

WDCM training course for Microbiome data sharing summary report

Personal introduction

My name is Blagoy Angelov Uzunov and I am 36 years old. I graduated Sofia University *St Kliment Ohridski* (Bulgaria) with my bachelor's (Ecology and environmental protection) and master's (*Algology and mycology*) degrees. My recent position in the University is an Associate Professor. In 2010 I became a curator of the Algal collection (ACUS) and since 2015 I am an administrator of the e-learning platform of the Biology Faculty. My PhD - *Aeroterrestrial algae from Pirin Mt (Bulgaria)* was graduated in 2009 in the University of Innsbruck (Austria). Recently I have 50 articles, 28 project and 26 scientific conference participations.

Name of the culture collection

Algal Collection of the University of Sofia "St. Kliment Ohridski"
(ACUS)

ABSTRACT

Report for the training course organized for the participants from development countries by the Institute of Microbiology of Chinese Academy of Sciences in the period 15-30 October 2017 Beijing (China)

is provided. Benefits from the course for ACUS and its curator are reported. Likewise some suggestions to the work of GCM, Analyzer of Bio-resource Citations (ABC) and to the organization of future courses are also proposed. Further cooperation between ACUS and WDCM in conclusion is commented.

Key words: ACUS, aeroterrestrial algae, Bulgaria, e-learning, GCM

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Brief introduction of the Culture Collection

Algal collection of Sofia University “*St. Kliment Ohridski*” was established in 2006 in the Department of Botany of the Faculty of Biology under supervising and personal participation of Univ. Prof. DSc Georg Gärtner from the University of Innsbruck (Austria). The first collected samples were from soil and aerophytic cyanoprokaryotes and algae in Bulgaria. These algae are still known as aeroterrestrial algae and they are in the basis of the collection. From the group of aeroterrestrial algae in Sofia University collection are included living strains of cyanoprokaryotes and algae collected from barks of trees, as well epilithic, epiphytic, endolithic, epimycotic and soil algae. Most of the collected strains are from Bulgaria, situated in one of the hotspots of European biodiversity - the Balkan Peninsula. In the collection are deposited strains also from some Antarctic islands - Deception, King George, Ardley, Nelson, Geologist and Dart. The number of clone cultures is increased during the years mainly by samples collected from PhD students and from scientific field trips. Recently the collection contains more than 200 strains of 80 cyanoprokaryotic and algal taxa. Among them the taxa of green (Chlorophyta and Streptophyta) and ochrophytes (Ochrophyta) algae are dominant. In spite of the small number of ACUS strains, in the collection is available a new described taxon (*Trochisciopsis tetraspora* f. *minor* Gärtner, Uzunov, Stoyneva,

Kofler & Ingolić) and some interesting species, representatives of soil algal microbiome (*Coelastrella aeroterrestica* Tschalkner, Gärtner & Kofler, *Macrochloris multinucleata* (Reisigl) Ettl & Gärtner, *Palmellopsis texensis* (Groover & Bold) Ettl & Gärtner, *Eustigmatus magnus* (Petersen) Hibberd and *Vischeria stellata* (Chodat ex Poulton) Pascher). Some strains of the last species are very promising for carotenoid production. During the last year in ACUS were deposited green algal strains belonging to the microbiome of polyporal fungi.

On 13th of April 2010 the collection was registered in WDCM with number 965 and the acronym ACUS (Algal Collection of the University of Sofia). Director of the collection is Prof. DSc Maya Stoyneva and its curator is Assoc. Prof. Dr Blagoy Uzunov. The director and the curator of ACUS work already 10 years as volunteers because there is not a special item of expenditure for ACUS in the budget of Biology Faculty. Therefore the ACUS challenges in the future can be demonstrate in three time periods:

1. Permanent challenges: funding, staff, and strain number increasing;
2. Short-term challenges: gene sequence analysis, metabolite analysis, cryopreservation and ISO standards;
3. Long-term challenges: converting ACUS into main European research center of aeroterrestrial algae.

