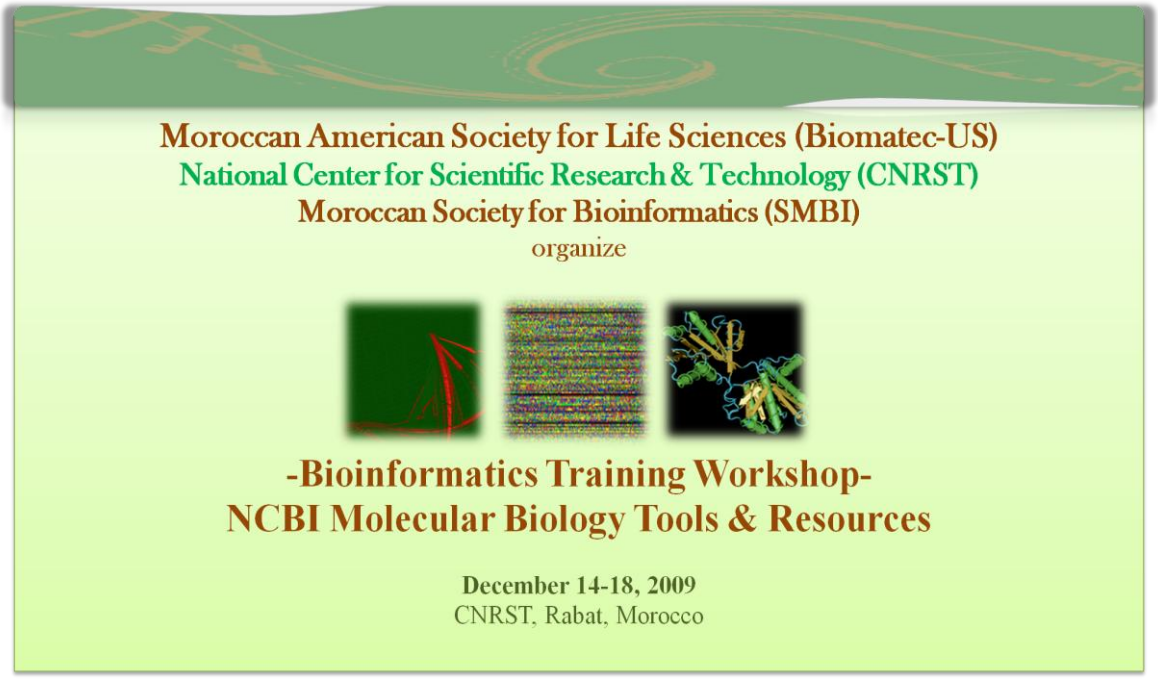

Workshop description

Molecular sequence databases and computational biology tools are an important part of biological and biomedical research. To assist life-scientists in using these data and tools, the Moroccan American Society for Life Sciences (Biomatec-US), the National Center for Scientific Research and Technology (CNRST) and the Moroccan Society for bioinformatics (SMBI) organizes a four-days training course entitled, "A Field Guide to NCBI Molecular Biology Resources and Tools" that will be held on December 14- 18, 2009 at the CNRST, Rabat, Morocco.

This workshop is intended to help participants to gain hands-on experience with the resources and tools at the NCBI site and to learn how to explore these resources and apply these tools in their specific research area. In particular, the course will provide practical information about GenBank, RefSeq and the integrated genome resources, as well as the other most used databases maintained at NCBI. The focus will be on effective use of Entrez and sequence similarity searching with BLAST. NCBI expression resources linked to Gene Expression GEO data will also be presented. The course will also teach the effective use of analysis tools that focus on 3D macromolecular structure data. Participants will be also introduced on how to use PubMed accurately and efficiently to search MEDLINE and NCBI Bookshelf. The second part of the workshop will be dedicated to toxicogenomics as example of use of Genomics and Bioinformatics tools in Biomedical Studies. A last session will bring together actors at different levels to discuss the future of Bionformatics in Morocco and the perspectives of Moroccan American Scientific cooperation at large.

