

## The History of Pathology in Indonesia\*

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### Abstrak

Sebelum Perang Dunia II Indonesia diduduki oleh Belanda, karena itu pelayanan medik sebagian besar dilaksanakan oleh dokter Belanda. Publikasi pertama tentang penemuan postmortem di Indonesia diterbitkan pada akhir 1620an. Sekolah kedokteran pertama, yang disebut Sekolah Dokter Jawa didirikan di Jakarta pada tahun 1851, yang kemudian diubah menjadi STOVIA dan pada tahun 1927 berkembang menjadi Sekolah Tinggi Kedokteran, setara dengan sekolah serupa di Negeri Belanda. Sementara itu, pada tahun 1913 didirikan sekolah kedokteran lain di Surabaya yang dikenal sebagai NIAS. Laboratorium pertama, yaitu Laboratorium Patologi Anatomi dan Bakteriologi didirikan di Jakarta pada tahun 1888. Di dalam laboratorium inilah Eijkman menemukan vitamin B1 yang antineuritik. Untuk penemuan ini ia menerima Hadiah Nobel pada tahun 1929. Pada tahun 1906 didirikan suatu Laboratorium Pusat di Medan oleh berbagai perkebunan swasta, dan di Bandung pada tahun 1914 telah didirikan suatu Lembaga Kanker. Jadi setelah tahun 1914 terdapat empat senter Patologi Anatomi, yaitu di Jakarta, Medan, Surabaya dan Bandung. Selama Perang Dunia II Indonesia diduduki oleh Jepang, dan ahli patologi Indonesia yang sangat sedikit itu, resminya di bawah penyelia Jepang, mengambil alih tugas yang ditinggalkan oleh ahli patologi Belanda yang ditawan. Pada tanggal 17 Agustus 1945 Indonesia memproklamasikan kemerdekaannya, namun Belanda mencoba menduduki lagi Indonesia, sehingga terjadi perang kemerdekaan hingga tahun 1949. Untuk memenuhi kebutuhan akan ahli patologi, sejak tahun 1950an banyak ahli patologi muda dikirim ke mancanegara untuk pelatihan. Kini terdapat 13 senter patologi di Indonesia.

### Abstract

Prior to World War II Indonesia was occupied by the Dutch, as such medical care was mostly provided by Dutch physicians. The earliest publication of postmortem findings from Indonesia appeared in the late 1620s. In 1851 the first so-called school for Javanese Doctors was established in Jakarta, which later became the STOVIA and 1927 developed into the Medical College, equal to those in the Netherlands. Meanwhile, in 1913 another school was established in Surabaya, called NIAS. The first laboratory, i.e. the Laboratory of Anatomic Pathology and Bacteriology was established in Jakarta in 1888. It was in this laboratory that Eijkman discovered the antineuritic vitamin B1, for which he was awarded the Nobel prize in 1929. In 1906 another Central Laboratory was established in Medan (North Sumatra) by private plantation companies. A Cancer Institute was established in Bandung in 1914. Thus after 1914 there were four centres of Anatomic Pathology, i.e. in Jakarta, Medan, Surabaya, and Bandung. During World War II the Japanese occupied Indonesia, and the very few Indonesian pathologists, officially under the supervision of the Japanese, took over the duties left by the Dutch who were interned. Indonesia proclaimed its independence on August 17, 1945, but the Dutch tried to reoccupy Indonesia and an independence war lasted till 1949. To fulfill the need of pathologists, since the 1950s many young pathologists/residents were sent abroad for training. Nowadays there are 13 centres of pathology in Indonesia.