Benefit from the training courses

The training course organized from WDCM provided many different and important for me and for the future of ACUS benefits. The main of them was the opportunity for contact network creation between all participants from 13 different countries who have similar work and challenges. Other significant benefit from the course was provided information for the: 1) existence of many diverse data basis which will be very useful in my work in the future; 2) method of work of the data basis; 3) opportunities for study, teaching and development provided by the Chinese Academy of Sciences.

Suggestion on WDCM work

Actually the work of colleagues from the Institute of Microbiology of the Chinese Academy of Sciences regarding WDCM was very impressive for me. In the last 5 years they are really made a lot for the improvement of the data base and for the creation of the Global catalogue of microorganisms (GCM) and recently for the Analyzer of Bio-resource Citations (ABC). However I have some suggestion concerning GCM because the group of algal organisms looks neglected in the catalogue in comparison with other organisms (e.g. bacteria and fungi). The suggestions are as follow:

1. In *Species tree viewer/Species Info* cyanoprokaryotes and algae are no included in the provided taxonomic tree. I should think that it will be very useful for the GCM users if you make a link to the taxonomic tree of *AlgaeBase* (<http://www.algaebase.org/browse/taxonomy/>). *AlgaeBase* is a widely accepted database of information on cyanoprokaryotes and algae that includes terrestrial, marine and freshwater organisms. *AlgaeBase* should be used also by name checking of the new provided cyanoprokaryotic and algal strains from the collections in GCM.
2. In *Species tree viewer/List by Isolation Sources* the information in the column *Microalgae* is not upgraded for the groups of soil and aerophytic algae (should be in row *air*). In this particular occasion the curator of ACUS (Reg. №965) provided such type of information for the collection, all strains of which are aeroterrestrial cyanoprokaryotes and algae.

Comments or suggestion on the training courses

The idea for the implementation of such type of training courses is very well accepted among all participants. My personal suggestions to the training course carried out in the period 15-30 October 2017 are as follow:

1. Most important part of such courses for me is the practical experience. Actually during the course we had some problems with this part, regarding connection and inability to work with the proposed online data bases. For example we were unable to use Analyzer of Bio-resource Citations (so called ABC) because the data from most of the collections of course participants were not implemented in this base yet. Therefore I would like to propose for the future courses more laboratory work and work related to collection of the Institute of Microbiology. The Institute possesses many different and well equipment laboratories and using of their facilities would be a great advantage for all participants in the course. From the other hand the theoretical part of the course is also a good benefit for the trained when it is specialized for the needs of concrete person or collection. Personally for me, the overview provided by Dr. Lei Cai considered the global mycological databases going to be very helpful in my future work in the field of mycology. From the other side there was not even a single lecture related with algae. In spite of my main work with algae the visitation in biosafety level 3 laboratories in the Institute of Microbiology was very impressive.

2. Theoretical part of the course would be much more useful if opportunities provided by free e-learning platform Moodle (or other similar) are used. In this way all participants in the course should be enrolled in the e-based course/s related with WDCM and culture

collections. This type of teaching could save time of trainers and trained. Everyone could manage with the provided information in advance, even in their own countries, in the hotel, before and after the practice. Using this mode of course preparation all participants in e-based courses will be well prepared to discuss their topic of interest and they can also use other Internet source, which is independent from the building where the course is carried out. Furthermore, the using of e-learning in the theoretical part of course will save time for more practical work and for more common discussions that in my opinion is the most important.

Suggestion on further cooperation between WDCM and your collections

Algal collection of Sofia University “St. Kliment Ohridski” (ACUS) is a small collection of aeroterrestrial cyanoprokaryotes and algae that contains living strains. Since its establishment ACUS have no special funding from Sofia University. However, the director and the curator of ACUS are able to provide to WDCM their knowledge and capacity in classical taxonomy for determination of aeroterrestrial and freshwater cyanoprokaryotes and algae. Undoubtedly we will be very thankful to WDCM if we have a possibility to cope with our short-term challenges related to gene sequence analysis, metabolite analysis, cryopreservation, and ISO standards.