**Zajitschek Lab**

Handbook

ZAJITSCHEK LAB

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Welcome!

Welcome to LJMU, UK! I hope this lab manual will help you settle in and will explain some general expectations and ground rules, both for the academic life while you're with me here in Liverpool, as well as more lab-specific information. This lab manual has been inspired by the Aly Lab at Columbia University.

The ![zebrafish] sections are specific to working in zebrafish and/or Cichlids.
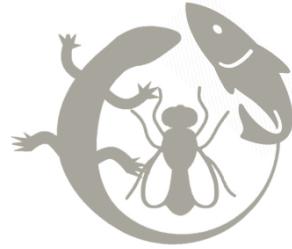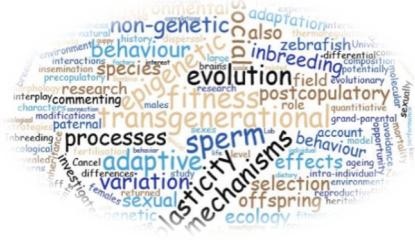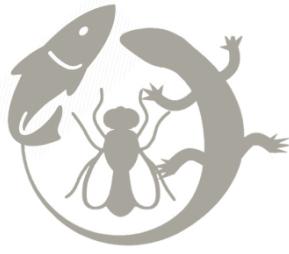
The ![fly] symbol refers to Drosophila related work.

Most points will be independent of the study system!

When you join the lab, you're expected to read this manual.

Our Lab Mottos

1. Be curious!

2. Collaborate, communicate & have fun: working together is much more exciting and fruitful than trying to outcompete each other

3. Scientific integrity is key: Honesty, replicability, transparency

4. Skills have become more important than knowledge; the three "musts" are to learn:
    1) how to use *Google*,
    2) how to use *R*, and
    3) how to write (I can provide lots of resources and feedback!).

Important Contacts

Our Affiliation (please use this for publications)
(Behavioural Ecology and Physiology Research Group)
School of Biological and Environmental Sciences
Liverpool John Moores University
James Parsons Building, Byrom Street
Liverpool L3 3AF
United Kingdom

Susi
Dr Susanne Zajitschek (Senior Lecturer)
Room 3.46a, James Parsons Tower
School of Biological and Environmental Sciences
Liverpool John Moores University
James Parsons Building, Byrom Street
Liverpool L3 3AF, UK

Mobile: 075 399 65778
Email: *s.r.zajitschek@ljmu.ac.uk*
Website: https://suszaj.github.io/ZajitschekLab/
https://www.ljmu.ac.uk/about-us/staff-profiles/faculty-of-science/school-of-biological-and-environmental-sciences/susanne-zajitschek

Felix
Dr Felix Zajitschek (Visiting Lecturer)
School of Biological and Environmental Sciences
LJMU
Email: *f..zajitschek@ljmu.ac.uk*
Website: http://felix.zajitschek.net/
https://www.ljmu.ac.uk/about-us/staff-profiles/faculty-of-science/school-of-biological-and-environmental-sciences/felix-zajitschek
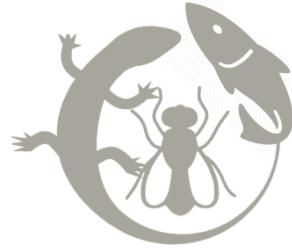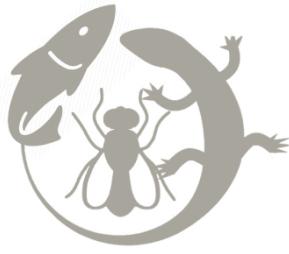
Academic collaborators / co-supervisors in BES
Fish:

Dr Adam Reddon (Cichlids)
A.R.Reddon@ljmu.ac.uk

Dr Will Swaney (Zebrafish)
w.t.swaney@ljmu.ac.uk

Drosophila:
Dr Mirko Pegoraro
M.Pegoraro@ljmu.ac.uk

Other important contacts

Senior Research Officer, Lab bookings & Inductions
Dr Jerry Bird
J.M.Bird@ljmu.ac.uk

School Secretary – the most helpful person in the School!
Denise Crowley
d.b.crowley@ljmu.ac.uk

PGR ADVISORS in BES
Claudia Mettke-Hofmann
C.C.Mettke-Hofmann@ljmu.ac.uk

Peter Falkingham
P.L.Falkingham@ljmu.ac.uk
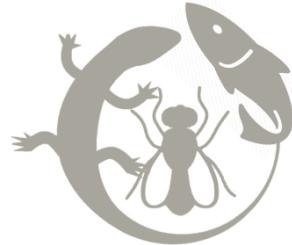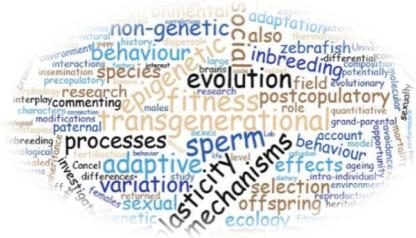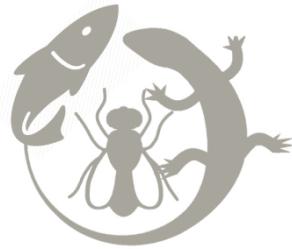
Doctoral Academy
DoctoralAcademy@ljmu.ac.uk

Secretary of the Faculty Research Degree Committee
Andrew Rowlands
a.j.rowlands@ljmu.ac.uk

Help/Support

IT Help
In person: Library Helpdesk, Phone help @ the Library: 0151 231 3179
https://www.ljmu.ac.uk/students
https://www.ljmu.ac.uk/ithelp/student

Emergency/Security
Emergencies: 0151 231 2222 (Internal 2222)
https://www.ljmu.ac.uk/discover/student-support/your-safety-at-ljmu

