Facts About Hansen's Disease

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National Hansen's Disease Programs welcomes
Voiture Nationale La Societe des 40 Hommes et 8 Chevaux

The Star
Radiating the Light of Truth on Hansen's Disease

GET TO KNOW THE FORTY & EIGHT

DO NOT THROW AWAY!

This is the new format for The Star.
The Laboratory Research Branch (LRB) fulfills the National Hansen's Disease Program's (NHDP) mission to improve public health by its activities in biomedical research related to Hansen's Disease (HD) and by training investigators for the future. LRB conducts and supports research in the causes, diagnosis, prevention and cure of HD and tuberculosis, developing and implementing many of the newer sophisticated cell and molecular biology tools used today to study human diseases. LRB couples animal modeling of HD with many of these new tools to address basic questions surrounding the underlying causes of HD. Efforts at LRB play an integral role in the quest for a more complete understanding of HD and provide a link between basic biomedical research for HD and National and International efforts designed to improve treatment and prevention of HD. LRB research efforts are focused in three primary areas: 1) Animal Models; 2) Genetics and Cultivation and 3) Pathogenesis and Vaccines.

Animal Models

Gene knockout mice as models for the leprosy spectrum. Linda Adams, Ph.D.

In addition to managing the armadillo program at LRB Dr. Truman studies aspects of control and eradication of HD using epidemiological tools seeking to understand the source of infection and modes of transmission associated with HD. Dr. Truman's studies are intended to define the relative burden of leprosy on different populations and evaluate the importance of human and non-human reservoirs in leprosy transmission.
Genetics and Cultivation

Gene expression, regulation and pseudogenes in *M. leprae*. Diana Williams, Ph.D.

Fundamental to understanding the pathogenicity of *M. leprae* is identifying the genes needed for survival, growth and virulence in man. The completion of the *M. leprae* genome sequence has provided information capable of supporting studies aimed at better understanding *M. leprae* and the disease it causes. The genome appears highly degraded and possesses the largest repertoire of pseudogenes compared to other bacteria as well as a large number of deleted genes. This large-scale loss of gene function has resulted in a genome that is occupied by less than 50% protein-coding genes and comparative genome analysis has identified deficits in several general cellular metabolic families. We have used the *M. leprae* genome sequence data, bioinformatics and surrogate genes in several mycobacterial hosts to study specific *M. leprae* genes associated with drug resistance, gene regulation, virulence, and growth. We have also used this information, in collaboration with investigators at Colorado State University, to characterize the first *M. leprae* global DNA microarray, consisting of all open reading frames and pseudogenes. Dr. Williams' work continues to be at the forefront of understanding *M. leprae* genetics and has resulted in molecular tests useful for diagnosing HD and determining *M. leprae*'s susceptibility to antileprosy drugs.

Genotyping *M. leprae* using variable number tandem repeats. Tom Gillis, Ph.D. and Richard Truman, Ph.D.

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In 2002, Richard Riezberg, an attorney for the National Institute of Health in Washington, D.C., was in the process of retiring after 35 years of service. “Mother’s Day” had been hanging in his office for most of that time. This painting and “Bundling the Star” now hang in the National Hansen’s Disease Programs Museum.

From our book shelf...

Dr. Margaret Brand along with her husband, the late Dr. Paul Brand (d. 2003), were invited by the U.S. Federal Government to work at Carville, Louisiana. There, Margaret served for 22 years as Chief of Ophthalmology at the National Hansen’s Disease Center, and Paul as Chief of Rehabilitation and Orthopedics, specializing in hands and feet. Paul and Margaret served on the staff of the Christian Medical College and Hospital in Vellore, S. India, for 18 years. During their time in India the Brands became interested in and challenged by the problems of people suffering from Hansen’s disease more commonly known as leprosy. Readers will be encouraged and inspired by the remarkable impact of this medical pioneer in the field of leprosy and by her vision of God.
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NHPD LABORATORY RESEARCH BRANCH STAFF
Dr. James Krahenbuhl, Director, NHDP discusses concerns and answers questions about today’s HD challenges. Dr. Krahenbuhl simplifies the misunderstood complex problems in Hansen’s disease, his confidence and optimism about what is being done and what can be accomplished was very well received by all of these National Directors of the Forty and Eight. Nationale Direvtur Mike Wood has become a real HD advocate since his NHDP visit last year. He told of his experiences of people really not understanding about this disease. In the last year he has spoken to several groups and organizations about Hansen’s disease. He has arranged for individuals affected by HD to visit and speak at local 40 & 8 chapter meetings in California and Texas. He would like to expand this project to other states across the country. He is on the front line in the battle against ignorance concerning the truths of Hansen’s disease and how patients and families are affected when living with this disease. The Nationale Society of the Forty and Eight and the National Hansen’s Disease Programs form a great team in their mission to improve public health and to improve the quality of life for people affected by Hansen’s disease.
Where NHDP Laboratory Research began....

