first approval

Guide for Student Biological Data Competition by First Approval

Introduction

The Student Data Competition hosted by First Approval invites undergraduate, graduate, and PhD students to submit their datasets for evaluation. This guide consolidates the submission process, requirements, and an exemplary format to assist participants in successfully completing their submissions.

Eligibility

- Open to students enrolled in undergraduate, graduate, or PhD programs. Recent graduates (within 12 months of graduation) are also eligible.
- Datasets must be submitted through the First Approval platform. Early deadline: **15 September 2025**. Regular deadline: **15 October 2025**.

Key Requirements:

1. Datasets must include detailed annotations explaining data acquisition and experimental specifics.
2. Research areas:
   - ◊ **General Fields:** biological science, biomedical science, biotechnology.
   - ◊ **Specialized Areas:** Molecular Biology and Biochemistry, Genetics, Cell Biology and Histology, Anatomy and Physiology Biophysics, Immunology, Neuroscience, Developmental biology, Biomedical Research, Biotechnology, Omics Technologies, Aging, Zoology, Botany and Mycology, Microbiology, Ecology, Behavioral Science.
3. Acceptable Submissions:
   - ◊ **Original datasets** – Newly generated data that has not been previously published.
   - ◊ **Replication datasets** – Data that successfully reproduces the results of previous experiments.
   - ◊ **Negative datasets** – Data that contradicts or does not support the original hypothesis.
   - ◊ **Previously published datasets** – Acceptable if new data have been added and/or prior annotations were insufficient for reuse (in such cases, cite the original publication).
4. Upload a **signed letter from your academic supervisor** (see draft).
   - ◊ Your academic supervisor may be your thesis advisor, laboratory head, or another authorized university representative who can confirm your right to submit this dataset.

Evaluation Criteria

Submissions will be judged based on:

1. **Annotation Completeness** – The dataset should include clear and comprehensive metadata, providing sufficient details about data collection, variables, methods, and experimental context. Well-structured annotations make the dataset more understandable and reusable.
2. **Data Accuracy** – The submitted data should be reliable, free of errors, and consistent with the described methods.
3. **Novelty and Experimental Design Quality** – The dataset should either present new scientific insights or demonstrate a well-structured experimental design that follows scientific best practices. High-quality datasets should be logically designed, appropriately controlled, and clearly documented.
4. **Potential for Reuse** – The datasets with broad applicability within the scientific community, enabling further research, replication, or integration into larger studies, will be highly valued.

Prizes

Prizes will be awarded across **three main categories**: Undergraduate, Graduate, and PhD students. The prizes in each category are as follows:

- **First Place**: $1,000
- **Second Place**: $500
- **Third Place**: $200
- **Fourth to Tenth Place (Merit Award)**:. . $100 each

Additional special prizes include:

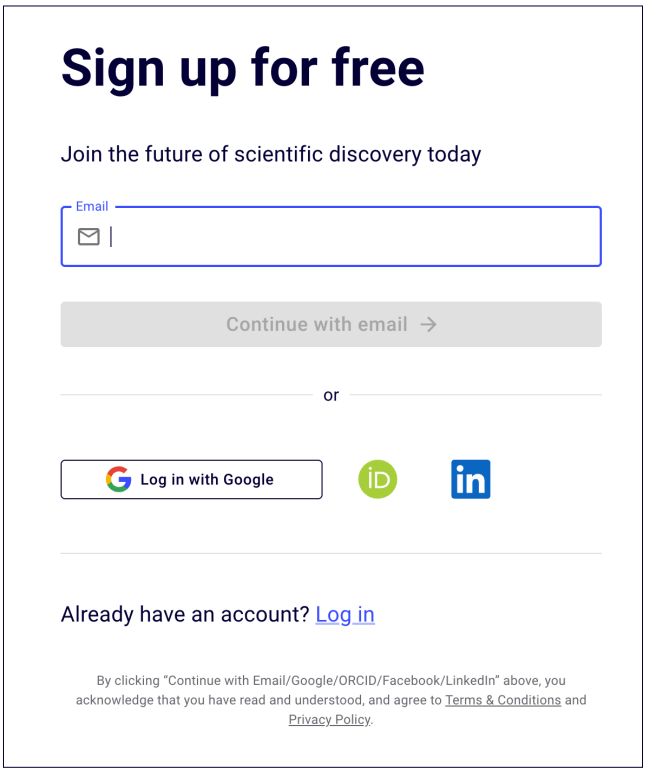
- **Best Negative Dataset**: $300
- **Best Replication Dataset**: $300
- Special prizes from partner organizations may be added to the prize pool.

All those who advance to the final stage of the competition (**top 35%**) will be awarded a “Honorable Mention” certificate.

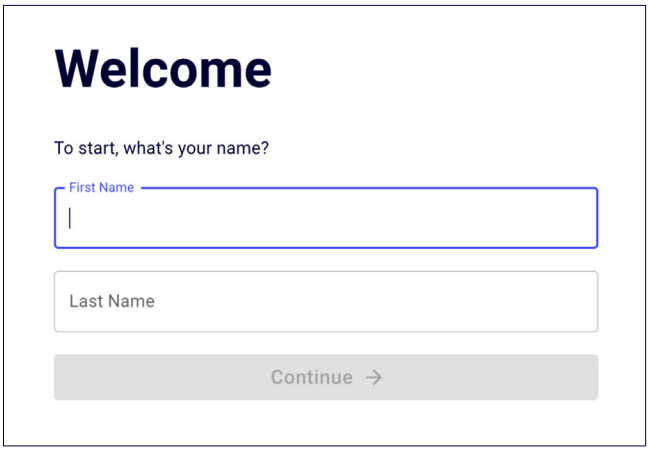
Step-by-Step Submission Process

I. Registration

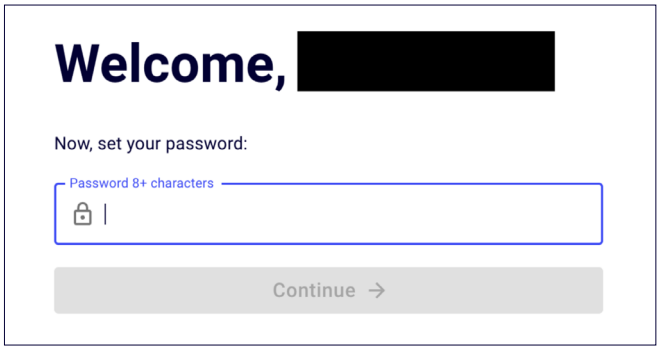
1. **Sign up** at First Approval.



