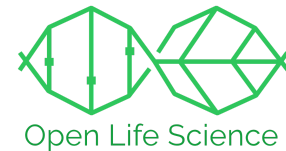


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Open Life Science: Annual Report 2022, as submitted for the CZI interim reporting

Date report submitted: 2022-09-30

Lead applicant name: Yo Yehudi

List of key personnel directly involved

- Yo Yehudi, Open Life Science
- Bérénice Batut, Open Life Science and University of Freiburg
- Malvika Sharan, Open Life Science and The Alan Turing Institute
- Emmy Tsang, Open Life Science and Invest in Open Infrastructure

Background:

[Open Life Science](#) (OLS) is an organisation dedicated to growing open science ambassadors who create open equitable communities in their own scientific and local domains. OLS is currently funded by the Chan Zuckerberg Initiative via the Silicon Valley Community Foundation ([grant materials](#), [blog announcement](#)), and by the Wellcome Trust (see our [Funding and Supporters](#) page for more details).

Progress since September 2021

Open research mentoring and training

OLS has continued to deliver our cohort-based training and mentoring programme for open researchers and leaders worldwide.

We successfully ran our fifth cohort, OLS-5, between February and July 2022. A numeric overview:

- **71 mentees from 18 countries** developed **34 open research projects** in OLS-5: <https://openlifesci.org/ols-5/projects-participants/#projects>. Projects range from improving diagnostics of cancer through artificial intelligence and digital pathology (led by a team from Uzbekistan and Cameroon), to building open collaborative networks and incentive systems for brain health (led by a participant from South Korea).
 - We offered 15 microgrants to participants from 9 countries to facilitate their participation. These typically cover small pieces of hardware (e.g. webcam), and costs for mobile data.

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- **35 mentors** provided crucial guidance and support along the participants' open journey. Of these mentors, 15 were past OLS mentees in OLS-4 or previous cohorts.
- **26 experts and guest speakers** shared their perspectives and experience with and provided advice to the cohort during cohort calls, as well as mentoring meetings.
- **5 cohort facilitators** continue to contribute to delivering cohort calls, from co-hosting calls to correcting cohort call transcripts and sharing recordings on YouTube. Their work is crucial to the accessibility and inclusivity of OLS.

Widening access to the OLS programme outputs

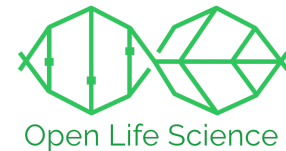
On average, we noted a significant increase in the number of views in our YouTube recordings and participants following the programme asynchronously. As viewing figures for the last six months show (total 2920 views), asynchronous access and captioned videos facilitate access to participants worldwide, directly showing OLS's impact at broadening global open science capacity (with most viewers from the Global South countries, as well as the USA and European countries).

Geography	+	Views ↓	Watch time (hours)
<input type="checkbox"/> Total		2,920	216.4
<input type="checkbox"/> Ghana		96 3.3%	7.3 3.4%
<input type="checkbox"/> Kenya		58 2.0%	0.5 0.2%
<input type="checkbox"/> Mexico		48 1.6%	1.5 0.7%
<input type="checkbox"/> Argentina		40 1.4%	1.4 0.6%
<input type="checkbox"/> Bolivia		30 1.0%	0.8 0.4%
<input type="checkbox"/> United States		23 0.8%	0.2 0.1%
<input type="checkbox"/> India		18 0.6%	0.0 0.0%
<input type="checkbox"/> Canada		11 0.4%	0.0 0.0%
<input type="checkbox"/> United Kingdom		11 0.4%	1.7 0.8%
<input type="checkbox"/> Spain		10 0.3%	0.0 0.0%
<input type="checkbox"/> Netherlands		10 0.3%	0.0 0.0%

Responding to mentors' and participants' feedback, we piloted extended graduation periods and catch-up sessions to offer more flexibility for participants to follow and engage with the training.

In addition, recognizing that many participating in OLS-5 do their best work in Spanish,

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we organized a **first bilingual Spanish-English graduation call**. Some graduates presented in Spanish while others in English, and simultaneous interpreters translated presentations and discussions in real-time to the other language. These calls were also live streamed to YouTube to broaden participation, and closed captioned in both languages. We are motivated to run more bilingual calls in the future, as well as to organize fully non-English cohorts (see [future work and timeline](#))

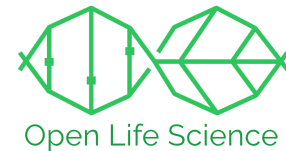
With the funding received in 2022, we were able to provide mentors and guest speakers with honoraria, participants with microgrants, and facilitators with compensation for their work. We have seen and have been personally informed on many occasions that paying people for their time has facilitated and encouraged participation, especially those from traditionally underrepresented groups.

