

Special Article

International Research Group for Steroid Hormone Receptor Assays

Summary Report of the 3rd Workshop held in Boston, MA, U.S.A.

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IN ADDITION to summarizing the proceedings of the 3rd workshop, we would like to take this opportunity to introduce the aim and scope of this international group and briefly outline its past and present activities and plans for the next meeting.

In the early 1980s, establishing a quality assurance program for steroid hormone receptor assays was an important issue for those who were actively participating in basic and clinical research related to human breast cancer. Multinational groups were set up in the U.S.A., Australia and in Europe (EORTC) for addressing the issues of quality assurance. Several diagnostic companies in different parts of the world started to distribute their own ER/PR positive and negative tissue powders for use as positive and negative controls. Conjugated steroidal reagents were also distributed for histochemical localization of ER and PR. NEN/Dupont was successful in manufacture and distribution of radio ligand assay kits for ER and PR. There were still disagreements among investigators regarding the most suitable tissue extraction procedures, buffer composition, inclusion/exclusion of sodium molybdate, procedures for protein measurements and, most importantly, issues related to the preparation and distribution of standardized tissue powders containing specified

quantities of ER and PR.

The International Research Group was founded at that time with the primary goal of bringing together under one roof all the leaders in the field of hormone assay methodologies to exchange data gathered by different groups, to participate in research for establishing optimal experimental conditions for ER/PR measurements, to delineate essential criteria for quality assurance and, finally, to produce a standardized set of receptor-positive and -negative tissue powders for worldwide distribution.

In addition to radioligand assays, immunoquantitative measurements of ER and PR are becoming popular. If standardized reference powders were to be made available and distributed by an organization such as the World Health Organization, these powders could be used as external standards against which different laboratories or manufacturers of assay kits could compare their own internal standard powders and express the quantity of ER and PR in units relative to what is found in the external standard.

In addition to hormone receptors, other marker proteins, especially those which are regulated by the steroid hormone receptors, are being evaluated for their merits as prognostic/diagnostic reagents in the field of cancers of the breast and other endocrine organs.

The overall goal of this International Research

Group is to periodically consolidate the efforts of investigators from all over the world on steroid hormone receptor assay methods and, in addition, bring into focus the availability of new diagnostic/prognostic markers, evaluate the reagents that are commercially available and promote togetherness among these investigators involved in steroid hormone receptor related research.

The 3rd workshop was held in Boston on 6–7 November 1986. This workshop, similar to the previous workshops, was sponsored by Tufts University School of Medicine and was partially funded by organizations such as Dupont New England Nuclear, ICI Pharmaceuticals, New England Pathology Associates and SmithKline Bioscience Laboratories.

The 3rd workshop focused on two major topics: (a) immunology and steroid hormone receptors and immunoassay kits and (b) new diagnostic markers. The workshop was divided into four sessions. Within each session there were three to four speakers and the discussion was moderated by a single moderator. Shanthi Raam (Boston), Michael Press (Chicago) and Robin Leake (Glasgow) discussed various antibody probes to estrogen/progesterone receptors which was followed by a very active panel discussion moderated by Dr. James Wittliff (Louisville).

During the 2nd session which was chaired by V. Craig Jordan (Madison), Shanthi Raam, Guy Leclercq (Brussels), James Wittliff and Robin Leake presented their experimental data using the ELISA test for ER distributed by Abbott Laboratories, Abbott Park, Illinois. During the discussion period, recommendations from different investigators for improvement of the kit's performance and trouble shooting were discussed.

The third session started with Dr. Wittliff's lecture on potential new markers for breast cancer. It was followed by an excellent overview by Timothy Kute of Bowman Gray Medical Center, North Carolina on the question of clinical significance of aneuploidy in breast cancer. Thomas Spelsberg of the Mayo Clinic gave an expert lecture on the new procedures for detecting hormone responsive cancers.

The fourth and final session included an excellent discussion of growth factors related to estrogen and antiestrogen action by V.C. Jordan, an interesting insight into Muellierian inhibiting substance

by David MacLaughlin of Massachusetts General Hospital and Harvard Medical School, an introduction to the nuclear antinomycin-D binding under estradiol stimulation as a test for hormone sensitivity by Guy Leclercq and finally a stimulating summarization of the work related to H-ras oncogenes and alpha-TGF by Michele DeBortoli (Turin).

It is our hope that our next workshop will be in Europe. Professor Piffanelli and Dr. Michele DeBortoli along with Dr. Robin Leake and Guy Leclercq have agreed to shoulder the responsibility of organizing the next meeting. One of the very important issues that will be discussed in the next workshop is to finalize the course of action that is to be taken for generation and distribution of international reference powders for standardizing all the ER, PR receptor assay kits and the quality control materials for laboratories.

As a result of the previous workshops on quality assurance aspects, it has been possible to consolidate U.S. and European data on this subject. The biostatistician in our group, Dr. Rebecca Gelman, of the Charles Dana Cancer Center, Harvard Medical School is in the process of summarizing the data.

It is our hope that the goals which have been defined will be met with success and that future goals be established to meet the needs of the scientists working in the field of steroid hormone receptors as related to the human cancers of organs which are target organs for steroid hormones.

Current members of the steering committee for this organization are the following:

Professor Th. Benraad, Ph.D., Holland
Michele DeBortoli, Ph.D., Italy
Frank Fegone, Ph.D., U.S.A.
Rebecca Gelman, Ph.D., U.S.A.
V. Craig Jordan, Ph.D., D.Sc., U.S.A.
Robin Leake, Ph.D., U.K.
G. Leclercq, Ph.D., Belgium
David T. MacLaughlin, Ph.D., U.S.A.
Professor A. Piffanelli, Ph.D., Italy
Shanthi Raam, Ph.D., U.S.A.
Nicholas Robert, M.D., U.S.A.
James L. Wittliff, Ph.D., U.S.A.
Vincent Perna, M.D., U.S.A.
Timothy E. Kute, Ph.D., U.S.A.
Thomas C. Spelsberg, Ph.S., U.S.A.