**Keywords :** History, Pathology, Medical school

Indonesia is the largest archipelagic country in the world, comprising 13667 islands stretched along a crossroad between two oceans-the Pacific and Indian Oceans-, and two vast continents -Asia and Australia-,

spanning 5,152 kms from west to east and 1,770 kms from north to south, with a total area of 1,919,440 square kilometers, along the equator. Indonesia's population of 197,232,428 people (estimate, July

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1993) makes it the fourth most populous country in the world. There are about 300 ethnic groups, speaking about 200 languages, but possessing one national language, the *Bahasa Indonesia* (the Indonesian language). Most are living on a few big islands, like Java (one of the most densely populated areas in the world with about 1,500 persons per square mile), Sumatra, Kalimantan (Borneo), Sulawesi (Celebes), Bali, Lombok, Irian Jaya (West New Guinea), Bangka, Belitung (Billiton), Madura, etc. The capital is Jakarta, a metropolitan city with an estimated population of 8,800,000 people.<sup>1</sup> The GNP per capita in 1992 was US\$ 670, thus by World Bank standards belongs to the lower-middle-income economies (in 1991 with a GNP per capita of US\$ 610 it belonged to the low-income economies). The life expectancy at birth (1991) for males was 59 years and 63 years for females. Crude birth rate (1991) 25 per 1,000 pop.; crude death rate 9 per 1,000 pop.; natural increase 1.8%. Hospital beds available was 0.7 per 1,000 pop.; physicians 1 per 7,030 persons.<sup>2</sup> In 1993, a total of 1960 medical doctors were graduated from all the medical schools in Indonesia (currently there are 30 medical schools, comprising 15 state and 15 private ones). The infant mortality is still high; 73.0 per 1,000 live births in 1991.<sup>1</sup>

Prior to World War II, for about three and a half century, Indonesia was occupied by the Dutch, and was known as *Nederlands Indie* (Netherlands Indies), while during World War II it was occupied by the Japanese. Directly after World War II was over, Indonesia proclaimed its independence on August 17th, 1945. However, the Dutch tried to reoccupy Indonesia, and a war, the independence war, lasted for more than 4 years, until ultimately on December 27th, 1949 the Netherlands officially transferred the sovereignty to Indonesia.

In the beginning, the Dutch physicians who were sent to Indonesia were all military officers, who came along with the personnel of *VOC* or the armed forces who were stationed in Indonesia to support the authority of the *VOC*. They not only took care and treated the Dutch soldiers and officers, but also took care and treated the Dutch employees, and as a gesture also the important native employees and officials. Many military hospitals were established, like in Cimahi, Magelang, Malang, Palembang, Weltevreden (now Central Jakarta), Kotaraja (now Banda Aceh), Fort de Kock (now Bukittinggi). Just in 1911 an independent Public Health Service was established, separated from the Military Health Service.<sup>3</sup>

The role of pathology in the understanding of disease processes and cause of death was already appreciated since a long time ago. The earliest publica-

tion of postmortem findings from Indonesia appeared in the late 1620s, in *De Medicina Indorum*, the English translation of which is "An account of the diseases, natural history and medicines of the East Indies" by Jacobus Bontius. He graduated from the University of Leiden in 1614 and in 1627 arrived in Indonesia as medical officer of the *VOC* (*Verenigde Oostindische Compagnie = East India Company*). He described accurately autopsy findings in meningitis, pulmonary tuberculosis and dysentery, but unfortunately could only work for 4 years, and died here at a very young age of 39 in 1631.

The opportunities and challenges offered by tropical diseases attracted European physicians, and by the end of the 19th century many of them, while their field of activities was far wider than fits current notions of pathology, were using a rapidly developing array of laboratory methods to understand and to diagnose disease.<sup>4</sup>

Efforts in the field of prevention was started with the production of smallpox vaccine to fight the spread of this dangerous disease. Initially this was performed in Batutulis, Bogor, and later on in Jakarta. Several laboratories were also established. The oldest is the *Laboratorium voor onderzoekingen op het gebied der Pathologische Anatomie en Bacteriologie*, usually abbreviated to *Laboratorium voor Pathologische Anatomie en Bacteriologie* (Laboratory of Anatomic Pathology and Bacteriology), established in Weltevreden (Central Jakarta) on January 15, 1888, which later (1910) developed into the Central Medical Laboratory, and in 1938 became the Eijkman Institute.<sup>4</sup> Due to financial difficulties, in 1964 this institute was closed. In December 1990 an international symposium on biochemistry was held in Jakarta, and the government decided to revive this institute as an institute for molecular biology, which formally came into existence in July 1992, and now is called *Lembaga Biologi Molekuler Eijkman* (Eijkman Institute for Molecular Biology).

