SCI REUNION DU PRINTEMPS 1994

BULLETIN

CANADIAN SOCIETY FOR IMMUNOLOGY SOCIETE CANADIENNE D'IMMUNOLOGIE

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SEPTEMBER, 1993

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1994 SPRING CSI MEETING 1994 SPRING CSI MEETING FIRST ANNOUNCEMENT

A MESSAGE FROM THE PRESIDENT

One of the highlights of the Spring meeting of the CSI is the Cinader Lecture. The Cinader Lecturer is selected from nominations put forward by members of the CSI. There is still time to nominate persons for the 1994 Cinader Award. The nominee should be a prominent immunologist who has made a significant contribution to the field of immunology, both nationally and internationally. Please send your nominations to Dr. Rick Miller, Ontario Cancer Institute, 500 Sherbourne St., Toronto, Ontario M4X 1K9 by October 15, 1993.

UN MESSAGE DU PRÉSIDENT

La conférence Cinader est un des points culminants de la réunion printanière de la SCI. Le conférencier Cinader est sélectionné parmi les nominations suggérées par les membres de la SCI. Il y a encore le temps de proposer des candidats pour le Prix Cinader de 1994. Le candidat devrait être un immunologiste qui a fait une contribution importante au domaine de l'immunologie, aux nivaux national et international. Veuillez envoyer vos nominations au Dr. Rick Miller, au Ontario Cancer Institute, 500 rue Sherbourne, Toronto, Ontario M4X 1K9 avant le 15 octobre 1993.

Capel S. Capp

Secretary-Treasurer's Report re Investment of CSI Reserves

The CSI membership approved the formation of a committee to examine investment options as outlined in the minutes of the 13th Annual General Meeting. The committee members, Drs. A. Greenberg, L. Pilarski and J. Schrader identified two options from Richardson Greenshields and Royal Trust which they felt were comparable in terms of administrative costs and revenues. A summary of the committee's findings including detailed descriptions of the two options recommended was circulated to the members of council for examination. A teleconference was held July 9, 1993 for council to discuss these proposals and to make a final decision as to an investment strategy.

There were many similarities between the two proposals, in terms of management fees, anticipated returns (a conservative estimate of 8-9% based on past performance) and portfolio composition. However there were also some significant differences.

The Royal Trust proposal was for a totally managed fund in which quarterly reports would be provided to the CSI. The objectives of the CSI investment in terms of risk factor, returns and composition would all be taken into account in the initial establishment of the portfolio. After this the distribution and movement of the monies would be under the control of a single investment manager. All monies would be invested in Royal Trust funds.

The Richardson Greenshields offering also took into account the CSI objectives but selected a number of independent mutual funds with strong performance records and suitable philosophies as the vehicles for investment. Thus each investment would be directed by the specific Fund Manager. The CSI would receive monthly reports from RG. However, changes in portfolio would be the responsibility of the CSI.

It was felt that as the Richardson Greenshields offering diversified our investments over several independent funds with good performance records, this was a potentially more desirable option. The council authorized Secretary-Treasurer Wilkins to proceed with the Richardson Greenshields proposal and make a final investment of \$200,000. This would leave some funds available in the CSI main account for operating expenses in the upcoming year.

It was apparent that regardless of the option chosen, the CSI would have to play an active role in assessing the fund performance and in deciding on any major changes in investment direction. An Investment Committee consisting of President Wayne Lapp, Vice-President Linda Pilarski, Secretary-Treasurer John Wilkins and Councillor John Schrader was established for this purpose.

Investment Update

A total of \$201,053.03 was paid to Richardson Greenshields. Investments of \$200,000 were made on behalf of the CSI effective July 22, 1993, as outlined below. The remaining \$1,005.03 was paid to Richardson Greenshields as commission. The value of the portfolio as of August 31, 1993 was \$206,427,25.