Emergency – Off Campus
for Ambulance/Police/Fire: call 999

Student support
https://www.ljmu.ac.uk/discover/student-support

Mental health
https://www.ljmu.ac.uk/students/supporting-your-study/support-in-your-faculty
https://www.ljmu.ac.uk/discover/student-support/health-and-wellbeing
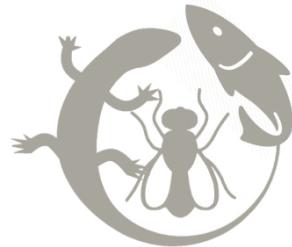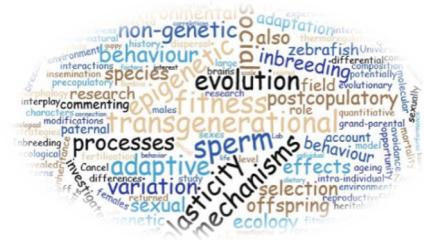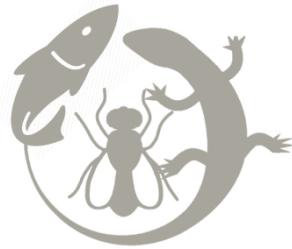
The *Wellbeing Team* will refer you to appropriate contacts (incl. counselling, financial advice, etc):
Email: studentwellbeing@ljmu.ac.uk,
call on 0151 231 3664,
drop in at Student Life Building

Getting started

Before you can dive into your experimental work with us, you will need to connect with us via several electronic means (communication and work tools), and to get access to buildings and facilities. For experimental work you will also need clearance to do your research, which requires attending inductions in person and several online modules. Please check your LJMU email account for details (you should be receiving information on that very soon after your account is activated!)

Lab Resources

Email
This is our most important means for day-today communication. Please make sure you check your emails at least once a day. Obviously, there's no obligation to do so after hours or on weekends (unless you're running an experiment and have permission to be in the building).

OSF (also useful: GitHub / OneDrive)
OSF (Open Science Framework) is a great resource. It can be used to preregister plans for papers, organise protocols and manuals, and to coordinate collaborations and projects. Please sign up for an OSF account, and also register with GithHub (this is particularly important for sharing code when publishing your data). While osf is free, in GitHub you can apply for an educational account, which allows you to create private projects (otherwise all is public). The educational account can be applied for [here](). If you need help, read [How to apply for an education account]().

OSF allows you to store files directly, but also to easily access external storage systems (such as Dropbox, GitHub). Depending on your project, you might want to open accounts there, too. It might be a good idea that you back up your data in multiple places – LJMU provides free storage on OneDrive, and in theory disallows use of personal external hard drives (i.e. we can't plug those into LJMU managed devices, but you can create extra backups via downloading onto your personal devices from the LJMU cloud). We can ask for more storage on our OneDrive, should you run out of storage space.
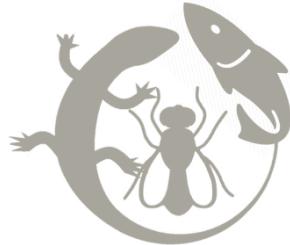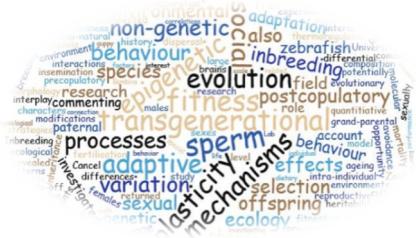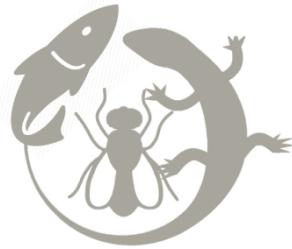
Todoist
Being organised and able to prioritise complex tasks are key for success in academic life. Todoist is a nice app that can help stay on top of your tasks – and you can even share your relevant to-do lists with me, should you wish to do so.

There are also many other good apps that may help you stay organised (i.e. freedcamp.com; zenodo.org), of course you may use any additional resources that you prefer.

Inductions
Working with animals requires ethical knowledge, molecular labs have specific safety standards, and being a researcher requires a high level of academic integrity. LJMU provides detailed compulsory

trainings that you need to attend before being able to start any practical work in the lab (esp if working with fish and even more so if associated with a "licenced project" – that's one that has specific ethical clearance from the Home Office). Which and how much training will be asked of you depends on your role, interns may only be required to participate in the in-person Lab inductions, while postgraduate students should be prepared for a whole range of online and in-person training (PGRs, please refer to the Faculty of Science PGR Induction handbook that you will receive! This is an important resource with lots of information about requirements of your degree).
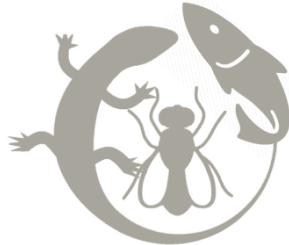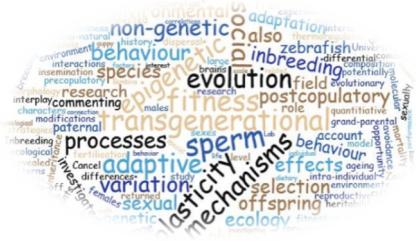
The training marked with ***** will apply to all new lab members, regardless of role – but you may have to complete additional trainings and inductions, such as

Online Training
- Working ethics
- Research Integrity
- EDI (Equality, Diversity & Inclusion)
- Risk Assessments
- …

In person
- *Lab induction / Health & Saftely **
- Animal Facility Induction (not if Drospophila only)
- PGR Induction (if applicable)
- *Hands-on training in fish or fly maintenance and research (conducted by relevant personnel)**
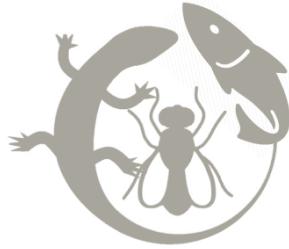
Expectations and Responsibilities

Applicable to all:

Big Picture

We want to make sure that everyone experiences a positive, engaging, hostility-free, challenging, and rewarding lab environment. To maintain that environment, we all have to do a few things:

• Work on what you're passionate about, work hard at it, and be proud of it.