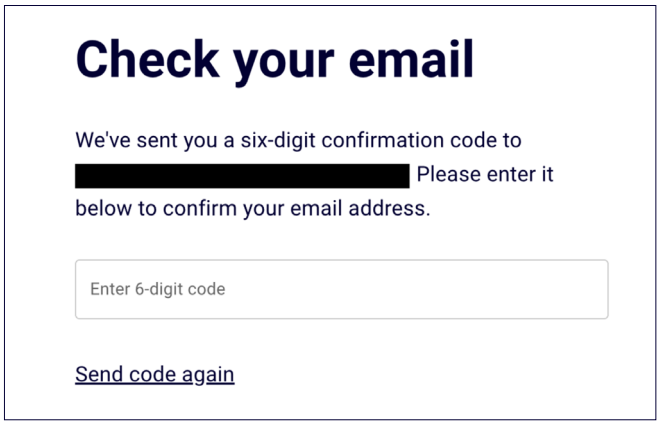
2. **Enter your name** in the designated field.



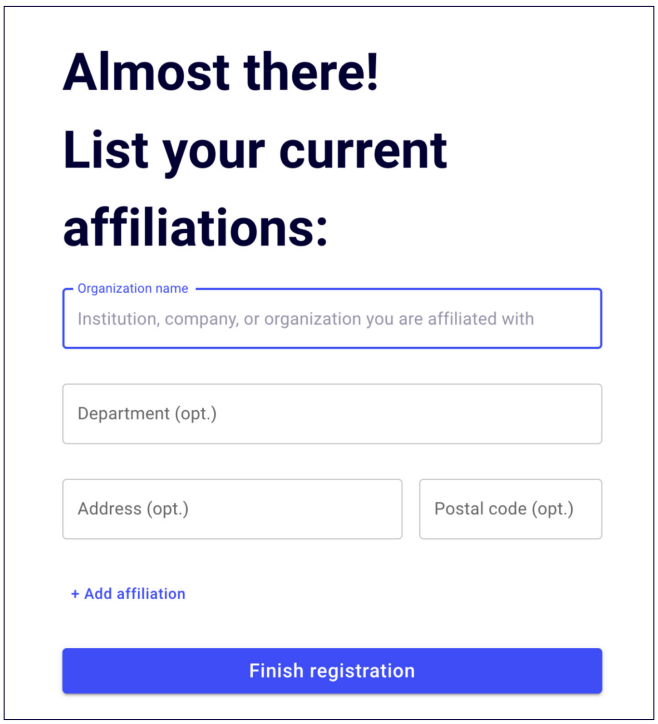
3. **Create a password.**



4. Verify **your email** address.

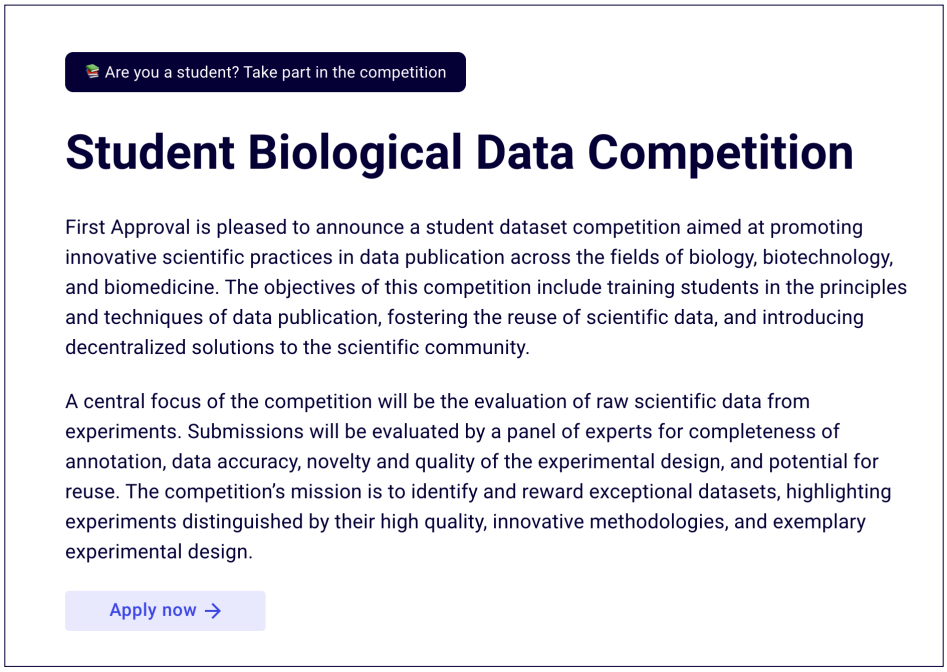


5. Provide your **affiliations** in the corresponding section.



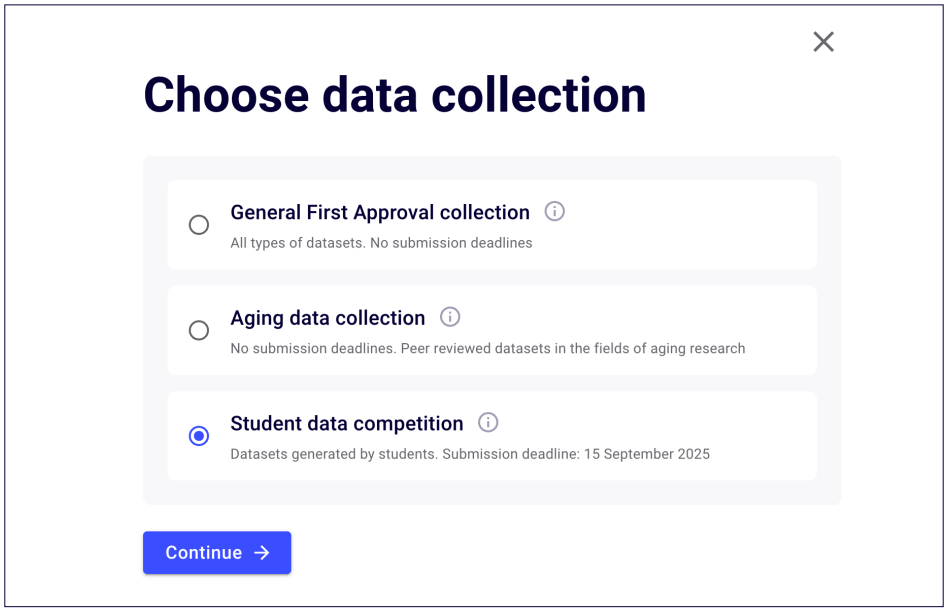
II. Dataset annotation

1. Log into your First Approval account.
2. On the Student Data Competition page (https://firstapproval.io/contest), press the **“Apply Now” button**.

