

## THE IMMUNOLOGY LABORATORY SERVICES IN MALAYSIA

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Immunology has been an acknowledged branch of medicine since the end of the 19th century. Since then, it has grown at a steadily increasing pace, and has diversified into specialised fields including immunochemistry, immunopathology and immunogenetics. Rapid growth and advances in basic immunochemistry and immunobiology over the last few decades paralleled the development of new technology and methodologic advances. The introduction of chemical methods led to Landsteiner's fundamental studies on immunologic specificity. Development of the quantitative precipitation method by Heidelberger and Kendall in 1935 is one of the most important factors in the development of modern immunochemistry. Over the last 2 decades, immunological laboratory methods have become increasingly refined and simplified, and the available range of tests increasingly wider.

### THE IMMUNOLOGY SERVICE IN MALAYSIA

The immunology service is a relatively young branch of the laboratory service in this country. The immunology laboratory in the University Hospital, Kuala Lumpur (UH, KL), became functional in 1972. Semi-quantitative techniques for the determination of immunoglobulins and complement levels were available then. This subsequently gave way to the single radial-immunodiffusion technique of Mancini and, more recently, to laser nephelometry. Immuno-electrophoresis was also available then for monitoring patients with monoclonal gammopathies. In the early years of its operation, the range of tests available was necessarily small. However, over the last few years, the range of tests has increased and the techniques employed have changed with the availability of newer and more refined methodology.

The Division of Serology, Institute for Medical Research (IMR), was converted to the Division of Serology and Immunology in the mid-1970s. Since its establishment, the Immunology section has developed at a brisk pace, and offers a wide range of immunological tests for monitoring the humoral as well as the cellular immune system. The Division also serves as a centre for the preparation of biological reagents for serological diagnosis. These are supplied to the state laboratories of the country.

The immunology service in the Universiti Kebangsaan Malaysia (UKM) is the youngest and started in 1975. A comprehensive range of tests is available at the centre.

The government state hospitals do not operate a specialised immunology service. Isolated tests, however, are performed, for example, the latex fixation test for the diagnosis of rheumatoid arthritis. In general, requests for diagnosis of immunological disorders are directed to the Institute for Medical Research in Kuala Lumpur. This calls to mind the many possible problems that can and do occur during transportation of samples that may come from as far as several hundred kilometers away.

### Range of Tests and Workload

Currently, the immunology laboratories existent in Malaysia are centred in the Institute for Medical Research, Kuala Lumpur, and in the teaching hospitals, which include the University Hospital and the Universiti Kebangsaan Medical Centre, which are both located in Kuala Lumpur. An immunology division is also in the process of being developed in the medical school, Universiti Sains Malaysia. These laboratories provide service for hospital patients as well as for referral patients from general practitioners and private hospitals. The tests available at each of these centres are comparable. Commonly performed immunochemical tests include quantitation of immunoglobulins A, G and M, quantitation of complement components, electrophoresis and immuno-electrophoresis for diagnosis and typing of monoclonal gammopathies. Determinations of auto-antibodies including anti-thyroid antibodies, rheumatoid factor, anti-nuclear-factor and anti-DNA antibodies form a significant bulk of the requests. Less commonly performed tests which include quantitation of T- and B-cells and lymphocyte transformation tests are available on special request. Tables 1 and 2 summarise the tests offered by the UH, KL, and the IMR respectively. Annual workload for the years 1980 and 1981 in these two centres are given in Tables 3 and 4.

Organisation of the service varies in the different centres. The full range of tests available at the IMR are run wholly by the Division of Immunology and

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TABLE 1  
TESTS AVAILABLE AT THE INSTITUTE FOR MEDICAL RESEARCH

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Immunoglobulin quantitation (IgA, IgG, IgM, IgD, IgE)
Complement quantitation (C3, C4)
Detection of Autoantibodies:
Rheumatoid factor
Antinuclear Factor
Anti-thyroglobulin and anti-microsomal antibodies
Immunoelectrophoresis for gammopathies
Quantitation of T and B cells
Lymphocyte Transformation Tests
Mixed lymphocyte culture.

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TABLE 2  
TESTS AVAILABLE AT THE UNIVERSITY HOSPITAL, KUALA LUMPUR

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Immunoglobulin quantitation (IgA, IgG, IgM)
Complement Quantitation (C3, C4)
Quantitation of C <sub>1</sub> esterase inhibitor, haptoglobin and $\alpha_1$ antitrypsin
Detection of autoantibodies:
Rheumatoid factor
Antinuclear factor
Anti-DNA antibody
Anti-thyroglobulin and anti-microsomal antibodies
Anti-mitochondrial, anti-smooth muscle, and anti-parietal cell antibodies
Immunoelectrophoresis for gammopathies
Quantitation of T and B cells
Lymphocyte Transformation Tests

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TABLE 3  
ANNUAL WORKLOAD: UNIVERSITY HOSPITAL, KUALA LUMPUR

Tests	1980	1981
Immunoglobulin Quantitation		
IgA	679	498
IgG	692	534
IgM	692	528
Complement quantitation		
C <sub>3</sub>	1848	2062
C <sub>4</sub>	1848	2062
Immunoelectrophoresis	267	134
Autoantibodies		
Rheumatoid factor	1077	1264
Antinuclear factor	1836	1858
Anti-DNA antibody		581
Antithyroid antibodies	661	715
Quantitation of T and B cells*	12	8
Lymphocyte Transformation Test*	12	8

\* These tests are usually performed on a research basis and those cases are not quoted.

TABLE 4  
ANNUAL WORKLOAD: INSTITUTE FOR MEDICAL RESEARCH

Tests	1980	1981
Immunoglobulin quantitation (IgA, G,M,D,E)	236	341
Complement quantitation (C3 and C <sub>4</sub> )	297	596
Autoantibodies	3,564	4,730
Immuno-electrophoresis	18	18
Quantitation of T and B cells	263	110
Lymphocyte Transformation Test	85	—
Mixed lymphocyte culture	—	16

Serology. In the University Hospital, the immunochemistry section is located in the Department of Pathology, while tests for the monitoring of cell-mediated immune function are provided by the immunology laboratory of the Department of Medical Microbiology. The service in the UKM is provided primarily by the Department of Medical Microbiology.

Comparatively new in this country, this branch

of the laboratory service is still in its growing phase. Anticipated development include improvement and optimization of existing services, and expansion of the currently available range of tests. Provision of the service at the state level is a possibility to be considered. Centralisation of facilities and services in individual institutions calls for careful study and deserves consideration.