• Carefully think about your task at hand. Double and triple check it. Regarding analyses & code: Incorporate check points and clearly annotate your steps and workflow. Ask others (us) to look at your code or data if you need help or something doesn't quite look right.

• If you do make a mistake, make sure to tell your collaborators (regardless of the stage of the project! Preliminary analyses or proofreading an accepted paper!). There's no brushing anything under the carpet, it is our responsibility to maintain highest scientific integrity. We therefore must admit our mistakes and correct them to move on and progress.

• Related to the above: We all want to get papers published and do great things. But we do this honestly. It is never acceptable to tamper with, invent or omit data, to plagiarize, or to fudge results in any way. Science is about discovering the truth, so null results and unexpected results are still important. This can't be emphasized enough: no academic misconduct! For further details please refer to sections "Scientific Integrity (p. 15) and "Code of Conduct" (p. 16).

• Support your fellow lab-mates. Help them out if they need help (even if you aren't working on the same project), and let them vent when they need to. Science is collaborative, not competitive. Help others, and you can expect others to return the favour you need it (which you will at some point!).

• Respect your fellow lab-mates (and other collaborators). Respect their strengths and weaknesses as well as their desire for quiet if they need it. Try your best to also be there for support and a kind ear when they need that too. Respect their culture, their religion, their beliefs and their sexual orientation.

• If you're struggling, tell someone. Your health and happiness come first. We want to look out for the well being of everyone. It's normal to go through hard patches (we all do), but we don't want you to struggle alone! If there is any tension or issues with someone, please let us know to help you work things out. We can't thrive in an environment we aren't comfortable in, and disrespect or rudeness will not be tolerated.

• Stay up to date on recent research and consider following scientists in relevant fields on social media platforms, if you are using social media.
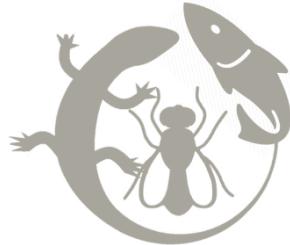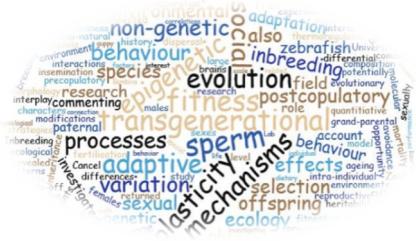
• Have a life outside of the lab, take care of your mental and physical health, and don't ever feel bad for taking time off work. That said, please practise good communication and let me know when you're on leave, sick, or working from home.

Additional thoughts

• If you are unwell, stay home and take care of yourself, both because you need it, but also to prevent others from getting ill. Just make sure to reschedule any experiments or meetings for when you come back as soon as is convenient. Obviously, let me know about it!

• Attend your scheduled meetings, classes, seminars and workshops. Avoid being late to events where other people will be waiting for you to arrive.

• Keep the lab workspaces tidy. We are sharing a majority of our spaces with many other people, so it is rather important to put lab equipment back where you found it. Keep common areas uncluttered.

• Be on time when you are running experiments – in fact getting there 15-20 minutes early to set everything up is even better (especially if you're not running them on your own!). If you are running late, inform the other people involved.

Additional responsibilities I have over you:

• Support (academically, emotionally).

• Provide feedback on a timely basis on project ideas, conference posters, talks, manuscripts, figures, grants, etc.

• Be available in person and via e-mail on a regular basis, including regular meetings to discuss your research (and anything else relevant).

• Give my perspective on where the project is going and tips about surviving and thriving in academia.

• Support your career development by introducing you to other researchers in the field, promoting your work at talks, writing recommendation letters for you, and letting you attend conferences as often as finances and research schedule permit.

• Prioritise your emotional and physical well-being above all else.
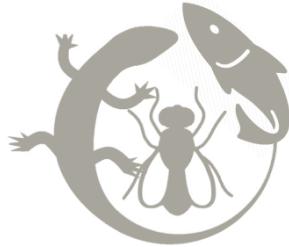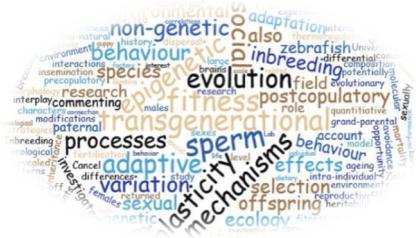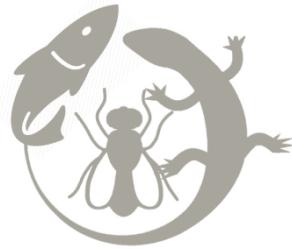
Additional responsibilities of PHD students:

• Develop your dissertation research. Much of your work has to be done independently but remember that others are there to help you when you need it.

• Help mentor undergraduate students if applicable.

• Present your work at departmental events, other labs (if invited), and conferences.

• Apply for grants – this is a valuable experience, which is best to get early on.

• Think about what you want in terms of future career (academia, research, teaching, industry, science writing, etc.) and try to ensure you are getting the correct training to achieve it.

Additional responsibilities of Research Assistants, interns, volunteers and undergraduate students:

• Work on your allocated research project.

• Assist other laboratory members with data collection and analyses (unless you are working on your own independent project under the mentorship of another laboratory member).

