protocols.io

Introduction to protocols.io

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SPRINGER NATURE

Housekeeping

We will record the webinar (registrants will receive a link to the recording and these slides)

Q&A will be at the end, but please add your questions in the Q&A or Chat during the webinar as they occur to you.

Check out our other webinars: https://www.protocols.io/webinars

Request a demo: https://www.protocols.io/help/demo

Agenda

1. **Why Sharing Methods Matters**

2. **Introduction to protocols.io**
   Mission & Key Functionality

3. **Navigating protocols.io**
   Public repository
   Create and share protocols
   Publish protocols
   Protocol Entry Service

4. **Q&A**

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Methods Are Frequently Lost

Biologists...

> **Morgan Halane**
> @themorgantrail   **Folge ich**
>
> Looking for protocol in 1997 paper: "as described in (x) et al '96". Finds '96 paper: "as described in (x) '87." Finds '87 paper: Paywall.
>
> ⊕ Tweet übersetzen
>
> 21:20 - 1. Nov. 2017 aus 대한민국 포항시
>
> 34 Retweets 96 „Gefällt mir"-Angaben

Physicists...

> **Daniel Gonzales**
> @dgonzales1990   **Folge ich**
>
> 2017: "Devices were fabricated as previously described [ref 8]"
>
> [ref 8] 2015: "Devices were fabricated as previously described [ref 4]"
>
> [ref 4] 2013: "Devices were fabricated as previously described [ref 2]"
>
> [ref 2] 2009: "Devices were fabricated with conventional methods"
>
> ⊕ Tweet übersetzen
>
> 13:16 - 17. Jan. 2018
>
> 230 Retweets 798 „Gefällt mir"-Angaben
>
> 💬 28   ⟲ 230   ♡ 798   ✉

Researchers cannot:

➔ **Find,**

➔ **Access, or**

➔ **Replicate**

Experimental /

Methodological Details

Cancer Biology Reproducibility Project

Repeating & building upon previously published work is hard

The **hardest part, by far, was figuring out exactly what the original labs actually did**. Scientific papers come with methods sections that theoretically ought to provide recipes for doing the same experiments. But **often, those recipes are incomplete, missing out important steps, details, or ingredients. In some cases, the recipes aren't described at all**; researchers simply cite an earlier study that used a similar technique.

Plan to replicate 50 high-impact cancer papers shrinks to just 18

By Jocelyn Kaiser | Jul. 31, 2018 , 5:45 PM

When preparing replications of **193 experiments** from **53 papers** there were a number of challenges.

2%
experiments with open data

70%
of experiments required asking for key reagents

69%
of experiments needing a key reagent original authors were willing to share

0%
of protocols completely described

32%
of experiments the original authors were not helpful (or unresponsive)

41%
of experiments the original authors were very helpful

Cancer Biology Reproducibility Project

Papers / Researchers do not have sufficient information for experiments to be repeated

