



**MINUTES OF THE BELGIAN NETWORK FOR DNA BARCODING WORKSHOP  
ROYAL BELGIAN INSTITUTE OF NATURAL SCIENCES, BRUSSELS, 28<sup>TH</sup> JUNE 2010**

**Organized by:** JEMU (RMCA - RBINS)

**Present:**

Peter Galbusera (Zoo Antwerp - CRC)  
Jill Shephard (Zoo Antwerp)  
Sofie Vandewoestijne (UCL)  
Veerle Versteirt (ITG)  
Wim Willems (UHasselt)  
Sofie Derycke (UGent)  
Karine Van Doninck (FUNDP)  
Sofie Gombeer (Universiteit Antwerpen)  
Annick Wilmotte (ULg)  
Ludwig Triest (Vrije Universiteit Brussel)  
Yves Roisin (ULB)  
Stijn Desmyter (NICC)  
Yves Braet (NICC)  
Christiane Fassotte (CRA-W)  
Wim Vyverman (UGent)  
Denis Michez (UMons)  
Steven Dessein (Nationale Plantentuin België)  
Joachim Mergeay (INBO)  
Tine Huyse (KULeuven)  
Filip Volckaert (KULeuven)  
Zoltán Nagy (JEMU)  
Kurt Jordaens (KMMA - JEMU)  
Floris Breman (JEMU)  
Sonet Gontran (JEMU)  
Lorenzo Lombard (ECBOL - Centraalbureau voor Schimmelcultures)  
Marc De Meyer (KMMA - JEMU)  
Thierry Backeljau (KBIN - JEMU)

**1 Introduction by Thierry Backeljau**

The aim of the workshop is to bring together Belgian research units active in the field of DNA barcoding and to envisage the creation of a Belgian network of DNA barcoding. This network would enhance collaborations, coordinate activities at national level and make the link with International stakeholders like ECBOL, iBOL and CBOL.

**2 “DNA barcoding; what’s going on in Europe ?” by Lorenzo Lombard (coordinator of ECBOL).**

- Presentation of the CBOL (Consortium of the Barcoding of life supports working groups for regular meeting), IBOL, ECBOL, NELL.
- Barcoding activities in European countries.

- Tasks of the ECBOL coordinator (updating ECBOL website, correspondence, Streamlining NELL, ECBOL newsletter, communicating EU funding opportunities).
- Future evolution of ECBOL (promoting national campaigns, increase high throughput facilities, creation of EBOLD (European counterpart of BOLD – Barcoding of Life database).

### 3 Brief introduction of all participants

#### 3.1 Presentation of JEMU by Zoltán T. Nagy

Organization, research projects, equipment and first publications (cf. document in folder).

#### 3.2 Presentation of the different research groups:

##### **Peter Galbusera (Zoo Antwerp - CRC):** Sustainable population management

Mainly conservation work: wildlife medicine, functional morphology, conservation biology, ethology & welfare including captive breeding programs – field conservation projects: Cameroon (Great Apes), Brazil (golden headed lion tamarins), Flanders (De Zegge). Population genetics of zoo-populations, paternity analysis, in situ conservation genetics, veterinary diagnostics

No specific barcoding work going on and no “barcode” data available yet. But possible link with DNA barcoding: taxonomic research (e.g. Military Macaw); diagnostic research (microbiology); biodiversity research (e.g. De Zegge); DNA storage bank (international through EAZA) Possibly flexible use?; ConGRESS (Conservation Genetic Resources for Effective Species Survival).

##### **Sofie Vandewoestijne (UCL - Earth & Life Institute):** “Phylogeny & phylogeography of *Aglais/Apatura/Pararge/Bicyclus*”, “*Ophrys*”, “*Aedes/Tetranychus*” (Modirisk) and “*Apodemus*”

DNA sequencing (among other markers, use of COI), microsatellites (butterflies, trouts, domestic bovine races, conservation genetics of plants, genetic diversity in crop species), host parasite in *Apodemus sylvatica* – Nematode.