CSI Investment Portfolio

MacKenzie Industrial Portage Securities	\$141,055,28
MacKenzie Industrial Growth Fund	\$ 4,321.61
Trimark Fund	\$ 4,321.61
Trimark Income Growth Fund	\$ 46,984.92
Fidelity Far East Fund	\$ 4,321.61
Total (including Commission)	\$201,005.03

J. A. Wilkins WINNIPEG, September 15, 1993

UPCOMING MEETINGS

Canadian Society for Immunology - Spring '94 Meeting

The 1994 Spring CSI meeting will be held at Le Chantecler, Sainte-Adèle, Québec from the evening of Friday 11th March to the morning of Monday 14th March 1994. The Cinader Lecture will be on Friday evening, the Symposia will be on Saturday, Sunday and Monday mornings and the workshops will be on Saturday and Sunday late afternoons. Saturday and Sunday evenings will be for poster sessions. Registration and abstract packages will be mailed in October, if you have received this CSI bulletin you will get the package, otherwise write or FAX to Michael Ratcliffe, McGill University. As in previous years there will be student travel bursaries for this meeting and prizes awarded for the best student posters; details of awards will be provided in the registration package.

Société Canadienne d'Immunologie - Réunion du Printemps 1994

L'assemblée SCI du printemps 1994 aura lieu à l'hôtel Le Chantecler, Sainte-Adèle, Québec. La réunion débutera dans la soirée du vendredi 11 mars et se conclura dans la matinée du lundi 14 mars 1994. La présentation Cinader se donnera le vendredi soir, les conférences se tiendront les samedi, dimanche et lundi matins et les ateliers auront lieu les samedi et dimanche après-midi. Les soirées de samedi et dimanche seront réservées pour les séances d'affichage. Les inscriptions pour la réunion, le résumé et l'hôtel vous seront postés en octobre. Si vous avez reçu ce bulletin du SCI vous recevrez sans faute ces informations. Dans le cas échéant veuillez écrire ou télécopier votre demande à Michael Ratcliffe de l'Université McGill. Comme dans les années précédentes des bourses pour les frais de voyage et des prix pour les meilleures affiches seront attribués aux étudiants. Les détails des prix seront fournis dans le nécessaire d'inscription.

Early registration deadline: La date limite pour la pré-inscription:	7th January 1994
Abstract deadline: La date limite de réception du résumé:	7th January 1994
Student travel bursary deadline: Bourse de voyage pour les étudiants:	7th January 1994
Hotel registration deadline: La date limite pour les réservations à l'hôtel:	1st February 1994
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Michael J.H. Ratcliffe, Department of Microbiology and Immunology, McGill University, 3775 University St., Montreal, Quebec, H3A 2B4

FAX (514)-398 7052

Preliminary Announcement



Canadian Society for Immunology -- Spring '94 Meeting Société Canadienne d'Immunologie -- Réunion du Printemps 1994

March 11-14, 1994 / le 11-14 mars, 1994 Le Chantecler - Sainte-Adèle, Québec

The meeting will consist of a symposium each morning, afternoon workshops and a poster session each evening after dinner.

Les matinées sont reservées pour les conférences et les soirées pour les séances d'affichage. Les après-midi sont libres pour les ateliers.

Program/Programme

Cinader Award and Lecture

Sym	Symposium I			o leran 1: Pete	ce r Bretso	cher (Saskatoon)		
Sym	posium	ı II	Signal transd Chairperson	uction : Han	ne Oster	rgaard (Edmonton)		
Sym	posium	1 III 1	Immunology Co-chairs:	of HIV Rafik Larry	/ Sekaly Guilbe	rt (Montreal) rt (Edmonton)		
Workshops:	I	Immu	noparasitology		Co-cha	irs: Kris Chadee (Montreal) Terry Pearson (Victoria)		
	I	Cell death in ontogeny and lymphocyte activation			Chair:	John Reynolds (Calgary)		
	III	Super	antigens		Chair:	Walid Mourad (Sainte-Foy)		
	IV	Nuclea lymph	ar regulation of locyte activation	n	Chair:	Gill Wu (Toronto)		



