

## **Executive Summary**

### **International Cancer Biomarker Consortium Conference**

**Fred Hutchinson Cancer Research Center (Seattle, Washington, USA)**

**October 11-12, 2005**

The objectives of this conference were to do the following:

- Get acquainted
- Share information and technology
- Establish working principles

There were multiple goals for this first conference of the International Cancer Biomarker Consortium (ICBC). Since the ICBC is in its infancy, immediate goals were to meet one another and create a collegial working environment. Longer term goals were to improve discovery methods for cancer biomarkers and ultimately to find biomarkers. The opportunity to work together to achieve these goals poises the consortium at the forefront of an exciting venture reminiscent of the pre-genome era.

The sharing of information began with seven international biomarker teams from China, Korea (2 teams), the United States (2 teams), Singapore, and Taiwan each giving updates on their chosen cancer site(s), their laboratory methodologies and technologies, and their bioinformatics infrastructure and tools for archiving, mining, and sharing data. Seven nascent biomarker teams, including one multi-national team and one each from Hong Kong, the United States, Australia, France, Canada, and Mexico, also contributed reports on their respective efforts to establish teams. (All presentations given at this conference can be accessed at [http://www.fhrc.org/science/international\\_biomarker/meetings/2005/oct/](http://www.fhrc.org/science/international_biomarker/meetings/2005/oct/).)

Several members of the ICBC Steering Committee presented technology updates to the consortium. Dr. Martin McIntosh proposed two models of how the ICBC can share data using the Computational Proteomics Analysis System (CPAS), developed by the Computational Proteomics Laboratory under Dr. McIntosh's direction, as a mechanism for data analysis, storage, and transfer. The goal will be to develop CPAS with collective input from all biomarker teams so that CPAS will have the capability to support all teams with their respective, unique experimental platforms and data outputs.

In the second technology update, Dr. Ruedi Aebersold presented a proposal to establish a collaborative consortium biomarker project based on the analysis of N-glycosites isolated from serum and cell/tissue sources. By focusing on a subproteome, the sample space is made smaller and the data is reasonably comparable. Participating laboratories within the consortium will gain experience communicating experimental protocols and sharing data generated on multiple platforms, and will convey their lessons learned to the whole consortium.

Dr. Dick Smith next gave an update on proteomics technology development taking place in his lab to improve high-throughput capacity for high-resolution separations and mass spectrometry. One significant development is the Accurate Mass and Time (AMT) tag approach for identifying

peptides by accurate mass and LC separation time and for determining abundance concentrations. As throughput increases, the cost per analysis decreases, replicates to address variation are feasible, the complexity and depth of coverage issues are addressable, and new applications are enabled.

Finally, Dr. Sam Hanash provided an update on multiple technologies being developed and used in his lab for cancer biomarker discovery. These sources of protein markers include informatics intelligence, that is, looking at what others have already done; recombinant proteins as a source of tumor antigens (in collaboration with Invitrogen); tumor glycoproteins as sources of tumor antigens; tumor cell surface proteomics; signaling pathways as sources of markers; and proteomic profiling of biological fluids.

Following the technology updates were funders' perspectives in support of the ICBC given by Dr. Adam Clark representing the National Cancer Institute (NCI) of the United States and Mr. Don Listwin from the Canary Fund. The NCI has developed the Proteomics Technologies Initiative to meet the challenges in the clinical measurement of proteins. The Mouse Proteomic Technology Consortia have already been funded to develop stringent protocols for protein sample acquisition and measurement in multiple mouse models and to create a common open source bioinformatics platform, namely CPAS. To further meet the challenges, the Clinical Proteomics Technology Initiative will be funded at \$104 million over 5 years through three programs to develop reproducible procedures to identify and validate peptides/proteins within the dynamic ranges of putative cancer proteins in human plasma or serum. All ensuing protocols, reagents, resources, and analytical platforms will be publicly available. The NCI acknowledges and supports a global effort for biomarker discovery. International collaborations are welcome to apply for funding through new initiatives and to use resources.

Mr. Don Listwin, founder of the Canary Fund, is dedicated to funding research for cancer early detection and intervention. His experience in the information technology industry has prompted him to urge this consortium to work collaboratively to build a standards-based common open platform. As with the development of the internet, Mr. Listwin expects that the capability of the resulting system will be much higher in the end through an open platform effort than through proprietary systems, although setting up the collaborations at the outset takes more time. The role of Canary Fund in the discovery effort will be in breaking down technology and industry barriers.

Finally, four working groups were established for informatics, mass spectrometry, antibody, and clinical samples and mouse models. Each working group gave an update on the discussions that took place during the conference and the efforts in which they will engage beyond the conference. In addition, the Steering Committee met to open discussions on intellectual property, data sharing, glycosylation capture, support through the Asian-Pacific Economic Cooperation (APEC), marketing, steering committee membership, communication, and relationship to the Human Proteome Organization (HUPO).

The next ICBC meeting will be held in Singapore on December 2-3, 2006 (prior to the Asia Oceania HUPO meeting). In addition, the Steering Committee may meet at the Canary Symposium in Palo Alto, California in May 2006 (to be confirmed).