These were all made by tweaking the same recipe. Rachel Askinasi/Insider

(Screenshot from
https://www.insider.com/chocolate-chip-cookies-common-baking-mistakes-photos)
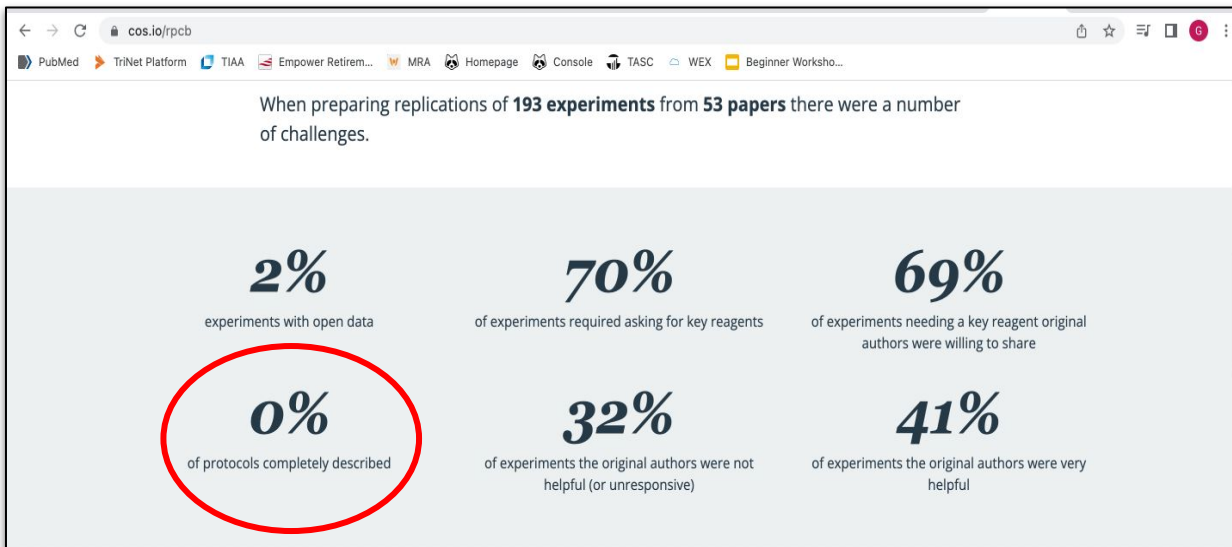
Methods Matter for Reproducible Research

IF Cookies == Data / Results

ANALYSIS OF
Size, Thickness, Texture, Hardness, Flavour

CAN ONLY BE INTERPRETED IN CONTEXT OF THE TWEAKS
Too much flour or sugar, Baking powder instead of baking soda, etc.

Image Attribution: CC-BY 2.0 José Manuel Suárez from Spain

A Drop in the Research Data Ocean

protocols.io

Data Sharing needs Methods Sharing

If you share data, you need to also share comprehensive methods details

Research Data
"Nothing in Biology Makes Sense Except in the Light of Evolution"
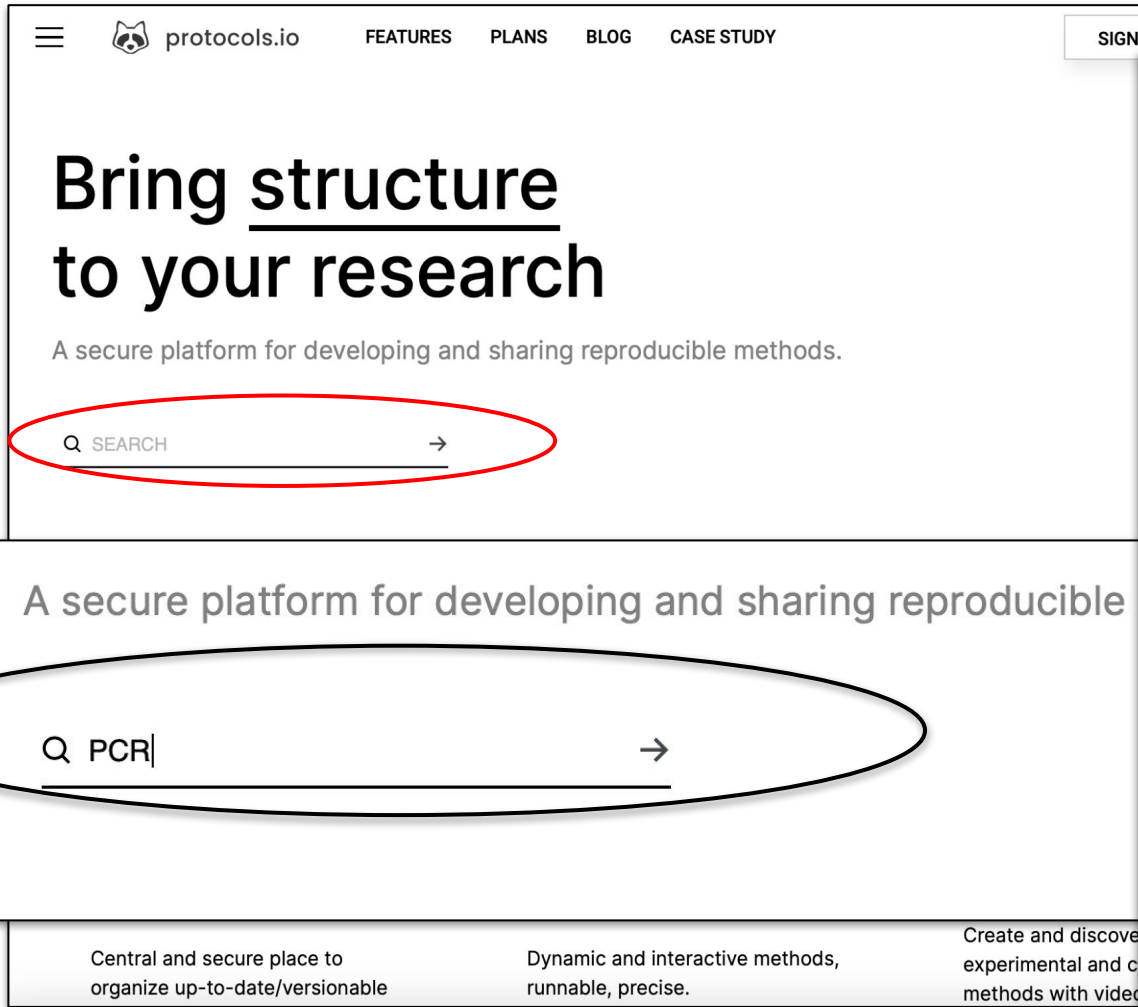*How it was Generated*
-- Theodosius Dobzhansky, 1973