The establishment of this laboratory was the result of a recommendation by Professor G.A. Pekelharing, who together with Professor C. Winckler was sent to Indonesia by the Netherlands government to conduct research on the nature and the control of beri-beri, which has caused hundreds of deaths among the colonial army troops during the Aceh war between 1880 and 1886. They stayed in Jakarta from November 1886 to August 1887, and used a room in the main military hospital for their bacteriological and anatomical pathology research. Dr. Christiaan Eijkman (1859-1930), a military medical officer, was assigned to the laboratory. Anticipating the end of his stay, Professor Pekelharing recommended to the Governor General

that the laboratory should be continued and cited the necessity "that the opportunity be provided in at least one hospital in the Netherlands Indies to do accurate research into the nature of pathologic products and the presence of living organisms causing disease. It is of much greater importance that the opportunity be created for the performance of strong scientific research into problems in the domain of pathology".<sup>4</sup> Eijkman, who became the first director of this laboratory from 1888 till 1896, is known principally for his discovery of the antineuritic vitamin B1, thiamine, as the cause of beriberi, for which he was awarded the Nobel prize for medicine and physiology in 1929, together with Sir Frederick G. Hopkins (discoverer of the growth stimulating vitamins) from Great Britain. Dr. Eijkman left Indonesia in 1896 to become Professor at the Utrecht University in the Netherlands. Among later distinguished visiting scientists in the laboratory were Robert Koch, who worked there for three months in 1899, and Neisser and von Prowazek who both were there in 1905 and 1906.<sup>3</sup> This laboratory carried out both scientific investigation as well as daily routine work of analysis and examination for practical purposes. Later on it also investigated food substances and drugs. In 1913 a branch laboratory was established in Malang, especially for plague. Provincial laboratories were established later in Medan, Surabaya, Semarang and Makassar (now Ujung Pandang).<sup>3</sup>

In 1879 attempts had been made to establish a cowpox-institute in Batutulis. After a few years these efforts had to be halted because all experiments for inoculation with animal lymph sent from the Netherlands failed. Meanwhile, in 1884, Dr. C.D. Schuckink Kool working in a very modest institute in Meester Cornelis (Jatinegara) succeeded to prepare smallpox-vaccine. In 1891 this institute was moved from Meester Cornelis to Weltevreden (Central Jakarta) and was called *de Landskoepokinrichting* (National Cowpox Institute), or also known as *Parc Vaccinogene*. In 1896 another institute was opened, called *het Instituut Pasteur* (Pasteur Institute), which initially was especially for the treatment of rabies. Since 1899 both institutes were united, with Dr. A.H. Nyland as the director. These institutes were moved to Bandung in 1918. Meanwhile since 1913 these institutes also produced other vaccines and antisera, like against snake venom, tetanus, cholera, dysentery, typhoid fever, plague, pertussis, diphtheria, etc. Since 1923 the Pasteur Institute also served as a general diagnostic medical laboratory.<sup>5,6,7</sup>

On October 3, 1906, a central medical laboratory, *Het Pathologisch Laboratorium* (Pathological Laboratory) was established in Medan (North

Sumatra) by private plantation companies (Deli Company, Senembah Tobacco Company and Medan Tobacco Company). The task of this laboratory was not only in the field of bacteriology, serology, clinical chemistry and anatomical pathology, but it also produced several vaccines. It also provided hygienic advices. The control of the immigration was also performed by this laboratory, and also published several statistical data. Dr. W.A. Kuenen, who arrived in Sumatra in 1903 and among others has worked out in detail the histopathology of amebiasis, became the first director of this laboratory. The operational costs of this laboratory were almost entirely subsidized by the private plantation companies, with later on a minimal subsidy from the government (f 500.- per month in 1918; and since 1922 a government physician was also detached to this laboratory). At the end of 1930, 48 hospitals were affiliated with this laboratory; together they took care of 320.000 labourers. The total amount of examinations rose from 629 in 1909 to 30.372 in 1930.<sup>8,9,10</sup> About ten years earlier, in 1897, Prof. Dr. W.A.P. Schuffner, a German-born graduate of the University of Leipzig, arrived in this area. He was a co-founder of this laboratory. His major contribution stemmed from his research in prevalent endemic tropical diseases. His name is probably best remembered as a result of his description of erythrocyte stippling in *Plasmodium vivax* malaria, i.e. the Schuffner's dots.

