

Chapter 7

Analysis of Basic Medical Sciences Group Institutes

7.0 List of institutes under Basic Medical Sciences group

1. Institute of Pathology (IOP), **DELHI**
2. Institute of Immunohaematology (IIH), **MUMBAI**
3. Genetic Research Centre, **MUMBAI**

The data from the following institutes/labs has not been received:

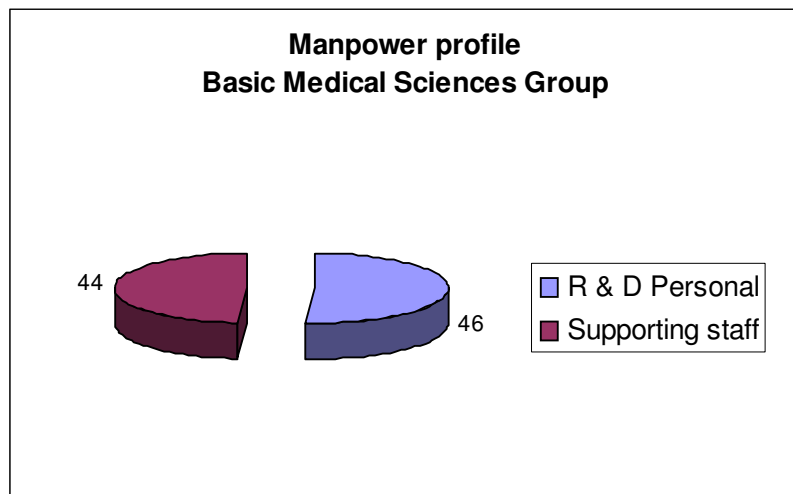
1. Genetic Research Centre, MUMBAI

7.1 Overall analysis of institutes under Basic Medical Sciences group

7.1.1 Manpower Profile

The three institutes are categorized in the Basic Medical Sciences group cover varied areas of research. The figure 7.1 below presents the manpower profile in terms of R&D personal and supporting staff of the 2 institutes/labs of Basic Medical Sciences group out of a total of 3 who have supplied the data.

Figure 7.1



7.1.2 Core Competency wise Manpower of the Basic Medical Sciences Group Institutes are given in Table 7.1

Table -7.1

Basic Medical Sciences Group				
Core Competency of various Institutes				
S. No.	Name of laboratory	Area of Core Competency	Manpower (in Numbers)	
			R&D Personal	Support Staff
1.	Institute of Pathology (IOP), DELHI	Histopathology	7	10
		Molecular Biology	4	4
		Electron Microscopy	3	3
		Immunology/Immunohistochemistry	7	4
		Cell Biology / Tissue Culture / Hybridoma	4	4
		Cytopathology	6	2
2.	Institute of Immunohaematology (IIH), MUMBAI	Hemoglobinopathies	5	7
		Hemostasis	4	2
		Blood group serology	3	5
		HLA and cytogenetics	3	3
Total			46	44