• Develop a weekly schedule, and regularly talk to your mentor.

• Participate in lab meetings and attend relevant institutional seminars.

General Policies

Hours

Being in lab / office is a good way of building a connection with staff and students at LJMU, learning from others, having fast and easy access to resources (and people) you need, and being relatively free from distractions at home (e.g., your bed or Netflix). While hours in academia are more flexible than in other jobs – we expect you still treat it as a real job with a majority of the time showing up to the lab / office.

Even though some degree of "working from home" (WFH) has been integrated into LJMU working policy since Covid19, please let me know in advance when you're planning on working from home. How appropriate it is to WFH depends on your situation and stage – it is certainly not a good idea while you're running experiments, but may be ok during the later stages of writing up projects or theses.

PI's Office Hours

I aim to hold weekly meetings on individual schedules. If I am in the office, it is usually fine to just drop in, but to be sure I am available, please get in touch via email or teams ahead of time.

Lab Meetings
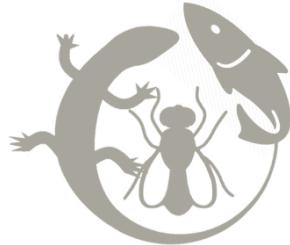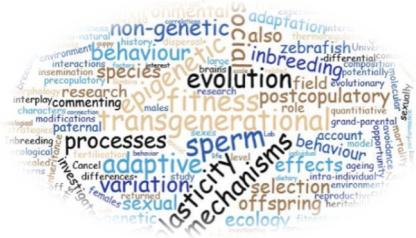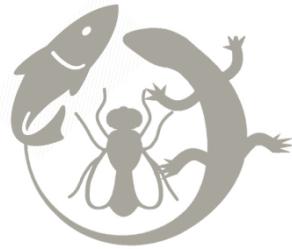
During term-time and when people are around, there will be regular across-lab journal clubs and/or labmeetings (schedules will be distributed), as well as monthly Behavioural Ecology & Physiology research group (BEP RG) meetings. You are normally expected to attend Lab meetings, and BEP RG when an invitation has been issued. We can also use Lab meetings to talk about methods, statistical analyses and career development. Importantly, the meetings are an opportunity to present project ideas and/or data to get feedback from the rest of the group. Projects (including experimental, theoretical, grant proposals) at any level of completion (or even not yet started!) can benefit from being presented. For paper or book chapter discussions, it is expected that you come to lab meeting having read the assigned reading (which will have been distributed in advance).

Every Lab member is expected to contribute to our Lab-website with a blurb about themselves as a minimum, but you're invited to treat this as writing practise and write blog-type entries on topics of your choice and (science and/or lab-related) news. Please send me your text for website publication, and I will add it to the GitHub page!

Deadlines

One way of maintaining sanity in the academic field is to be as organised as possible. This is essential, to maintain good working relations with collaborators and people whose help you need. Tell your collaborators of upcoming deadlines and remind them as it gets closer.

You may need something urgently from me – but please consider that we all have multiple deadlines and different tasks to manage. If possible, give me/us at least one week's notice for a hard deadline that doesn't require a lot of time (e.g., reading/commenting on conference abstracts, filling out paperwork, etc.), and *at least 2 weeks if it* requires a lot of time (e.g., a letter of recommendation).

For manuscript revisions and invited paper submissions (which have hard-ish deadlines), keep us in the loop as soon as you can, as this will likely multiple involve back-and-forths of various draft iterations!

Presentations
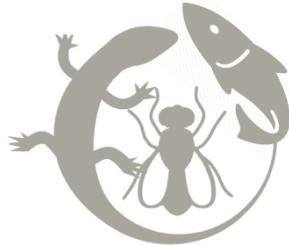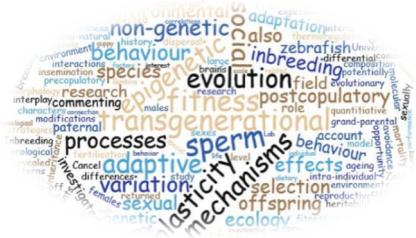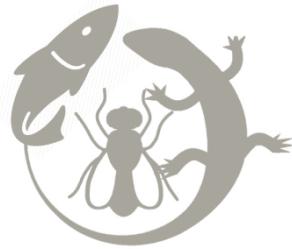
Learning to present your research is important. Very few people will read your papers carefully (sad, but true) but you can reach a lot of people at conference talks and posters. Also, if you plan on staying in academia, getting a post-doc position (or a faculty position!) significantly depends on your ability to present your work. Even if you want to leave academia, presentations are likely to be an important part of your job. Additionally, every time you talk about your research, you are representing not just yourself but the entire Lab.

It is, therefore, highly encouraged that you seek out opportunities to present your research, whether it is at departmental talk series and events, to other labs, at conferences, or to the general public. If you are going to give a presentation (a poster or a talk), be prepared to give a practice presentation to the Lab AT LEAST one week ahead of time. Practice talks will help you feel comfortable with your presentation and will also allow you to get feedback from the Lab and implement those changes well in advance of your real presentation.

Templates for posters are available from LJMU as well as on PowerPoint itself, you can use those as much or as little as you'd like. Some general rules for posters should be followed: minimize text as much as possible (no full paragraphs!), make figures and text large and easy to read from a distance, label your axes, and make sure different colours are easily distinguishable. Please refer to additional resources in the back of the Lab manual for some useful links on presentation skills.

Recommendation Letters

Letters of recommendation are extremely important for getting new positions and grants. If you need a letter, notify me as soon as possible with the deadline (see Deadlines, p.10, for guidance), your CV, and any relevant instructions for the content of the letter. If the letter is for a grant, also include your specific project aims or proposal outline.

