Saiki Tadasu and the Making of the Global Science of Nutrition, 1900-1927

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Abstract

This paper examines the activities of Saiki Tadasu, a leading Japanese nutrition scientist of the early twentieth century.[2] According to his American counterpart, Dr. Victor G. Heiser, Saiki's work was "of great benefit to the human race."[3] Using a variety of sources in Japanese archives, the Rockefeller Archive Center, and the League of Nations Archives, this paper focuses on Saiki to explore Japan's role in the making of a global science of nutrition, and to map out an international network of intellectual cooperation and knowledge circulation on nutrition science during this period. Inspired by the work of Iris Borowy and Tomoko Akami, it illustrates a world of scientific knowledge-sharing about human well-being which extended geographically beyond the Atlantic world, and thematically beyond disease control.[4] Following Saiki's lead, from 1900 to 1927, Japanese nutrition scientists contributed to growing public recognition of the importance of nutrition science and championed its global development.

An American Ph.D.

The time was 1905, the second year of the Russo-Japanese War. At Mr. Chinno Kushami's house, Mrs. Chinno spoke with her husband's friend, Meitei, about Kushami's stomachache and his new affection for daikon radish:

> "How is his stomach recently? Getting any better?"
> "Hard to say whether it's good or bad. But he won't be able to recover as long as he keeps eating that much jam…"
> "That much? He is like a kid!"
> "Having recently heard that grated daikon radish could be the medicine for a stomachache, he's eating a lot of that."
> "That is surprising."
> "The newspapers say that daikon radish has amylase…"[5]

This story is from Natsume Sōseki's popular novel, *I Am a Cat* (*Waga hai wa neko de aru*), which depicts Japanese society and private life in the early 1900s. Despite its fictional nature, such casual banter about grated daikon radish and amylase in Natsume's novel serves as a record of a vital moment in the history of nutrition science in Japan, as well as in the personal history of nutrition scientist Saiki Tadasu. For his discovery of amylase in daikon radish in 1904, Saiki became known to the public for the first time as "the doctor studying daikon radish."[6]

Born to a medical family in Ehime Prefecture in 1876, Saiki had been interested in nutrition science since the start of his scientific career. When studying biochemistry under Araki Torasaburō at Kyoto Imperial University, he examined "whether humans can live merely on rice and salt."[7] After moving to Tokyo in 1902, Saiki entered the Imperial Institute for Infectious Disease and studied bacteriology under Director Kitasato Shibasaburō. Together with Teruuchi Yutaka, Saiki devoted his time to the chemical analysis of the urine and feces of beriberi patients to examine the relation between beriberi and nutrition. In 1904, they published their findings, which challenged Heinrich Botho Scheube's argument that protein deficiency caused beriberi.[8] In the same year, Saiki presented his research on daikon radish amylase at a conference on gastroenterology.[9] His study attracted attention from colleagues in Europe. In 1906, the details of his experimentation on daikon radish amylase was published

in *Hoppe-Seyler's Journal of Physiological Chemistry (Hoppe-Seyler's Zeitschrift für physiologische Chemie)* in Germany, and later in Italy and Russia.[10]

Though taught by two German-trained medical scientists and already known to the European medical world, Saiki Tadasu chose to pursue his postgraduate medical study in the United States and entered Yale University in 1905. In the Japanese medical world, which had been under predominant German influence since the 1870s, this choice was uncommon.[11] At Yale, Saiki began his three-year degree under Russell Henry Chittenden and Lafayette Benedict Mendel, two leading biochemists widely known for their contributions to the burgeoning field of nutrition science.[12] In 1907, Saiki completed a thesis on the chemical analysis of non-striated muscle and received his Ph.D. degree.[13] He continued his study at Yale until 1908, when he completed a second thesis on the influence of thyroid gland on metabolism to receive a Master of Science from the Sheffield Scientific School. In this research, Saiki aimed to observe in the laboratory "the influence of thyroidectomy as well as thyroid-feeding on metabolism under various conditions, the influence of starvation, of different kinds of food, the quantity of thyroid administrated, and the influence of single and repeated doses."[14] Through controlled experiments on dogs, Saiki concluded that the thyroid gland had a "pronounced" influence on the nitrogen balance in the body and the utilization of dextrose.[15] In 1909, eager to continue his medical career in the United States, Saiki joined the Bender Hygienic Laboratory in Albany, New York, where he carried on with various biochemical experimentations.[16]

Saiki had planned to reside in the United States. However, a letter from home informing him of his father's severe illness upended this plan. On his way to Japan to see his father, Saiki stopped briefly in Europe to investigate the development of nutrition science in Great Britain, Belgium, Germany, and France.[17] By the time he arrived home in 1912, Saiki harbored ambitions to further the development of nutrition science around the world. It was not long before this German- and American-trained doctor brought major changes to the Japanese medical world and the field of nutrition science globally.

