BIO-INVESTIGATIONS LTD.

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OPINION LETTER ON:

NoAB IMMUNOASSAY INC.
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MR. DAN LICHTMAN, PRESIDENT

Overview: NoAB Immunoassay is a Canadian corporation focused exclusively on a third generation immunodiagnostic system, from the initial research and development stage, through ultimate sales and marketing. The technology, which is designed to be proprietary, can best be characterized as marrying antibody mimics with emerging biosensors. Our review of the company is highly favorable, and it is our recommendation that both the Canadian and United States venture capital firms give NoAB Immunoassay a high priority in their review process. Similarly, we view NoAB Immunoassay as highly appropriate for participation by governmental agencies, and a prime candidate for strategic alliances with leading multiconglomerates. In our classification of companies, NoAB Immunoassay is not a start-up, but is rather an emerging immunodiagnostic/medical corporation.

Methodology: Our review of NoAB Immunoassay has been extremely in-depth, and has been accomplished by a number of interrelated activities. A review of the master business plan commenced in June 1994, followed by a review of the supplementary product development document. Trips were made to three Canadian cities: Toronto (Markham), Montreal, and Edmonton, each playing a key role in the NoAB project. Visits to several of the research laboratories of involved scientists were completed, at both McGill University and the University of Alberta. A visit to the shared facility of NoAB Immunoassay and Inter Medico, both owned by Mr. Dan Lichtman, was accomplished. A formal technology review session, involving the combined participation of Dr. Robert Hancock, representing the Canadian Bacterial Diseases Network as Scientific Director and from the University of British Columbia; Dr. Randall Irvin, Director of Research from Synthetic Peptides Incorporated and from the University of Alberta; Dr. Bruce Lennox, from McGill University; and Mr. James Kupczak, President, Kupczak & Company Limited, one of the firm's two financial advisors, was accomplished. An

in-depth face-to-face discussion was also held with Dr. Robert Hodges, representing the Medical Research Council Of Canada Group in Protein Structure and Function, and from the University of Alberta. A site visit was conducted to the Alberta Research Council, and in-depth discussions were held with Mr. J. Michael Curtis, Section Head, Biochemistry, of the Council.

The purpose of this review is to raise key issues related to NoAB Immunoassay, as opposed to summarizing the existing business plans. It is expected that review of this opinion letter will be followed by a formal request to NoAB headquarters for additional detailed documentation. While the scientific staff of the NoAB project is extraordinarily qualified and well integrated through the Canadian Bacterial Diseases Network, it is not our intent to provide a review of each contributor's scientific publication history. Rather, it is our intent to raise representative key issues critical to the success of NoAB Immunoassay, and to comment on both existing strengths and weaknesses of NoAB as it is presently positioned. For reasons of clarity, we have seen a point-by-point delineation to be more effective in identifying key issues, as opposed to a narrative format, and we will follow this preferential approach.

1. Mr. Dan Lichtman: Mr. Lichtman is key to the success of NoAB Immunoassay. As President of the company, he is also President, Founder, and CEO of Inter Medico, founded in 1979. Inter Medico has an excellent reputation in the Canadian market as a highly regarded and service oriented supplier of medical diagnostics and research biologicals. Comments across Canada have been extremely consistent regarding Mr. Lichtman; he is viewed as being "stellar in character, with a constant pulse on the immunodiagnostic business." NoAB Immunoassay is presently housed in the same facility as Inter Medico. The relationship between the two companies can be further clarified in that Inter Medico will represent the domestic marketing outlet for NoAB products. Inter Medico presently has sales representatives strategically situated across Canada, in Halifax, Quebec City, Montreal, Toronto, Calgary, and Vancouver. Inter Medico is already an extremely successful company; it is the largest privately held supplier of its product type in all of Canada. Thus, in weighing the critical success factors of an emerging company, NoAB is being led by an individual who has already proven himself successful in taking a company forward. Mr. Lichtman's position in NoAB is one of genuine interest in bringing a new immunodiagnostic system to the marketplace, and thus eliminate many of the problems associated with first and second generation systems; he comes forward to NoAB from a position of strength. All venture capital investors into NoAB will need to require the appropriate key man insurance on Mr. Lichtman.