7.1.3 Major R&D facilities of the Basic Medical Sciences Group Institutes are given in Table 7.2

Table -7.2

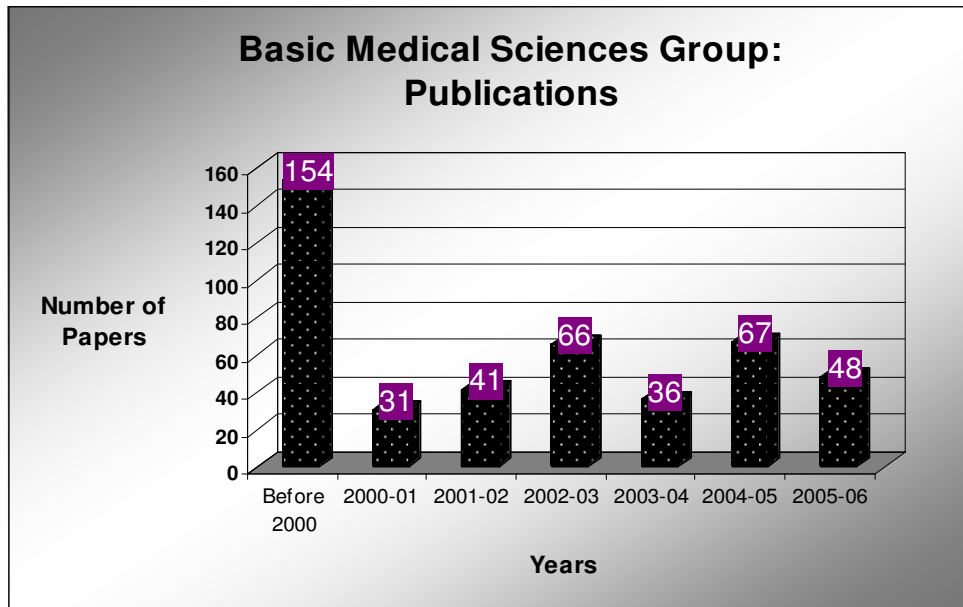
Basic Medical Sciences Group			
Major R&D facilities of various Institutes			
S. No.	Name of laboratory	Area of Core Competency	Facilities
1.	Institute of Pathology (IOP), DELHI	Histopathology	Diagnostic
		Molecular Biology	Diagnostic & Research
		Electron Microscopy	Diagnostic & Research
		Immunology/Immunohistochemistry	Diagnostic & Research
		Cell Biology / Tissue Culture / Hybridoma	Research
		Cytopathology	Diagnostic
2.	Institute of Immunohaematology (IIH), MUMBAI	Hemoglobinopathies	Laboratory for screening for hemoglobinopathies, HPLC based Hb variant testing system, Basic molecular biology laboratory and various techniques for mutation detection , Prenatal diagnosis facility for B.
		Hemostasis	To investigate various bleeding disorders like hemophilia A and B by screening for various coagulation and for inhibitors, to investigate thrombophilia profile which includes assays for proteins, to look for platelet disorders by detecting anti-platelet antibodies ,platelet function tests and receptor studies.
		Blood group serology	To investigate blood transfusion reactions to solve blood grouping and cross matching problems and to identify incompatible blood in difficult cases, to screen and identify a typical antibodies in the serum, Rh genotyping in antenatal couples and to investigate HDN cases.

		HLA and cytogenetics	HLA typing for those narrow transplant, kidney transplant, HLA B 27 typing is suspected seronegative spondarthritis, Karyotyping by GTG banding in patients with hematological malignancies, Chromosomal breakage study in fanconi's anemia, comparative genomic hybridization in MDs patients.
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7.1.4 Papers

The following figure 7.2 represents the total number of papers published by the 2 institutes/labs out of 3 institutes in the Basic Medical Sciences group from 2000 to 2006.

Figure 7.2



7.1.5 Exportable R&D facilities of the Basic Medical Sciences Group Institutes are given in Table 7.3

Table -7.3

Basic Medical Sciences Group			
R&D Services of various Institutes			
S. No.	Name of laboratory	R&D services offered	Description of R&D service offered
1.	Institute of Pathology (IOP), DELHI	Consultancy services	Histopathology, Molecular Biology, Electron Microscopy, Immunology /Immunohistochemistry, Cell Biology / Tissue Culture / Hybridoma, Cytopathology
		Training	
		Contract Research	
		Technology Transfer	
		Specialized facilities / services	
2.	Institute of Immunohaemotology (IIH), MUMBAI	Testing	<ol style="list-style-type: none"> 1. Prenatal diagnosis of thalassemia, screening for hemoglobinopathies. 2. Technique in blood banking. 3. Molecular screening for haemophilia and its management. 4. Cost effective diagnosis and management of haemophilia
		Training	
		Consultancy services	
		Contract Research	
		Technology Transfer	
Specialized facilities / services			