Data Management

Storing Active Datasets

Lab data, new Protocols and Guidelines should be stored on OSF. Please make sure you regularly backup your own data, using external hard drives, the LJMU provided OneDrive cloud storage, or your personal devices.

Code and analyses:
Please make sure you do not only back up your raw data, but also the code needed to reproduce all analyses. We aim for transparency and reproducibility in science, so this is extremely important (not to mention making things much easier for yourself, if you need to change some small thing in your analyses). Have useful bits of code easy to find as templates, and annotate you R scripts neatly, clearly and extensively! Learn R markdown, which is great for this. We also recommend you learn and use GitHub for your code development, especially if you have considerable amounts of analyses.
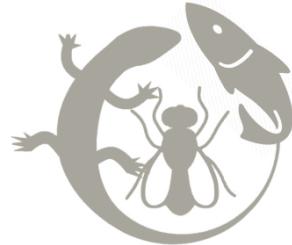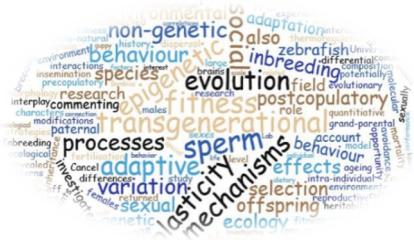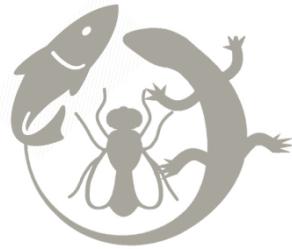
Data organisation
It is recommended to create subdirectories for each type of project, in particular for your raw and cleaned up datasets, and analyses. Create and update necessary meta-data regularly (Meta-data: detailed descriptions of the data, including each field codes, units, comments, etc. You will realize how important it is once you have to go back to your data and analyses after a longer break!).

When you leave the Lab, your projects should be set up in directories that are transparent and easy to navigate, so that other people can look at your data and code, as needed. You *must* do this, otherwise your analysis pipeline and data structure will be uninterpretable to others once you leave, and this will slow everyone down (and cause us to bug you repeatedly to clean up your project directory or answer questions about it).

An important note for project students, MPhil and PhD students

It is a requirement of graduation (UG) that you hand over your data collection and all materials provided to you for your research before leaving the lab. Undergraduate students are officially not allowed to graduate until this has been signed off by your supervisor.

Data collection during your postgraduate degree is critical in the advancement of knowledge, and it is in everyone's best interest to get your data published

Funding

Funding for laboratory consumables is usually covered by internally and externally awarded funds to the PI (Primary Investigator, i.e. me in this lab).

Writing small applications in order to fund your own research is highly encouraged, as it is also great practice for more significant demands in the future (and getting a grant looks good on your CV).

A great way to find a grant that may fit your project is through one of the following websites, which contain large databases to search through, such as:

Alternative Guide to Funding

https://www.sciencecentres.org.uk/resources/stem-clubs/funders-database/

https://www.scientifyresearch.org/grants/

https://www.grantsonline.org.uk/news/energy-environment-and-transport/

Society grants
There are many societies that may be worth signing up with, as they provide for example student travel funds, and small research project pots. For example:

- The Association for the Study of Animal Behaviour (ASAB): www.asab.org
    - https://www.asab.org/research-grants
- British Ecological Society: https://www.britishecologicalsociety.org/
    - https://www.britishecologicalsociety.org/funding/
- The Linnean Society of London: https://www.linnean.org/
    - https://www.linnean.org/the-society/medals-awards-prizes-grants
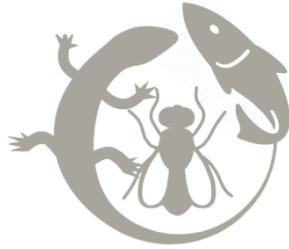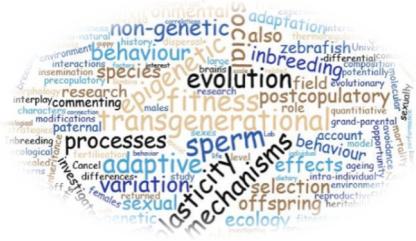
Travel grants
- Are often available from societies that organise meetings and conferences – APPLY for those!
- Turing Funding: LJMU partnered funding scheme to support 6 weeks to 12 months (?) for research experience in any non-UK research institution. For details contact Will Swaney (p.3)!

Major funders in the UK

For more advanced career stages (i.e., post PhD):

- Royal Society: https://royalsociety.org/grants-schemes-awards/grants/leverhulme-trust-senior-research/
- NERC: https://www.ukri.org/councils/nerc/guidance-for-applicants/types-of-funding-we-offer/discovery-science/

General advice

(on grant writing, personal development, fundings sources, etc. A little bit Australia-biased, but a fantastic compendium by Scott Keogh at the Australian National University)

https://keoghlab.com/resources-and-advice-for-students

https://suszaj.github.io/ZajitschekLab/skill/

Open Science

I encourage open science (i.e. freely sharing results, data and code), to enhance scientific transparency and reproducibility. Generally, we will try to make our data and code publicly available upon publishing the results (or whenever data collection has been finished if long-term data are involved).