Outcomes

Below, we highlight a few stories from the community in the reporting period that made us proud of our work.

- The team leading the **Argentinean Public Health Research on Data Science and Artificial Intelligence for Epidemic Prevention (ARPHAI)** project participated in OLS-5. Mentored by Mayya Sundukova (who is also an OLS facilitator and former mentee), the team was exposed to a new, more open way for working and were able to see how the "open by design" approach could be applied in real life. (See the ARPHAI's team graduation presentation, in [Spanish](#) and [English](#)).
- The **Bioinformatics Hub of Kenya Initiative (BHKi)** steering team, who participated in OLS-1, ran a bioinformatics seminar series and an open science conference: <https://bosscon2022.bhki.org/>
- Saranjeet Kaur, founder of **RSE Asia** and OLS-4 mentee, co-organised RSE Unconf Asia, Australia, New Zealand along with an OLS expert Rowland Mosbergen, a software and data expert based in Australia: <https://rse-aunz.github.io/2022-Asia-Australia-unconference/>
- Kim Martin and Saranjeet Kaur were **awarded Rising Star and Impact Awards by RSECon 2022** for founding and leading RSE communities in South Africa and India respectively, projects they were designing in OLS: <https://rsecon2022.society-rse.org/policies-for-rsecon22/>
- A project **Data Science and AI Educators' Programme** at The Alan Turing Institute, reused the OLS planning format, consulting and mentorship to build and deliver a 10 week long programme for 47 international educators in AI and data science: <https://github.com/alan-turing-institute/ds-ai-educators-programme>. They are set to launch a second cohort.
- 15+ OLS community members were selected to work on **NASA's Transform to Open Science initiative**:

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https://github.com/nasa/Transform-to-Open-Science/blob/main/docs/Area2_Capacity_Sharing/OpenCore/OpenCore_leads.md

- OLS team members, facilitators and graduates delivered **3 workshops and multiple talks** at several international conferences including Vive la différence - research software engineers 2022, Software Sustainability Institute (SSI) - Research Software Camp 2022, SSI Collaboration Workshop 2022, Vitae International Researcher Development Conference 2022, RSECon 2022.
- OLS collaborated with Invest in Infrastructure and The Turing Way to build community-solicited recommendations for **UNESCO's Global Call for Best Practices in Open Science**: <https://zenodo.org/record/6841873>

Building organizational capacity and resilience

We have been building operational capacity to empower OLS to achieve our stated mission.

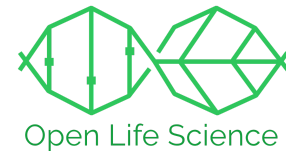
- In February 2022, **Yo Yehudi stepped up as our Executive Director**, working 3 days a week (0.6FTE) to spearhead and coordinate the various activities in this grant, as well as exploring and pursuing partnerships and business development opportunities.
- Between March and April 2022, contracts were established between OLS and Co-Directors Malvika Sharan and Emmy Tsang.
- We **engaged PEM, an accounting firm**, to support our bookkeeping and accounting work, manage our payroll and pension, and provide fiscal advice.
- In June 2022, **Paz Bernaldo was hired as our Community Researcher and Programme Coordinator** (1 FTE, funded by the Wellcome Open Research Fund). With guidance from the Co-Directors, Paz is leading the organization of OLS-6 and future cohorts.

The expanded core team combines knowledge and experience in open science, community design and management, biomedical and social science research. Paz brings in invaluable lived experience and perspectives from the Global South, which is critical to our work and mission, as well as enhanced capacity to engage in Spanish.

In parallel, we have established processes and infrastructure that improve our team's efficiency, but also are crucial in enabling us to live our values of openness, transparency, and accountability.

- To enable further sharing and reuse of our work, we **started documenting our key processes in [this publicly accessible GitHub repository](#)**. These include cohort organizing resources (such as email templates), our microgrant policy, as well as invoicing instructions to make it easier for those who work with us to receive compensation for their work.