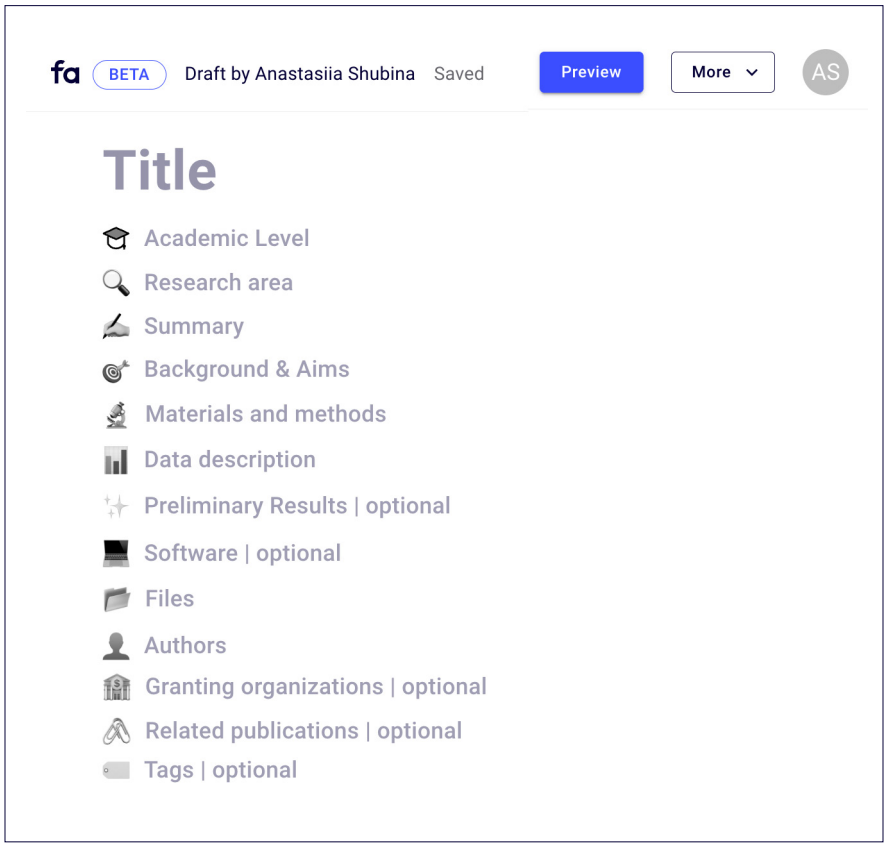


Or click the **“Apply now” button** in the top-right corner of the homepage to start a new submission.

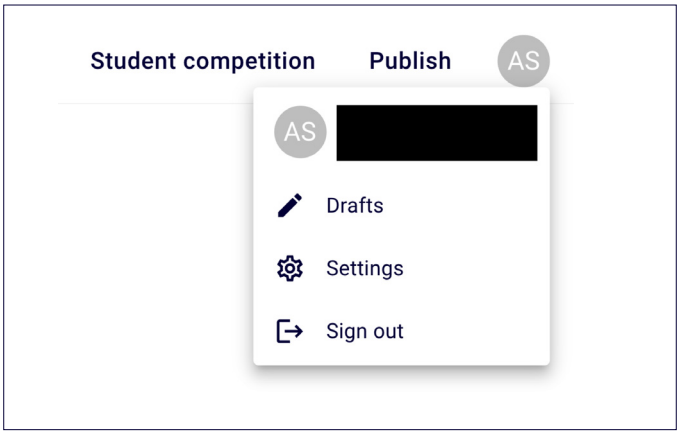
3. Select **“Student Data Competition”** as your submission type and click the **“Continue”** button.



4. **Complete all required sections**.
   - ◊ Complete all sections of the submission form, including dataset annotation, detailed descriptions, and upload your data.