Currently, the best option for sharing smaller datasets might be via the Open Science Framework (OSF). Striving for highest research integrity you may want to explore the submission of study protocols and research proposals to OSF. This will keep you on track with your hypothesis testing and is a great opportunity to carefully plan not only your experimental design, but also analyses. Such practice can help avoiding pitfalls due to bad planning, as well as helping to ensure reproducibility, reducing bias and increasing objectivity and scientific validity of your research. It is a relatively new way of collaborating with journals, which may commit to publishing your study ahead of it being conducted, enhancing the possibility of publishing non-significant results (there remains a big bias towards "significance"; despite big words and some effort – as far as I can see in the foreseeable future).
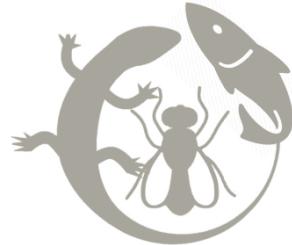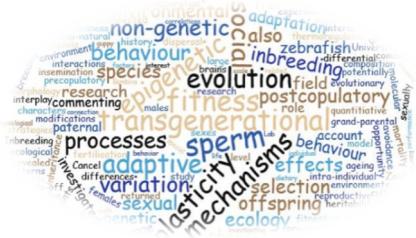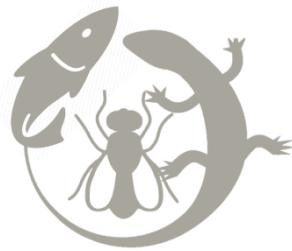
I am currently collaborating with the University and the library to create some "Best practise" guidelines for data / code sharing.

Authorship

Like other labs, we will follow the APA guidelines with respect to authorship:

"Authorship credit should reflect the individual's contribution to the study. An author is considered anyone involved with initial research design, data collection and analysis, manuscript drafting, and final approval. However, the following do not necessarily qualify for authorship: providing funding or resources, mentorship, or contributing research but not helping with the publication itself. The primary author assumes responsibility for the publication, making sure that the data are accurate, that all deserving authors have been credited, that all authors have given their approval to the final draft; and handles responses to inquiries after the manuscript is published."

At the start of a new project, the student taking on the lead role can expect to be first author on a publication it it is carried through to competion; the PI (I) will typically be the last author. Students and interns who help over the course of the project may be added to the author list depending on their contribution, and their placement will be discussed with all parties involved in the paper. If a student takes on a project, but subsequently hands it off to another person, they will most likely lose first-

authorship. All these issues will be discussed openly, and you should feel free to bring them up if you are not sure of your authorship status or want to challenge it.

Similarly, if a full dataset is collected but not written up, this may be assigned to another person to expedite publication. This policy is meant to prevent data from remaining unpublished but will give priority to the person who collected the data initially.

Scientific Integrity

Research (Mis)conduct
We are fully committed to research integrity, which is the backbone of any reliable research, and will not tolerate research misconduct, including fabrication, falsification, or plagiarism of data and content.

I would suggest to read the LJMU policy on Academic Misconduct, even if it's mainly written for taught content (if the link isn't working for you I have pdfs of the policy documents mentioned here).
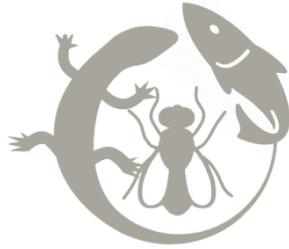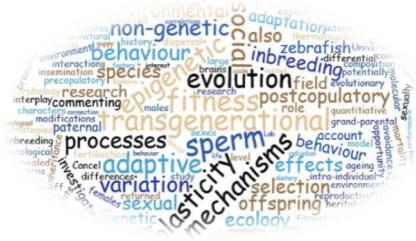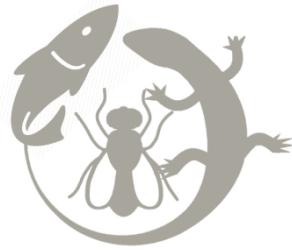
Here a part of the LJMU Code of Practise:

"The University derives its principles from the definition of "Research Integrity" provided by the Concordat to Support Research Integrity:

Honesty in all aspects of research, including in the presentation of research goals, intentions and findings; in reporting on research methods and procedures; in gathering data; in using and acknowledging the work of other researchers; and in conveying valid interpretations and making justifiable claims based on research findings.

The University encourages all involved in research to consider the wider consequences of their work and to engage critically with the practical, ethical and intellectual challenges that are inherent in the conduct of high quality research. It has adopted the following Principles, laid out by the UKRIO, which set out the responsibilities and values relevant to research: https://ukrio.org/publications/code-of-practice-for-research/2-0-principles/ "

A big problem is the reasons why people feel the need to engage in misconduct in the first place, and that's a discussion that we can have. If you are feeling pressured to succeed (publish a lot, publish in high impact journals), you should reach out and we can talk about it – but this pressure is something we all face and is never an excuse to fabricate, falsify, or plagiarize. Also, think about the goal of science and why you are here: you're here to arrive at the truth, to understand this diverse world that we live in better! Not only is research misconduct doing you a disservice, it's also a disservice to the field and the society. And it risks your entire career. It is never right and never worth it. Don't do it.

Reproducible Research

For results to be reproducible, the analysis pipeline must be organised and well documented. To meet these goals, you should take extensive notes on each step of your analysis. This means writing down how you did things every step of the way (and the order that you did things), ideally using R markdown. Keeping your project backed up on GitHub will ensure transparency (and version control – or at least version tracking) beyond your own PC, and provides a platform for sharing, troubleshooting and disseminating your code. Our overarching goal is to produce research that is both reproducible and replicable.

