Abstracts, EORTC–NCI–ASCO Annual Meeting on "Molecular Markers in Cancer"

Speakers' Summaries

S1

American Society of Clinical Oncology 2007 Update of Recommendations for the Use of Tumor Markers in Breast Cancer

D. Hayes. *University of Michigan Comprehensive Cancer Center, Ann Arbor, MI, USA*

Purpose: To update the recommendations for the use of tumor marker tests in the prevention, screening, treatment, and surveillance of breast cancer.
Methods: For the 2007 update, an Update Committee composed of members from the full Panel was formed to complete the review and analysis of data published since 1999. Computerized literature searches of Medline and the Cochrane Collaboration Library were performed. The Update Committee's literature review focused attention on available systematic reviews and meta-analyses of published tumor marker studies. In general, significant health outcomes (overall survival, disease-free survival, quality of life, lesser toxicity, and cost-effectiveness) were used for making recommendations. Levels of Evidence defining quality of the data on a given marker were considered for each recommendation.
Recommendations and Conclusions: Thirteen categories of breast tumor markers were considered, six of which were new for the guideline. The following categories showed evidence of clinical utility and were recommended for use in practice: CA15-3, CA 27.29, CEA, ER, PgR, HER2, UPA, PA-1, certain multiparameter gene expression assays. Not all applications for these markers were supported, however. The following categories demonstrated insufficient evidence to support routine use in clinical practice: DNA/ploidy by flow cytometry, p53, Cathepsin D, Cyclin E, Proteomics, certain multiparameter assays, detection of bone marrow micrometastases and circulating tumor cells.

S2

Recommendations for collection and handling of specimens from group breast cancer clinical trials, from onsite collection through shipping to the central bank

B. Leyland-Jones, on behalf of the Blood, FFPE, and Fresh/Frozen Tissue Working Groups of the North American breast cancer Cooperative Groups and the Breast International Group. *Emory University School of Medicine, Atlanta, GA, USA*

Abstract: Recommendations for specimen collection and handling have been developed for adoption across breast cancer clinical trials conducted by the Breast International Group (BIG) Groups and the National Cancer Institute (NCI)-sponsored North American Cooperative Groups.
Purpose: These recommendations are meant to promote identifiable standards for specimen collection and handling within and across breast cancer trials, such that the variability in collection/handling practices that currently exists is minimized and specimen condition and quality are enhanced, thereby maximizing results from specimen-based diagnostic testing and research.
Methods: Three working groups were formed from the Cooperative Group Banking Committee, BIG Groups, and North American breast cancer Cooperative Groups to identify standards for collection and handling of (1) formalin-fixed, paraffin-embedded tissue; (2) blood and its components; and (3) fresh/frozen tissue from breast cancer trials. The working groups collected Standard Operating Procedures from multiple Group specimen banks, administered a survey on banking practices to those banks, and engaged in a series of discussions during late 2005–2007. Their contributions were then synthesized into a single guidelines document (forthcoming). These guidelines focus primarily on collection and handling to the point of shipment to the central bank, although also offer some guidance to central banks.

S3

Cancer biobanking: The American perspective

C. Compton. *National Cancer Institute, Bethesda, MD, USA*

Introduction: The quality, quantity, and accessibility of human tissue is a critical issue in cancer research. Recent advances in genomic and proteomic technologies are accelerating advances in translational research and driving progress in personalized cancer medicine. With new opportunities to conduct translational research using genomic and proteomic technologies, the demand for hiqh-quality, clinically annotated human biospecimens has greatly increased, but biospecimen resources of sufficient quality to meet the technical demands of the new analysis tools are limited. As a result, the dearth of high-quality human biospecimen resources has been repeatedly identified as a critical problem and a major barrier to progress in cancer research over the next decade. The National Cancer Institute (NCI) is committed to moderniize and standardize biospecimen and biorepository management on a national level in order to better support the field of molecular medicine. The NCI has created the Office of Biorepositories and Biospecimen Research (OBBR) to lead this new initiative.

