

2008 ANNUAL REPORT OF THE GLOBAL SCIENCE COPRS (GSC)  
MISSIONS TO THE UNIVERSITY OF BUEA, CAMEROON

Missions' periods:

June 1<sup>ST</sup> - 14<sup>th</sup>, 2008

November 1<sup>ST</sup> - 9<sup>th</sup>, 2008

By:

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## I. Introduction

Since 2005 I have played an advocacy role for the Global Sciences Corps (GSC) initiative targeting fellow African scientists in the Diaspora (in North America) for their involvement. From this personal experience, the GSC has been viewed by most African émigré scientists as a very much needed initiative with a great potential for contributing to knowledge and technology transfer to developing countries. In fact immediately after my participation to the January 2006 workshop on the concept of a GSC in Africa, I decided to spend as a start my vacation time to contribute to teaching at the University of Buea, Cameroon. Because of a tremendous support from Prof. Vincent Titanji (VC of the University of Buea), I was offered an adjunct assistant professor position in the Department of Biochemistry and Microbiology of the University of Buea. In that context, I have committed to teach twice a year at the University of Buea for years 2008, 2009 and 2010.

For year 2008, I have already completed two teaching trips to the University of Buea and this report annual describes the work completed.

## II. Detailed description of the work completed

### II.1. June 2008

The June 2008 mission was the first one and consequently was mostly devoted to discussions on the new syllabus taking into account the expertise that I will bring to the faculty of the Department of Biochemistry and Microbiology. Before traveling to Buea I had already initiated discussions (since September 2007) with the Head of the Department of Biochemistry and Microbiology (Dr. Nelson Ntonifor) and the coordinator of the Biochemistry program (Dr. Fidelis Cho-Ngwa). These discussions were mostly on the strategies to redesign a curriculum that reflect the current developments in advance Molecular Biology, Genomics and Bioinformatics. During the June visit, I had further discussions with Prof. Vincent Titanji who expressed the

importance of organizing a practical course to introduce MSC students (at the beginning of their research life) to a wide range of techniques and research approaches including Genetic Engineering, Genomics and Bioinformatics. Plans are underway and in the near future a course plan will be available. The course is currently referred to as MSC Integrated Labs.

In terms of general syllabus and after discussions with both the coordinator and the head of the department, it was agreed that I lead the teaching of the following courses: BCH 709 (**Bioinformatics Resources**), BCH 711 (**Functional Genomics**), BCH 620 (**Molecular Biotechnology**) and BCH 613 (**MSC Integrated Labs**). BCH 709 and BCH 711 are first year Biochemistry PhD level courses. BCH 613 and BCH 620 are MSC level courses.

## **II.2. November 2008**

During the November teaching mission, I taught the following courses BCH 709 and BCH 711. A total number of 11 students were required and registered to take the courses. Both courses were taught in seminar format with an emphasis on journal club (review of research articles) and case studies as an alternative to practical sessions in the absence of appropriate infrastructural resources for laboratory hands on training.

### **BCH 709: Bioinformatics Resources**

Course objectives: A review of sequence databases; specialized databases skewed towards tropical medicine and agriculture, advanced sequence analyses, Phylogenetic analysis and molecular epidemiology; Genome projects; The Human Genome will be examined in comparison with genomes of a selection of lower organisms.

Course Content: **Chapter 1** (Bioinformatics: An overview), **Chapter 2** (Sequence Databases), **Chapter 3** (Sequences Analyses) and **Chapter 4** (Phylogenetic Analysis).

Teaching Approach: Seminars presentations of all chapters and further readings (journal articles, reviews and books sections).

Student evaluation: 1- Continuous assessment (Class attendance and participation 25%, Journal club presentation 25%); 2- Finals (Case study and presentation 25%, Quiz 25%).

All components of this course were completed and a final test was also administered. Students who attended this course now have a grade that will count toward their overall PhD program.

## **BCH 711: Functional Genomics**

Course objectives: This course seeks to portray Functional Genomics as the systematic analysis of gene activity or function in the context of normal or abnormal cellular or developmental processes through the development and application of genome-wide, high-throughput experimental methodologies. It is intimately linked to BCH 709 (Bioinformatics Resources).

Course content: **Chapter 1** (Introduction to Genomics), **Chapter 2** (Technical Foundations of Genomics), **Chapter 3** (Fundamentals of Genome Mapping and Sequencing), **Chapter 4** (The Computational Foundation of Genomics), **Chapter 5** (functional Genomics), **Chapter 6** (Systems Biology).

Teaching Approach: Seminars presentations of all chapters and further readings (journal articles, reviews and books sections).

Student evaluation: 1- Continuous assessment (Class attendance and participation 25%, Journal club presentation 25%); 2- Finals (Case study and presentation 25%, Quiz 25%).

Everything but the final quiz was completed. Practical sessions for this course will be conducted by **Dr. Cho-Ngwa** before a final quiz is administered. So far

most students have done very well on continuous assessment and journal club presentation.

As part of the grant, an LCD projector purchased under the GSC financial support was used and is currently with the Coordinator of Biochemistry. A laptop computer has also been purchased and will be donated to the Department of the end of year 3 (2010).

### **III. Conclusion and perspectives**

Both courses were taught to a group of highly motivated students. Almost all students had received at undergraduate and MSC levels, courses that provided them with the necessary background for a better understanding of the topics discussed. In some cases, students had enough research experience to relate the course to their own projects.

Course BCH 709 received a full evaluation and all students passed with scores ranging from 83% to 96%. The interactive nature of the course was very well accepted and has ever since triggered a heavy email exchange with many students. Such exchanges vary from specific scientific questions as they develop their research projects to questions about their orientation as they embark in research.

For the year 2009, the scheduled trips are projected for May - June and November - December. In the meantime, discussions are on the way for my implication in the co-supervision of one or two MSC/PhD students.

So far this has been an extremely rewarding experience and I wish - once more - to extend my gratitude to the GSC for the financial support. I look forward to next missions

### **IV. Annexes**

Annex 1: Sample course evaluation form filled by one student.

**BCH-709**

**Course evaluation**

DINGA JÉRÔME NYHALATI

1. Please indicate if the course met your expectations

It met my expectation as I can now appreciate what bioinformatics is all about and how I can explore and use it.

2. Could this course be improved to better suit your needs?

My needs seem to be covered by what the lecturer taught. But as my experience increases so would be my bioinformatics need. In that case, it will require an improvement to suit my needs.

3. Was the instructor knowledgeable and why?

Yes, the instructor was knowledgeable because he gave clear explanations and answered all ~~questions~~ ~~the~~ our numerous questions to ~~our~~ <sup>my</sup> understanding.

4. Would you recommend this course and its current instructor to other students? And why?

I would definitely recommend the course and its instructor. This is because his class is quite ~~interactive~~ interactive. With this method of learning, it is easier to understand and retain information/subject matter. He has also created a link between himself and us so we could continue to learn and have our questions answered even after the course ~~ends~~ has ended.

Annex 2: Pictures of/with students.

*A1. Group picture (Appolinaire Djikeng and University of Buea 2008-2009 1<sup>st</sup> year Biochemistry PhD students) in front of the classroom*



A2. *Group picture in the classroom*



A3. *Classroom setting*



*A4. Lecture by Appolinaire Djikeng*



*A5. Students preparing for journal club presentation*



*A6. Journal club presentation by students*