If you feel like living up to the highest standards of reproducibility, you may want to think about pre-submission of planned research. This can be done by "preregistations" (e.g. on OSF), which can serve you as you're writing up your paper: all details on experimental design should be already included here. However, it is science , and things quite often do not go EXACTLY as we plan. It is therefore very important to please take notes carefully (esp if there are slight changes in the protocol, changes in sample sizes, etc.). Make it a primary goal to comment your code, not just for yourself, but so that every step is understandable for outsiders.
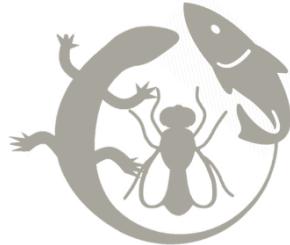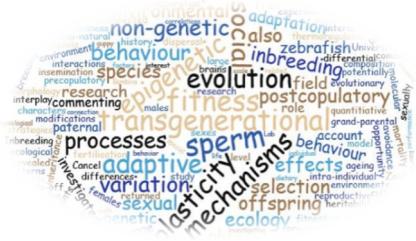
Code of Conduct

LJMU aims to provide work environments that must be free of harassment and discrimination. All laboratory members are expected to abide by the policies on discrimination and harassment, and code of conduct. See also: https://www.ljmu.ac.uk/campaigns/respect-always

We are committed to providing a safe, friendly, and accepting environment for everybody. We will not tolerate any verbal or physical harassment or discrimination on the basis of gender, gender identity and expression, sexual orientation, disability, physical appearance, body size, race, or religion. We will not tolerate intimidation, stalking, following, unwanted photography or video recording, sustained disruption of talks or other events, inappropriate physical contact, and unwelcome sexual attention. Finally, it should go without saying that lewd language and behaviour have no place in the offices and laboratories used by our lab members and extended to any Lab outings.

Unlawful harassment occurs when someone is made to feel intimidated, insulted or humiliated because of their race, colour, national or ethnic origin, sex, disability, sexual preference, or some other characteristic specified under anti-discrimination or human rights legislation. Unlawful harassment can also occur if someone is working in a 'hostile' working environment. For details refer to the Bullying & Harassment Policy, Dignity at Work Policy and Code of Conduct (https://www.ljmu.ac.uk/about-us/edi/edi-policies)

If you experience or witness harassment or workplace bullying, here are some possible next steps to take:

- Raise the issue directly with the person they believe is responsible – often an informal approach can quickly resolve an instance of workplace bullying.

OR

- Involve their manager/supervisor to assist in resolving the issue.

OR

- Raise the matter with another relevant manager/supervisor (such as myself)
- Talk to members of the Inclusion Ambassador team (e.g. Nic Koyama, our EDI coordinator: N.F.Koyama@ljmu.ac.uk, or any other member of the trained team)
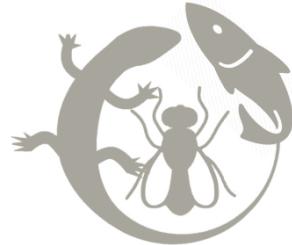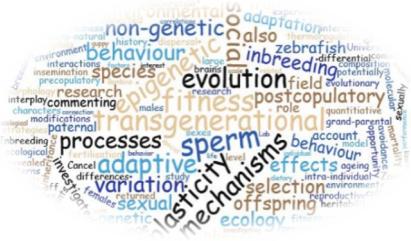
If the above approach does not resolve the issue, or you are not comfortable using this approach, you can

• Lodge a formal complaint or grievance, see here https://www.ljmu.ac.uk/about-us/public-information/student-regulations/student-complaints

If you notice someone being harassed/bullied, or are harassed/bullied yourself, we urge you to raise this with the Inclusion Ambassador. All reports of bullying (formal or informal) will be treated seriously and investigated promptly, confidentially, and impartially. No one who reports bullying or harassment will be victimised or disadvantaged. Managers and supervisors have a responsibility to ensure workers are not bullied or harassed and must also report any potential or actual incidents.

Taking Photos & Videos

We respect the privacy and comfort of laboratory members by only taking photos or video recordings of them with their explicit knowledge and consent. This is especially important before posting any images on social media. The goal of this is to foster an environment where everyone feels safe to be who they are, take risks, and have fun, without worry or self-consciousness.

Technical protocols, useful links and skills to learn

OSF: https://osf.io/

- o Is used to host our shared protocols
- o Used to organise and share data files etc of all separate projects
- o Used for pre-registration of research projects

Meta-analysis

- https://metaanalysis.zajitschek.net

Lifespan analysis

- https://lifespananalysis.zajitschek.net/

R resources:

- o Environmental computing: http://environmentalcomputing.net/
- o R online courses: https://cu-psych-r-users.github.io/cu-psych-r-tutorial/
- o R for data science: http://r4ds.had.co.nz/

- o **Analytical skills**: General Stats: http://students.brown.edu/seeing-theory/index.html

Writing skills:
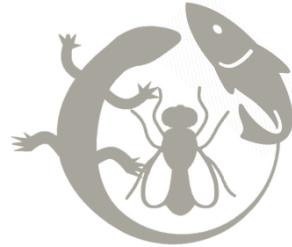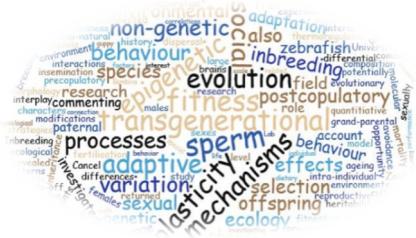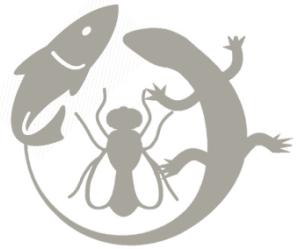
- o http://advice.writing.utoronto.ca/types-of-writing/science/
- o https://blogs.nature.com/naturejobs/2016/10/28/scientific-writing-a-very-short-cheat-sheet/
- o https://masterclasses.nature.com/ (there may be some offers for free insight snippets for writing/grants/publishing)
- o https://annhandley.com/9-qualities-of-good-writing/
- o https://www.writing-skills.com/top-ten-writing-tips-for-scientists

MindMapping:

A great resource to organise your thoughts! If you find you need visuals in addition to words. I use vue (http://vue.tufts.edu/index.cfm), ask me if you'd like to get a brief intro. Useful to plan experiments, papers, dinner plans, talks, arguments, your thesis, … anything really!

