ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

Project title: UNA-CAPGEN: CAPacity Building in Conservation GENomics of insects within the Una Europa Alliance
Acronym: UNA-CAPGEN
Name and Department of the UNIBO scientific coordinator: Andrea Luchetti - Department of Biological, Geological, and Environmental Sciences

Project objectives
UNA-CAPGEN aims at building capacity in conservation genomics of insects through integrated training, mobility and pilot implementation of shared research frameworks. The project focuses on transcriptomic analyses of non-model, protected insect species, addressing challenges such as complex genomes, limited reference resources, and the sensitivity to possible experimental biases. It fosters collaboration, hands-on training, and shared protocols across the University of Bologna, University of Zurich, Jagiellonian University and other strategic experts. The vulnerable predatory bush cricket *Saga pedo* serves as a flagship species, offering a biologically meaningful system to develop and validate transcriptomic workflows. UNA-CAPGEN provides advanced training in RNA-seq experimental design, wet-lab techniques, and reproducible bioinformatic analyses, along with short-term mobility opportunities for early-career researchers. Activities include wet-lab workshops, online training, harmonised sampling and protocols setup, joint data analysis, and a grant incubator. Tangible outputs include reusable protocols, shared teaching materials, a jointly analysed comparative RNA-seq dataset, internal technical notes, and at least one joint scientific publication. The project emphasizes reproducibility, skills transfer, openness, and FAIR principles, aiming to establish a sustainable, high-impact framework for future collaborative research and competitive European funding.

Activities
The activities integrate laboratory, field, and computational training, short-term mobility, and collaborative outputs, aiming to build harmonised protocols, reusable datasets, and scientific publications.

- RNA-seq Wet-Lab Workshop: 3–4 day in-person workshop at the University of Zurich covering tissue handling, RNA extraction, batch-effect awareness, and library strategy selection. Mobility of one student and one early-career researcher included.
- Additional Sampling: field sampling in Sicily, Sardinia, and Corsica to collect additional *Saga pedo* populations.
- Online RNA-seq Analysis Workshop.
- Pilot Implementation and Joint Publication: joint analysis of a full-scale comparative RNA-seq dataset to validate harmonised workflows and prepare a manuscript.
- Grant Incubator and Evaluation: online meetings and focused writing sessions to translate pilot results into a European-scale proposal concept.
- Conference Participation and Dissemination: attendance at international conferences or Alliance-level events to share preliminary results, workflows, and training outcomes.

Partnership
The project brings together three UNA Europa partners with complementary expertise, coordinated by the

University of Bologna: Universität Zürich and Jagiellonian University. The team is also supported by other strategic experts.

Expected impact

UNA-CAPGEN will create a structured conservation genomics working group linking Bologna, Zurich, and Krakow. Short-term benefits include **training**, **resources**, and **strategic positioning**: at least 15 students and early-career researchers will gain hands-on experience in RNA-seq experimental design, lab protocols, and reproducible data analysis through workshops and online courses. Tangible outputs include validated and reusable protocols (sampling, RNA extraction, QC, analysis pipelines), teaching materials for MSc and PhD courses, and a transcriptomics dataset supporting both training and a joint scientific publication. For the University of Bologna, the project strengthens its coordinating role in conservation genomics; partner institutions benefit from integrated skills and harmonised workflows. For Una Europa, visibility will be enhanced through webinars, presentations at Alliance events, a potential dedicated webpage, and a Horizon Europe/MSCA concept note with a submission roadmap.