In the popular mind no other disease is regarded with deeper horror than leprosy. No other is believed to be more contagious, or to wreak greater and more revolting physical havoc. None is more intimately associated with ancient su-
tions of taboo. Victims of leprosy are not only feared and disdained with almost pietistic dread, but are subjected also to the humiliation stripped by widespread belief, survi-
viving from primitive ideas of uncleanliness, that the malady is somehow a shameful one. Even some physicians share the general public attitude.

Yet leprosy is not a horrible disease. Half or more of those afflicted could pass unnoticed in any public gathering, while a high percentage of the remainder suffer no more disfigure-
ment than is commonly seen in impetigo, pink eye, porosis and many other superficial disorders. Nor is leprosy highly contagious. At worst, it is less communicable than tuberculosis in many respects, completely noncontagious. It is not, moreover, a disease of birth, race, social condition, moral or economic condition, or route of travel. It occurs among the washed and the unwashed, the saints and the sinners of every community and every social and economic level. That Biblical authority supports popular ideas concerning the shameful, unclean and highly contagious nature of the dis-
order is refuted by distinguished scholars; they deny that leprosy is the condition anciently ritualized as one unclean.

Estimate up to 5,000,000 in U.S., have Hansen’s disease

As known in modern times, leprosy is now more than a chronic skin disease having an extremely long incubation period. The ectopic agent is believed to be M. leprae or Hansen’s bacillus. It affects some three to five million persons, of whom one to two million are “active” cases. These cases are 2% of all United States. Leprosy is found in nearly every state, and is endemic in the state of Alabama and the islands of Hawaii and Guam. It is largely a family disease, the infection being contracted most often perhaps always by childhood or youth. Of known cases under treatment in this country, three-fourths are native-born whites.

The most important fact about leprosy, however, is that many cases are now being treated successfully. Today, for the first time in history, the outlook for sufferers is one of promi-
"female" instead of the old disheartening prospect of slow de-
struction into a helpless, cinderella state, with only a slender chance that the process might be stayed by classical therapy or spontaneous remission.

The most important result of the research with the sulfa-
compounds—principally Promin, Disone and Promiac—
originally initiated in the Leprosarium within this country’s continental boundaries, the Marine Hospital Service at Carville, Louisiana, here, and more recently at other similar institutions, sulfa
treatment is accomplishing, in a substantial and growing number of cases, what has been achieved only in rare, rather desperate infections—cure with other methods of treatment—
complete arrest of the disease. Almost equally dramatic results are obtained in the cases of leprosy. Evidence that the disease is curable is provided by the remark-
able objective clinical improvement occurring in many children, long-established cases which remain bacterio-
ologically positive. So striking indeed are the results that some medical authorities regard the eradication of the disease from most of the world as a goal which is well within sight.

It must be noted, however, that attainment of this goal is already assured. Although the International Leprosy Congress, held in Havana in April of this year, officially recognized the efficacy of the new drugs by formally recom-
mending them as the treatment of choice for the disease, even better agents are needed, since the sulfones are slow and have other disadvantages. More education in the disease is in order in the medical profession. Malaria diagnosis sub-
jects to many suffers to long and dangerous delays in obtaining proper treatment.

Another need is for enlightenment of patients and the general public. The story of sulfone treatment should be widely disseminated. All who have, or suspect they may have the disease, should be apprised of the danger of transmitting it to others, especially to children in the house-
hold involved. Sufferers should be encouraged to present themselves voluntarily to competent medical authority while the infection is limited to the uninfected members of their families.