L'Hôtel Le Chantecler, site de villégiature par excellence des Laurentides, est fière de recevoir, pour la première fois, la conférence de la "Société Canadienne d'Immunologie"

Dates de la Conférence

Arrivée : vendredi, le 11 mars 1994

Départ : lundi, le 14 mars 1993

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Tarifs

132,00	S	par	personne.	occupation	simple	(taxes	en	sug)
94.00	S	par	personne.	occupation	double	(taxes	en	sus)
86,00	ś	par	personne,	occupation	triple	(taxes	en	sus)
77,00	Ş	par	personne,	occupation	quadruple	(taxes	en	sus)

Incluant: Petit déjeuner buffet Déjeuner buffet Dîner fixe Accès au centre sportif (piscine, squash, racquetball, ping-pong, tourbillon, sauna) Chambre avec bain tourbillon *

> Tarifs Pré & Post-Congrès

99,00 \$ par chambre, occupation simple ou double (sans repas) minima nel -

15,00 \$ par personne additionnelle

Notre tarif de groupe de ski alpin oet de 10,00 \$ par personne, par jour.

TO STANDARD PROVIDE THE

Les formulaires d'enregistrement seront disponibles à l'intérieur des enveloppes d'invitation à cet effet.

Nous vous souhaitons un merveilleux séjour dans nos belles Laurentides et, au plaisir de vous accueillir!

* Certaines chambres de l'hôtel sont sans bain tourbillon.

LE CHANTECLER 1474, chemin Chantecler C.P. 1040 Sainte-Adèle (Québec) JOR 1L0

Téléphone: Réservations, Est du Canada et É.-U.: Reservations, Eastern Canada and USA: 1-800-363-2420 Sainte Adèle (514) 229-3555 Fax: (514) 229-5593

Hôtel Le Chantecler,



the conference and resort center by excellence, situated in the heart of the Laurentians, is pleased to host, for the first time, the Canadian Society of Immunology's March 1994 Meeting

Conference Dates

Arrival : Friday, March 11, 1994 Departure : Monday, March 14, 1994

* * *

Rates

\$ 94.00	per per	person, person,	single occupancy double occupancy	(taxes	extra)
\$ 86.00	per	person,	triple occupancy	(taxes	extra)
\$ 77.00	per	person,	quadruple occupancy	(taxes	extra)

Including: Breakfast "Buffet Style" Lunch "Buffet Style" Dinner "Fixed Menu" Access to our sports complex (pool, squash, racquetball, ping-pong, whirlpool, sauna) Room with a whirlpool bath *

* * *

Rates Pré & Post-Conference

\$ 99.00 per room, single or double occupancy
(without meals)

\$ 15.00 per additional person

Our group rate for downhill skiing is \$ 10.00 per person, per day.

* * *

You will find the registration forms inside the invitation envelopes.

We look forward to greeting you at Le Chantecler and wish you success in this special upcoming event.

* Certain rooms do not include a whirlpool bath.

EDUCATION IN IMMUNOLOGY: PART ONE OF A SERIES

There is an unprecedented degree of interest in Immunology among scientists in other fields, the general public and, significantly, educators at all levels. The CSI/SCI Council has discussed a number of potential avenues we might take as an organization, or individually at the local level, to support this interest. John Reynolds (Calgary) is actively looking into the advantages of different strategies we could consider.

In this issue of the Bulletin, we begin a series on the theme of Education in Immunology with a thought provoking report. This paper was prepared by an international committee charged by the IUIS with establishing guidelines for doctoral degrees in Immunology. The article, reprinted from *The Immunologist 1:22, 1993 (with permission)*, provides interesting food for thought on doctoral programs in immunology in Canada.

