BIH QUEST
Transforming Biomedical Research

Educational resources to make the best out of corona

Around the world, many researchers have found themselves in self-isolation, and are unable to continue performing lab-based studies. However, this can be an opportunity to learn and expand professional and scientific horizons. We have created a list of resources to help you make the best of this strange and challenging time, and increase the quality of your research in the future.

List of contents: I want to…

I want to…

1. …manage my data better.

Name	**Best Practices for Biomedical Research Data Management**
Type of resource	Online course from Harvard Medical School
Details	Topics related to research data management (e.g. data types & formats, data storage & archiving, data sharing, policies, data management plans)
Credit available?	Free certificate
URL	https://bit.ly/3bmHif9
More information	**If you are members of BIH/Charité/MDC:** For further resources on data management and data sharing, with a discipline-specific focus where available, please contact evgeny.bobrov@bihealth.de. He will also support you with your implementation of RDM practices (e.g. documenting and validating data, choosing a repository, finding data for reuse, writing a data management plan)

2. …try out systematic reviews and meta-analyses

2.1. …with a focus on systematic reviews and meta-analyses of clinical data

Name	**Cochrane Interactive Learning**
Type of resource	Online courses from Cochrane Center, available free to members of the Charité
Details	Introduction to conducting systematic reviews for intervention studies
Credit available?	Certificate
URL	Instructions on how to register: https://bit.ly/ChariteSR Cochrane Interactive Learning: https://bit.ly/3bqNfYy

2.2. …with a focus on systematics reviews and meta-analyses of animal/preclinical studies

Name	**Systematic Reviews of Animal Studies**
Type of resource	Online course from SYRCLE (SYstematic Review Center for Laboratory animal Experimentation, Radboud University)
Details	Introduction to conducting systematic reviews in animal studies
Credit available?	Unclear
URL	https://bit.ly/2WThYtl (use registration code “syrcle”!)
More information	**If you are members of BIH/Charité/MDC:** we have a new facility to help researchers plan and perform systematic review and meta-analysis of animal studies: CAMARADES (Collaborative Approach to Meta-analysis & Review of Data from Experimental Studies) Contact: sarah.mccann@charite.de; https://bit.ly/CAMARADESberlin Read about why we perform systematic reviews of animal studies: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4013765/

3. …brush up on statistics.

Name	**Points of Significance**
Type of resource	*Nature Collection* of explanatory articles designed for biologists
Details	Curated collection of short pieces on key concepts in statistics
Credit available?	no
URL	https://go.nature.com/33I0v8s
More information	A link to similar resources from other publishers: https://go.nature.com/3dDsLxE

Name	**Improving Your Statistical Inference**
Type of resource	Intermediate Coursera online course from Daniel Lakens
Details	Learn to better understand statistics for empirical research and experimental design
Credit available?	Basic participation free, can pay to fully enroll and have access to all course materials and certificate of completion
URL	https://bit.ly/3aj6u5T

4. …improve my programming skills.

4.1. …by learning R:

Name	**RStudio's Beginners' Site**
Type of resource	Online resource collection
Details	Step-by-step installation instructions and recommended reading from the makers of RStudio. In the Primer Section you can program yourself in your browser and practice on exercises
Credit available?	No
URL	https://bit.ly/2wzOR3a

Name	**R Programming**
Type of resource	Beginner online course from Coursera and Johns Hopkins University
Details	Provides and introduction to R and practical issues in statistical computing
Credit available?	Basic participation free, can pay to fully enroll and have access to all course materials and certificate of completion
URL	https://bit.ly/39fAhuX

4.2. …by learning Python:

Name	**Learn Python 3**
Type of resource	Online Course from Codecademy

Details	Introduction to general programming concepts with Python. Free version offers interactive lessons and daily practice, pro version has additional resources and “portfolio-building” function
Credit available?	No
URL	https://bit.ly/3ahT6Pv

4.3. …by learning version control with Git:

Name	**GitHub Learning Lab**
Type of resource	Online resource collection
Details	Courses and project from the makers of GitHub to help users improve their version control
Credit available?	No
URL	https://bit.ly/3ak4ISe
More information	GitLab also has online training available: https://bit.ly/2UiFn5r

5. …improve my peer review skills.

