

## **P2-5: Microbial Resources and Applications: Preliminary Trends and Insights for Future Economic Impact Estimates**

**André Antunes, Marta F. Simões, Cledir Santos, Armando Venâncio, Nelson Lima**

*IBB-Institute for Biotechnology and Bioengineering, Centre of Biological Engineering, Micoteca da Universidade do Minho, University of Minho, Braga, Portugal*

*E-mail: [andre.antunes@ceb.uminho.pt](mailto:andre.antunes@ceb.uminho.pt)*

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### **Session selection:**

The advent of the molecular age has proven Microbes to be the dominant life forms on Earth. Microbes associated with our own bodies outnumber our own cells by a 10:1 ratio [3-4], while current estimates on the total number of bacterial cells in our oceans exceed the estimated number of stars in the Universe by several orders of magnitude [6]. Microbes clearly surpass multi-cellular life in abundance, metabolic activity, genetic, and biochemical diversity.

Microbes are associated with multiple direct and indirect benefits. Indeed, they play essential ecological roles, interacting with plants and animals, and controlling vital global geochemical and nutrient cycles. Furthermore, Humans have been making use of microbes since the dawn of mankind, mainly associated with the production of fermented food and beverages. The last few decades brought an exponential increase in the number of microbial applications with the development and growth of modern-day Biotechnology.

The explosive growth in Biotechnology is fed by a constant supply of newly discovered microbial strains and microbial-mediated processes. The study of new environments, and isolation and description of new microbes is vital for this continued growth, as it is to assure their proper long-term storage, preservation, and accessibility. Biological Resource Centers (BRCs) are fundamental in harnessing and preserving the world's biodiversity and genetic resources fueling research and development, and vital in meeting modern demands for the further advancement of bioeconomy [1-2, 5].

While BRCs and their microbial resources have an unquestionable high economic impact, true value and growth are very hard to estimate in an accurate way. Here we propose to use number of publications in several areas, and patents in biotechnology as preliminary proxies for future estimates of global and regional impact. We present and analyze some of the recent trends observed in Europe and in the World. Most noticeably, we have observed a narrowing of the gap between publications in microbiology and biotechnology, a worrying plateau in the publication of new microbial species descriptions, and the widening of the gap between Europe and the World in number of biotechnology patents.

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- [6] Whitman, W.B., Coleman, D. C. & Wiebe, W. J., *Proceedings of the National Academy of Sciences USA*. 95, 6578-6583 (1998).



# The 13th International Conference on Culture Collections (ICCC13)

BRCs in the era of microbial genomics and  
diversity driven innovation of biotechnology

## PROGRAM & ABSTRACTS



**中国科学院微生物研究所**  
INSTITUTE OF MICROBIOLOGY CHINESE ACADEMY OF SCIENCES



**中国微生物学会**  
Chinese Society for Microbiology

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## **Program & Abstracts**

**Beijing Friendship Hotel**

**September 23-27, 2013**

**Beijing China**

# General Information

## History of ICCC

1968 Tokyo, Japan	1992 Beijing, China
1973 Sao Paulo, Brazil	1996 Veldhoven, the Netherlands
1976 Bombay, India	2000 Brisbane, Australia
1981 Brno, Czechoslovakia	2004 Tsukuba, Japan
1984 Bangkok, Thailand	2007 Goslar, Germany
1988 Maryland, U.S.A	2010 Florianopolis, Brazil

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