The public requires education to free it from the attitude which drives many patients to hide their condition. Reason must replace the indiscriminate fear and prejudice which demand rigid isolation for every case, including those in which this is not only unnecessary, but often positively undesirable. For the present existing barrier of lifelong social and economic ostracism, there should be substituted adequate opportunity for patients to have useful, respected and, as far as their individual conditions permit, normal lives.

One further need in educating the public is of that replacing the names lepery and leper, words that probably never can be divorced from their connotations of stigma. Hansen’s dis-
case, Hansen’s disease and leprosy are among those which have been proposed. Although Walsh’s ‘New’ does not ordinarily encourage the use of eponyms, it accepts in this instance the judgment of leading leprologists, patients and others inter-
ested in the disease, and will hereafter use the terms, Han-
son’s disease and leprosy.

To give the medical profession a graphic record of what is being accomplished in the field of treatment today, to show something of the life of patients under treatment, and to contribute to a closer understanding of the social and medical problems yet to be solved, Alcott Laboratories presents the documentary pictorial feature which follows. It was made with the cooperation and help of patients and the professional personnel of the Marine Hospital at Carville. Brash, crayon and pencil, rather than the camera, are used in order to con-
trol the identity of most patients. In all other particulars accuracy has been a primary consideration. The artists are Fred Vitale, who served as an official war artist in the Pacific, and Howard Baer who, as an artist war corre-
ponent for Alcott, recorded the work of the Army Medical Department in India, Burma and China during the recent war.
Where NHDP Laboratory Research began....

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THE CONTINUING CHALLENGES OF LEPROSY


Laboratory Research Branch, National Hansen’s Disease Programs
Louisiana State University (LSU), Baton Rouge, Louisiana 70803

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Dr. James Krahenbuhl, Director, NHDP, discusses concerns and answers questions about today’s HD challenges. Dr. Krahenbuhl is the expert the 40 & 8 look to for leadership and knowledge about Hansen’s disease. As Dr. Krahenbuhl simplifies the misunderstood complex problems in Hansen’s disease, his confidence and optimism about what is being done and what can be accomplished was very well received by all of these National Directors of the Forty and Eight. National Director Mike Wood has become a real HD advocate since his NHDP visit last year. He told of his experiences of people really not understanding about this disease. In the last year he has spoken to several groups and organizations about Hansen’s disease. He has arranged for individuals affected by HD to visit and speak at local 40 & 8 chapter meetings in California and Texas. He would like to expand this project to other states across the country. He is on the front line in the battle against ignorance concerning the truths of Hansen’s disease and how patients and families are affected when living with this disease. The National Society of the Forty and Eight and the National Hansen’s Disease Programs form a great team in their mission to improve public health and to improve the quality of life for people affected by Hansen’s disease.
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From our book shelf...

Dr. Margaret Brand along with her husband, the late Dr. Paul Brand (d. 2003), were invited by the U.S. Federal Government to work at Carville, Louisiana. There, Margaret served for 22 years as Chief of Ophthalmology at the National Hansen’s Disease Center, and Paul as Chief of Rehabilitation and Orthopedics, specializing in hands and feet. Paul and Margaret served on the staff of the Christian Medical College and Hospital in Vellore, S. India, for 18 years. During their time in India the Brands became interested in and challenged by the problems of people suffering from Hansen’s disease more commonly known as leprosy. Readers will be encouraged and inspired by the remarkable impact of this medical pioneer in the field of leprosy and by her vision of God.
The Laboratory Research Branch (LRB) fulfills the National Hansen's Disease Programs' (NHDP) mission to improve public health by its activities in biomedical research related to Hansen's Disease (HD) and by training investigators for the future. LRB conducts and supports research in the causes, diagnosis, prevention and cure of HD and tuberculosis, developing and implementing many of the newer sophisticated cell and molecular biology tools used today to study human diseases. LRB couples animal modeling of HD with many of these new tools to address basic questions surrounding the underlying causes of HD. Efforts at LRB play an integral role in the quest for a more complete understanding of HD and provide a link between basic biomedical research for HD and National and International efforts designed to improve treatment and prevention of HD. LRB research efforts are focused in three primary areas: 1) Animal Models; 2) Genetics and Cultivation and 3) Pathogenesis and Vaccines.