A cancer institute, *Het Nederlandsch Indisch Kanker Instituut* (The Netherlands Indies Cancer Institute) was established in Bandung in 1914, which very promoted the study and treatment of cancer in Indonesia. Since 1932 this institute organized scientific meetings annually, called *Bosshadagen*. In 1935 Dr Bambang Soetarso, a NIAS graduate who later became Professor of Pathology at the Gadjah Mada University in Yogyakarta, filled in temporarily for 6 months as a pathologist at the Juliana Hospital (nowadays called Hasan Sadikin Hospital) in Bandung in the interim between two Dutch pathologists, J. J.Th. Vos and R.E.J. ten Seldam. Even so, tissues for microscopy were sent either to Professor Bonne or Muller at one of the two medical schools (Jakarta and Surabaya) during Dr. Bambang's tenure.<sup>4</sup> Vos returned to the Netherlands in 1935 to become Professor of Pathology at the Groningen University, while ten Seldam later moved to Australia and became Professor of Pathology at the University of Western Australia in Perth. He was also Head of the WHO Collaborating Centre for the Histological Classification of Skin Tumours (first edition of the WHO "blue books").

The teaching of pathology always played an important part in instruction of Indonesian doctors.<sup>4</sup>

In the year 1847 the area of Banyumas (Mid Java) was plagued by various diseases. There were not enough Dutch physicians to eradicate these diseases. Therefore Dr. Willem Bosch, Head of the Health Service (until 1911 the Public Health Service was also handled by the Military Health Service), proposed the possibility of utilizing indigenous manpower as assistants to the Dutch physicians. Dr. Bosch came to Indonesia in the year 1818 and stayed until 1856, and became Head of the Health Service in 1845. He has played a very important role in the advancement of all aspects of medicine (services, teaching and scientific) in Indonesia. In his home, on March 19, 1851, *De Vereeniging tot Bevordering der Geneeskundige Wetenschappen* (The Association for the Advancement of Medical Sciences) was established, and he became the first president. He was also the founder of a school for indigenous midwives.

He also paid attention to anatomic pathology. He attempted to establish a museum of anatomic pathology. Since September 1846 H.A. Schreuder, a medical officer, began to collect specimens of tissues and organs.<sup>6</sup> On January 2, 1849 the Government decided to establish a medical school in conformity with Dr. Bosch' recommendation. Initially the education would be performed in three military hospitals in Semarang, Surabaya and Weltevreden (Central Jakarta), however later on it was decided to do it only in Weltevreden. Ultimately, in January 1851, the school for the *Dokter Djawa* (Javanese physician) was opened with 12 pupils, among which two years later, in 1853, 11 were graduated. Instruction was in the Malay language. They got the degree of *Dokter Djawa*, but in reality they were only utilized as smallpox vaccinators.<sup>11</sup> The first director of the school was Dr. P. Bleeker, a military officer. The curriculum of this newly opened school had included the rudiments of general pathology.<sup>12</sup> All the pupils were natives from Java, but since 1856 they began accepting natives from other islands, i.e. two pupils from West-Sumatra and two from Minahasa (Manado). Since 1864 the curriculum was extended to three years. During the second and third year the pupils had to attend autopsies, and forensic medicine was instructed in the third year. In 1875 a major change took place. The length of study became 7 years, comprising 2 years of preparation, during which they mainly were taught the Dutch language, and 5 years medical education. Since 1890 knowledge of the Dutch language was a prerequisite. In 1897 forensic medicine was added to the required subjects to be tested in the final examination.<sup>13</sup> This was at the time Dr. H.F. Roll was appointed as the director of the school (he was