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Overview: Mission of protocols.io

Make it easy to share method details before, during, and after publication.

https://protocols.io/welcome
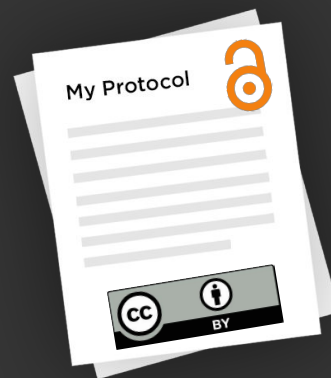
FAIR: Discover Protocols

Findable & Accessible

- Open access repository
- All research disciplines
- Collaborative tool
- Archived & Mirrored

Some stats

Total users:	>160,000
Total public protocols:	>16,700
Total private protocols:	>68,600
Average views/month:	>200,000
Visitors in 2022:	>1,000,000

Publish your protocol, get a DOI link, place in your Materials and Methods

Methods and protocols for …… are available as a collection in protocols.io (DOI link)

Links with Many Journals

Journals & Publishers

Recommending protocols.io on manuscript submission

AACR American Association for Cancer Research®

GSA Genetics Society of America®

PLOS

eLIFE

500+ journals

Lab Protocols in PLOS ONE

Organizations encouraging use of protocols.io

Journals & Publishers

Recommending protocols.io on manuscript submission

AACR — American Association for Cancer Research®

GSA — Genetics Society of America

PLOS

eLIFE
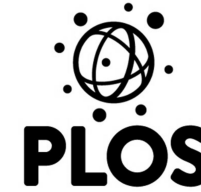
500+ journals

Funders

Requiring or recommending protocols.io in grant guidelines/policies

THE LEONA M. AND HARRY B. **HELMSLEY** CHARITABLE TRUST

Alex's Lemonade Stand

CZ

GORDON AND BETTY **MOORE** FOUNDATION

NIH

wellcome
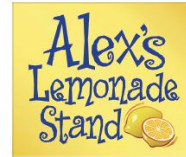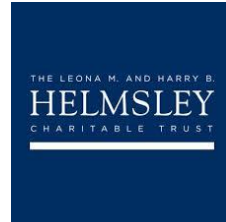
Institutions

Campus licenses for more reproducible research and publications.

