Dr. Björn Sigurðsson (1913–1959) A Memorial Tribute

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It is a privilege for me to have this opportunity to give a very brief talk on Dr. Björn Sigurðsson's life and work at this conference which highlights slow infections of the nervous system caused by conventional and non-conventional infections agents.

As you know the pathogenesis of slow viral infections was Dr. Sigurðsson's great interest and subject of most of his studies during the last years of his all too short scientific career.

I would, however, first like to say a few words on our ancestors' incessant struggle for survival in this rather hostile country where inclement weather conditions often prevail.

Since the settling of Iceland over a millennium ago, farming and fishing have sustained its population. Sheep farming was the most important source of food; the sheep provided milk and meat, but also the raw materials for shoes, clothing and the waterproof skin garments indispensable for all fishermen on open boats, fishing off the coast of Iceland.

Shortage of winter-feed for the sheep and other farm animals due to poor hay-harvest, contagious diseases of sheep, and volcanic eruptions spreading poisonous ash over the pastures and grass-fields repeatedly brought famine to the human population in past centuries.

The nineteenth century saw the first attempts, chiefly by Danish scientists, to deal systematically with diseases of domestic animals, primarily sheep, in this country, namely sheep scab, volcanic fluorosis, ecchinococcosis, and gastromycosis (braxy).

With the founding of a Pathology chair in 1917 at the University of Iceland, and especially with the appointment in 1925 of professor Niels Dungal (1897–1965) to that chair, research in this field moved to Iceland. Dungal, although primarily concerned with human diseases and pathology, took a broad and vigorous interest in veterinary problems and made several lasting contributions to sheep disease research in this country.

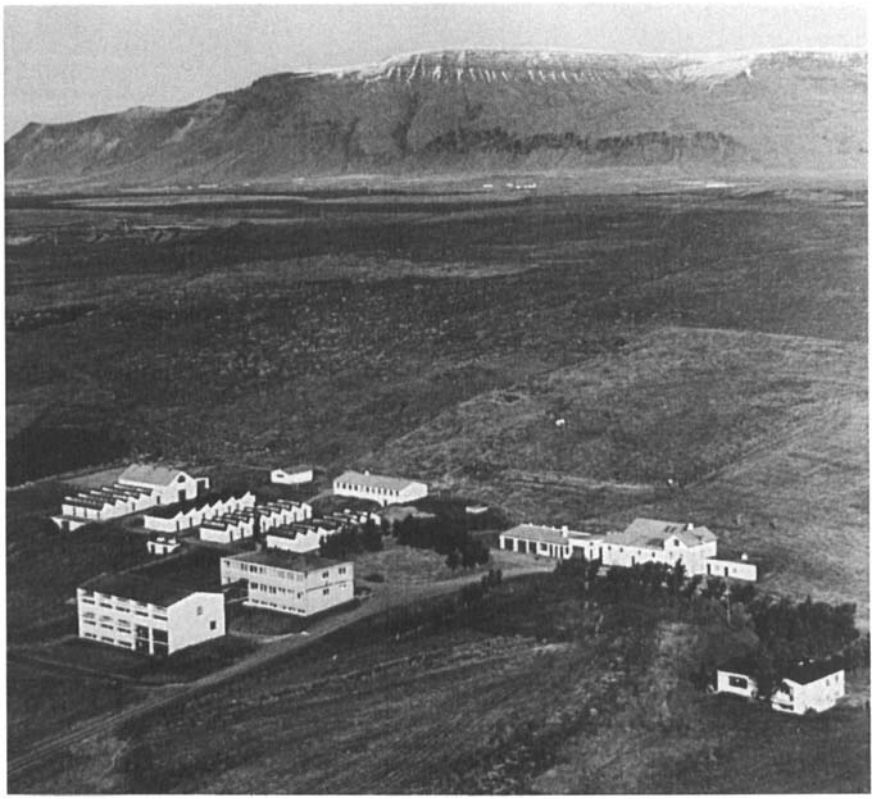
During the depression in the 1930s a flock of Karakul sheep was imported to Iceland from Germany. The intention was to start production of valuable lamb skins for the fur industry. These plans however turned out to be a sad miscalculation.

This flock of imported sheep, although apparently healthy while kept in quaran-

tine for few months, brought several serious contagious diseases to the Icelandic native breed of sheep. These diseases, Maedi/Visna, adenomatosis of the lungs, and paratuberculosis, were all unknown here before this importation.

Owing to our sheep farming practices using vast common summer pastures, these diseases spread widely during the following years and caused enormous losses in our sheep flocks. Annual mortality due to the lung diseases could often reach 20–30 per cent, making sheep farming hopeless.

In the face of these difficulties, the Government decided to improve the conditions for studies of sheep diseases. In order to do so a small farm near Reykjavík—Keldur—was purchased, where experimental animals could be kept. This facility originally lead by Guðmundur Gíslason M.D. (1907–1969) not only dealt with diseases previously endemic in the sheep stock but also with the new entities, adenomatosis of the lung, and paratuberculosis.



Keldur—Institute for Experimental Pathology, University of Iceland.

Continuing devastation of the sheep stock caused by the novel diseases prompted the government to establish an institute which primarily should be concerned with research on animal diseases and related problems. It was decided that the site of this institute should be on the farm Keldur, where studies of animal diseases had already begun.

The Rockefeller Foundation in the USA awarded a grant of $200,000 U.S. in order to facilitate the purchase of necessary and the most modern laboratory equipment, which at that time just after World War II was not easy to find. This grant was awarded with the understanding that this new institute should be affiliated with the University and that it would be led by Björn Sigurðsson (1913–1959) who had been a Fellow of the Rockefeller Foundation, Princeton, New Jersey.