appointed as director twice, from 1896-1899 and from 1901-1908). Dr. Roll has written a famous textbook on *Gerechtelijke Geneeskunde* (forensic medicine). Before him, from 1888-1896 the director was Dr. Christiaan Eijkman, the Nobelprize winner. At that time, from 1888 till 1902, the director of the medical school concurrently became director of the laboratory. A new building for the medical school was built beside the military hospital, which was officially opened on March 1, 1902, and the length of study became 9 years. The name of the school was changed from *School voor Inlandsche Geneeskundigen* to *STOVIA (School tot Opleiding vor Inlandsche Artsen = School for Education of Indigenous Physicians)*, and the graduates from this school got the degree of *Inlandsch Arts* (literally indigenous/native physician). About ten years later, in 1913, the nomenclature of *Inlandsch Arts*, both in the name of the school as well as the degree of the graduates, was changed to *Indisch Arts* (literally Netherlands Indies physician), because other citizens were allowed to enroll.<sup>14</sup> Also, since 1913 the length of study was prolonged to 10 years. Admittance was open for graduates of the primary school. A new building was built in Salemba, and on July 5, 1920 all the teaching facilities were moved to this building, which is nowadays known as *Fakultas Kedokteran Universitas Indonesia* ( Faculty of Medicine, University of Indonesia). The previous year, on November 26th, 1919 the *CBZ (Centrale Burgerlijke Ziekeninrichting = Central Public Hospital)* was opened at Jalan Diponegoro, beside the new building of the medical school at Salemba. Nowadays this hospital is known as the *Rumah Sakit Umum Pusat Nasional Dr. Cipto Mangunkusumo* (Dr. Cipto Mangunkusumo National Central General Hospital), and is a top-referral hospital in Indonesia. The *CBZ* became the teaching hospital of the medical school. On August 9nd, 1927 medical education officially became part of higher learning with the opening of a new *Geneeskundige Hoogeschool* (Medical College), commonly known by its acronym *GHS*, at the building in Salemba. The standard of the school was equal to the medical schools in the Netherlands, and the graduates were valued the same as graduates from universities in the Netherlands.<sup>15</sup> The *STOVIA* was gradually closed by not accepting new pupils. The last pupils graduated in 1935. In 1940, the *GHS* became *de Geneeskundige Faculteit van de Universiteit van Nederlandsch-Indie* (the Medical Faculty of the University of the Netherlands Indies). Meanwhile on September 15, 1913 another medical school had been opened in Surabaya, called the *NIAS (Nederlands Indische Artsen School =*

*School for Netherlands Indies Physicians*). The curriculum was the same as the *STOVIA*, and the graduates also got the degree of *Indische Arts*.

At the time the new medical college (GHS) was opened, Professor Cornelis Bonne arrived from the Netherlands, to become Professor of General Pathology, Anatomic Pathology and Forensic Medicine. Bonne was born on October 3rd, 1890 in Ilpendam, the Netherlands and graduated from the University of Amsterdam in 1913.<sup>16</sup> He was an exceptionally outstanding scientist, teacher and organizer. He has contributed very much for the improvement not only of the Department of Pathology, but also to the new established medical college, first as secretary, and from 1931-1932 as Chairman (Dean) of the college. Since 1932 he also became chief editor of the prestigious *Geneeskundig Tijdschrift voor Nederlands Indie* (Medical Journal for the Netherlands Indies), which was the official publication of the *Vereeniging tot bevordering der Geneeskundige Wetenschappen* (Society for the Advancement of the Medical Sciences). The first issue of this journal was published in 1853.<sup>17</sup> From 1932-1942 he has guided 9 doctoral dissertations, although he himself had no doctoral degree. During World War II he was interned by the Japanese. Early 1947 he again was appointed as Dean of the revived *Faculteit der Geneeskunde, Universiteit van Indonesie* (Faculty of Medicine, University of Indonesia), and in June 1947 even became President of the University of Indonesia. Unfortunately he could only serve for a short period because he became ill and went to the Netherlands, where he passed away on April 25, 1948. Many of his assistants also became outstanding scientists, among others Sutomo Tjokronegoro -who became the first Indonesian Professor of Pathology and Forensic Medicine-, Lie Kian Joe -who became the first Indonesian Professor of Parasitology-, and Gerrit Bras -who became Professor of Pathology at the University of Indonesia, and later on as Professor of Pathology at the University of the West Indies in Jamaica, and then at the University of Utrecht in the Netherlands, until he retired in 1983 at the age of 70 years. He now lives in Odijk, the Netherlands.