Your comments on this proposal, the strengths and weaknesses of Canadian training programs, or on the issue as a whole, are welcomed and will be published in the next issue of the Bulletin.

As the input of research trainees is particularly vital, we can publish comments on a "name withheld, University location-withheld" basis, should that be requested. Contributions can be mailed to the address provided on the cover of this issue or FAXed to the editor at 204 772 7924.



POSITIONS AVAILABLE

2222 Health Sciences Mall, UBC Vancouver, British Columbia Canada, V6T 1Z3 Telephone (604) 822-7810 Telecopier (604) 822-7815

THE BIOMEDICAL RESEARCH CENTRE

POSTDOCTORAL POSITIONS: available immediately at The Biomedical Research Centre, University of British Columbia to study cell-surface receptors for 1) transcobalamin II and 2) IL-5, using monoclonal antibodies, protein purification and recombinant DNA techniques. Successful candidates will have training and publications in areas of immunology/hemopoiesis, biochemistry of membrane proteins or signal transduction. The BRC provides an excellent interdisciplinary environment emphasizing interactions and collaborations. Applicants should send curriculum vitae and names of three referees to: Dr. John Schrader or Dr. Hermann Ziltener, The Biomedical Research Centre, UBC, 2222 Health Sciences Mall, Vancouver B.C. V6T 1Z3, Canada FAX (604) 822 7515.

Guidelines for the PhD Degree in Immunology —

Recommendations of the Education Committee of the IUIS

Prepared by J.-P. Revillard

This document recommends a set of guidelines that guarantee an acceptable scientific competence in scientists awarded a PhD degree, but does not prescribe a rigid formula for education. It suggests how a PhD may be acquired, ways in which a PhD candidate may be assessed, and criteria for the overall evaluation of a PhD program. It is aimed at university departments, national organizations that set standards for graduate education, scientists who serve as external examiners for evaluation of theses for graduate degrees, and, most importantly, the candidates themselves.

In many universities, specialized departments (or centers involving faculty from several departments) provide an integrated, multidisciplinary curriculum in basic immunology for undergraduate and graduate students. These institutions have the research facilities, personnel and educational experience required for the organization of PhD programs in immunology. The contributions of these establishments to education and research training over the last two or three decades has been central to the development of modern immunology as a recognized specialty in its own rights. However, the recognition of immunology as an independent scientific discipline is recent, and in some academic institutions, immunological research is carried out in departments primarily devoted to other specialties, such as biochemistry, molecular biology, microbiology or cell biology. The same holds true for research and training in clinical immunology: only a limited number of medical, dental, and veterinary schools have independent immunology departments with suitable research facilities. In many medical schools immunological research may be carried out in departments primarily devoted to pathology, microbiology, blood transfusion, pediatrics, transplantation, oncology, etc. Particularly in developing countries, where qualified immunologists are in great demand to tackle major and urgent problems of human and veterinary health, some of the more recently established universities and research institutes lack the necessary expertise and finance required for selecting, training and evaluating PhD candidates.

In 1989, the committee on education of the international union of biochemistry published a series of recommendations under the title "Standards for the PhD Degree in Biochemistry and Molecular Biology" [1]. This document provides valuable guidelines for the organization of PhD programs. The Education Committee of IUIS and many representatives of immunological societies felt that similar recommendations for immunology should be available. The present recommendations, essentially parallel to those prepared by our biochemistry colleagues, provide specific considerations relating to the position of immunology among other scientific disciplines.