2. The Canadian Bacterial Diseases Network: The Canadian Bacterial Diseases Network (CBDN) is in our opinion critical to the success of the NoAB project. The NoAB project involves a number of different research laboratories and technologies spanning all of Canada, which is clearly a strength; the strategic plan in identifying top researchers was not limited to one province, but rather positioned as going out and finding the best resources, and then developing a mechanism to coordinate communication and technology transfer. A minimum of four major research departments and associated laboratories are involved, spanning three provinces: Dr. Hancock at the University of British Columbia, Drs. Irvin and Hodges at the University of Alberta, and Dr. Lennox at McGill University. Dr. Hancock also serves as Scientific Director of the Canadian Bacterial Diseases Network, headquartered in Vancouver. The Canadian Bacterial Diseases Network has as one of its primary aims the efficient diffusion/transfer of technology/intellectual property to industry. The NoAB project is well structured, with the CBDN interacting with each of the respective universities and associated laboratories. Thus Dr. Hancock serves two key functions: he is actively involved in one aspect of the research product development, and he is also providing a coordinating role through the CBDN. There is a formal letter of intent executed between the Canadian Bacterial Diseases Network and NoAB Immunoassay, dated 16 March 1994, which allows for NoAB to fund specific research by CBDN and CBDN to in turn undertake to procure an option for NoAB to license the resultant intellectual property. The execution of this agreement is scheduled to take place when further financing becomes available to NoAB. The letter is sound in that all three laboratories are tied into the agreement. Since the major capitalization activity of NoAB will occur in 4th Quarter 1994, the letter's option period of nine months, through 16 December, 1994, is reasonable. It is envisioned that if a one or two month extension is required to complete all aspects of capitalization, especially if key product development funds are escrowed by a venture capital syndicate, that Dr. Hancock should be able to obtain the necessary extension. Negotiations must be advanced between the CBDN and NoAB Immunoassay as to refinements in the actual contract between the two parties, over the next sixty days.

3. Technology: The NoAB project involves synthesizing antibody mimics, utilizing both synthetic and recombinant methodologies, and marrying these antibody mimics to emerging biosensors. The antibody mimics will obviate the need for complete antibodies, and will be used to develop a menu of assays for the immunodiagnostic market. In addition, a new instrument, known as Syn-Pep, will be developed to accommodate the new technology; Syn-Pep will effectively replace the number of different instruments utilized in the laboratory to one, based on its adaptability

to the technology and the intrinsic merits of the technology itself. The rationale for developing a generalized method of effectively replacing antibodies in diagnostic assays is so that the assays can be "dry formatted" and largely eliminate liquid handling. Several approaches to this problem have been considered, including the classical approach of an in-depth examination of the antibodies and antigens of interest. The objective of NoAB is to use a more novel approach and to generate a very extensive library of peptides, and then screen the library to find peptides that can functionally replace the antibodies of interest. It is felt that this approach has a much greater probability of success, has a much shorter time frame of development, and offers a more cost effective solution. The combinatorial libraries will be used in an integrated approach using three approaches: a. synthetic combinatorial libraries, in the laboratories of Dr. Irvin and Dr. Hodges; b. phage display libraries, in the laboratories of Dr. Scott (Simon Fraser University) and Dr. Finlay (University of British Columbia); and c. bacterial display system(s), in the laboratory of Dr. Hancock. As the peptides that mimic antibody binding to specific ligands are identified, the antibody mimics will be used to develop dry formatted diagnostic assays employing biosensor technology. A current limitation of biosensor assays has been the difficulty in attaching various ligands to a gold surface. The electrochemical biosensor contribution to the NoAB project is through the laboratory of Dr. Lennox at McGill University. Their laboratory has used de novo design principles to develop novel dimerization domains that can circumvent the difficulty in attaching the ligands to the gold surface. Each domain is a random coil until it interacts with its complementary domain at which time both form an amphipathic helix. Once the domains interact, a very stable coiled-coil structure rapidly forms. In short, electrochemical biosensors involve the coupling of a biological recognition event (eg. enzyme-substrate, antibody-antigen) to the electrochemical experiment. Utilizing an ultrathin film-modified electrode as the transducer, NoAB has the capability of assimilating a sensitive detection technology into an integrated, cost-effective instrument system. Continual transfer of peptide mimics into the laboratory of Dr. Lennox, as they are developed, should considerably shorten the commercialization cycle.