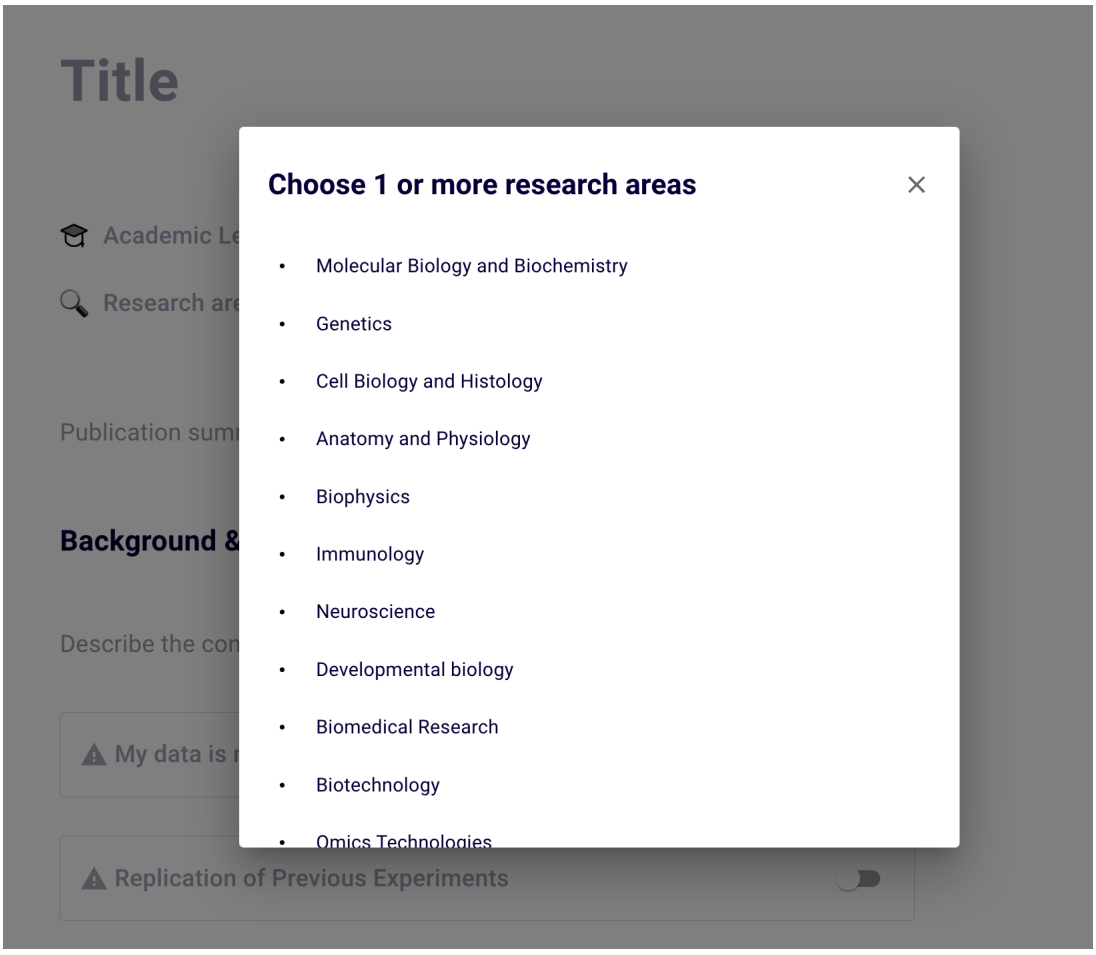
- **Progress will be automatically saved in the "Draft" section.** You can view your drafts by clicking on your account icon in the upper right corner.



4.1. Enter the **Title** of your dataset. Maximum 200 characters.

4.2. Choose your **Academic Level**: Undergraduate (Bachelor's) student, Graduate (Master's) student, or PhD student. Your selection will determine the appropriate competition category.

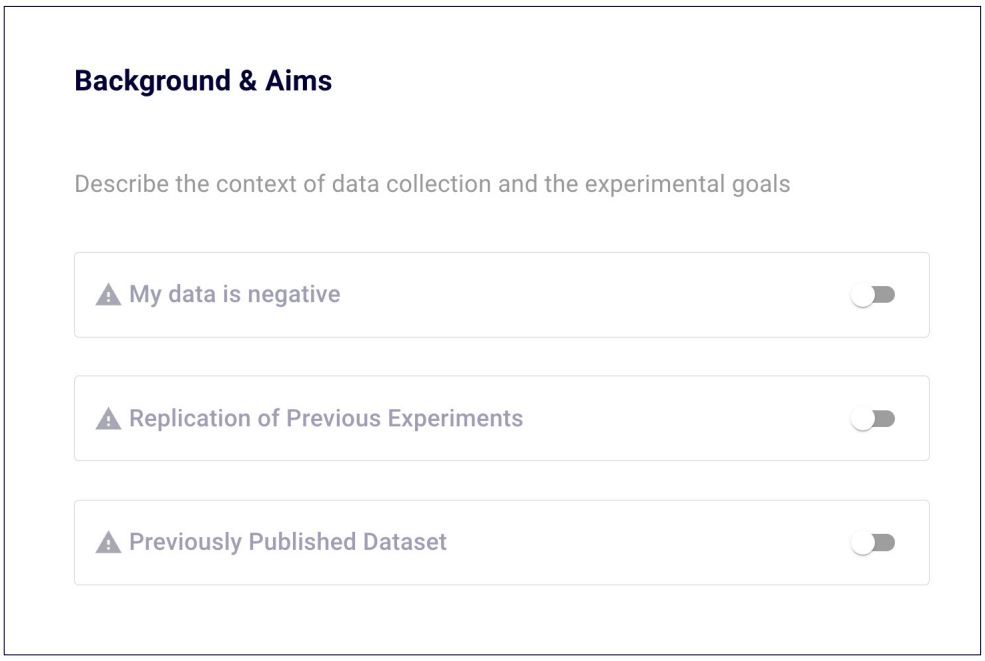
4.3. Select your **Research Area**.



4.4. **Summary**: Write up to 1,500 characters detailing the experiment background and aims, methods, and dataset description.

4.5. **Background & Aims**: Describe the research objectives and previous relevant studies. Describe the aim of this experiment.

- ◊ Please indicate if your dataset falls into one of the following categories: **Negative** – data that challenges the original hypothesis by producing non-confirmatory results, or **Replicative** – a dataset that successfully reproduces the findings of a previous experiment. By selecting these categories, you become eligible for the **Best Negative Dataset** and **Best Replication Dataset Awards**.
- ◊ Additionally, please indicate if your dataset has been previously published. **Previously published datasets** are acceptable if new data have been added and/or prior annotations were insufficient for reuse (in such cases, cite the original publication).



4.6. **Materials and Methods**: Provide a comprehensive description of your study design, experimental procedures, controls, reagents, and any software used.