UNIVERSITY OF CALIFORNIA

Carnegie Mellon University

THE UNIVERSITY OF EDINBURGH

FRED HUTCH CURES START HERE®

+ more

Facilitating Cross-Disciplinary Connections

Accelerate Science

→ Increase Discoverability

→ Reproducibility

→ Facilitate Research Connections

→ Enable Reuse

→ Enhance Value of Research

Key Benefits
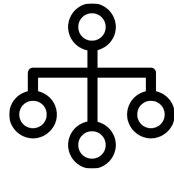
Manage and Share Research Data and Protocols
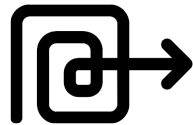
Simplify Teamwork and Improve Collaboration
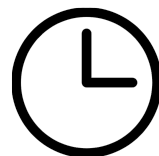
Save Time and Keep Work Organized

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3. **Navigating protocols.io - Demo if Internet OK!**
   Public repository
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4. **Q&A**

Public Repository: Search for Public Content

https://protocols.io/welcome   Find published protocols to run / fork

Public Repository: Search for Public Content

Find and join public workspaces relevant to your research

Sign up for an account:

https://protocols.io/welcome

User Account Options

Open Research Free Account

Two private protocols

Unlimited public protocols

Unlimited public workspaces

Unlimited public versions and forks

Long term preservation

Basic Support

Individual Premium Workspace

Everything in Open research

PLUS:

Unlimited private protocols

Private and secure workspace

Training

Dedicated Support

Plus more...

Institutional License

Everything in Open research

PLUS:

Unlimited private protocols

Unlimited private workspaces

Protocol import service

SAML single sign-on

Training webinars

Plus more....

https://protocols.io/plans
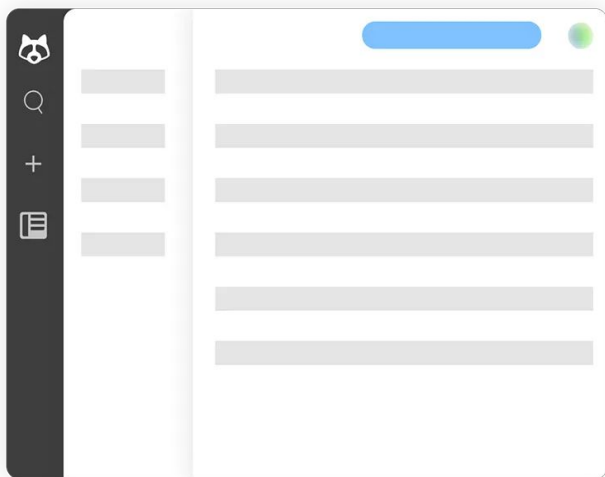
Using protocols.io

File Manager

Protocol / Document Editor and Viewer

Workspace Profile

visible   invisible

Access all workspaces
Arrange folders / files
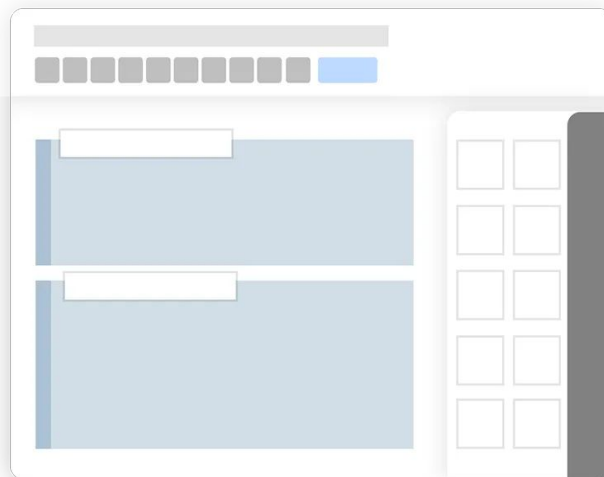
Develop protocols
Edit / Comment
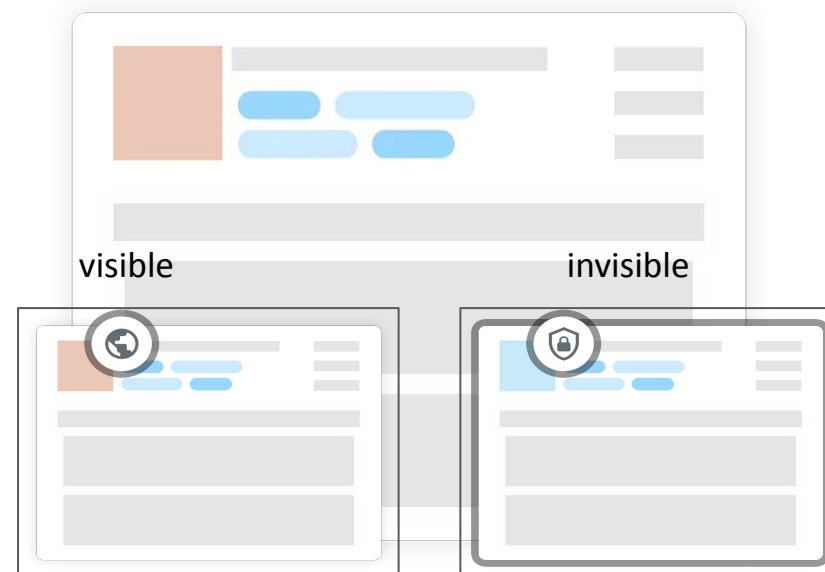
Interact with team members
Discussions / resources