4. Market Opportunity: The in vitro laboratory immunodiagnostic market is the general market into which NoAB and its Syn-Pep product line are targeted. This market is estimated at approximately $4.7 billion dollars for 1994. If the Syn-Pep were designed to be one of a myriad of instruments in the diagnostic laboratory, its positioning would be against a large number of established competitors, including Abbott, Baxter, Beckman, Pharmacia, and Syva,

among others. The Syn-Pep is designed to replace the broad instrument line presently in the diagnostic laboratory, and as such is highly unique. While NoAB may have players in the industry with which it will interact, there are no known competitors to the technology and product line envisioned by NoAB. While Syn-Pep technology will have the broadest range of assays available, be designed to operate on whole blood, and be a "dry chemistry" process, we envision one of its greatest advantages to be the fact that it will be peptide-based (non-antibody), biosensored, and high throughput.

5. Strategic Alliances: Further support of the classification of NoAB as an emerging immunodiagnostic company can be obtained through an assessment of its collaborative relationships already in place with industry. First and foremost, NoAB has an integral relationship with Inter Medico, especially in that Inter Medico will ultimately serve as the marketing arm for NoAB throughout Canada. Inter Medico's success in the Canadian marketplace has already been referenced. Inter Medico presently represents a number of companies focused in diagnostics and research biologicals. One of the companies represented, Diagnostic Products Corporation (DPC), is uniquely suited to be NoAB's international marketing partner. DPC entered the immunodiagnostics business in 1971 with a mission of developing, manufacturing, and marketing immunodiagnostic kits and related instruments. DPC is a major player in the business with annual sales most recently reported at year end of over one hundred million dollars, with activities on a global basis spanning North America, Europe, China, and Japan. DPC has a unique relationship with Inter Medico, in that Inter Medico has been DPC's Canadian distributor for the past fifteen years. DPC is therefore well positioned for a strategic alliance with NoAB, for ultimate manufacture and distribution of the Syn-Pep instrument system. A second example is that afforded by the relationship in place with Dr. Hodges and Dr. Irvin, who not only are involved in the peptide research, but are also founders of Synthetic Peptides Incorporated. We view this as positive for three reasons: a. two of the senior scientists are well familiar with the development of an entrepreneurial development company; b. Synthetic Peptides Inc. (SPI) was initially located on the campus of the University of Alberta but has now moved off-site, which speaks on the former point to the ability of the University of Alberta to interact with commercial activity in the launching of a company, and on the latter point of reaching a critical size consistent with a move to a larger facility. (Confirmation of a second involved university's ability to be involved in the transfer of technology to industry was assessed and found totally acceptable through a site visit to McGill University and discussions specifically on this topic with Dr. Alan Shaver, Professor and Chair, Department of Chemistry. Dr. Shaver is totally uninvolved with the NoAB project.)

SPI is engaged in custom peptide synthesis and pharmaceutical development, and will operate as a totally arms-length subcontractor. Capable of synthesizing and purifying up to 50 grams per batch, SPI can accomplish NoAB's initial production requirements for synthetic peptides. NoAB has demonstrated its ability to effectively plan for and implement parallel development programs, with its relationship with the Alberta Research Council, Biotechnology Pilot Plant, of which we toured in August. The plant is well suited to produce enzymes from recombinant, yeast, and bacterial processes, and will be an integral of NoAB's product development and commercialization phases.

