European Consortium of Microbial Resources Centres – EMbaRC

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EMbaRC, a 3 year project funded by the EU, aims to improve the coordination and validation of microbial resources delivery to European and International researchers in both the public and private sectors. It brings together microbial resource centres (mBRC) from seven European countries, and combines networking, training and research activities. Outreach and training activities ensure that all European collections can share and further develop technologies in the preservation and characterisation of microorganisms. Furthermore it aims at helping collections and microbiologists to comply with regulatory requirements; for example biosecurity guidance will be developed.

CECT enjoys new facilities (see below)

Grants for access to leading EU Microbial Biological Resource Centres (BRCs)

The **EMbaRC** Training and Outreach Programme (TOP) is an opportunity for scientists to stay at **EMbaRC** centres and benefit from expert advice and advanced equipment. **EMbaRC** will cover the bench fees, travel and subsistence costs. Access to this unique opportunity for collaborative study visits in collection management, identification of bacteria and fungi by state-of-the-art techniques or phenotypic screening of a collection of strains has been simplified. Submit a project idea for consideration and then enjoy working with EMbaRC partner staff in their facilities. You can stay several weeks in a single installation or combine stays in several EMbaRC centres across Europe, according to your project's needs. More information and the application form are found at: www.embarc.eu. > Access Grants

EMbaRC evaluation – EMbaRC moves into its third year

Venue Belgian Science Policy, Brussels, 3-5 November 2010

EMbaRC coordinators and work package leaders presented key achievements to the EC Project officer, Jean-Emmanuel Faure and Dr. Ramon Rosselló-Móra, the Independent Project reviewer in a series of presentations. Jean-Emmanuel Faure stated that the project had made great progress and that the consortium worked well together and demonstrated a true European spirit. Dr. Ramon Rosselló-Móra, agreed that good progress had been made. There were only a few concerns; the major problem was the low numbers of access (participants) to the Transnational Access (14 places filled from 95 at the half-way point). After a successful review the project moves into its final year with some useful ideas to improve outreach and a request to readers to submit your proposal to study at one of the partner centres.

EMbaRC Biosecurity Code of Conduct on Biosecurity

Within the tasks of NA1.3 is the drafting of a Code of Conduct on Biosecurity for BRCs. Accumulated and advanced knowledge on biological systems offers substantial benefits to mankind, to research and to development in all areas of basic and applied bio-medical and bio-technological sciences. However, this improved knowledge is intrinsically associated with the potential for dual application: for beneficial or malicious purpose. The *dual-use dilemma* affects both, knowledge and the biological resources. Therefore, the association between science and the international political debate on arms control is playing an

increasing role for in-depth implementation of the Biological and Toxin Weapons Convention (BTWC).This Code of Conduct on Biosecurity will help microbial Biological Resource Centres (BRCs) to promote a basic ethical understanding of science compliant with the BTWC and raise awareness to prevent misuse in the life-sciences context.

It intends to raise awareness within the BRCs and outside and to clearly demonstrate that BRCs fully comply with national and international legislation and support the BTWC as an international norm prohibiting biological weapons with the aim to prevent microbial BRCs from directly or indirectly contributing to the development or production of biological weapons, as described in the BTWC, or to any other malicious misuse of biological agents and toxins.

Many BRCs are entrusted with the collection and controlled supply of potentially hazardous bio-resources. This requires high responsibility, well-established risk analyses and appropriate BRC internal infrastructures, profound knowledge of relevant bio-legislation including export control and respective protective measures. This Code calls for implementation and compliance of awareness, accountability and oversight and targets researchers, laboratory workers, managers, stakeholders and others.

The draft of the Code of Conduct on Biosecurity is available on the EMbaRC website: http://www.embarc.eu/biosecurity.html. You are invited to comment and contribute. We would like your feedback (at: embarc@rennes.inra.fr) on:

- the wording of the draft code
- whether it can be implemented by your collection
- if it meets with your institutional or organisational needs
- and if it comply with national needs.