Rationale

Immunology emerged during the late-nineteenth century as the scientific discipline concerned with the mechanisms of host interactions with infectious agents. Major advances in immunology arose from different facets of basic biology and medical applications, a long time before immunology was recognized as a major independent discipline among sciences. For example, studies of blood transfusion and clinical organ transplantation provided a major impetus toward the discovery of blood groups and, later, of the major histocompatibility complex. Progress in protein biochemistry and in molecular biology of the gene led to the discovery of the structure, gene organization and rearrangements, and mechanisms of the diversity of antibody molecules and T cell receptors. Studies of patients with immunodeficiencies, allergy, or monoclonal lymphoproliferative diseases, provided new insights into many basic mechanisms underlying the immune response. In parallel, antibodies, especially monoclonal antibodies, and the technology of immunoassays, had extensive application in numerous fields of biology as well as in human and animal medicine. Thus numerous examples of conceptual and methodological interactions between immunology and other scientific disciplines may be found.

A scientific discipline relies on a few major leading concepts. In addition, scientific disciplines share a common language and

Box 1. Evaluation of PhD Candidates

These criteria are suggested for use by the Faculty and by the candidates themselves. For this and the other suggested evaluations (Boxes 2 and 3), it may be useful to use a numerical scale 1 - 5 (1 excellent; 2 very good; 3 good; 4 adequate; 5 unsatisfactory).

Technical Skills

- Quality of the protocols (controls, statistical analysis, capacity to anticipate)
- Use of microcomputers (text, graphs, statistics)
- Accuracy and quality of notebooks
- · Precision and rigor in performing experiments
- Practical knowledge of laboratory equipment (handling, maintenance)
- · Ability to learn new techniques

Behavioral Skills

- Standard of laboratory practice
- Discipline, and application of safety regulations
- · Communication with supervisor, technicians and students
- Active participation in scientific discussions, seminars, journal clubs
- Capacity to initiate contacts with other scientists (information, documentation, reagents)

Aptitude for Research

- Updating of background knowledge
- Critical reading, computation and classification, organization of relevant information
- Critical analysis, oral presentation and discussion of experimental results
- Curiosity
- Tenacity

After One Year of Training

- Ability to write preliminary reports, and to organize and present experimental results (appropriate questions, tables, figures etc)
- · Quality and originality of the first results
- · Ability to formulate pertinent questions and hypotheses
- Progress towards autonomy at the conceptual and methodological levels

Acquisition of the ability to formulate meaningful questions is a major step in the candidate's transition from a passive to an active role in research. One way of evaluating this skill is to require that the candidate make an oral presentation, on a topic distinct from his/her thesis.

5. The Candidate Should Demonstrate Oral and Written Communication Skills

The results of scientific research are of questionable value unless they are made available to the scientific community. Scientists communicate their data by giving lectures and seminars, poster presentations, periodic reports on their research, applying for grant support and, most importantly, publishing papers in refereed journals. Communication skills improve, and self confidence increases, through practice. There are many opportunities during the doctoral process for developing communication skills, including the preparation of the research proposal, the periodic reviews of research progress, journal-club presentations, seminars, and the preparation for the oral defense of the thesis. Opportunities should also be taken for discussion of ethical aspects and of appropriate acknowledgement of the work of others, including references to published work.

Most of the current scientific and technical literature is in English. In countries where English is a foreign language, programs for learning scientific English should be made available to PhD candidates.

It is the responsibility of the supervisor, or of the department or institute where the candidate plans to pursue his/her training, to indicate to the candidate from the beginning of the doctoral training what is expected, and to provide feedback and guidance at every opportunity.

6. The Candidate Should Demonstrate Skill in Designing Experimental Protocols and in Conducting Productive Independent Research

This skill is of fundamental importance to an independent immunologist. Its acquisition is demonstrated by the successful completion of a self-initiated project of research that leads to publication in an international refereed journal. It involves asking questions at an appropriate level and proposing a hypothesis to be tested (neither too trivial, nor too broad), carrying out appropriate experiments with suitable controls, statistical treatment and analysis of the results, suggesting answers (that is, conclusions) to the questions posed, and communicating these to the scientific community through a refereed publication.

