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Introduction to the Second Conference on Radioimmunodetection and Radioimmunotherapy of Cancer[1]

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The first conference on this subject was held in 1979 (1), one year after we published the first clinical evidence of targeting and imaging of cancer in humans with defined polyclonal antibodies against a well-known cancer-associated marker, carcinoembryonic antigen (2, 3). There was considerable interest and controversy about this new technology, and we were able to organize a Workshop under the auspices of the International Union Against Cancer and the National Cancer Institute of the NIH to summarize the status and problems and to discuss future opportunities (1). Based upon the papers presented at this second conference, it seems that many of the hopes and predictions expressed in my introduction to the publication of the Workshop (4) and in another article of the proceedings (5) 10 years ago have come to pass. In 1979, there were perhaps 4–5 groups pursuing cancer RAID[3] and RAIT in 4–5 cancer types; in 1990, the number of investigators cannot be estimated with any reasonable accuracy. Certainly, several thousand patient studies on a large number of tumor types have been performed, and the question of clinical relevance, which burdened the development of RAID in its early years, no longer seems as much at issue, particularly since the publication of a number of prospective and retrospective trials comparing RAID to other contemporary technologies for detecting sites of cancer, such as computerized tomography and magnetic resonance imaging. Now RAID encompasses the use of MAbs, metallic radionuclides such as ^{111}In and ^{99m}Tc, antibody fragments, and single photon emission computerized tomographic imaging. In the future, we will probably experience an expansion of RAID with ^{99m}Tc-antibody fragments and the reengineering of MAbs to human and humanized forms. Improved conjugation methods may permit the successful development of MAb-based magnetic resonance imaging contrast agents. Positron nuclides linked to antibody fragments may also enable combining RAID with positron emission tomography imaging. In RAIT, many promising β- and α-emitting radionuclides will be conjugated to human and humanized antibodies, thus permitting repeated doses. Finally, the advent of bone marrow transplantation and other protection measures for more aggressive chemo- and radiotherapy should also be applicable to higher doses of RAIT agents. These and other promising areas that are under development are covered in the papers comprising this publication.

Many of the historical developments during the past 40 years, since the first publications by David Pressman and his associates (6, 7) and by William Bale *et al.* (8), have been summarized elsewhere (9, 10). We were fortunate to have these two pioneers of RAID at the first conference, as shown on the cover of this publication. Ten years ago, Stanley E. Order and his group were virtually alone in RAIT, and I am gratified that Dr. Order contributed to the success of both conferences, as did also William C. Eckelman in the area of radiochemistry. A number of other distinguished scientists in RAID and RAIT also joined us in organizing this second conference: Edgar Haber, Thomas Hoffman, Steven M. Larson, Howard Sands, and Mette Strand (Fig. 1).

In a recent editorial, Pauwels and van Kroonenburgh (11) commented that "in spite of a wealth of literature data on studies in animal models and in clinical situations, it should be admitted that no real breakthrough has been obtained and in international conferences the rumour is being gently spread that immunoscintigraphy is at a deadlock." At the very least, this conference should dispel this view. "Earlier and more precise identification and localization of small tumors, for preoperative evaluation and staging, for postoperative follow-up, and for monitoring the effects of therapy, are very real possibilities for this field of cancer radioimmunodetection. Not of lesser consequence is the extension of these principles to the field of therapy, both radioimmunotherapy and chemoimmunotherapy, and the potential realization of a long-standing dream of the cancer chemotherapist, the achievement of a tumor-specific therapy" (4). I believe that the following pages will provide further support that we are moving steadily forward toward the achievement of these goals.

Fig. 1. Program committee for conference. *Back row, from left*: Thomas Hoffman, M.D., David M. Goldenberg, Sc.D., M.D., Stanley E. Order, M.D., D.Sc., and Howard Sands, Ph.D. *Front row, from left*: Steven M. Larson, M.D., Mette Strand, Ph.D., and William C. Eckelman, Ph.D. Edgar Haber, M.D. (not pictured), also served on the committee.

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[3] The abbreviations used are: RAID, radioimmunodetection; MAb, monoclonal antibody; RAIT, radioimmunotherapy.

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