In October 1946 the Parliament enacted the necessary legislation regarding the Institute at Keldur.

Björn Sigurðsson was entrusted with the planning, building and organization of the Institute. When the laboratory building was completed in 1948, a modest number of workers under the scientific direction of Björn Sigurðsson could begin work. From that time until his untimely death, Sigurðsson devoted all his time and energy to the interest of the Institute and research on various diseases of animals and man, and never spared himself.

It would be a long list to enumerate all of Sigurðsson's publications on animal and human diseases.

Therefore: I will only mention a few of them briefly. Sigurðsson described together with some colleagues a numerically significant epidemic of a disease at that time (1948) named "Akureyri disease or Iceland disease" later known as Myalgic encephalomyelitis. He was later the first to lay down the facts concerning the chronicity of this disease.

He also reported on studies on coxsackie and poliomyelitis viruses in the years 1952–1958. Sigurðsson's studies on influenza epidemics occurring in Iceland in the years 1948–1957, together with his colleagues, lead to the production of a vaccine against influenza which apparently was found to be quite successful.

He was one of the scientists who was responsible for the establishment of the WHO World influenza center in 1948.

For many years until his death Sigurðsson acted as a consultant for the Health Authorities of Iceland on epidemiological matters.

I will only mention a few of Sigurðsson's achievements in animal diseases.

For many years (1945–1959) Sigurðsson reported in a number of publications his and his coworkers studies on paratuberculosis or Johne's disease of sheep. The studies finally led to production of a vaccine against this disease in sheep, the first of its kind.

In order to test the efficacy of this vaccine under different field and farming conditions, he organized a vast long-lasting experiment. More than 6000 sheep on 141 farms were used and closely controlled. This experiment which took nine years to complete showed that the killed vaccine reduced the average annual specific mortality by 93.3 per cent.

Sigurðsson presented his extensive work on paratuberculosis, new diagnostic methods and development of a killed protective vaccine, in a doctoral thesis at the University of Copenhagen in 1955. This vaccine which is still used has been of great economic importance for sheep farmers in our country.

The main purpose of establishing the new laboratory at Keldur was to study the novel lung diseases of sheep that had been introduced by import of the Karakul sheep flock that is: lung adenomatosis, maedi of sheep, and later also the central nervous system disease visna.

Years of experimental studies and detailed information on the diseases under field conditions demonstrated the transmissibility and the slow progressive course of these diseases. All this information resulted in Sigurðsson's concept of slow viral infections originally introduced by him in a series of special University lec-

tures given at the University of London in 1954 and published in the *British Veterinary Journal*.

Three and four years later he published together with his co-workers the original descriptions of Visna, a demyelinating transmissible disease of sheep. Finally his work on the growth of visna virus in choroid plexus tissue culture, the first lentivirus grown *in vitro*, was described but first published just after his death.

Sigurðsson initiated or took part in a number of studies on other diseases of animals or man which would take too much time to mention. In retrospect one is amazed by the sheer volume of scientific work he accomplished during his all-too-brief career.

Besides that he was often called on to sit in or chair committees dealing with various important planning or activities in our community, doubtless because he had a capacity to think laterally and across scientific disciplines.

Sigurðsson was always interested in the issues of the day ready to express his views, which often were very radical.

Björn Sigurðsson was born and raised on the farm Veðramót in northern Iceland. His parents were highly respected for good farming and social activities within their small farming community.

Sigurðsson attended grammar school in Reykjavík. He graduated in Medicine at the age of 24. After an internship in Reykjavík he moved to Copenhagen to work and study at the State Serum Institute under Dr. Torvald Madsen and at the Biological Institute of the Carlsberg Foundation under the renowned Dr. Albert Fisher, one of the pioneers in studies of cancer.

At the beginning of the Second World War he returned to Reykjavík to work at the University Institute for Pathology, under Prof. Niels Dungal.

From 1941–1943 he attended the Rockefeller Institute, Princeton, New Jersey, where he specialized in animal and plant virology.

He then returned to Iceland and worked at the Institute for Pathology until he moved to the Institute for Experimental Pathology at Keldur in the year 1948.

It is not easy to give an objective description of a person with whom one has worked for more than a decade. But I can try.

Björn Sigurðsson was a hard working and zealous person often working long hours. He was usually quick to detect the core of any issue. He read widely and constantly and had command of several languages.

He had an incisive mind, generated ideas and evaluated those of others with a critical but open mind. He was demanding of his co-workers but most and mainly of himself. He knew that you could always do better and he did.

Sigurðsson was often looked upon as a medical virologist. But he was more. He was equally conversant with epidemiological and clinical aspects of disease and was well versed in classic pathology and microbiology as well as immunology.

An accomplished speaker and lecturer, Sigurðsson frequently contributed to national and international meetings and conferences.

Sigurðsson had a wide range of interests. Being brought up on a farm he was used to manual labor and was an avid outdoors-man, enjoyed hiking and watching wild flowers, birds and the ever-changing views in our colorful country.

Sigurðsson had a cheerful mind, and was known for his love of arts and music and his good company. He was frank and firm and not afraid to speak his mind.

His sense of responsibility and integrity and his concerns about social injustices within the society was well known.

Sadly, illness (kidney cancer) clouded the last months of his life, but his energy and enthusiasm remained unaffected towards the end. Sigurðsson untimely death

at the age of 46 was a source of great sadness to all those who knew him and more so for his family and those with whom he had worked for many years.

He was survived by his wife and his three children, who all became physicians.

In this country Dr. Björn Sigurðsson and his pioneering work will be remembered for a very long time.