Such skills are not acquired simply by the collection or compilation of data, by cataloguing observations or by other activities in which the candidate serves as a technician. The candidate must participate actively in the selection of the research topic; supervisors should assist in orienting their candidates to the relevant literature but should not impose their will on the studies. The supervisor and the PhD Advisory Committee should participate in periodic evaluations of the progress in a critical way, and should permit the student to carry out independently planned experiments and even to learn from mistakes (within reasonable limits set by budgets and safety considerations).

The original description of the thesis topic should not be too restrictive. The candidate should be encouraged to recognize leads suggested by results and be permitted to change the direction, if change is likely to produce more meaningful results. The balance between persistence in overcoming difficulties and wasting time on poor ideas can only be learned by experience. Similarly, the lure of tempting new ideas must be resisted to the extent needed to bring the project to publishable conclusions. the pharmaceutical and biotechnology industries. Immunological expertise can be applied to areas of medicine involving allergy, autoimmunity, transplantation, biocompatibility of foreign devices, development of new vaccines or antibodies by genetic engineering, and subcellular interventions such as gene therapy.

Standards

The recommendations presented below should be adapted to prevailing educational standards in the given country. However, in view of the increasing mobility of scientists, an attempt should be made to guarantee a minimum internationally acceptable level of competence for holders of the PhD degree in immunology. As for research in other biological disciplines, practical knowledge of applied statistics (including non-parametric tests) and competence in the use of personal computers (data analysis and graphic expression, keyboard efficiency) are mandatory for PhD students nowadays.

1. The Candidate Should Demonstrate a General Knowledge of Basic Immunology

The level of knowledge expected from a PhD candidate goes beyond the broad principles and terminology of the discipline. It should be based on an understanding of the experimental methods from which the basic concepts are derived, rather than on the conclusions that others have derived from the use of these methods. This implies the reading, in-depth analysis and understanding of original publications journals such as *Journal of Immunology, European Journal of Immunology, Nature, Science,* and *Cell,* and of review-type papers such as those published in *Annual Reviews of Immunology* and *Immunology Today.*

A good understanding of immunology requires extensive background knowledge of physiology, cell biology, biochemistry, molecular biology and microbiology. It requires familiarity with major areas of immunological research such as lymphocyte differentiation, receptor structure and repertoire selection, the regulation of cell activation, the biology of cytokines, networks, the MHC, complement, cell adhesion molecules, as well as more integrated studies of autoimmunity, immunodeficiency, oncology, transplantation, immunity in infectious diseases, and allergy. Since the extent to which such knowledge is acquired during undergraduate programs varies, supplementary formal courses during the PhD training period must be available to correct the deficiencies in some candidates.

Attainment of the required level of understanding can be evaluated by written examination and/or oral tests for the graduate courses, as well as by review of the candidate's progress in research.

2. The Candidate Should be Familiar with the Immunology Literature and Be Able to Acquire a Working Background Knowledge of Any Area Related to Immunology

Familiarity with the literature enables the candidate to identify areas that have already been explored, those that require exploration, and those where results or interpretations are controversial. The literature is the major link between immunologists throughout the world and is the repository of all scientific information. This is the same literature to which candidates are expected to contribute during their training and in their future career as independent investigators. The ability to review the literature, to evaluate it critically, and to extract from it the reliable information to be used as a basis for further exploration or investigation, is essential for an independent immunologist.

The development and evaluation of these skills can be achieved by the preparation of the following: the research proposal, seminars and journal-club presentations, results for publication, periodic reviews of progress, the preparation of the thesis, and the preparation of a research grant application. To guarantee minimal standards and fairness in the evaluation process. it is advisable that the candidate's progress be assessed by his/her PhD Advisory Committee.

3. The Candidate Should Possess Technical Skill

Owing to the great number of experimental techniques used in modern immunology, a PhD candidate will not receive formal training in every technology. Rather, the candidate should be expected to have acquired sufficient technical skills, background knowledge and self confidence to conduct the research project assigned for his/her degree program; this indicates the ability to adapt or develop techniques for future research.