Presentation skills:

- o Compilation of knowledge from 16 TED talks: https://www.inc.com/jeff-haden/16-ways-to-dramatically-improve-your-presentation-skills-from-16-powerful-ted-ta.html
- o https://www.skillsyouneed.com/presentation-skills.html

Practical skills and tools

Behaviour software

- o Ethiovison -> We recently secured a Captital Research bid for this – to be updated SEPT 2023!
- o Free alternative: Fish Tracker: http://www.dgp.toronto.edu/~mccrae/projects/FishTracker/
    - & Argus program: https://github.com/samlani03/Argus

- o Free Resources for Behaviour: https://edspace.american.edu/openbehavior/

Fly maintenance
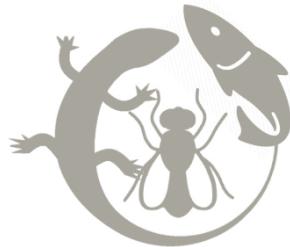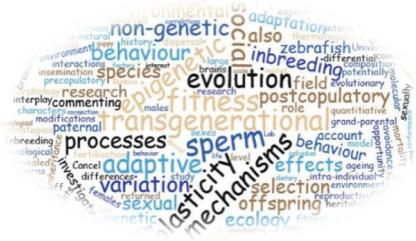
Fly Media Protocol: RAPID COOKER 3/2023

	500 ml	700ml	1000ml
Agar	7.5g	10.5g	15g
Sugar	25g	35g	50g
Yeast	50g	70g	100g
Propionic Acid*	1.5ml	2.1ml	3ml
Mold Inhibitor**	15ml	21ml	30ml

* Not strictly necessary, food seems to be lasting ok even without.
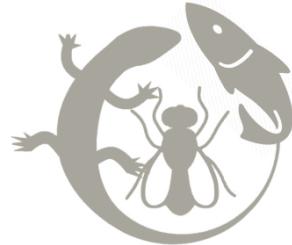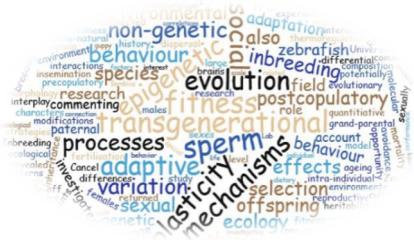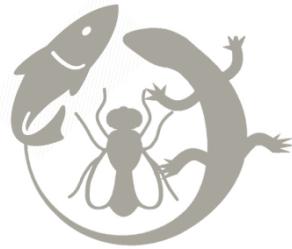
** 3 g Nipagen (or whatever mold inhibitor equivalent) substrate/litre diet, filled up to 30ml with EtOH

Instructions:

1. Weigh agar, sugar and yeast (according to the information above), and add it mixing container**.** Mix the dry ingredients.

2. Add mixture to ⅔ of the water (pre-boiled in kettle or in pot) in the pot and mix (with whisk), clump-free. [if small amount, i.e. less than 1 l: boil entire amount]

3. Start pot: setting on "saute", -> less, 10-15 mins. While it's cooking, prepare Nipagen (Tegosept) If no premix available; get required amount pf propionic acid (Lab 2nd floor, acid cupboard below hood. Key is in storage side-lab 247b, in key safe: 488)

4. Once cook time is over: fill up to the final volume with water [doesn't apply for small vols]. Wait for the liquid to cool down to 65 Celsius. Use thermometer to measure the temperature.

5. At or below 65 C, add appropriate amounts of propionic acid and mold inhibitor. Use graduated cylinders /glass pipettes to measure the amount needed. <u>Note:</u> This step requires gloves.

6. Mix carefully. Fill squeeze bottle (over sink, pour into plastic squeezy bottle/s. Have vials pre-prepped up in trays. Fill the vials quickly because once the food hardens, it is difficult (impossible) to use. HINT: Hot waterbath for the squeezy bottles to prevent too rapid setting

7. Vials should be filled with about 8-15 ml of food. Bottles should be filled with about 2-4cm

8. Cover the vials or bottles securely with a cloth to avoid fly contamination. Keep stirring /shaking food in squirt bottles / in pot in between batches to avoid clumping.

9. Clean equipment & wipe down the counter.

10. Let the food cool overnight. Once completely cool, seal with plastic wrap, label, put an empty cardboard box on top and flip over to keep from drying out, and store in the refrigerator.

This is an ONGOING COLLECTION OF USEFUL RESOURCES. Please get in touch if you have found fantastic online links that may be helpful to new members of the Lab!
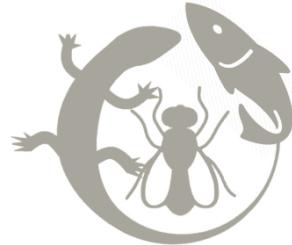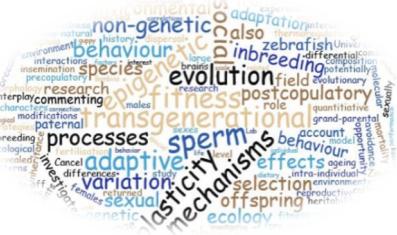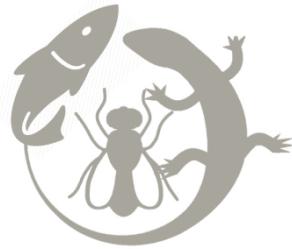
Hereby confirm that I have read the Zajitschek lab handbook.

I understand that there are certain expectations that I will aim to meet and acknowledge that I have been informed about my Primary Investigators' responsibilities for me and my research. I am aware where to look for help, or whom to ask for assistance, should I need it.

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