7.2 Analysis of individual institutes under the Basic Medical Sciences group

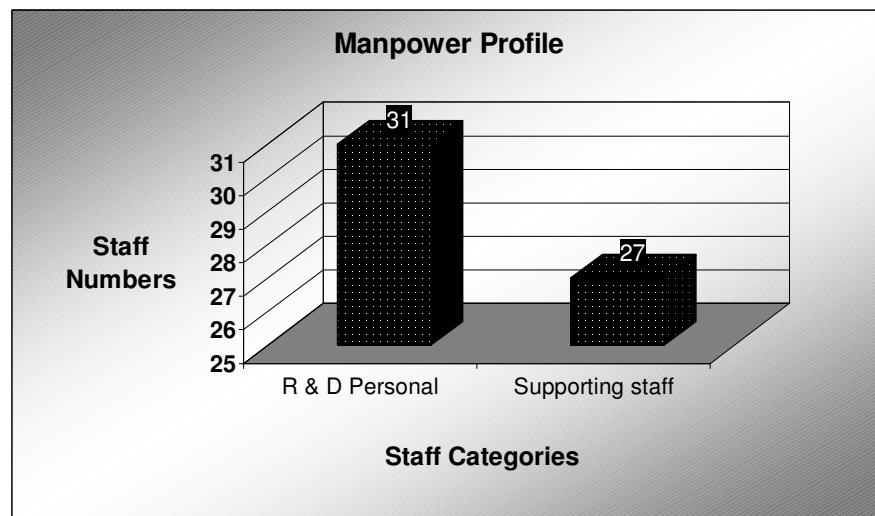
7.2.1. Institute of Pathology (IOP), DELHI

The Indian Registry of Pathology (IRP) of the Council was established in 1965 (at the Safdarjang Hospital, New Delhi), with the major aim of promoting the collection and distribution of teaching material in pathology. Over the years, the IRP not only collected, duplicated and distributed teaching material in different branches of Pathology to various institutes/medical colleges in India but also succeeded in mass-producing colour transparencies at a very low cost. The IRP also made significant contributions in the area of Indian childhood cirrhosis, cerebral oedema, encephalopathy syndrome, experimental neuroathrysm, osteopathology, *etc.*

7.2.1.1. Manpower profile

The following figure 7.3 depicts the manpower profile of IOP

Figure 7.3



7.2.1.2. Areas of Core Competency

The following Table 7.4 gives the available manpower data in the identified areas of core competency of the institute.

Table 7.4

S.No	Area	Manpower (Nos.)	
		<i>R & D Personal</i>	<i>Support staff</i>
1.	Histopathology	7	10
2.	Molecular Biology	4	4
3.	Electron Microscopy	3	3
4.	Immunology/Immunohistochemistry	7	4
5.	Cell Biology / Tissue Culture / Hybridoma	4	4
6.	Cytopathology	6	2

7.2.1.3. Major R&D Facilities

The following Table 7.5 gives various R&D facilities supporting the above areas of competency:

Table 7.5

S.No	Area	Facilities
1.	Histopathology	Diagnostic
2.	Molecular Biology	Diagnostic & Research
3.	Electron Microscopy	Diagnostic & Research
4.	Immunology/Immunohistochemistry	Diagnostic & Research
5.	Cell Biology / Tissue Culture / Hybridoma	Research
6.	Cytopathology	Diagnostic

7.2.1.4. National / International Accreditations

The IOP has following accreditations:

1. For post graduate level training in Pathology by Diplomate of National Board (DNB) of National Board of Examinations New Delhi.
2. For **Ph.D. Programme by BITS, Pilani** under the Off-Campus Programme.

3. Accredited as **Centre of Excellence for WHO-In Country Fellowship Programme** under the aegis of WHO/Ministry of Health & Family Welfare.

7.2.1.5. Number of collaborations/ Affiliations

The IOP has following collaborations:

International collaborations <i>(Research projects)</i>	National collaborations <i>(Research projects)</i>	Regional collaboration <i>(for training)</i>
Indo-US VAP- 02 Indo-German - 01	DRDO- 03 DST - 02 DBT – 01 ICMR - 05	WHO-SEARO

7.2.1.6. Patents

The following table gives the details of the number of patents applied by and granted to IOP during 2000-01 to 2004-05.