No real barcoding work going on but already data (sequences) exist that could be used as barcode.

##### **Veerle Versteirt (ITG):** Mosquitoes (Malaria related) and Tsetse flies (host-parasite interaction)

Insecticide resistance (specific PCRs), molecular ID of cryptic species and infected mosquitoes (RFLP of mostly ITS2, ELISA test, blood meal detection, CytB)

Several Projects: MODIRISK, included in the Mosquitos Barcoding Initiative (MBI), Avia-Gis, Wageningen, Belspo), Virorisk, VBORNET...

Already real barcoding activities: MBI; Part of BC42W (JEMU project) on *Anopheles* complex in Belgium. No sequencing facility.

##### **Sofie Derycke (UGent):** Marine Biology

Barcoding *sensu lato* of freeliving (deep-sea) nematodes (18S and 28S); Barcoding of deep-sea sponges: COI variability is very low.

DNA barcoding running and efficient (<5% threshold) but most sequences do not overlap with the Folmer region and data are not (directly) relevant for submission as barcodes.

##### **Karine Van Doninck (FUNDP):** Evolutionary Genetics and Genome Evolution

Reproductive strategies : “Bdelloid” rotifers – *Corbicula* spp. (spontaneous androgenesis)

Diversity based on genetic clusters, (species definition ?), clonal diversity/population genetics; DNA breaks caused by desiccation ? Genoscope project: genome structure.

No real barcoding work. COI is used as a marker within these studies; could be submitted as barcode?

**Sofie Gombeer (Universiteit Antwerpen):** Benthic invertebrate communities (Insecta – Trichoptera)  
Case study for micro-array, COI + five others markers compared with morphology

DNA barcoding for Trichoptera. COI is one of the markers. Sequencing in Canada.

**Annick Wilmotte (ULg):** Cyanobacteria

Double taxonomy of the group: treated as algae and then prokaryotes; phylogeny based on 16S.

There is potential for DNA barcoding based on strains but nothing really planned (16S may be a good candidate gene). Culture collection from the Antarctica is available.

**Ludwig Triest (Vrije Universiteit Brussel):** Alismatidae (Water-plants)

Sea-grasses (e.g. *Ruppia*): 2500 specimens; microsatellite: problems with species cross-amplification, Herbarium present: African representatives

DNA barcoding was done “by necessity” in order to have an alternative technique for species identification. Chloroplasts markers (6 introns) + nuclear markers (newly developed primers) were used. Lots of problems with hybrids. Multisamples per species to cover geographic range.

**Yves Roisin (ULB):** Termite ecology and systematics

Termites from Panama and Guyana. Taxonomy based on soldiers and alates but the soldier caste is not always present.

Active in barcoding in collaboration with JEMU and together with Maurice Leponce: for DNA taxonomy of soldierless termites, matching alates with workers and for phylogeny.

**Stijn Desmyter / Yves Braet (NICC):** Genetic identifications

Genetic identifications of humans with non coding gene (control region); biological microtraces; entomology: morphological identification; identification of Diptera relevant for forensics (those that deposit their eggs early), post mortem interval, DNA in addition to morphological identification

Active in barcoding in collaboration with JEMU. Further species could be used for barcoding if the whole corpse decomposition process is taken into account.

**Christiane Fassotte (CRA-W):** Agricultural aspects

Monitoring, entomology; biting midges (*Culicoides* – Ceratopogonidae) “blue-tongue” disease; emerging insect pests for riparian woody species in Wallonia (VigiRive): survey of 13 potential pest species. Decision support systems and assessment (e.g. insect identifications)

No real DNA barcoding activities ongoing. Planned within BC42W JEMU project. Potential for DNA barcoding: identification of particular pest species and also identification of insects collected during surveys in horticulture.

**Wim Vyverman (UGent):** Eukaryotic microbes

Focus on diatoms. Phylogeny and phylogeography. Colonization patterns. Aquatic ecosystems functioning (environmental monitoring). “Diatoms”: two types of sexual reproduction (model species: *Seminavis robusia*)

Keep DNA bank that can be used for genotyping. DNA barcoding not a goal on its own. No consensus yet on diatom barcode marker(s).