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- Our community is starting to contribute to this documentation, e.g. Michael Landi, an experienced cohort facilitator, has shared documentation around the roles and tasks for cohort facilitators. Michael will be leading the effort to train and onboard new OLS facilitators.
- We **created and implemented key pieces of internal documentation and infrastructure**, including financial and accounting processes and key points of contact, an equipment manifest, and a risk register.
 - In July 2022, we **implemented a Customer Relationship Manager (CRM) system** [CiviCRM Spark](#), to better manage the personal data of our community members and past and present participants and ultimately to be more intentional and careful in our community engagement efforts.
- The hiring process in OLS involved trusted community members in writing the job description, reviewing, interviewing and selecting the candidates from a pool of over 200 applicants. Since this process was designed using open science principles and proved to be successful, OLS will release a **recruitment toolkit for open science organizations** in the near future.

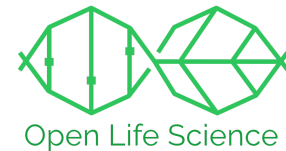
Co-designing a new Open Source Software module

From our experience developing biomedical open source research software, reviewing related grant proposals, and training software engineers (RSEs) and researchers in this field of work, there's an urgent need to train those who are developing and maintaining biomedical open source software in open ways of working and community engagement, to improve the sustainability of tools and technologies in biomedical research. We also recognize strongly that any training materials and curriculum in this area must be co-designed with stakeholders from various communities, as open source software and community management practices are highly contextual.

In the past half year, we focussed on **co-designing the module and curriculum with the community** from the very beginning. The Co-Directors brainstormed a list of topics that we felt important to teach from our own experiences, and then ran a survey in our existing community to gauge members' interests and gain a sense of where training is most needed to inform our curriculum design.

In parallel, three of our community members – Mayya Sundukova (OLS facilitator and mentor), Batool Almarzouq (OLS facilitator, mentor, and former mentee), and Michael Landi (OLS facilitator) – designed and ran a [short version of the full OLS programme](#) at the Software Sustainability Institute Research Software Camp. This not only helped provide valuable insight into how RSEs engage with the topics taught within the OLS programme, but also helped us understand how we can better tailor the open source software module to the needs of RSEs and others developing research software. Multiple participants from this event subsequently signed up to join OLS-6 as mentees.

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Establishing and maintaining partnerships

Partnerships with value-aligned organizations not only strengthen our work, but enable us to explore new collaboration and business development opportunities. Since February 2022, we have:

- Established a new partnership with N8-CIR to provide Ally Skills training for their members.
- Co-authored a paper titled ["Ten simple rules for establishing a mentorship programme"](#) with our partners at Talarify.
- Co-submitted 3 grant applications with MetaDocencia, Code for Science and Society, 2i2c, the Carpentries, Talarify, CSCCE and Invest in Open Infrastructure.
- Continued our partnership with the Delft University of Technology (TU Delft) Faculty of Applied Sciences, where the Faculty offers graduate school credits for participating TU Delft PhD candidates. We've had at least one participating team from TU Delft every cohort since OLS-4.

Future work and timeline

In the next year, we will run two more cohorts of our open research mentoring and training programme and continue to center our values of inclusivity, care, and flexibility, to iterate on training design, facilitate broaden participation (especially for those from the Global Majority), and ensure that contributors are meaningfully compensated for their work.

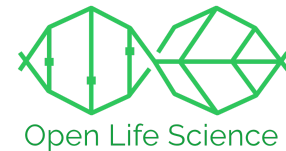
In addition, we will build upon the foundations we have established to further our work in building meaningful and robust governance, piloting the open-source software module, and in exploring and building out alternative revenue streams as well as finding opportunities for further partnerships and collaborations.

Piloting and trailing the Open Source Software Module

Building on the survey and feedback from workshops and the core OLS programme, we will **design a prototype for the open source software module and test this in OLS-6**. OLS-6 participants can choose to take part in this test module, and their feedback will be used to improve and refine the curriculum and format.

We will also be looking for **further opportunities to test this module in different settings beyond the OLS cohort**. This allows us to ensure the usefulness of the module for RSEs and those who develop scientific software in different settings, and to promote this work to a broader audience to increase reuse and impact of the resources and training materials we will produce.