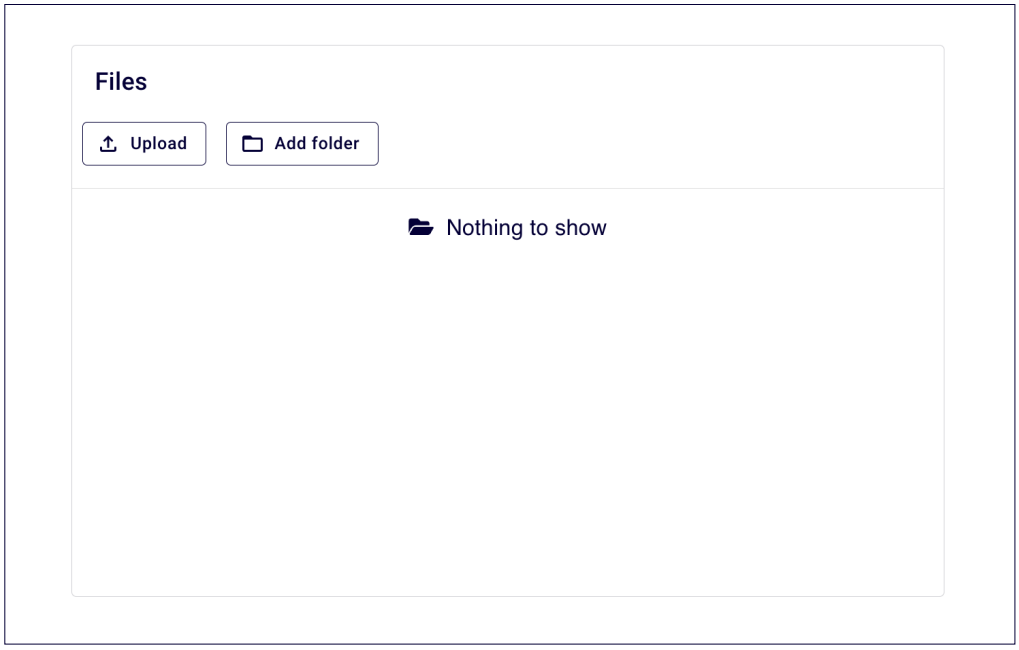
4.7. **Data Description**: Explain dataset structure, formats, and quality assurance methods.

4.8. **Preliminary Results (optional)**: Describe your initial observations or interpretations derived from the data.

4.9. **Software (optional)**: Specify the software used for data collection and processing, including relevant parameters and settings.

4.10. Files. **Upload all relevant data files**, including:

- ◊ Raw and processed data.
- ◊ Supporting materials such as images, diagrams, or supplementary files.



4.11. **Fill in all required information about the author and co-authors:**

- ◊ Add the co-authors of the paper. Please note that the prize will be awarded only to the first author.
- ◊ Check the box for the co-author — the academic supervisor of this research.
- ◊ Upload a signed letter from the academic supervisor (see draft). Your academic supervisor may be your thesis advisor, laboratory head, or another authorized university representative who can confirm your eligibility to submit this dataset.

- ◊ If your dataset was created as a collaborative project involving multiple institutions, you may attach letters from the PI/research supervisor of each institution.

4.12. **Granting Organizations (Optional)**: List the granting organizations that support your research.

4.13. **Related publications (Optional)**: Provide references to articles closely related to your research. If your dataset has already been described in a research paper, list it here.

4.14. **Tags**: optionally put the keywords that characterize your research

5. Click the **"Preview"** button in the upper right corner of the screen to ensure all details are correct.

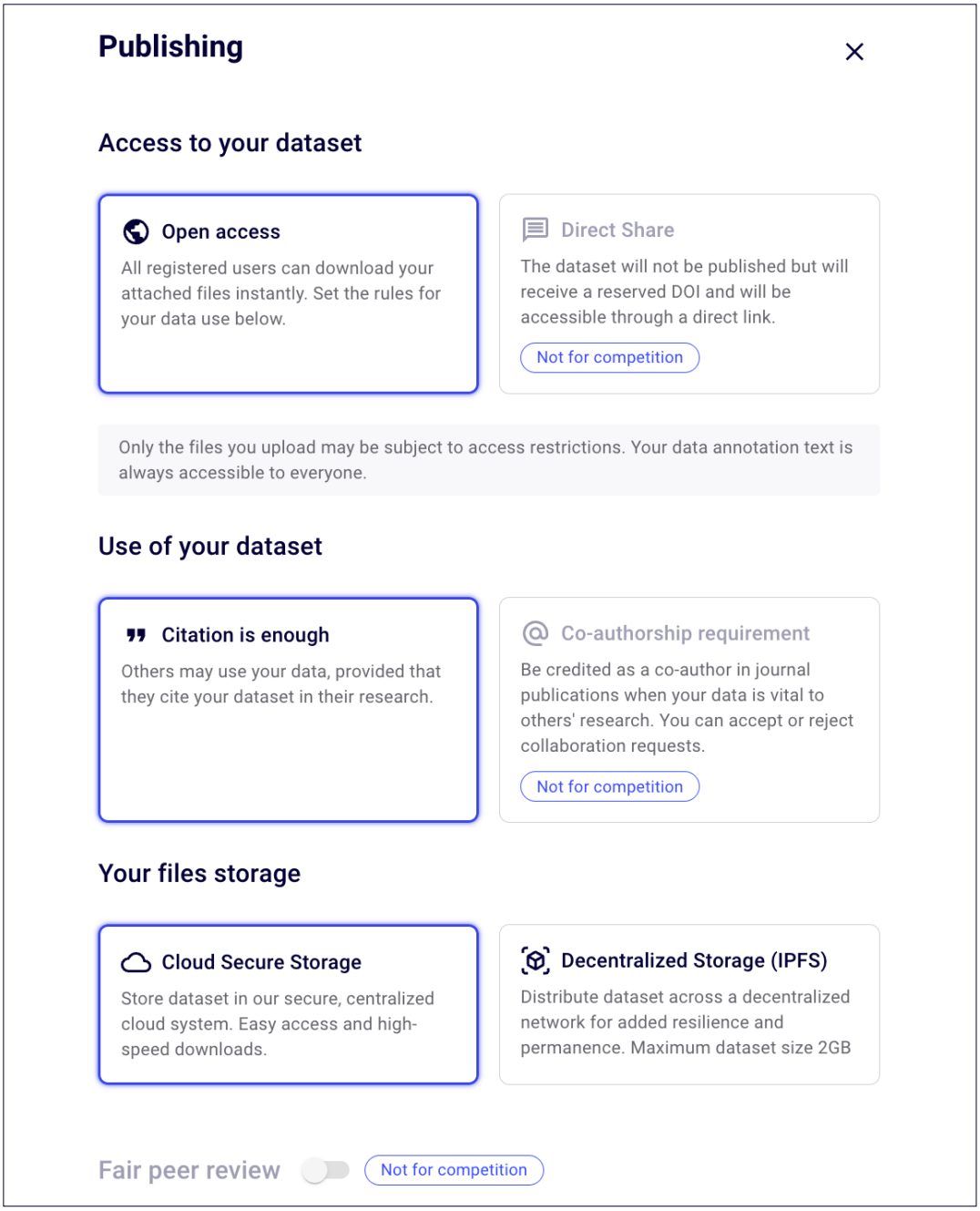
- ◊ You can make the necessary corrections by clicking the **"Edit"** button.