Professor Sutomo Tjokronegoro played an important role in maintaining continuity of medical teaching in Jakarta during the Japanese occupation of WW II. He was also one of the founders of the *Balai Perguruan Tinggi Republik Indonesia*, which can be regarded as the forerunner of what is now the *Universitas Indonesia* (University of Indonesia). It was established not long after Indonesia had proclaimed its independence. He became the Secretary of the University, concurrent-

ly also of the Medical School. He was also greatly instrumental towards the accomplishment of an affiliation between the University of Indonesia and the University of California, to overcome the shortage of lecturers at the Faculty of Medicine after the Dutch left Indonesia in the early 1950s. He described and studied the pathology of hydatidiform mole and its relation to choriocarcinoma. He observed that for the diagnosis of choriocarcinoma one should find certain features, known as *trias Sutomo* (Sutomo's triad), i.e. necrosis, hemorrhage and inflammation, besides the proliferation of the trophoblastic cells. Based on his research he came to the conclusion that the so-called mola destruens actually also has to be regarded as a choriocarcinoma, and he has proposed to call it the villous type (villous choriocarcinoma), while the classical choriocarcinoma should be called nonvillous choriocarcinoma.<sup>18</sup> He has also tirelessly promoted the precise and accurate use of the Indonesian language in medical teaching and writing. He is regarded as the father of Indonesian pathology.<sup>4</sup> He passed away on May 6th, 1969 at the age of 62 years.<sup>19</sup>

Professor Lie Kian Joe was a brilliant student who passed through all grades *cum laude*. He also passed his doctorate examination (under the guidance of Bonne) *cum laude*, even before he had finished his study as medical doctor.<sup>20</sup> He became a world famous parasitologist and currently is retired and lives in San Francisco, California. In the early 1950s he founded the Department of Parasitology and General Pathology, separated from the Department of Pathology. He delivered his inaugural speech as the first Indonesian Professor of Parasitology and General Pathology on March 29, 1952.

Professor Gerrit Bras carried out a classical study of the pathological changes in variola major during the epidemic in Java after WWII, and presented it as a doctoral dissertation on January 13, 1950.<sup>21-24</sup> It was based on 177 autopsies on smallpox cases. In the same year, on August 30, he was inaugurated as Professor of Pathology at the University of Indonesia. His name is also honoured in the Stuart-Bras syndrome (veno-occlusive disease of the liver). The term veno-occlusive disease of the liver (VOD) actually was first used by Bras and his colleagues in 1954.<sup>25</sup> Clinically it is characterized by the development of acute ascites, and on liver biopsy occlusive lesions of the terminal hepatic venules or the sublobular hepatic veins are found. In contrast to the Budd-Chiari syndrome, the larger hepatic vein branches are unaffected.<sup>25,26</sup> Even after his retirement he has still contributed a chapter on vascular disorders, co-authored by Brandt, in the second edition of the book "Pathology of the liver",

edited by MacSween et al., published in 1987.<sup>27</sup> His name is listed in the *Illustrated Churchill's Medical Dictionary*.

