with proper care, such reusable plastic labware can be more durable and safer alternatives to one-time use plastics and glass materials.

13. **If any of the items listed in your budget proposal cannot be purchased through Emory Express or another Emory-preferred vendor, please explain why below.**

    Not applicable.

14. **Projects that propose the installation of items in buildings or on Emory grounds may require approvals from relevant departments or entities, including and up to, the Board of Trustees. If your project may require such approval, please describe below whether those approvals have been received, or demonstrate how they will be pursued, within the timeframe of the grant.**

    Not applicable.

Applicant Acknowledgements

Please initial to indicate that you have read and understand all guidance in this application.

_SO___

Initials

Please initial to confirm that your submitted budget totals to no more than $5,000.

_SO___

Initials

Please list any questions or concerns you have in complying with the project guidelines and limitations.

None.

Please submit your completed application in this Word document via email to emorysustainability@emory.edu by or before Friday, May 15, 2026.

On behalf of the OSI team, thank you for your time and effort! Emory is a better place because of innovators like you!