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ANNOUNCEMENT

BGE/BGE+: From Research to Practice – A New Approach to Addressing the Challenges of European Biodiversity

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A new approach to monitoring, managing and addressing biodiversity challenges through the use of genomics is being established by the European research project entitled “Biodiversity Genomics Europe Plus” (BGE+), the successor to the “Biodiversity Genomics Europe” (BGE) project.

The BGE project began in September 2022 and was completed in February 2026. It brought together 33 organisations from 21 countries and was coordinated by the Naturalis Biodiversity Center, the National Museum of Natural History and Research Centre in the Netherlands. Greece was represented by Aristotle University (AUTh) and the Natural History Museum of Crete. The project’s principal investigators were Professor Alexandros Triantafyllidis, Director of the Laboratory of General Biology, School of Genetics, Development and Molecular Biology, AUTh, and Professor Filippos Aravanopoulos, Director of AUTh’s Laboratory of Forest Genetics and Coordinator of the IUFRO Division of Population, Ecological and Conservation Genetics.

The BGE project aimed to promote the use of modern genetic methods, such as DNA barcoding and whole-genome analysis, helping improve the way species are documented and ecosystems monitored.

BGE: From Building Networks to Mapping Greek Biodiversity

The project’s main achievements relate to research capacity, data generation and practical application. It led to the establishment of pan-European cooperation networks in biodiversity genomics, the development and adoption of standards and protocols for generating large volumes of genomic data, and the practical use of tools and data to support decision-making and policymaking.

These achievements provide researchers and organisations with the expertise and communication channels needed to work together. By applying common methods, data generated by different teams become comparable and reliable, while genetic data can now support measures to protect and restore biodiversity.

In this context, the establishment of GrBOL (Greek Barcode of Life) was launched, with the aim of studying and monitoring biodiversity using modern genomic tools, in accordance with the standards of the international iBOL network. More than 120 researchers from approximately 22 Greek organisations have expressed interest in participating in its development, including universities, research institutes, scientific societies and public-sector organisations.

Another significant achievement was the enrichment of the international BOLD database with DNA barcoding data from specimens held in the collections of Greek institutions. In total, 2,270 identified animal and plant specimens from across Greece, as well as more than 18,000 unidentified arthropod specimens, were submitted for sequencing. A substantial proportion of the latter successfully yielded DNA barcodes. This work expanded the available knowledge of Greek biodiversity and created new opportunities for species identification and monitoring. At the same time, training and awareness-raising activities were organised for young scientists, school students and university students in Greece.

BGE+: European Cooperation Moves to the Next Stage

The continuation of the work initiated by BGE is marked by an important alliance of DNA researchers, aiming to establish a pan-European system that harnesses genetics and genomics to protect European biodiversity.

The European Reference Genome Atlas (ERGA), the International Barcode of Life Europe (iBOL Europe) and the Consortium of European Taxonomic Facilities (CETAF) have signed a new agreement on biodiversity genomics in Europe. The agreement aims to establish a coordinated European infrastructure for biodiversity genomics, enabling experts to work within an interconnected European system of shared resources, technology and data.

This vision is being implemented through the BGE+ project and is aligned with the European Commission’s environmental objectives. As a continuation of BGE, BGE+ aims to establish the services, standards, capabilities and infrastructure needed to make biodiversity genomics an integral part of how Europe studies, monitors, manages and restores nature, according to the project’s researchers. BGE+ began in May 2026 and will run until October 2029. Its principal investigators are Professor Alexandros Triantafyllidis, Director of the Laboratory of General Biology, School of Genetics, Development and Molecular Biology, AUTh, and Professor Filippos Aravanopoulos, Director of AUTh’s Laboratory of Forest Genetics and Coordinator of the IUFRO Division of Population, Ecological and Conservation Genetics.

The initiative highlights one of the greatest challenges facing effective biodiversity research: scale. According to the researchers, although more than two million species have been formally identified and described worldwide, millions remain unknown. However, understanding and monitoring biodiversity at the pace and scale required by today's environmental challenges calls for new approaches that strengthen scientific cooperation and interoperability.

The researchers also emphasise that never before has DNA-based science been so well positioned to identify species, monitor ecosystems and understand genetic diversity at such low cost, with such efficiency and on such a large scale as it can today.

Aristotle University at the Forefront of Biodiversity Research

Aristotle University is one of the few universities in Europe participating in both projects, maintaining a continuous international scientific presence in the field of genomics research over a seven-year period (2022–2029). In this way, it contributes to expanding the network of organisations involved in biodiversity conservation, primarily at the national level, while also making a substantial contribution across the Balkan countries and the wider European region.

Furthermore, the University coordinates an extensive dialogue among the organisations involved in developing and operating an integrated infrastructure for the study and protection of biodiversity, drawing on genomic and taxonomic data in Greece and the Balkans.

The researchers note that the results of BGE, on which the continuation of this effort through BGE+ is being built, can be applied in environmental policy, nature management, education, the economy and healthcare. Genetic data, including DNA barcoding and metabarcoding, support biodiversity conservation strategies and are incorporated into European and national policies, as well as the activities of various organisations, making them accessible to the wider public.

At the same time, these data can contribute to protecting natural resources and developing new products in agriculture and pharmaceuticals, thereby having a positive impact on the economy.

For more information about BGE and BGE+, visit:
https://biodiversitygenomics.eu/
https://cordis.europa.eu/project/id/101059492

Images from the projects are attached.

Image Captions:
Image 1: Launch of the GrBOL initiative: the poster (A) and commemorative photograph (B) from the conference held in October 2024. The GrBOL logo (C).

Image 2: Training seminars organised by the AUTh team as part of the project: "Train the Trainers", Thessaloniki, October 2023 (A); training seminar, Thessaloniki, April 2024 (B); Thessaloniki, February 2025 (C); Sofia, Bulgaria, July 2025 (D).

Image 3: Application of genomic tools in biodiversity studies: eDNA analysis at the Port of Thessaloniki, compared with four other European ports (A); metabarcoding analysis of soil samples from areas of Halkidiki (B); study of insect communities along altitudinal gradients and in areas with different land uses (C).

Image 4: Citizen science activities: eDNA sampling by school and university students in Alexandroupoli, Kavala and Rhodes (A); study of insect communities using DNA metabarcoding by Biology and Agriculture students (B).

Image 5: BGE+ logo.

Image 6: Naturalis Biodiversity Center.

We kindly request that this event be published, broadcast, and covered by the media.