Among the publications by European pathologists in Indonesia in the early part of the 20th century, was an article by Dr. A.E. Sitsen, who reported on 173 autopsies performed at the STOVIA. He became the first director of the newly opened medical school in Surabaya, NIAS, and was in office for 14 years. After the arrival of Bonne numerous articles were published in domestic as well as international journals. Many articles of high standard were also published by the pathologists from Medan, Surabaya and Bandung. Professor Muller, chairman of the Department of Pathology and Forensic Medicine of the NIAS in Surabaya, was especially well-known for his skill in forensic medicine. After WWII he moved to Jakarta and established a Department of Forensic Medicine separated from the Department of Pathology. On December 17, 1948 he delivered his inaugural speech as Professor of Forensic Medicine.

During the Japanese occupation, all the activities of pathology declined. The medical schools were closed. The Dutch were interned. At the Department of Pathology and Forensic Medicine in Jakarta, Dr. Sutomo Tjokronegoro took over the daily routine work, assisted by Dr. Lie Kian Joe, and later also by Dr. W.M. Tambunan. At the instance of the Indonesian lecturers and students, the Japanese agreed to revive the medical school in Jakarta on April 24, 1943. It was called the *Ika Daigaku*. A Japanese, Prof. Komiya was appointed as chairman of the Department of Pathology, but he never gave lectures, nor did he perform surgical pathology examinations or autopsies.<sup>28</sup> Sutomo Tjokronegoro was appointed as Assistant Professor of Pathology and Forensic Medicine. After the Japanese surrendered, the Indonesian academics founded the *Perguruan Tinggi Kedokteran Republik Indonesia* (Medical Faculty of the Republic of Indonesia) as part of the *Balai Perguruan Tinggi Republik Indonesia* (University of the Republic of Indonesia). Sutomo Tjokronegoro became Vice Dean of both. The Dutch government who tried to reoccupy Indonesia, also established the *Geneeskundige Faculteit, Nood-Universiteit van Indonesie* (Faculty of Medicine, Temporary-University of Indonesia) on January 21, 1946 in a hall of the Tjikini Hospital (a private Christian hospital located about one kilometer from the medical school at Salemba). Since March 12, 1947 the prefix -temporary- was deleted. Subsequently they occupied forcefully the building at Jalan Salemba and later on also the general hospital at Jalan Diponegoro. The Department of Pathology was run by

Bonne, Bras and M. Straub. After the official transfer of sovereignty from the Netherlands to Indonesia at the end of 1949, on February 2, 1950 the two schools were united as the *Fakultet Kedokteran Balai Perguruan Tinggi Republik Indonesia Serikat*, which is now called *Fakultas Kedokteran Universitas Indonesia* (Faculty of Medicine of the University of Indonesia). Because Professor Sutomo Tjokronegoro at that time was still in Great Britain on a scholarship from the British Council, Gerrit Bras became the first chairman of the Department of Pathology. Sutomo Tjokronegoro returned at the end of 1950, while Gerrit Bras went on vacation to Europe and then moved to the West Indies.

After the Dutch left Indonesia in the early 1950s, there was a serious shortage of physicians and medical lecturers. The total number of Indonesian physicians was very small, estimated to be only 1200. In 1954 there were not more than 8 pathologists for the whole country.<sup>18</sup> The STOVIA, from 1872 until it was closed in 1935, only delivered 551 physicians (figures before 1872 are unknown).<sup>13</sup> The NIAS until July 1, 1941 has delivered 324 physicians.<sup>29</sup> Until 1941, only 231 physicians were graduated from the new GHS. During the Japanese occupation about 250 were graduated.<sup>13</sup> To overcome this shortage, it was decided to increase the number of graduates but maintain the quality. Eventually the Faculty of Medicine in Jakarta set up an affiliation with the University of California School of Medicine in San Francisco, who provided technical aid and sent lecturers and professors to Indonesia. The affiliation officially started on July 1, 1954. The curriculum was shortened to 6 years and the so-called *guided study* was introduced in 1955. Prior to this period the study at the school was the so-called *free study*. Officially the curriculum was 7 years, however because the time for examinations was not compulsory, the students could take their examinations any time they wanted to, so not infrequently it took more than 7 years before they graduated. There were even some so-called *eternal students*. The affiliation with the University of California initially was agreed to last for 3 years, but than it was continued for another 2 years, and again continued for another year until July 1960, after which the California team continued another affiliation with the Faculty of Medicine of the Airlangga University in Surabaya. In 1950 there were only 3 medical schools in Indonesia, i.e. in Jakarta, Surabaya (after WWII the former NIAS was revived as a branch Faculty of Medicine of the University of Indonesia, and later became the Airlangga University), and one in Yogyakarta (Gadjah Mada University was initially a private university but in 1949 became a state

university). Because of the urgent need to produce more physicians, the government as well as private organizations opened a number of new medical schools. Nowadays there are 15 state and 15 private medical schools.