Navigating protocols.io: File Manager
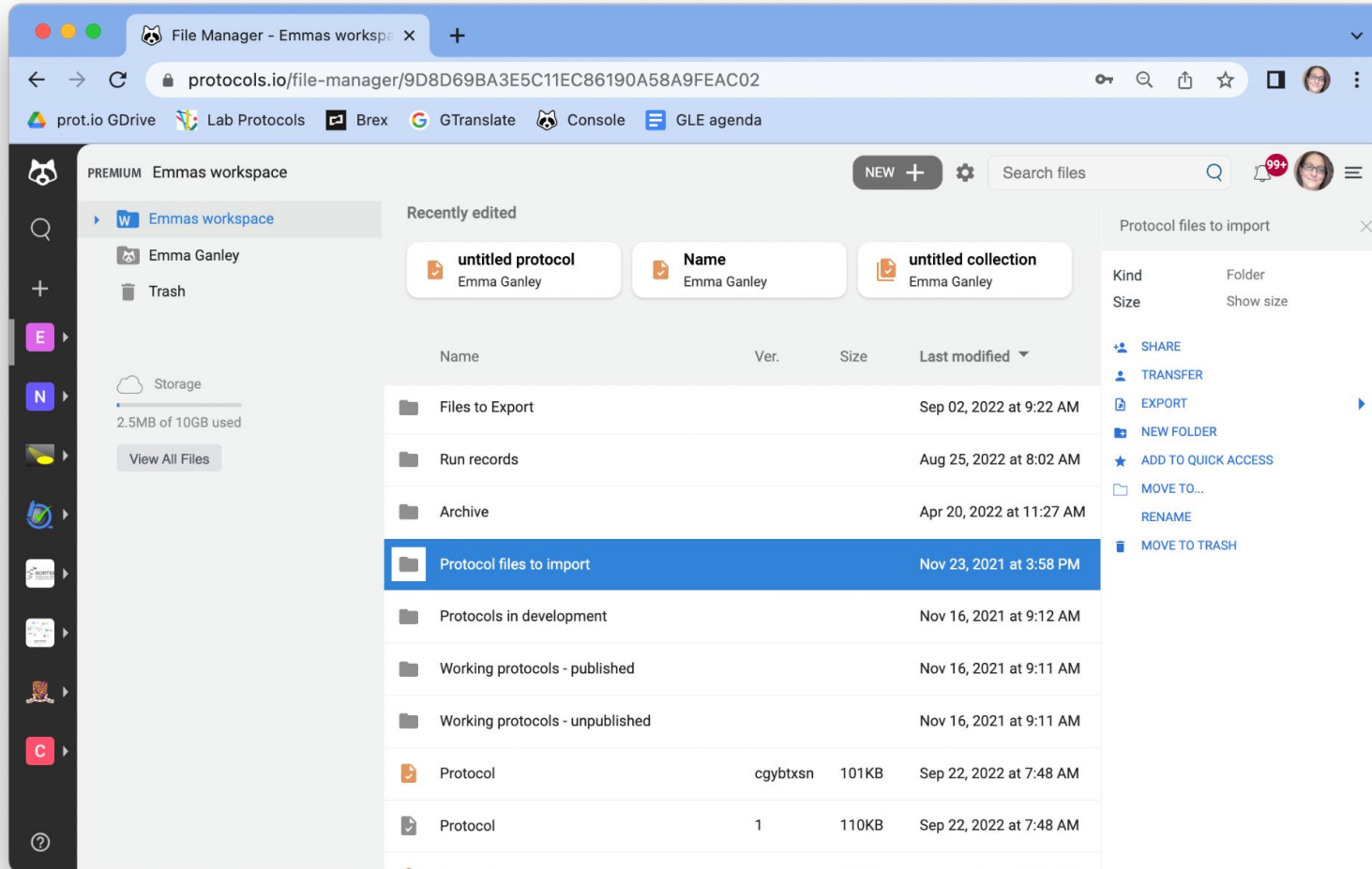
Access all workspaces
Arrange folders / files