Year	Applied			Granted	
	India	PCT/Individual countries	Subject of patent	Indian	Foreign
2002-03	<i>One*</i>	<i>One**</i>			<i>One***</i>

* Patent filed for work on “*Development of serovar specific monoclonal antibody to Chlamydia trachomatis*”

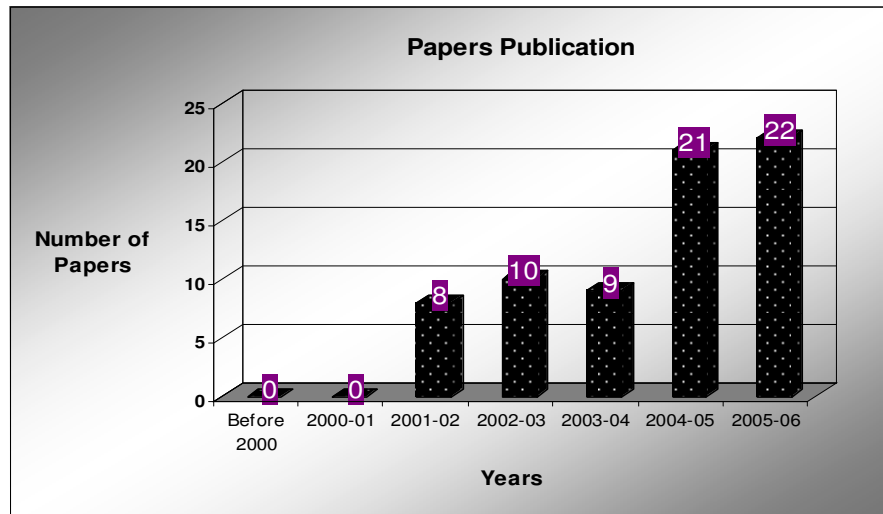
** US Patent filed for work on “*Centrin knock-out mutants of Leishmania donovani*”

*** US Patent granted for work on “*Species-specific PCR assay for diagnosis of kala-azar and PKDL*”

7.2.1.7. Papers

The following figure 7.4 gives the details of the number of papers published by IOP during 2000 and 2006:

Figure 7.4



(For details about the publications of IOP, refer institute website)

7.2.1.8. Potential Exportable R & D services

IOP has identified the following as their potential exportable R&D services:

a. Type of R & D services offered

i. Histopathology

1. Diagnostic services in routine & specialized areas
2. Training
3. Consultancy

ii.. Molecular Biology

1. Consultancy
2. Training
3. Sequencing services
4. Microarray services

iii. Electron Microscopy

1. Diagnostic
2. Training
3. Research

4. Consultancy
5. Microanalysis for heavy metals

iv. Immunology/Immunohistochemistry

1. Diagnostic
2. Training
3. Consultancy
4. Contract Research
5. Technology transfer

v. Cell Biology / Tissue Culture / Hybridoma

1. Autologous skin graft
2. Training
3. Cell lines

vi. Cytopathology

1. Diagnostic services in routine & specialized areas
2. Training
3. Consultancy

b. Description of R & D service offered

- | | |
|----------------------------|---|
| Training– | Summer Training for Ph.D. students of other Universities, Training to Pathologists/Technicians for specialized techniques. |
| Diagnostic- | Specialized diagnostic services for tissues needing specialized handling for sophisticated processes to reach the diagnosis and in cases of diagnostic dilemma. |
| Consultancy- | Services are provided when some Institute is starting new facilities like Histopathology, Cytopathology, Immunohistochemistry, etc. |
| Technology-transfer | Done when approached by an individual/Institute for transfer of specialized techniques available at Institute of Pathology. |

7.2.1.9. Target Markets

The following target markets have been identified for the above services:

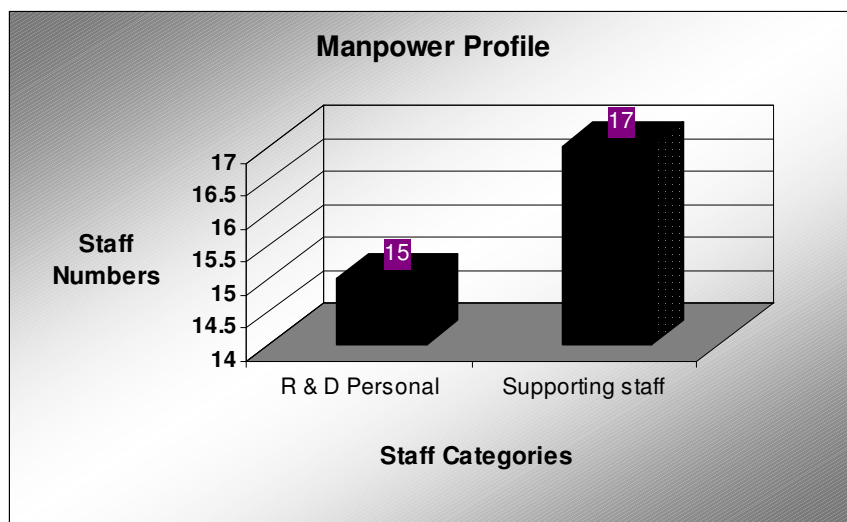
S.No	Area	Countries
1.	Histopathology	Asia & Middle East
2.	Molecular Biology	
3.	Electron Microscopy	
4.	Immunology/Immunohistochemistry	
5.	Cell Biology / Tissue Culture / Hybridoma	
6.	Cytopathology	

7.2.2. Institute of Immunohaematology (IIH), MUMBAI

7.2.2.1. Manpower profile

The following figure 7.5 depicts the manpower profile of IIH

Figure 7.5



7.2.2.2. Areas of Core Competency

The following Table 7.6 gives the available manpower data in the identified areas of core competency of the institute.

Table 7.6

S.No	Area	Manpower (Nos.)	
		<i>R & D Personal</i>	<i>Support staff</i>
1.	Hemoglobinopathies	5	7
2.	Hemostasis	4	2
3.	Blood group serology	3	5
4.	HLA and cytogenetics	3	3

7.2.2.3. Major R&D Facilities

The following Table 7.7 gives various R&D facilities support the above areas of competency:

Table 7.7

S.No	Area	Facilities
1.	Hemoglobinopathies	Laboratory for screening for hemoglobinopathies, HPLC based Hb variant testing system, Basic molecular biology laboratory and various techniques for mutation detection , Prenatal diagnosis facility for B.
2.	Hemostasis	To investigate various bleeding disorders like hemophilia A and B by screening for various coagulation and for inhibitors, to investigate thrombophilia profile which includes assays for proteins, to look for platelet disorders by detecting anti- platelet anti bodies ,platelet function tests and receptor studies.
3.	Blood group serology	To investigate blood transfusion reactions to solve blood grouping and cross matching problems and to identify incompatible blood in difficult cases, to screen and identify a typical antibodies in the serum, Rh genotyping in antenatal couples and to investigate HDN cases.
4.	HLA and cytogenetics	HLA typing for those narrow transplant, kidney transplant, HLA B 27 typing is suspected seronegative spondarthritis, Karyotyping by GTG banding in patients with hematological malignancies, Chromosomal breakage study in fanconi's anemia , comparative genomic hybridization in MDs patients.

7.2.2.4 Projects Executed

The IIH has executed following collaborative projects:

1. Indo–French project on ‘Molecular genetics of major haemoglobinopathies’ in India (1992-1995)
2. Indo-US project on molecular pathology of Glanzmann’s thrombosthenia 1997-1998
3. Indo –INSERM project on thalassaemia in India subcontinent –prevention and clinical management (1995-1997)
4. Indo –INSERM project on catalytic antibodies against factor VIII in haemophilia (2001-2004).
5. Indo –US project on thrombohemorrhagic balance in hemophilia, implication for an alternative therapeutic approach (2004-2006).
6. Multicentric intervention programme for nutritional anemia and hemoglobinopathies amongst some of the primitive tribal population in India(1999-2005).
7. Multicentric Jai Vigyan S and T mission project on ‘Community control of thalassemia awareness, screening, counseling and prevention (2000-2005).
8. Incidence and molecular characterization of G6PD deficiency in North – East(2003-2006).
9. Study of some genetic aspects of essential hypertension in North –East (2003-2006)