News from the Inter-laboratory Working Groups

JRA1.1: **Improving protocols for preservation of delicate/recalcitrant strains**

The objective of Task JRA1.1 is to improve current protocols or develop new ones to increase the recovery rates and extend the shelf-life of preserved material for which conventional methods give poor results. Due to the differing performances of fungi and yeasts versa bacteria during long-term maintenance it was decided that lyophilization experiments would be performed with bacteria and deep-freezing experiments performed with eucaryotic microorganisms. The first step was to identify what each partner considers delicate or recalcitrant among its own holdings. It was agreed to carry out experiments on six strains representing different life styles. A literature review compiled more than 70 references and books which describe preservation methods and the respective studies undertaken to evaluate the influence of different conditions on preservation success in the past. Based on these previous experiences, freeze-drying will be applied to the six selected strains, and the effect of the following factors on the survival rate will be measured:

- addition of trehalose to the growth medium
- low temperature treatment to induce stress protection mechanisms
- incubation time
- variation of protectant
- L-drying on skimmed milk plug.

For the Eukaryotic fungi, partners selected a suite of 15 preservation recalcitrant fungi. Each participant contributed 3 strains from their own collection which they had previously experienced difficulty in preserving. The organisms selected included economically important members of the Basidiomycota and the fungal like Chromists. All 15 strains were distributed to each partner. The study has been broken down into two stages; stage 1 involves each partner applying their own ‘in-house’ preservation regimes to each strain. Preservation methods selected included centrifugal lyophilisation, traditional controlled rate cooling cryopreservation and a ‘LN free’ cryopreservation method. A standard set of methods have been applied before and after preservation to assess the success of each preservation protocol, these include an assessment of viability and culture characteristics, a molecular assessment and a MALDI-TOF approach. In the coming weeks, the data generated will be analysed and the results used for the second stage of the study. Stage 2 will involve the application of optimized and more novel preservation regimes such as encapsulation-dehydration cryopreservation. Preservation success will be assessed using the same set of protocols used in stage 1 of the study. When all of the results are analysed, a standard set of methods will be selected and tested as part of JRA 1.3, validation of methods and biological materials.

JRA2: **Exploring new approaches in species identification:**

Do we need new molecular markers for identification of prokaryotes?
Today, molecular techniques are routinely being used for identification of prokaryotes. Even though 16S rRNA gene sequence analysis is the standard for reliable species identification, classification and differentiation of closely related strains becomes more and more difficult.

The availability of whole genome sequences has drastically cleared the way to focus on additional genes. Protein coding genes are known to evolve much faster than rRNA genes and these genes, especially the so-called housekeeping genes, seem to be ideal candidates for the investigation of closely related bacteria. Multi-locus sequence analysis currently bridges the gap between 16S rRNA gene sequences to whole genome analyses based on direct genome sequence comparison. In subtask 2.1.2 the partners involved (DSMZ, INRA, IP, UVEG-CECT, UGent) will apply the MLSA approach for characterization of strains affiliated to different genera like *Lactobacillus*, *Propionibacterium*, *Acetobacter*, *Rhizobium* or *Campylobacter*.

Note:

60 strains affiliated to the genus *Lactobacillus* have been sequenced so far with more in progress
26 whole genome sequences for *Campylobacter* strains are available

Microbial Resources Research Infrastructure (MIRRI) - a proposal for the European Strategy Forum for Research Infrastructures (ESFRI) road map

The ESFRI Biological and Medical Sciences Thematic Working Group Report 2010 has been published announcing that MIRRI – Microbial Resources Research Infrastructure was unanimously recommended as an excellent and mature proposal for the update of the ESFRI Roadmap.
http://ec.europa.eu/research/infrastructures/pdf/bms_report_en.pdf.

MIRRI brings together European microbial resource collections with stakeholders aiming at improving access to enhanced quality microbial resources in an appropriate legal framework. MIRRI builds on several initiatives and activities: the Organisation for Economic Co-operation and Development Biological Resource Centre (OECD BRC) Task Force initiative that provided best practice, the GBRCN demonstration project and the **European Consortium of Microbial Resources Centres (EMbaRC)** projects and voluntary scientifically based collection network activities, such as World Federation for Culture Collections (WFCC) and European Culture Collections' Organisation (ECCO). MIRRI enhances existing European microbial resource collections by linking them to third country partners extending globally.

The evaluators commented that this proposed RI (**R**esearch **I**nfrastructure) was an excellent and mature proposal. National structures from all over the Europe are already established, scientific and technological expertise centres identified. The proposed RI will contribute to excellence of research (through greater coverage, implementing best practice and facilitating global access) and human resource development incl. taxonomic expertise. It is complementing the existing RIs (BBMRI, EATRIS, EMBRC) and will collaborate with ERINHA and ELIXIR.