● Supports any file type

● Archiving, auditing, exporting

● Connect to Dropbox, One Drive, Box, OSF, LabArchives …

● Enterprise grade security and backup functionality

Navigating protocols.io: Workspace Profile

File Manager ↔ Workspace Profile

Workspace Administration

Workspace Administration

ADVANCED OPTIONS ↓

- Secure file sharing

- Task Manager

- Reagent Manager

- Workspace Visibility

- Manage Workspace Members

  - Invite colleagues

  - Generate a join link

  - Control permissions

- Configure Workspace Permissions

Create a Protocol: The Editor

Navigating protocols.io: The Editor

Detailed Components

Granular Editing history

Concurrent Editing

Colour Coded Sections

Step-by-step format

Existing Protocol: Copy/Paste into protocols.io

Include as much information as possible

Insert or Embed Images and/or Movies

Click share on YouTube, then Embed, copy and paste the embed code into protocols.io and then click Save.

Export Protocols and Run Records

From the file manager:

From the protocol:

ELN Integrations
- Export from protocols.io to your LabArchives notebook
- Import your protocols into RSpace or SciNote accounts

Sharing, Posting, Publishing Protocols

Commenting on Private or Public Protocols

Provide feedback via comments to your colleagues as you develop and optimize your protocol

Commenting on Private or Public Protocols

Add Private or Public comments

Protocol owner is Notified

Public Comments == A Public FAQ

Protocol Import Service
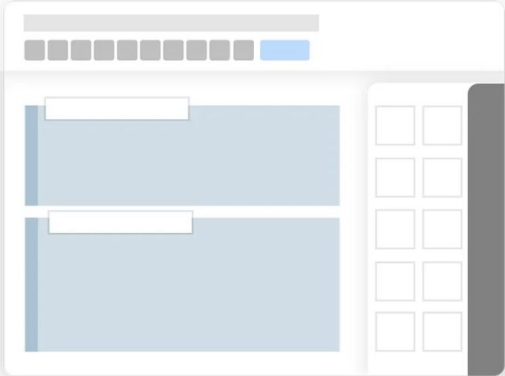
1. **Send us your protocol.** Submit your protocol in whichever format it currently is (pdf, docx, etc.).

2. **We import and format your protocol.** Our editorial team will enter the protocol and double check it to make sure there are no errors or typos relative to the document that you provided.

3. **You review the digitized protocol.** We will send you the protocol for review.

4. **Publish at any time.** If all looks good, the protocol will be reassigned to you privately and you will be able to publish it whenever you're ready.