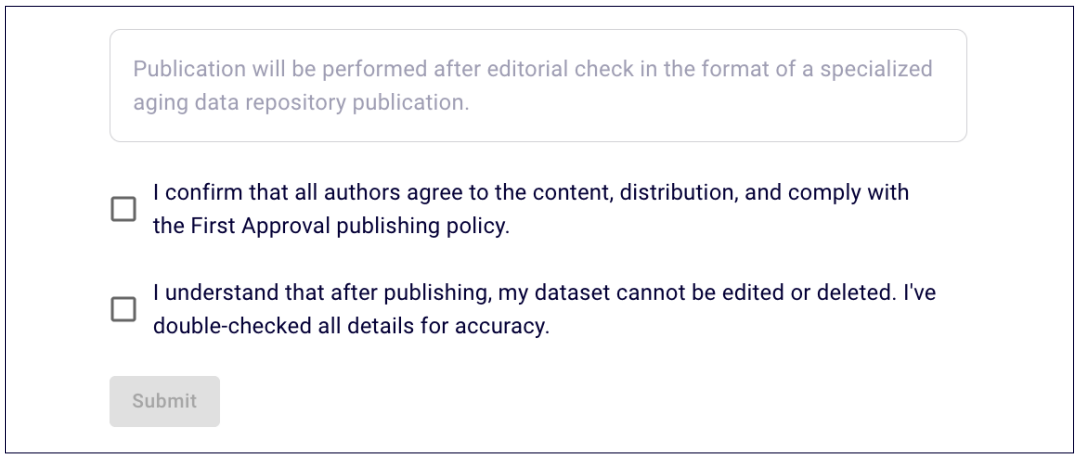
III. Submission

1. Click **"Finalize Submission"** to proceed.

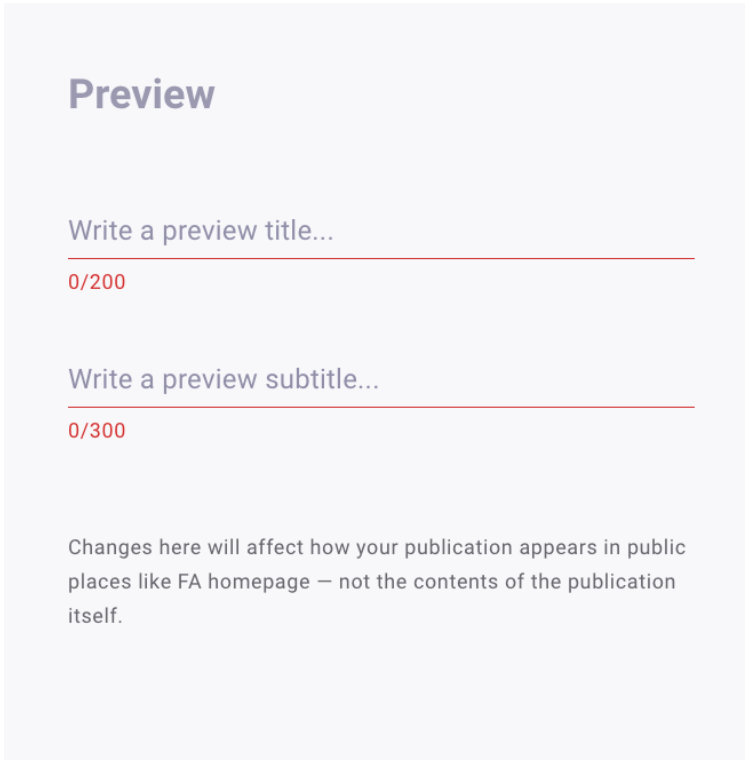
- ◊ **Review the publication and data storage terms on First Approval**.
- ◊ Make sure this is the final version of your dataset and check for errors. **Once published, your dataset cannot be edited or deleted.** Withdrawal is possible only under exceptional circumstances.

- **Note**: After the competition ends and the results are announced, your **submitted dataset with annotation** (if properly formatted) will be published as a **data publication** on **First Approval** and assigned a **DOI (Digital Object Identifier)**.
- Make sure your dataset submission does not contain sensitive information and complies with all institutional and legal requirements. Consult with your academic supervisor if needed.





- Review the preview title and preview subtitle in the First Approval data publications database. They are displayed in the upper left corner of the screen.



2. Finalize your submission by clicking **“Submit”**.

- Note: **Once your dataset is submitted, no further changes can be made**. Withdrawal is possible only under exceptional circumstances.

Additional Notes

- Each participant will receive a **first-authored Open Access publication** with a DOI and PDF version.
- Instructions for claiming the prize will be sent to the winners after the results are announced. The prize money will be transferred to the winners in USDT.
- All submissions will be reviewed and, upon acceptance, published after the competition's conclusion.
- Multiple submissions are allowed. In co-authored submissions, the prize will be awarded to the first author.