**Denis Michez (UMons):** Hymenoptera pollinators

Host plant – pollinators interaction, systematics, mapping and distribution. domestication of bumblebees; STEP project (FP7); FRFC-FRNS project (two); Geometric morphology. All with molecular components.

COI as by-product, no real barcode project.

**Steven Dessein (Nationale Plantentuin België):**

Phylogeny and Pop. Dynamics of European flowering plants. Rubiaceae, bryology and lichenology (a database would be useful), mycology: Boletales (e.g. for ecto- and endomycorrhiza a database would be useful). Much of the material is African: African rain forest species database is desirable.

Lots of molecular research but no specific DNA barcoding activities. However, genuine interest with specific topics. Are currently using markers that can be used as DNA barcodes.

**Joachim Mergeay (INBO):** GenDiv team

Conservation genetics, evaluate biodiversity policy and management, genetics as lever in conservation and sustainable use, invasive species. Studied organism: Coypu, wild boar, green frogs, bull frog. Make advice for policy makers regarding biodiversity and conservation.

Use different techniques for molecular work. Mainly end-users of DNA barcodes, but not planning to generate DNA barcodes themselves. Often use other markers, depending on the topic (so not necessarily the DNA barcode region).

**Tine Huyse / Filip Volckaert (KULeuven):** Ecology

Fisheries (fish ecology, genetics, evolution, biodiversity (Snoeks)), archaeobiology (Van Neer), aquaculture (European sea bass), Host-parasite coevolution and biodiversity, parasite diagnostics (new markers).

Production of DNA barcodes for fish of the Southern Ocean and *Schistosoma* parasites in Senegal (with Guelph, NHM - London, MNHN – Paris, Oslo but also through JEMU (for *Clarias*). Potential interest for flatworms and less studied taxa of European fish.

**Wim Willems (UHasselt):** (free-living) flatworms: e.g. *Gyatrix hermaphroditus*

Ecotoxicology and biodiversity.

Actively involved in DNA barcoding through one of the PhD students within framework of phylogenetic research. Collaboration with JEMU (Gybar).

#### **4 Discussion about a Belgian network for DNA barcoding**

Networking as a way (not as a goal) to exchange experience and coordinates efforts.

Advantages of such network:

- Regular basis contact/research meetings; focused meetings
- Attend workshops
- Invite lecturers
- Organise trainings
- Information point (congresses, meetings, funding, ....)
- Helpdesk

The Belgian network would be THE contact point for international bodies like EcBOL, iBOL, CBOL, etc in order to disseminate information throughout Belgium.

BCCM funded by BELSPO. Might be interested to have this link.

Composition:

Aim to have a diverse group of institutes, representing different categories (fundamental & applied research; barcode producers & end-users) and different organism groups.

Note that the group of research unit present at the workshop is a starting point and the network is still open to other Belgian institutions active in DNA barcoding.

Scientific theme:

What would be the scientific theme(s) of the proposal? FWO is asking for postdoctoral research and cutting edge science. Is barcoding on its own enough? Should we focus on problematic aspects related to DNA barcoding or suggest barcoding as a tool for a general theme like biodiversity? Most likely the second approach should be followed, emphasizing the fundamental aspect. Some practical deliverables (e.g. link with CITES) could be included, too.

It is important to have links between the participants of the group. Should it also be reflected in the publications? (Like to have one publication with ALL parties included?)

Alternatively we can look at more applied projects in collaboration with private companies. In this case, we have to approach the topic based upon the private partner's wishes and be "industry orientated".

Buzz words needed. Let's ask David Schindel!

Look into both grants for networking possibilities:

- FWO: Deadline is 1 or 15 October. Min 3 Flemish institutions + min. 2 others (in Wallonia or outside Belgium).
- FNRS: we miss practical information but the grant provides probably less money

In practice: a form will be circulated and participants are welcome to fill in relevant fields with pragmatic information concerning their unit (current activities, complementarities, etc.)