https://www.protocols.io/we-enter-protocols

Protocol Import Service
→ Access & Track via Profile

protocols.io for Teaching

Class

Computational class

Lab class

Make datasets, software, and code available through instructional protocols

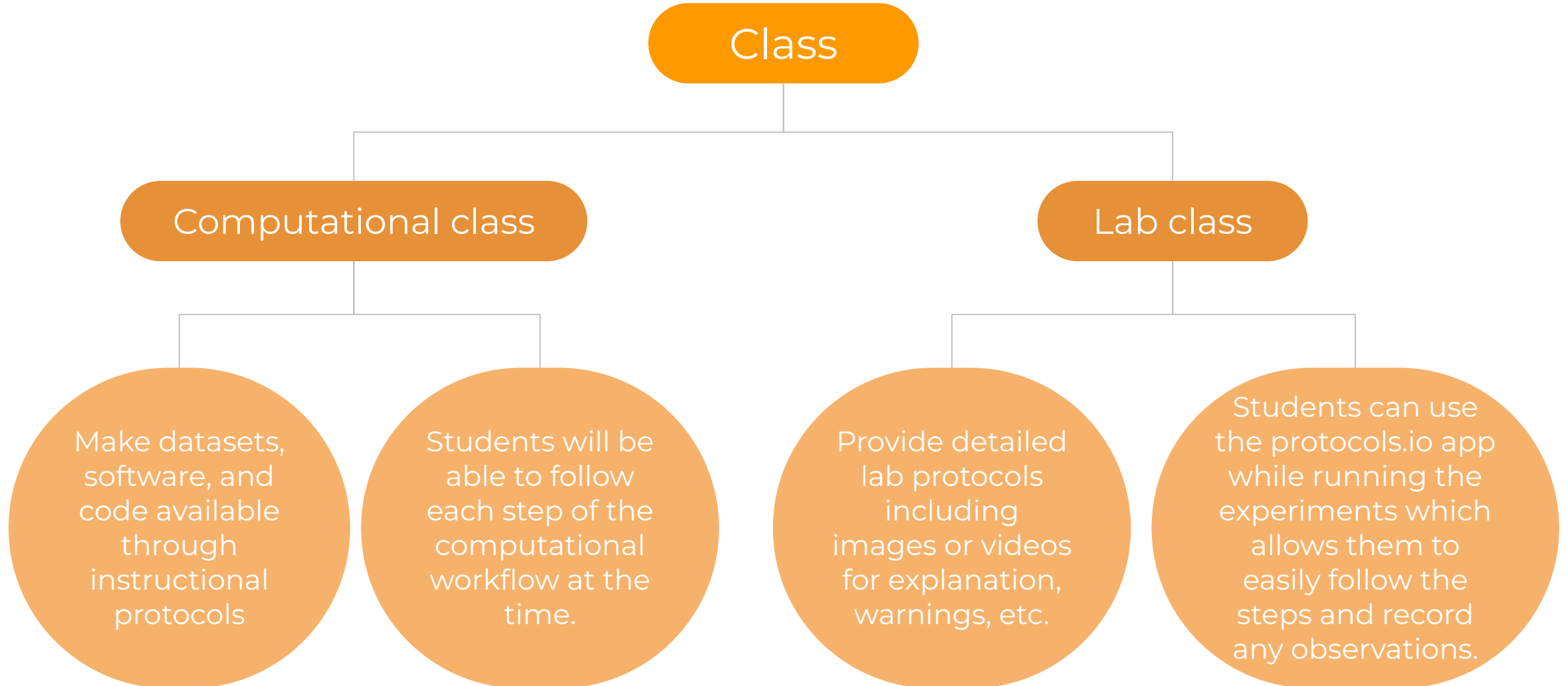Students will be able to follow each step of the computational workflow at the time.

Provide detailed lab protocols including images or videos for explanation, warnings, etc.

Students can use the protocols.io app while running the experiments which allows them to easily follow the steps and record any observations.

Check if your Orgaisation has a Site License

- Unlimited Premium use
- Unlimited private files
- Efficient protocol management
- Improved collaboration
- Training
- More reproducible publications
- Protocol import

https://www.protocols.io/institutions/

Contact info@protocols.io if you'd like advice on how to advocate for a license at your organisation

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Key Benefits

★ Support Collaboration

★ Increase Discoverability

★ Reproducibility

★ Enable Reuse

★ Credit & recognition for method

  development

★ Dynamic Permanence (Versioning)

★ Improved Materials & Methods

★ Stewardship of Research Output

Accelerate Science

Q/A

emma@protocols.io

protocols.io

Practicalities & Preservation

- Daily backups
- Archived in CLOCKSS
- Dynamic content archived with CZI
- Public content mirrored on GitHub & Internet Archive
- Public APIs
- Export (PDF, JSON)
- Integrated with some ELNs
- Citable