The sessions include a combination of lectures, demonstrations, and hands-on experience, eventually with actual user questions. The course consists of a 3-hour morning lecture and demonstrations, followed by a 3-hour hands-on sessions. These afternoon hands-on sessions will target some computational genomics case studies that illustrate the present methods and strategies in Bioinformatics. No strong computer knowledge is needed. Although this Field Guide to NCBI Resources is primarily designed to provide information for researchers, educators and students as a practical introduction and survey of the available NCBI tools and databases, experienced NCBI users can also find this course to be useful.

Workshop Objectives - Expected Outcome

This training is designed for all NCBI users who want to increase their efficiency in searching, navigating and analyzing results. Participants will learn the tips and tricks to locating, searching and migrating between the information and data from within NCBI's collection of databases, resources and tools. The event is a good example of *technology transfer* in the field of genomics and bioinformatics and training of students and scientists involved in Bioinformatics research and teaching in Morocco and Africa. This is also a good model to prospect and strengthen Moroccan American Scientific Training Cooperation.

Daily Schedule (Preliminary Program)	
Day 1	**NCBI tools and Resources overview and BLAST by Drs Tatusova & Pechous**
09:00 - 09:30	Course Opening Ceremony
09:30 - 10 :30	NCBI Tools and Resources overview
10:30 - 11:00	Coffee Break
11:00 - 12:30	Sequence Similarity Searching using BLAST
12:30 - 14:00	Lunch Break
14:00 - 15 :15	BLAST practical
15:15 - 15 :45	Coffee Break
15:45 - 17 :00	BLAST practical
17:00 - 18 :00	Poster Session

Day 2	**Entrez and Genomic Resources by Drs Tatusova & Pechous**
09:00 - 10:30	Entrez databases overview
10:30 - 11:00	Coffee Break
11:00 - 12:30	NCBI Genomic Resources overview
12:30 - 14:00	Lunch Break
14:00 - 15:15	Tutorial 1 : a journey of discovery through NCBI
15:15 - 15:45	Coffee Break
15:45 - 17:00	Tutorial 2: Examples of using genomic resources for scientific discovery

Day 3	**NCBI Specialized Resources by Drs Tatusova & Pechous**
09:00 - 10-30	New databases
10:30 - 11:00	Coffee Break
11:00 - 12:30	Specialized Resources: SNPs, Geo, 3D Structure…
12:30 -1 4:00	Lunch Break
14:00 - 15:15	Practical: demo life for NCBI resources
15:15 - 15:45	Coffee Break
15:45 - 17:00	Searching MEDLINE/PubMed and Bookshelf

Day 4	
Session I	**Toxicogenomics: Study Design By Dr Bourdi**
09:00 - 10-30	Microarray platforms
10:30 - 11:00	Coffee Break
11:00 - 12:30	Case Study in Toxicogenomics
12:30 - 14:00	Lunch Break
Session II	**Moroccan American Scientific Cooperation**
14:00 - 16:00	Free Time
16 :00 - 18:00	Round table 1: Moroccan American scientific cooperation
18:00 - 20:00	Reception

Day 5	Bioinformatics in Morocco
09:00 - 10-30	Selected Presentations
10:30 - 11:00	Coffee Break
11:00 - 12:00	Round table 2: Bioinformatics in Morocco
12:00	Workshop closing remarks

Language

Lectures and hands-on sessions will be given in English.

Intended Audience

This four days course is designed for individuals, particularly those based in biomedical and biological institutions, interested to improve or update their knowledge about NCBI tools and resources or provide bioinformatics support to their colleagues. It will provide an overview of a wide range of molecular biology resources that research communities need and use.

The target audience includes scientists from different fields including Biologists, Geneticists, Physicists, Mathematicians, Statisticians, and Software Developers, from various levels including researchers, educators, graduate students, and other scientific staff who either work with biomedical and biological global data or are interested in understanding how to incorporate such data into their specific research. No prior experience with bioinformatics is required. Familiarity with basic computer operation and common Web browsers is assumed. Knowledge of molecular biology and basic experience with NCBI resources such as Entrez, BLAST is preferred. Both experienced and novice users of the NCBI tools and resources will benefit, as the latest tools and methods will be taught.