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Evolving our governance

We organized a Directors' retreat in September 2022, where we designed the plan to evolve our governance. This includes:

- **Disambiguating and formalizing OLS directors' roles**, to provide clarity internally for present and future staff and community members, and externally for partners and supporters looking to work with us:
 - Yo Yehudi as Executive Director and Business and Development Lead
 - Malvika Sharan as Director of Partnerships and Strategy
 - Bérénice Batut as Director of Learning and Technology
 - Emmy Tsang as Director of Finance and Operations
- The current [governance structure and status was drafted](https://openlifesci.org/community) and updated on the website for transparency: <https://openlifesci.org/community>.
- *In the next 3 months*, **convening a governance working group**, which will lead the process of evolving OLS's governance. The governance working group will consist of core OLS community members with diverse geographical representation, and will work with OLS directors and staff to determine governance needs (e.g. the establishment of a Steering/Advisory committee, additional community oversight and advisory mechanisms), prioritize these needs and map a timeline for this work.
- *In the next 6 months*, **further systematizing processes and policies**, including an honoraria policy and a volunteer policy.
- *In the next year*, **formalizing relationships with our core community members**, including piloting a resident fellow programme for some of our core contributors, and exploring establishing a fiscal sponsorship relationship with some OLS-incubated projects.

Business development

Building on our current partnerships, in *the next 6-12 months*, we will be **accelerating our business development and fundraising efforts**. This includes:

- Formalizing our consulting services in community design and engagement;
- Developing fee-for-service partnerships with institutions, where OLS and our core community provide (customized) open research training for institutions; and
- Modelling and piloting fiscal hosting for OLS-incubated open initiatives.

Localizing training materials and curriculum (funding needed)

Building with and serving local communities worldwide is one of our core values. Through our past 3 years of work, we have witnessed how contextualized training and guidance has not only supported individuals and teams around the world in adopting

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open practices, but also facilitated knowledge and experience exchange between community members and participants from different parts of the world.

Yet, the fact that OLS is currently only offered in English and mostly designed by a largely European team remains a major barrier to participation, despite our best efforts e.g. to pair mentors and mentees from the same background/speak the same language, and to invite more guest speakers from the Global Majority. Hosting our first ever bilingual graduation call in OLS-5 has affirmed the need to further localize OLS, to move towards our vision to create and serve an equitable global community.

In the next 12-18 months, we will be **actively seeking funding and resources to localize our programme and resources produced**. In the short term, we hope to launch our first Spanish cohort in 2023, as well as mobilize our community to support efforts in localizing and translating open research training materials.

Key outputs and project recognition

Identifier (URL or DOI)	Title	Notes (optional)
doi: 10.1371/journal.pcbi. 1010015	Ten simple rules for establishing a mentorship programme	Co-authored with Talarify team
doi: 10.5281/zenodo.684 1873	Open Life Science (OLS) response to UNESCO global call for best practices in open science	
https://zenodo.org/communities/openlifesci	OLS-5 graduation presentations (also on https://www.youtube.com/playlist?list=PL1CvC6Ez54KCDNhueLfx7G3UEqO3LLxjE)	

Additional recognition for the open source project(s) and/or key personnel

- Saranjeet Kaur Bhogal (OLS-4 and OLS-6 mentee) was awarded the Impact Award at RSECon2022, and received an honorable mention for her poster
- Kim Martin (OLS-5 graduate, OLS-6 mentor) was awarded the Rising Star Award at the RSECon2022
- NASA TOPS OpenCore - Approximately 15 (60%) of the 35 subject matter experts creating [open science training material](#) were members of the OLS community.
- Diego Onna and Gemma Turon, both OLS graduates, were awarded grants under the [Code for Science and Society Event Fund](#)
- OLS graduates Gemma Turon, Kim Martin, and Sophia Batchelor were awarded

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[2022 Software Sustainability Institute \(SSI\) Fellowships](#). Meag Doherty, an OLS mentor, was awarded the first international fellowship from SSI to strengthen connections with the research community in the USA.

- Manuel Lera Ramírez, a former mentee and OLS-5 facilitator was awarded a fellowship of the [ELIXIR-UK DaSH project](#).

Major changes in scope or project plan:

So far, the scope of the project and the plan have remained largely the same as when the grant was originally written, with only minor deviations. For example, whilst the budget originally planned for all directors to work for two years at 0.1 FTE, one of our directors found it more effective to pick up 0.2 FTE for a single year (the final year of the grant). See budget narrative and table below for more details.

See original budget listed in CZI grant proposal published by OLS as Annual Report 2021: <https://zenodo.org/record/5907922>.

Deviations/reallocations:

- There has been some underspending in various areas due to currency fluctuations and other factors (see spreadsheet for more details), we plan to reallocate towards the following areas that will help facilitate and support the work within the scope this grant:
 - Mentor training for each cohort
 - Honoraria for community members supporting open source software curriculum development
 - Honoraria for governance working group members, as part of our plans to further evolve our governance
 - Funding for a resident research fellow, as part of our business development pilot
- In addition, to adjust directors salary for inflation at the beginnings of fiscal years within this grant (Sep 2022 and Sep 2023).

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