Main Message: The first priority for the OBBR is to develop and foster state-of-the-science methods to assess, improve, and ensure the quality of biorepositories that support cancer research. Projects related to this priority area include the publication of the NCI Best Practices for Biospecimen Resources; review of existing biospecimen science publications and creation of a web-based tool for accessing biospecimen research data; sponsorship of extramural and intramural biospecimen banking research programs; collaboration with authoritative professional organizations in development of data-driven biobanking protocols; and creation of objective self-evaluation criteria for biospecimen resources. The second priority is to support the needs of large-scale, transformative NCI projects that require high-quality, platform-appropriate biospecimens for their successful execution and to facilitate NCI initiatives that are building infrastructural support for translational research and molecular medicine. Projects related to this priority include the NCI Community Cancer Centers Program, projects relating to the Cancer Biomedical Informatics Grid (caBIG™) program, The Cancer Genome Atlas, the Clinical Proteomic Technologies Initiative for Cancer, and other high-impact team science initiatives of the NCI. The OBBR's third priority area focuses on collaborating with other major initiatives outside the NCI to improve processes for biospecimen consent, handling, storage, information management, biospecimen resource accreditation, and proficiency testing of biorepository personnel. Lastly, the OBBR is committed to developing educational tools and resources for all potential stakeholders (public, professional, private) that address a range of issues related to human biospecimens. The purpose of these educational efforts is to emphasize the importance of high-quality shared biospecimen resources across the biomedical reseach community. Projects relating to this priority area include the NCI Best Practices National Forums, the OBBR website, outreach to patient advocacy groups, and development of biobanking training programs for the biorepository community.

Conclusions: As a result of these activities, it is envisioned that the OBBR will accomplish the following goals:

- Develop evidence-based biobanking protocols
- Create an ethical chain of trust for patient specimens and data
- Provide rapid access to sufficient quantities of high-quality biospecimen resources for investigators
- Create biospecimen collections that meet the demands of technically sophisticated experiments and projects
- Establish biospecimen science as a distinctive field of research that ensures continued advancement of evidence-based methodologies as the foundation for personalized medicine
- Train and educate an expert technical workforce in biobanking in the USA

S4

Cancer biobanking: the European perspective

C. Chabannon. *Institut Paoli-Calmettes, Marseilles, France*

Introduction: The constitution of high-quality and well-annotated collections of biological materials obtained from cancer patients represents a major objective for translational research in oncology.

Main Message: Tumour banks – that are most often operated by hospitals – face however a number of challenges before they can meet high standards: (i) many samples of human origin are collected during patient care; conservation by cryopreservation, formalin fixation and paraffin embedding, or other means must clearly delineate the interest of patients and the interest of scientists, (ii) earlier diagnosis of cancers results in obtaining tissue fragments of smaller sizes, (iii) a thorough morphological control of tumour and peri-tumoural tissues must be done by trained pathologists in order to establish diagnosis, and sample surgical specimens for cryopreservation (or other adequate procedure): this must be done in a short timeframe following the surgical procedure in order to preserve tissues, cells or sub-cellular species, which usually precludes that obtained tissues be sent to a central laboratory or repository before being processed, (iv) the use of an increasing number of clinical and biological criteria leads to the definition of numerous neoplastic entities that could be considered as "orphan diseases": this results in a major difficulty for tumour banks associated with a single hospital or institution to obtain biological samples – particularly tumour tissues or cells – in sufficient numbers from a homgeneous group of patients, and constitute a significant collection over a reasonable period of time, (v) no consensus has been established regarding minimal essential clinical and biological data that should be associated with every sample, (vi) regulations that apply to biobanking vary from one country – and sometimes from one state or one region – to another; this is especially true for conditions in which patient consent or approval must be obtained. In addition, tumour banks must nowadays arrange for the procurement not only of tissues obtained from the primary or distant tumour sites, but also of peri-tumoural tissues, blood samples of other biological fluids, which all need specific procedures for appropriate handling, processing, conservation and distribution; eventually sequential collection of various biological samples from the same individual at different time points during and after treatment may also be of interest for the conduct of scientific studies. Many reports have underlined the disappointingly low frequency of samples that meet all these criteria, even in tumour banks that have been running and got organized for many years.

Conclusions: To better face these difficulties, several initiatives have been taken at regional, national, European and international levels, as well as in the context of cooperative groups or organizations. The main goals developed in these initiatives are: (i) to establish common rules (uniformity of preparation) and promote high-quality