



CE3C
centre for ecology, evolution
and environmental changes



**Ciências
ULisboa**
Faculdade
de Ciências
da Universidade
de Lisboa



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Hands-on Molecular Tools – Beginners Crash Course

Lecturers/Organizers: Ana Catarina Certal (Champalimaud Foundation-CF) Ana Raquel Tomás (CF), Cátia Feliciano (CF), Diogo Fernandes (CE3C-CHANGE/FCUL), Marta Barbosa (CF), Rita Zilhão (CE3C-CHANGE/FCUL), Vasco Barreto (FCT-UNL/ESSEM)

Date: September 5th – 9th, 2024

Duration: 36 hours (contact hours)

Schedule: 10 am – 7.00 pm (5 days)

Objectives: This hands-on course, limited to a small number of participants, aims at those who are looking for basic molecular biology training and wish to get familiar with some of the potentialities of this technology.

The specific objectives are: This course will incorporate theoretical and practical classes, where the participants will acquire experience in RNA extraction, cDNA synthesis, PCR, restriction enzyme digestion, electrophoresis, and plasmid DNA isolation, as well as sequence analysis and experimental design of a cloning project.

PROGRAM

September 5th

10.00 – 11.00 Introductory notes. Project design
11.00 – 11.30 Coffee break
11.30 – 13.00 Principles of Molecular Biology I
13.00 – 14.00 Lunch
14.00 – 15.00 Biosafety in a Molecular Biology lab
15.00 – 19.30 RNA extraction

September 6th

10.00 – 11.00 Principles of Molecular Biology II
11.00 – 11.30 Coffee break
11.30 – 13.00 Primer design
13.00 – 14.00 Lunch
14.00 – 15.30 cDNA prep
15.30 – 17.30 PCR, Gel preparation
17.30 – 19.00. Run gel. Cut band (freeze)

20.00 - Welcoming dinner

September 7th

10.00 – 11.00 Updating/Troubleshooting
11.00 – 11.30 Coffee break
11.30 – 12.30 Gel extraction. Digest PCR
12.30 – 13.30 Lunch
13.30 – 14.30 PCR clean. Measure DNA. Ligation
14.30 – 15.30 Restriction analysis
15.30 – 17.00 Transformation I. Pick colonies
17.00 – 18.00. Pizza break
18.00 – 19.00 Transformation II

September 8th

10.00 – 13.30 Minipreps. Set digestion. Gel preparation.
13.30 – 14.30 Lunch
14.30 – 15.30 Advanced cloning I (other approaches).
15.30 – 16.00 Coffee break
16.00 – 17.30 Run gel. Photo gel
17.30 – 19.00 Sequence analysis troubleshooting

September 9th

10.00 – 11.00 CRISPR

11.00 – 11.30 Coffee break

11.30 – 13.00 Advanced cloning II (viral vectors). Project results and wrap-up

Participants have to be present at 85% of the contact hours (this means that they can miss one half-day), and actively participate in all activities.

This course can give credits to PhD programs at FCUL or programs with partnerships from FCUL and other institutions with 6h-7h of contact hours per ECT, as a function of specific requirements. **For these students, in addition to the exercises done during the week, the delivery of a written report done after the course is mandatory.** For programs with fewer hours of contact per ECT (6h/ECT, getting 6 ECTs from the course) students need to do an additional assignment (summary report). If needed 1 or 2 additional hours of contact may be added. Such report(s) are also advised for other students requesting accreditation of the course in their institutions.

Nº (min, max) students: 10 – 16

Minimal formation of students Graduation (bachelor degree)

Directed to: Master and PhD students, lab technicians, post-docs and medical doctors

Location: Faculty of Sciences of the University of Lisbon (FCUL)

FEE

Free for 1st year PhD students in Doctoral programmes at FCUL (e.g. Biologia), Biodiversity, Genetics and Evolution (BIODIV UL; UP), Biology and Ecology of Global Changes (BEAG UL, UA) and Sustainability Science (UL, several institutions), when the course counts credits for their formation, in which case the delivery of a final report done after the course is mandatory; the course is also free for more advanced PhD students of the BIODIV programme (ULisboa or UPorto) – Only two students in one of these circumstances will be accepted. 400€ for all other academic/professional situations.

Deadline for applications: June 28th, 2024

How to apply

The formulary you will fill in the application link (shared in due time) is strictly confidential. All the mandatory fields are required because this CE3C Advanced Course is also offered as part of the PRR program of FCUL.

For any questions referring to course credits within the PRR program of FCUL please contact the CE3C coordinator of the “CE3C Advanced Courses” Margarida Matos (mmmatos@fc.ul.pt) and Rita Zilhão (rmzilhao@ciencias.ulisboa.pt) from the organizing committee.