6. Valuation: Traditional valuation methods including discounted cash flow analysis and price/earnings ratio analysis have all been taken into account in our final valuation of NoAB. We strongly believe that a proper valuation of NoAB cannot be accomplished unless one: visits with and understands the workings of the Canadian Bacterial Diseases Network; understands the tax credit and grants system of Canada; recognizes the positioning of Inter Medico as the largest privately owned specialized diagnostic supplier in Canada, having captured nearly 40% of the Canadian radioimmunoassay market; and carefully considers the impact of hospital consolidation on the diagnostic market. Over $3.2 million has been expended on NoAB to date, with $2,100,000 through CBDN, and $1,100,000 through McGill University. While there is an argument to be made which states that these amounts are low as opposed to industry equivalents, we have dismissed this argument, and prefer to use the referenced figures. The value of NoAB can only be correctly obtained if one understands the Syn-Pep system and the existing competition: very simply, there is no competition for the Syn-Pep system. With hospital consolidation expected to increase over the next five to ten years, there will be a decrease in the number of tests conducted in the smaller laboratories, and a consolidation of testing into the leading laboratories. This will equate to a need for instrumentation with extensive menus, appropriately priced. Therefore, the key question that needs to be asked is whether valuation is best determined by discounting cash flows, weighing heavily revenues that occur in years five and six, as projected now in 1994. We contend that the real value of NoAB lies not only in technology and what has thus far been expended, but in the strategic alliances that can be consummated over the next three years with leading companies. Clearly there will be a dollar for dollar minimum increase in valuation when $3,068,926, as discussed in the plan, comes in through the form of government assistance, but we believe Mr. Lichtman and the other NoAB management he surrounds himself with are cognizant of where the real value lies. We contend that NoAB is not all that different from other technology-driven

companies that have gone out and raised hundreds of millions of dollars. What Linda Sonntag did with Systemix in selling part of the company to a multiconglomerate for over three hundred million dollars must be factored into NoAB's valuation process; after all, Systemix had zero dollars in product sales at the time. A few years back Ariad Pharmaceuticals Inc. set a record with $46 million raised in a private placement, representing the largest start-up financing to date. Many U.S. companies are obtaining high multiples of Small Business Innovative Research (SBIR) grants that they have won, based on the technology assessment/review that they are undergoing by leaders in the field; clearly the grants pending in Canada for NoAB involve the same peer review process. Assuming that the company continues to focus on consummating strategic alliances, and assuming that NoAB pays attention to the critical factors for success which follow, we believe NoAB will dominate in the industry. Our valuation for NoAB at this time, representing a compilation of all issues presented, is between twenty and twenty-five million dollars.

7. Critical Issues for Success: We consider the following issues to be key for NoAB's continued success. First, NoAB must continue to focus not only on its marketing edge, but also on its key proprietary position. Patents have already been filed related to NoAB technology. Consideration should be given to additional patent filing all through the development process, including the potential filing of use and composition patents for the antibody mimics themselves. Protecting the antibody mimics should allow them to be sold for utilization by other companies in various test formats. This is one mechanism which may shift the revenue stream for NoAB to a closer time period. Second, in addition to the potential sale of antibody mimics, we believe that there are many ways to shift the revenue stream to a sizeable level in the next few years, very similar to the way many of the biotechnology firms did prior to having any product sales. To state it a different way, we believe that the commercialization cycle can be shortened. Third, and critical to the first two points, we believe active program management is key over the next twelve months. The technology behind NoAB is very sound and is backed up with some of the leading individuals in their field. The activities of NoAB, however, are spread throughout Canada. We believe that by developing active program management and coordinating the activities of all groups, that in fact the commercialization cycle can be effectively shortened. Up to this point in time the groups have been able to work fairly independently, but now the company should be shifting gears, more away from that strictly of research and development, into the active "mentality" of an integrated program and the ultimate commercialization cycle. Mr. Lichtman is clearly well-suited to be President of NoAB, but we believe that there is a definitive need for active program management, on

a weekly basis. We believe that by bringing in the appropriate expertise in the area of program management, that the commercialization cycle will be extensively shortened, and the ability to consummate strategic alliances will be significantly enhanced.

8. Rating: A

The recommendations and opinions provided in this Letter are those of BIO-INVESTIGATIONS LTD. Reasonable efforts have been made to collect accurate factual information from NoAB company headquarters, conduct site visits throughout Canada to many of the involved sites, and to perform face-to-face management and technology interviews. Corporate investors, strategic alliance partners, and venture capital firms, however, are all encouraged to perform their own due diligence. BIO-INVESTIGATIONS LTD. assumes no responsibility for actions taken as a result of this Opinion Letter.

BIO-INVESTIGATIONS LTD. is a venture capital consultancy headquartered in the United States, having commenced operations in September 1987. With an international client base, BIO-INVESTIGATIONS LTD. is heavily focused on identifying technologies for acquisition or investment.

We welcome your comments and questions related to NoAB Immunoassay Inc.

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