Technical competence, and adaptability are prerequisites for independent research, and these may be acquired primarily by the development of novel strategies for the thesis project, but also by specially designed laboratory courses, and/or short periods of training in other laboratories.

4. The Candidate Should Ask Meaningful Questions

This ability arises in part from familiarity with, and critical evaluation of, the literature. It requires broad knowledge, creativity, and imagination, and is faciliated by discussion with other scientists. Meaningful questions must be circumscribed and answerable; the answers become part of the edifice of scientific knowledge and constitute the cornerstones for research by other scientists in immunology or in related areas.

The ability to formulate new avenues for research can be developed by the supervisor through periodic reviews of the doctoral research, by analyzing published papers, at scientific seminars, while drafting and defending research proposals, and finally in the preparation of the thesis.

The candidate should participate in organized seminars, to provide opportunities to present and defend research plans, experimental results and their interpretation, to evaluate and comment critically on the work of others, and to participate in discussions about technical and scientific issues. As immunology develops ever faster, and as the potential for material rewards increases, competition for priority will become keener. One danger is that this may lead to misrepresentation of data and the omission of references to related or similar, already published investigations. Nevertheless, science remains a collaborative effort on an international level and graduate education must emphasize the interdependence of scientists. It must be taken for granted that those who wish to join the community of scholars must accept the ethical precepts that characterize science.

Appropriate training should be made available to PhD students for animal experiments or studies involving human volunteers and patients; this training must instill a responsibility for good laboratory practice and good clinical practice and a respect for adherence to local bioethical regulations in relation to animal care and investigations involving human subjects.

The Role of Formal Graduate and Post-Graduate Courses

Formal courses provide a convenient method to expend the candidate's general information base. Since the primary goal of graduate training is the development of independent thinking and familiarization with the pertinent literature, formal courses can be a useful element of the graduate program if they are designed to assist the student to become competent in acquiring knowledge independently; however, the acquisition of information should not be used as the main yardstick of a student's development. Graduate level courses should, therefore, facilitate the student's use of the literature and encourage active self-education. Since the independent scientist needs to keep abreast of new developments in the field, all graduate courses should be directed toward inculcating this philosophy.

Graduate courses in immunology should be aimed at developing permanent intellectual skills rather than the accumulation of transient, memory-based information, and should contribute to the development of a professional attitude. Regardless of the content or format of the course, mere accumulation of credits by "passing" courses does not provide evidence that the candidate has been trained to contribute to science. Courses may be time-consuming and may compete with the time available for experimental work. Moreover, the knowledge and skills that they foster can be acquired just as well in other ways, such as journalclub activities, reviews of the literature on selected topics, and seminars on topics unrelated to the research.

Universities, immunological societies and international agencies should be encouraged to organize postgraduate courses on the most recent theoretical and practical developments in immunology, and to facilitate the attendance of postgraduate students by providing low cost registration and lodging, and travel grants.

Role of Academics Other than the Supervisor

Though the doctoral process is based largely on the supervisor-candidate relationship, the complete training of the candidate to meet these standards may be, and very frequently is, beyond the ability of the supervisor: other academics and doctoral candidates have an important role in training. This not only broadens the scope of the learning environment but also demonstrates the social and interactive nature of scientific research. It is the responsibility of the department or institute in which the candidate is being trained to provide the environment in which the abilities outlined above can be acquired, and to recommend the candidate to other investigators, who might participate in the training of the candidate.

While most PhD theses are prepared in academic institutions devoted primarily to basic research and education, the participation of other research organizations, such as research laboratories in pharmaceutical or biotechnological companies, or in hospitals, is being encouraged in several countries. This will facilitate collaboration between universities and industry and may create employment opportunities for PhD graduates. However, work done towards a PhD thesis outside the academic institution should only be initiated by the organizers of the PhD program, and it is the responsibility of the University to ensure that an appropriate scientific environment, competent guidance and the access to information, collaboration, and evaluation by other scientists will be provided to the candidate. Permission for publishing and/or patenting results should also be granted on a contractual basis.