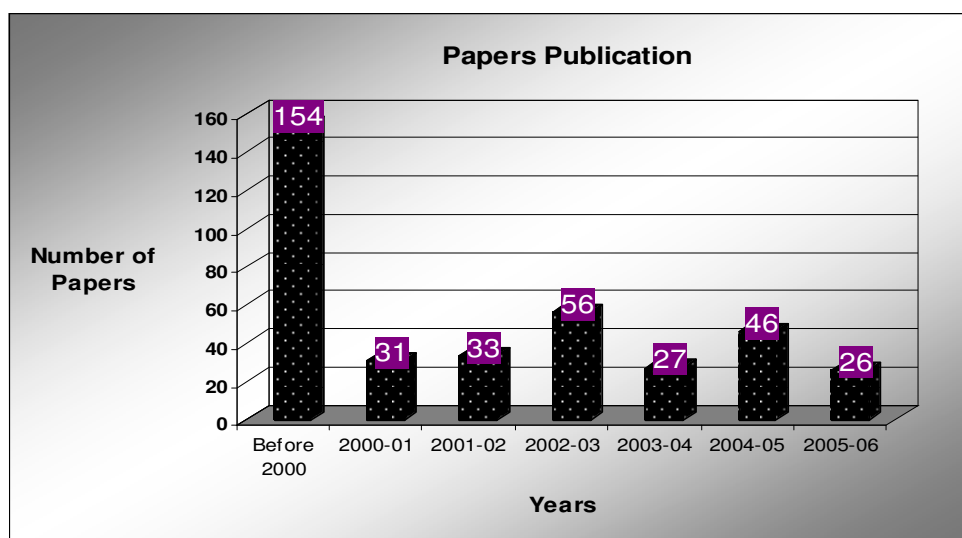
7.2.2.5. Patents

The IIH has applied for two Indian patents in the area of “Novel process for the preparation pf monoclonal antibodies to fetal hemoglobin in 2001 and granted one Indian patent in “A process for the preparation of diagnostic kit for detection of B- thalassemia syndromes field in 2005.

7.2.2.6. Papers

The following figure 7.6 gives the details of the number of papers published by IIH during 2000 and 2006:

Figure 7.6



(For details about the publications of IIH, refer institute website)

7.2.2.7. Potential Exportable R & D services

IIH has identified the following as their potential exportable R&D services:

- a. Type of R & D services offered
 1. Testing
 2. Training
 3. Consultancy Services
 4. Contract Research
 5. Technology Transfer
 6. Specialized facilities / services

- b. Description of R & D service offered
 1. Prenatal diagnosis of thalassemia, screening for hemoglobinopathies.
 2. Technique in blood banking.
 3. Molecular screening for haemophilia and its management.

- c. Special or Unique features of R & D service offered
 1. Cost effective diagnosis and management of haemophilia.
 2. Special techniques in blood banking.
 3. Quick prenatal diagnosis of thalassemia in second trimester.

- d. Whether R & D service offered exported in past? If yes, the client and value realized
1. Training in CVS collection and DNA analysis was offered to doctors from Maldives and Syria.
 2. Training in blood banking technology was offered to medical officers and technicians from Nepal, Bhutan Maldives and Myanmar.
 3. Gentic diagnosis for haemophilia was shown to doctors from Pakistan.

7.2.2.8. Suggestions

IIH suggested that following could help in enhancing the compatibilities for exporting R & D services:

1. Closer collaboration in third world countries.
2. Exchange of scientists and technology transfer.
3. Holding workshops symposia to bring scientists on the same platform.

7.2.3. Genetic Research Centre, MUMBAI

The unit of medical genetic was established in 1976 at the Institute for Research in Reproduction. The unit was made an independent center of ICMR in 1986 and was than lodged at the Bai Jerbai Wadia Hospital for children until end of 1999. It was shifted back and located back at the Institute of Research in Reproduction. Since its inception the center has catered to the needs of families having children with mental retardation and multiple malformations. The major activity of the center is to run an effective clinic where couples are counselled regarding recurrence risk of genetic disorders and availability of prenatal diagnosis.