Since 1953 many young physicians, some were even not yet graduated, were sent abroad for education and training. Most got fellowships from the ICA (later called US-AID = United States Agency for International Development). Other grants were among others from the China Medical Board of New York Inc. (formerly a subsidiary of the Rockefeller Foundation), Colombo Plan, WHO, DAAD, SEAMEO, etc. Among the young pathologists, many were trained at the UCSF, AFIP, Washington University in St. Louis and others.<sup>30</sup> One of the results of these trainings abroad, was the beginning of cytopathological services in the late 1950s. Except training we also received equipments, books, journals, etc. A few pathologists in the 1960s and 1970s were sent to the Netherlands and Germany. Since the 1970s the grants from USA decreased, and since then a few were sent to Japan (fellowships from JICA (Japan International Cooperation Agency) and JSPS (Japan Society for the Promotion of Science), Hong Kong, Thailand, and Australia. In the mid-1970s immunopathological services were started and in the 1980s fine needle aspiration cytology and immunohistochemistry services were added.

Relationships with Australian pathologists was started in the early 1970s, when a few pathologists and cytotechnicians were sent to Australia for training in cytology as part of a WHO project. In the 1980s further ties were established through courses on colposcopy and cervical pathology, which was sponsored by the Royal Australian College of Obstetricians and Gynaecologists. And last but not least, we succeeded in starting a close relationship with the Royal Australian College of Pathologists and the Australasian Division of the International Academy of Pathology (IAP). Since 1987 every year an Australian pathologist came to Indonesia to conduct lectures, slide seminars and symposia, which were sponsored by the Australasian Division of the IAP. And since 1994 a 4-year programme has been started as an official conjoint project between the Australasian Division of the IAP and the Indonesian Association of Pathologists, comprising of 2 series of courses, each time with 2 topics, each year. The initiation of this close relationship was mainly due to the efforts of Professor Robin Cooke, who first visited Jakarta in 1987 to attend the IXth National Congress of the Indonesian Association of Pathologists. He succeeded to persuade the Australasian Division of the IAP to

continue sponsoring visiting lectureships to Indonesia. And the last 4-year programme is the result of Professor Anthony S-Y Leong's effort to establish a well-organized programme for improvement of the standard of pathology services in Indonesia.

The Indonesian Association of Pathologists was founded in 1968. The first President was Dr. Rukmono. Because at that time the number of pathologists was still very small, it was decided that the membership of this association would comprise anatomical, clinical as well as forensic pathologists, although the three disciplines were separate departments and each had their own training programme for specialization, which were not interconnected. The first national congress of this association was held in Jakarta in 1969, and thereafter was held biennial, and later on triennially, alternating in other cities where there are centres of pathology. Currently there are 13 branches, so-called centres of pathology, spread all over Indonesia. However, at the eleventh national congress held in 1993 in Yogyakarta, it was decided that the three disciplines would be separated and thus three separate associations were established. Since 1980 the government has decided that all training programmes for specialization would be coordinated by the CHS (Consortium Health Sciences) of the Directorate General of Higher Learning of the Ministry of Education and Culture. From 1980 till the time of writing this paper, 84 physicians have received their license as anatomical pathologist. They have been trained in 7 centres of accredited pathology training.

One of the noteworthy activities is the pathology-based cancer registration, a conjoint project of the Cancer Registration Board of the Indonesian Association of Pathologists with the Indonesian Cancer Foundation and the Ministry of Health of the Republic of Indonesia, which started in 1987.

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