Admission : Participant profile and Selection criteria

The subject matter is suited for researchers, masters of bioinformatics, PhD students or last year students in a broad range of disciplines: computer science, biology, agricultural engineering, medicine, pharmacy. Selection of the candidates will be based on curriculum vitae. Candidates will be asked to provide information on their personal tasks and field of research. Good knowledge of the English language is a prerequisite.

The number of candidates for the theoretical course is limited to 80 persons. The number for Practical course will be provided on the first come first served basis, provided the selection committee accepted the application candidates. Evidence of involvement in research in Computational Biology or related fields must be provided. Those accepted will be informed by December 7th, 2009. Priority will be given to Moroccan applicants working in national universities and research centers. Applicants from Africa and Middle-East are also encouraged. Please submit the brief application by December 7th, 2009. Due to limited space in the computer lab, priority will be given to those who are involved in bioinformatics research or studies. Others will be welcome as space allows.

Travel fellowships

Travel Fellowship funds for students coming from cities far from Rabat will be provided some with help to attend the workshop. These travel fellowships are supported through funds from National Library of Medicine (NLM, Bethesda, MD, USA). Interested candidates are invited to apply and send their CV at the time of online registration.

Number of Participants

Theoretical course: Maximum 80
Hands-on sessions: Maximum 40

Registration deadline

Registration deadline: December 7th, 2009.

Registration fees

Theoretical course: 300 DH/30 Euros - Students: 200 DH/20 Euros.
Practical and Theoretical course: 500DH/50Euros. Students: 300DH/30 Euros.
The fees include the participation to the course, the hands-out course material, refreshment.
Travel, accommodation, meals and local transportation are in charge of individual participants.

Worshop materials

Lecture notes and information package (hard and digital copies)
The participants are encouraged to bring their laptops equipped with a wireless connection for tutorials and hands on sessions.

About the Instructors

Dr. Tatiana Tatusova is the Genome Group coordinator at NCBI and ***Dr. Steven Pechous*** is a bioinformatics training specialist at the NCBI User Services. The National Center for Biotechnology Information (NCBI) is part of the United States National Library of Medicine (NLM), a branch of the National Institutes of Health (INH). The NCBI houses genome sequencing data in GenBank and an index of biomedical research articles in PubMed, as well as other information relevant to biotechnology. **Dr. Mohammed Bourdi** is a Staff Scientist at the National Institutes of Health (Molecular & Cellular Toxicology).

Organizers

Organizing Committee
Mohammed Bourdi, PhD. (National Institutes of Health, Bethesda, MD, USA)
Hassan Ghazal, PhD. (University Mohammed First, Oujda/Nador, Morocco)
Mohamed Amar (CNRST, Rabat)
Amal Maurady, PhD (ENSAT, Rabat, Morocco)
Khalid Sendide, PhD (Al Akhawayn University, Ifrane, Morocco).
Redouane Merrouch (CNRST, Rabat)
Elmostafa EL FAHIME (CNRST, Rabat)
Naima Alami, MD (Faculty of Medicine, Rabat, Morocco)
Raouf Alami, PhD (Centre de Transfusion Sanguine, Rabat, Morocco)
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Reda Britel, PhD (ENSAT, Rabat, Morocco)
Mohammed Benhafid, PhD (INH, Rabat, Morocco)
Abdelghani El Asli, PhD (Al Akhawayn University, Ifrane, Morocco).
Hassan Badrane, PhD (Pittsburgh University, PA, USA).

Partners

From USA:
Moroccan American Society for Life Sciences (Biomatec-US)
National Library of Medicine (NLM, NIH, Bethesda, MD, USA)
National Center for Biotechnology Information (NCBI, NLM, NIH, Bethesda, MD, USA)

From Morocco:
National Center for Scientific Research and Technology
Al-Akhawayn University, Ifrane, Morocco
University Mohammed V-Souissi
University Mohammed First, Oujda, Morocco
Rabat School of Medicine and Pharmacy, Morocco
Moroccan Society for bioinformatics (SMBI)
Moroccan Society for Researchers in Biology (AMCB)

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