Helpful Links

- Competition Information Letter

Contact Information

For inquiries, email: competition@firstapproval.io

Example Dataset Format

Title: Evaluation of Reactive Oxygen Species (ROS) production in Endothelial cells (ECs) in response to COVID-19 patients serum.

Research Area: Medicine, Immunology and Allergy, Infectious Diseases, Cardiology and Cardiovascular Medicine

Summary: Oxidative stress and endothelial dysfunction have been shown to play crucial roles in the pathophysiology of COVID-19 (coronavirus disease 2019) (1,2,3,4). We hypothesized that oxidative stress and lipid peroxidation induced by COVID-19 in endothelial cells could be linked to the disease outcome. Thus, we collected serum from COVID-19 patients on hospital admission, and we incubated these sera with human endothelial cells, comparing the effects on the generation of reactive oxygen species (ROS) between patients who survived and patients who did not survive. We found that the serum from non-survivors significantly increased ROS production. Our data indicate that serum from patients who did not survive COVID-19 triggers ROS production in human endothelial cells.

Background & Aims: To find out if COVID-19 mortality correlates with increased ROS production in ECs. Serum from patients demised to COVID-19 will increase ROS production in ECs.

Materials and Methods:

Human umbilical vein endothelial cells.

Patients' samples

We obtained plasma samples of patients hospitalized with COVID-19 on the first day of hospital admission. Samples were divided into survivors (patients dismissed from the hospital) and non-survivors (N=22 and N=20, respectively). Mean age was 62±8.4 years and 74% were male in survivors' group and 63±14 years and 72% male in non-survivors' group. Mean time to death from blood sampling was 17.4±16.7 days in non-survival group. The study was approved by the Institutional Ethical Committee (IRB #202011756).

Cell Culture

Human umbilical vein endothelial cells (HUVECs) (Sigma, C-12205) were cultured in EGM-2 medium (Lonza, CC4147) and incubated at 37 °C and 5% CO2. Experiments on HUVECs were performed at passages 3-7. HUVECs were plated on glass bottom culture dishes (MatTek Corporation, P35GCOL-0-10-C). When 70-80% confluent, the cells were treated with 10% patients' serum for 24h under normal condition (37 °C and 5% CO2). To prevent clot formation 10,000 U/mL Heparin (Sigma, H3393-100KU) was added to serum before the experiment.

Reactive oxygen species (ROS) assay.

ROS production was quantified 2'-7'-dichlorofluorescin diacetate (H2DCF-DA, InvitrogenTM, D399), as described previously (PMID: 20884348). Incubation for both fluorescent probes, as well as washing and imaging were done in a Krebs-Ringer solution (NaCl 115mM, KCl 5mM, NaHCO3 10mM, MgCl2 2.5mM, CaCl2 2 mM, HEPES 20 mM) supplemented with 10mM glucose. After 24h of treatment with 10% patients' serum, HUVECs were incubated with 2.5 µg/mL Hoechst 33342, trihydrochloride, trihydrate (InvitrogenTM, H21492) for 30 min, in the dark, at room temperature (RT). Then, HUVECs were washed once and incubated with 10µM H2DCF-DA for another 15 min RT, in the dark. Then HUVECs were washed 3 times and incubated without any fluorescent probes for another 15 min, RT in the dark. Immediately after this, cells were imaged by Nikon CSU-W1 Spinning Disk confocal microscope using a 40x objective (Nikon Corporation). Cells were excited with a laser at wavelengths 405 nm and 488 nm for Hoechst and H2DCF-DA respectively. Light emission was detected using 455/50 and 520/40 filters for Hoechst and H2DCF-DA respectively. The same settings (laser intensity, exposure time, pinhole width, etc) were used for imaging of both experimental groups. In order to prevent H2DCF-DA photodynamic reaction, fields of view search and focusing were performed using a Hoechst signal. Images were converted to .jpg format and quantification of H2DCF-DA fluorescence intensity was performed using ImageJ software (NIH).

Data Description:

File name consist of

"ExperimentalGroup-Probe1Name-Probe2Name-ObejectiveMagnification-PictureID.format"

Pictures with the same PictureID but different formats are the same picture.

Software:
Images were converted from .nd2 to .jpg format and quantification of H2DCF-DA fluorescence intensity was performed using ImageJ software (NIH).

Files:

Granting organizations:

The Santulli's Lab is supported in part by the National Institutes of Health (NIH): National Heart, Lung, and Blood Institute (NHLBI: R01-HL159062, R01-HL164772, R01-HL146691, T32-HL144456), National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK: R01-DK123259, R01-DK033823) (to G.S.), by the National Center for Advancing Translational Sciences (NCATS: UL1TR002556-06) (to G.S.), by the Diabetes Action Research and Education Foundation (to G.S.), and by the Monique Weill-Caulier and Irma T. Hirschl Trusts (to G.S.). S.S.J. is supported in part by a postdoctoral fellowship of the American Heart Association (AHA-21POST836407); U.K. is supported in part by a postdoctoral fellowship of the American Heart Association (AHA-23POST1026190); F.V. is supported in part by a postdoctoral fellowship of the American Heart Association (AHA-22POST995561); and J.G. is supported in part by a postdoctoral fellowship of the American Heart Association (AHA-20POST35211151).

Related publications:

Sardu C., Gambardella J., Morelli M.B., Wang X., Marfella R., Santulli G. Hypertension, Thrombosis, Kidney Failure, and Diabetes: Is COVID-19 an Endothelial Disease? A Comprehensive Evaluation of Clinical and Basic Evidence. J. Clin. Med. 2020;9:1417. doi: 10.3390/jcm9051417

Montiel V., Lobysheva I., Gérard L., Vermeersch M., Perez-Morga D., Castelein T., Mesland J.-B., Hantson P., Collienne C., Gruson D., et al. Oxidative stress-induced endothelial dysfunction and decreased vascular nitric oxide in COVID-19 patients. Ebiomedicine. 2022;77:103893. doi: 10.1016/j.ebiom.2022.103893.