Name	**Science of Science Reading List**
Type of resource	Curated list of helpful papers
Details	Helps potential peer reviewers learn to identify & fix common problems with scientific papers
Credit available?	No
URL	https://bit.ly/3bsylke

Name	**Publons Academy Course**
Type of resource	Online course from Publons aimed at early career researchers
Details	Interactive course with exercises and feedback from mentors
Credit available?	No
URL	https://bit.ly/2Uj0Uem
More information	Many publishing companies also offer free “in-house” for peer reviewers. Here are a few examples: • Nature: https://go.nature.com/3bnjOGH • Elsevier: https://bit.ly/2WGX5kJ • Wiley: https://bit.ly/2Uzd8yy • Wolters-Kluwers: https://bit.ly/33J78ao The EQUATOR Network also provides excellent field-specific guidance and guidelines for reviewers: https://bit.ly/3aikrkR

6. …plan new and better experiments for when I get back to the lab.

6.1. …with support in pre-registering my new study:

Name	**Aspredicted**
Type of resource	Tool to generate quick preregistration template for you and your coauthors
Details	Asks a series of simple questions about your study and generates a (citeable) PDF and URL for your project
Credit available?	No
URL	https://bit.ly/2wwAnBo
More information	The Open Science Framework also provides templates and online infrastructure for project preregistrations: https://bit.ly/3btPdYc If you're conducting preclinical experiments, you can also consider the Preclinicaltrials.eu database: https://bit.ly/39n8VTI

6.2. …with support in designing my new animal experiments:

Name	**Experimental Design Assistant**
Type of resource	Online tool from NC3Rs
Details	Helps streamline and reduce bias in planning of animal studies
Credit available?	No
URL	https://bit.ly/2UiIKJD
More information	The NC3rRs also has lots of e-learning opportunities for improving scientific practice and animal welfare: https://bit.ly/2QKcjBO

6.3. …with support in improving existing protocols:

Name	**protocols.io**
Type of resource	Webinar from protocols.io
Details	Learn how to share and cite your protocols to make your research more transparent and reproducible
Credit available?	No
URL	https://bit.ly/2UFqCIS

Name	**Webinar Report: Everything you need to know about Research Resource Identifiers**
Type of resource	Webinar from eLife
Details	Ever had problems implementing a protocol because you couldn't determine what animal, antibody, plasmid, software tool, etc. the authors used? Find out how you can use research resource identifiers to quickly solve this problem.
Credit available?	No
URL	https://bit.ly/2Uhc6YO

6.4. …learning how to document experiments in an electronic laboratory notebook:

Name	**Electronic Laboratory Notebook Training**
Type of resource	Online training from the QUEST Center
Details	A short course in English or German on how to use electronic lab notebooks
Credit available?	No
URL	https://bit.ly/3dueiUx
More information	**If you are members of BIH/Charité/MDC:** For more information, contact ingo.przesdzing@charite.de

7. …make better figures.

Name	**Webinar Report: Transforming data visualisation to improve transparency and reproducibility**
Type of resource	Webinar from eLife
Details	Find out why you shouldn't use a bar graph for continuous data, and what to use instead
Credit available?	No
URL	https://bit.ly/2UBZsCW
More information	Twitter thread outlining some of the key concepts: https://bit.ly/39ngV7e

Name	**Sample Size Matters**
Type of resource	Online course from the Mayo Clinic, 9-12 hours, $50 USD
Details	Learn to identify and fix common problems with data visualization and analysis in small sample size studies
Credit available?	Certificate
URL	https://mayocl.in/3dz7STY

Name	**Data visualization, bar naked: A free tool for creating interactive graphics**
Type of resource	Paper and accompanying resources for visualizing and interacting with data
Details	Using small sample-size studies, the authors provide examples of best (and worst!) practices, as well as tools to explore them yourself
Credit available?	No
URL	https://bit.ly/39k6yBo
More information	Want to learn more about transforming data visualization? Check out this paper: https://bit.ly/2UmbykH

8. …work on my scientific writing and reporting.

Name	**Writing in the Sciences**
Type of resource	Online course from Coursera and Stanford
Details	This course teaches scientists to become more effective writers, using practical examples and exercises
Credit available?	Basic participation free, can pay to fully enroll and have access to all course materials and certificate of completion
URL	https://bit.ly/33L1YuI

Name	**Massive Science**
Type of resource	Online training for authors from Massive Science
Details	One-time membership fee ($10 USD) provides training on scientific communication, with emphasis on narrative and sharing findings with non-scientific audience
Credit available?	No, but you can write for their online publication after you've finished the training
URL	https://massivesci.com/consortium/