During the PhD program, candidates may gain great advantages from doing some of their research in other laboratories. Such mobility should be encouraged. Quite often it will accelerate the research process by associating different skills and competences. Moreover it will permit the evaluation of the candidate's capacity to adapt to a different environment and to communicate. Some PhD programs in Europe are organized jointly by universities from different countries, the candidates spending at least six months of their program in a foreign laboratory, and supervisors from both laboratories participate in the evaluation of the thesis.

Duration of Doctoral Training

The transition from student to professional status does not proceed at the same rate for every individual; the period required for completion of different research projects is an even greater variable. It is not reasonable to expect the requirements for a PhD degree to be met within a short and fixed period of time. Where outside forces (usually governmental ones) apply economic pressures to restrict the time for graduate training, members of the profession should resist the pressure to award prematurely or to reject students who could become useful professionals given longer periods of training. The award of a PhD degree should identify an individual who has acquired high standards of scientific research and has not compromised those standards to meet arbitrary deadlines. The period of training should not be less than three to four years.

The progress of every candidate should be monitored by an Advisory Committee. A decision to abandon an unproductive project should not be made suddenly but should arise from discussions with the candidate while there is still time to complete

POSITIONS AVAILABLE



Scientists in Autoimmunity at The John P. Robarts Research Institute The University of Western Ontario London, Ontario, Canada

The John P. Robarts Research Institute is seeking applications for five positions of Research Scientist in the newly established Autoimmunity Group. Positions are available July 1, 1994, and appointments will be made on a renewable five year basis at a competitive salary. Establishment funds will be available for the initial three years. Academic rank will be determined by cross-appointment in the appropriate University/Hospital department (e.g. Microbiology and Immunology, Medicine), and applicants will have the opportunity to teach and supervise graduate students and research fellows.

Candidates (Ph.D. and/or M.D.) should be experienced in one or more of the following broad areas; autoimmunity, antigen processing and presentation, lymphocyte growth control and development, signal transduction, gene mapping and immunogenetics. Experience with transgenic and/or knockout animal models of disease is also desirable. Successful candidates are expected to establish independent research programs using genetic, molecular and cellular approaches to fundamental problems in autoimmune disease (e.g. diabetes, multiple sclerosis, rheumatoid arthritis). They will have opportunities to collaborate with members of other existing (Transplantation Immunology, Stroke and Aging, Heart and Circulation, Imaging, Clinical Pharmacology, Clinical Trials) and to be established (Cell Surface Receptor Biology and Signal Transduction, Vaccine Development, Gene and Cell Therapy, Neurobiology) research groups at the Institute, as well as with members of relevant university and hospital departments.

The John P. Robarts Institute, located on the very attractive campus setting of The University of Western Ontario, London, Ontario, is an autonomous, modern, medical research facility that aptly reflects the strong growth and commitment to basic and clinical research in Southwestern Ontario. London, a city with a population of 317,000, in the Great Lakes region, has easy access to several centres in Canada (Toronto) and U.S.A. (Detroit). The absence of urban congestion and pollution together with a mild climate makes it one of the most attractive and affordable communities in Canada, offering an excellent cultural and family-oriented environment.

In accordance with Canadian Immigration requirements, priority will be given to Canadian citizens and permanent residents of Canada. Qualified candidates should forward a curriculum vitae, an outline of research interests and scientific goals, reprints of key publications, and arrange for three letters of reference to be sent to:

Dr. Terry L. Delovitch, Director, Group on Autoimmunity Weinstein Scientist in Diabetes The John P. Robarts Research Institute P.O. Box 5015, 100 Perth Drive London, Ontario, Canada N6A 5K8

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