Vardakas P., Skaperda Z., Tekos F., Kouretas D. ROS and COVID. Antioxidants. 2022;11:339. doi: 10.3390/antiox11020339.

Chernyak B.V., Popova E.N., Prikhodko A.S., Grebenchikov O.A., Zinovkina L.A., Zinovkin R.A. COVID-19 and Oxidative Stress. Biochem. (Moscow) 2020;85:1543–1553. doi: 10.1134/S0006297920120068

Primary article: https://doi.org/10.3390/antiox12020326

Tags:

Ros oxidative stress redox endothelial cells huvec covid19

See the sample dataset on First Approval:
https://firstapproval.io/publication/BBFDWYD

Supplementary: What does the PDF of a dataset publication on First Approval look like?

first approval

Evaluation of Reactive Oxygen Species (ROS) production in Endothelial cells (ECs) in response to COVID-19 patients serum.

Jankauskas Stanislovas.
Published online: Draft. No description yet.
https://firstapproval.io/publication/BBFDWYD
https://doi.org/10.62251/fa:ds:BBFDWYD

Oxidative stress and endothelial dysfunction have been shown to play crucial roles in the pathophysiology of COVID-19 (coronavirus disease 2019)(1,2,3,4). We hypothesized that oxidative stress and lipid peroxidation induced by COVID-19 in endothelial cells could be linked to the disease outcome. Thus, we collected serum from COVID-19 patients on hospital admission, and we incubated these sera with human endothelial cells, comparing the effects on the generation of reactive oxygen species (ROS) between patients who survived and patients who did not survive. We found that the serum from non-survivors significantly increased ROS production. Our data indicate that serum from patients who did not survive COVID-19 triggers ROS production in human endothelial cells.

1 folders & 12 files – 75.64 MB

Unique archive cryptographic hash: SHA-256: 48c4129c125507ffc555de69b1e844a42cbed780835cd457d9882ec16e58598a

Background & Aims

To find out if COVID-19 mortality correlates with increased ROS production in ECs. Serum from patients demised to COVID-19 will increase ROS production in ECs.

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ROS production was quantified 2'-7'-dichlorofluorescin diacetate (H2DCF-DA, InvitrogenTM, D399), as described previously (PMID: 20884348). Incubation for both fluorescent probes, as well as washing and imaging were done in a Krebs-Ringer solution (NaCl 115mM, KCl 5mM, NaHCO3 10mM, MgCl2 2.5mM, CaCl2 2 mM, HEPES 20 mM) supplemented with 10mM glucose. After 24h of treatment with 10% patients' serum, HUVECs were incubated with 2.5 µg/mL Hoechst 33342, trihydrochloride, trihydrate (InvitrogenTM, H21492) for 30 min, in the dark, at room temperature (RT). Then, HUVECs were washed once and incubated with 10µM H2DCF-DA for another 15 min RT, in the dark. Then HUVECs were washed 3 times and incubated without any fluorescent probes for another 15 min, RT in the dark. Immediately after this, cells were imaged by Nikon CSU-W1 Spinning Disk confocal microscope using a 40x objective (Nikon Corporation). Cells were excited with a laser at wavelengths 405 nm and 488 nm for Hoechst and H2DCF-DA respectively. Light emission was detected using 455/50 and 520 /40 filters for Hoechst and H2DCF-DA respectively. The same settings (laser intensity, exposure time, pinhole width, etc) were used for imaging of both experimental groups. In order to prevent H2DCF-DA photodynamic reaction, fields of view search and focusing were performed using a Hoechst signal. Images were converted to .jpg format and quantification of H2DCF-DA

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Authors

Jankauskas Stanislovas Albert Einstein College of Medicine Wilf Family Cardiovascular Research Institute

Granting organizations

- The Santulli's Lab is supported in part by the National Institutes of Health (NIH): National Heart, Lung, and Blood Institute (NHLBI: R01-HL159062, R01-HL164772, R01-HL146691, T32-HL144456), National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK: R01-DK123259, R01-DK033823) (to G.S.), by the National Center for Advancing Translational Sciences (NCATS: UL1TR002556-06) (to G.S.), by the Diabetes Action Research and Education Foundation (to G.S.), and by the Monique Weill-Caulier and Irma T. Hirschl Trusts (to G.S.). S.S.J. is supported in part by a postdoctoral fellowship of the American Heart Association (AHA-21POST836407); U.K. is supported in part by a postdoctoral fellowship of the American Heart Association (AHA-23POST1026190); F.V. is supported in part by a postdoctoral fellowship of the American Heart Association (AHA-22POST995561); and J.G. is supported in part by a postdoctoral fellowship of the American Heart Association (AHA-20POST35211151).

Related articles

Primary articles (publications based on this dataset):
[https://doi.org/10.3390/antiox12020326]

1. Sardu C., Gambardella J., Morelli M.B., Wang X., Marfella R., Santulli G. Hypertension, Thrombosis, Kidney Failure, and Diabetes: Is COVID-19 an Endothelial Disease? A Comprehensive Evaluation of Clinical and Basic Evidence. J. Clin. Med. 2020;9:1417. doi: 10.3390/jcm9051417
2. Montiel V., Lobysheva I., Gérard L., Vermeersch M., Perez-Morga D., Castelein T., Mesland J.-B., Hantson P., Collienne C., Gruson D., et al. Oxidative stress-induced endothelial dysfunction and decreased vascular nitric oxide in COVID-19 patients. Ebiomedicine. 2022;77:103893. doi: 10.1016/j.ebiom.2022.103893.
3. Vardakas P., Skaperda Z., Tekos F., Kouretas D. ROS and COVID. Antioxidants. 2022;11:339. doi: 10.3390/antiox11020339.
4. Chernyak B.V., Popova E.N., Prikhodko A.S., Grebenchikov O.A., Zinovkina L.A., Zinovkin R.A. COVID-19 and Oxidative Stress. Biochem. (Moscow) 2020;85:1543–1553. doi: 10.1134/S0006297920120068