**Animal Models**

Gene knockout mice as models for the leprosy spectrum. Linda Adams, Ph.D.

Genetic engineering of mice provides a powerful tool for studying the development and regulation of host immune response to infectious agents. Mice are immunologically similar to humans, and so mice can be used to study the mechanisms that underlie HD. In addition to managing the armadillo program at LRB Dr. Adams studies aspects of control and eradication of HD using epidemiological tools seeking to understand the source of infection and modes of transmission associated with HD. Dr. Adams has worked diligently to bring this approach into focus for studying HD and continues to lead a dynamic research team within LRB. The Armadillo: A model for translational research. Richard Truman, Ph.D.

As part of the infrastructure for leprosy research the NIAID funds a Leprosy Research Support contract to provide rare research materials to qualified investigators. This contract provides for propagation of leprosy bacilli and modeling of medium to high sensitivity leprosy-susceptible from resistant armadillos; 4) Advance armadillos as translational models for leprosy and tuberculosis.

In addition to managing the armadillo program at LRB Dr. Truman studies aspects of control and eradication of HD using epidemiological tools seeking to understand the source of infection and modes of transmission associated with HD. Dr. Truman's studies are intended to define the relative burden of leprosy on different populations and evaluate the importance of human and non-human reservoirs in leprosy transmission.
THE NATIONAL HANSEN’S DISEASE PROGRAM (NHDP) provides HD care to persons in the United States at 1770 Physicians Park Drive, Baton Rouge, LA 70816 and through the Ambulatory Care Program, which includes the following Outpatient HD Clinics.
Hansen's disease, erroneously associated with biblical leprosy, is a complex infectious disease which, although recognized for more than two thousand years and found to be caused by a bacterium over a century ago, is not completely understood.

Infectious Disease

Although the sulfone drugs, introduced at Carville in 1941, continue to be an important weapon against the Hansen bacillus the rising incidence of sulfone resistant disease necessitates treating all patients with more than one drug. Usually rifampin and isoniazid are added to the sulfone, but when thebacilli become resistant to all these drugs the physician must search for other agents. The combination of two or more drugs is always better than any one drug alone in killing bacilli and preventing the emergence of drug resistant bacilli. The drug therapy is complicated by side effects, and the work is made more difficult by the indifference of some patients toward the treatment.

H ow is HD t reated?

Treatment is designed primarily to eliminate the bacilli from the skin. The degree of susceptibility of the person, the extent of exposure, and environmental conditions are among factors probably of great importance in determining the course and outcome of the disease. In some cases the bacilli can be eliminated from the skin within a short time. In other cases the bacilli persist for many years, and some cases are apparently incurable.

The drug therapy destroys most of the bacilli within a variable number of years. Rapidly rendering the disease noncommunicable by killing nearly all the bacilli and clearing the skin of bacilli is the goal of drug therapy. In some cases this has been accomplished. In many cases the skin is cleared of bacilli and the patient is no longer communicable. This is particularly true if the patient village from the country to the city or to a private hospital. Most patients in the US are treated under US Public Health Service grants at clinics in major cities or by private physicians. There are still approximately 23 cases at the Gillis W Long Center at Carville, LA.

The Bacilllumed Center at Carville now treats approximately 200 - 250 new cases reported to the registry annually with about 175 of these cases with active disease and requiring drug treatment. The number of patients on the registry who are being new cases diagnosed for the first time.

As of 1994, 60% of those who should be on treatment are now being treated. In 1992 there were 10 - 12 million and 5.4 million respectively. According to these estimates, in 1994 the World Health Organization estimated that there were 2.4 million cases of Hansen's disease. The largest number of patients continue to be in Southeast Asia and Central America. The largest number of cases in the US are in California, Texas, Hawaii, Louisiana, Florida, New York, and Puerto Rico.

Where is HD F ound?

Hansen's disease patients continue to be in Brazil.

The national Hansen's disease programs welcomes

Voiture Nationale La Societe des 40 Hommes et 8 Chevaux

DO NOT THROW AWAY!