The proposed RI will build on existing national RIs and international networks in order to build up a pan-European virtual RI. It demonstrates an extensive collaboration network. This RI is the correct infrastructure for developing the area of chemical biology: microbial metabolomics, metabolite profiling, detection and quantification of microbial toxins. It will make microbial resources and materials available for the industry and supports the high quality research, training and education in Europe.

Report from 12th International Conference on Culture Collections.

Florianópolis, Brazil, 26 September – 01 October 2010

The EMbaRC Consortium had a strong presence at the World Federation for Culture Collections (WFCC) International Conference for Culture Collections contributing to various sessions. In particular Session 3D European Consortium for Microbial Resource Centres which as one of the parallel sessions had standing room only. The ensuing debate in the question and answer session could have extended the session well outside its scheduled time. EMbaRC partners also participated with GBRCN colleagues in the sessions *From culture collections to biological resource centres* and *GBRCN implementation and coordination with*

national and regional efforts, as well as sessions on *Quality Management Issues in Microbial Resource Centres*.
Topics key to the EMbaRC outputs were covered including implementation of best practices, legal and safety issues, intellectual property and innovation in biotechnology and data management, networking and information systems. The conference provided the opportunity to interact with current and future partners and enabled the detailed development of action plans for the Microbial Resources Research Infrastructure (MIRRI).

The scientific programme included 160 posters and 120 oral presentations; the report from the conference and the minutes of WFCC meetings will be available on the WFCC web site. The presentations are available on the ICCC12 website www.iccc12.info as attachments to the programme.

News from Partners

The CECT has moved to a new location at the University of Valencia Science Park (PCUV). This new initiative was set up in 2009 with the aim of strengthening links between the University and the socio-economic environment within which it operates, offering high value added spaces and services to address the needs of innovative companies in sectors with a strong research and development component.

Front view of Building 1 SC (Science and Technology Services)

Located 12 km from the Valencia city centre and 5 km from the airport, the Science Park is a centre for attracting knowledge transfer. It houses University's research potential, university spin-off companies (more than 50) and other innovative companies with a strong research and development component.

This move provides CECT with more space, new facilities and equipment but also funding alternatives, saving on the cost of common and/or shared services and the possibility of establishing synergies with companies in the Science Park.
The new postal address is:
Spanish Type Culture Collection (CECT), University of Valencia
Parc Científic Universitat de València
Catedrático Agustín Escardino, 9
46980 Paterna (Valencia)
SPAIN

EMbaRC 2nd Annual Meeting

The second annual meeting took place in Valencia (Spain) on 6-8 April 2011 and was kindly hosted by CECT, the University of Valencia and ADEIT. The first day focused on the results of the interlaboratory work packages whereas day 2 dealt with the networking activities NA1-3. The third day offered the possibility of visiting the new facilities of CECT after its move to the Science Park in Paterna (see above).

Upcoming Events

EMbaRC Workshop for Laboratory Culture Collections A workshop will be held in Turin, Italy on 14-15 June 2011 titled "Secure the future of microbial resources at a laboratory scale". Laboratory culture collections will be provided a rationale for securing resources and a set of tools including: taxonomic methods, preservation techniques, legal issues, training and outreach programme, as well as feedback from the MUT (Mycotheca Universitatis Taurinensis) who will host the event. **Free access upon registration on embarcturin.sciencesconf.org**

European Culture Collections' Organisation Annual meeting
The **30th Annual Meeting of ECCO** will be organized in 2011 by CBS, Centraalbureau voor Schimmelcultures, the Netherlands. It will be held on 16-17 June, 2011 at the **CBS** building and the nearby Hotel **Mitland** in Utrecht. Further information will be posted on the ECCO website (**http://www.eccosite.org**).

***Microbial Resources Research Infrastructure (*MIRRI) preparatory meeting**
A workshop to discuss the preparatory phase of the MIRRI project will be held back to back with the ECCO meeting on the 18th June 2011.

EMbaRC Partners

Institut National de la Recherche Agronomique, INRA, France (Coordinator)
Institut Pasteur, IP, France (Vice-Coordinator)
German Collection of Microorganisms and Cell Cultures, DSMZ, Germany
CABI Europe, UK
Spanish Type Culture Collection, UVEG-CECT, Spain
Belgian Co-ordinated Collections of Microorganisms, BCCM, Belgium
Micoteca da Universidade do Minho, MUM-UMinho, Portugal
Centraalbureau voor Schimmelcultures, KNAW-CBS, The Netherlands

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