"To nutrition we owe our gratefulness"

> Waking up in sunlight, we have strength to squelch a fiend. Sleeping well at night, we have blood to recover from fatigue. Defeating coldness and heat, we cultivate upright spirits. It leaves no room for attacking disease. To nutrition we owe our gratefulness.
>
> Raise good kids and above other nations we shall rise. Become robust and great, and limitless food we will possess. Clear up the water drawn for the happiest *kami matsuri*. It saves the world and makes us live. To nutrition we owe our gratefulness.[18]
>
> ---Song of Nutrition[19]

On the rainy winter afternoon of December 18, 1921, over a thousand guests gathered in front of a new two-story building in Koishikawa Kagomachi (now part of Bunkyō-ku in Tokyo). They were there to attend the opening ceremony of the Imperial Government Institute for Nutrition (IGIN).[20] Facing the large crowd, which included the Minister of Home Affairs and several leading medical scientists, and in full academic dress, Saiki Tadasu debuted as the writer of "Song of Nutrition," as well as the new director of IGIN. The Institute had officially been established in 1920, supervised by the Ministry of Home Affairs and with a government budget of 380,000 yen.[21] After nearly two years, the construction of the new building for the institute was finally complete. With its modern design, the new building had ten spacious rooms and was equipped with new laboratory apparatuses, including the calorimeter purchased from the Carnegie Institution in the United States.[22]

Unlike the private nutrition laboratory Saiki had quietly set up at Shirokane Sankō-cho in Shiba District (now the Minato-ku in Tokyo) in 1914, this new institute had attracted attention from home and abroad since the announcement of its creation. World War I had highlighted the close link between individual health and national destiny. Nutritionists in Germany began to play a leading role in forming government policy to deal with wartime food shortages. Similarly, the United States government conducted nutrition surveys to guide wartime food

conservation programs.[23] The food crisis following the end of World War I had also made expert knowledge on nutrition science an essential commodity.[24] Sharing this burgeoning ambition for food abundance and healthiness, the Japanese had also embraced nutrition science as the solution to its own food crisis since the last year of World War I.[25] This trend thrust IGIN and Saiki into the center of public and professional attention.

Although the Ministry of Home Affairs had initially considered inviting a German medical scientist to lead IGIN, the government chose Saiki as its director in 1920.[26] Following Saiki's lead, Japanese nutrition scientists began to play pivotal roles in advancing the field of nutrition science. From 1921 onwards, nutritionists at IGIN conducted scientific research on numerous nutrition-related topics, ranging from the chemical analysis of Japanese food to the digestion rate of rice, and from the metabolism of various Japanese social groups to the connection between nutrition and cancer.[27]

In Saiki's opinion, nutrition science was never merely scholastic research in the laboratories. Rather, it included the application of the scientific knowledge of nutrition to everyday life.[28] Thus, Saiki had actively championed the circulation of nutritional knowledge in Japanese society since 1918. In September 1918, he offered a three-week short course on "economical and nutritious cooking" to around thirty middle-class housewives in Tokyo.[29] At the same time, he created healthy family recipes and menus and published them in daily newspapers. These "five-cent" recipes were practical, with detailed instructions ranging from how to peel taro stem for miso soup to how to cut tofu in the shape of flowers.[30] In January 1920, Saiki began selling three new kinds of bread at the public market. According to him, the bread recipes were professionally researched to be especially nutritious. These breads were made in a French style from Manchurian sorghum "for the happiness of the people."[31]

Under Saiki's directorship, the IGIN began to play a vital role in advocating healthy eating in Japan. From May to June 1922, it published daily menus for home kitchens in multiple newspapers.[32] Following these menus were short articles from July to September, recommending biscuits or sweet potatoes as

snacks for children and efficient eating methods.[33] At the same time, the IGIN also opened its gates to visitors in search of hands-on learning.[34] In August, the IGIN organized a cooking course which attracted passionate attendees nationwide. Surrounded by over 600 women, IGIN nutritionists demonstrated how to grind dried sardines, the nutritious value of which Saiki made sure to highlight, especially for pregnant women.[35]

Starting from 1923, Saiki devoted himself into designing nutritious meals for school children. In March, the IGIN offered "nutritious lunch boxes" (*Eiyō bentō*) for 100 children from Hibiya Elementary School, where the students were found to be particularly weak in their physical examinations.[36] As part of the relief activities after the Kanto Earthquake in September, the Institute began to provide its "nutritious meals" (*Eiyō-shoku*) to even more school children.[37] In January 1924, with Saiki's support, the Tokyo Bureau of Social Affairs (*Tokyo shi shakai-kyoku*) launched the school meal project to provide over 4,700 school children from eight elementary schools with the nutritious meals prepared by IGIN.[38] As a result of this project, the percentage of weak school children in the schools dropped dramatically from 23 percent to below 4 percent in a year.[39]

Saiki and the IGIN's scientific and public outreach activities in Japan attracted overseas attention. On July 8, 1921, during his stay in Japan, Richard M. Pearce, the Director of the Division of Medical Sciences of the Rockefeller Foundation, visited Saiki's laboratory and the IGIN, which was still under construction.[40] After returning from Japan, Pearce commented, in great detail, on Saiki and his work in the official report to the Foundation:

> In 1913, Dr. T. Saiki, who had spent three years with Chittenden and Mendel at Yale, started in Tokyo in a small way a laboratory devoted to the study of problems in nutrition and maintained this laboratory partly out of his own funds and partly from the income obtained from a private metabolism practice. At the same time, he offered courses in food chemistry, metabolism, including elementary courses for nurses, housewives et al. in household science, dietics etc. His work grew and the small one-room laboratory was later replaced by a two-story building of five or six rooms. Finally, the government became interested on account of the growing importance of this work and it established a new

> institute known as the Government Institute for Nutrition and made Dr. Saiki director… As I went through the rooms with him and heard his story of the research work he had been able to do, of his general publicity campaign and of the large classes – sometimes 50 or 60 – he had taught, I was filled with admiration for the man himself and thoroughly impressed with his success in putting into practice the teaching and ideals which he had received at Sheffield and which he himself acknowledged were responsible for everything he had accomplished in his own country. The new building in process of construction is not advanced far enough for practical inspection, but from the plans it is obvious that all phases of modern research in the field of nutrition will be taken care of adequately.[41]

After the official opening of the IGIN, Dr. Norman White, the medical commissioner of the League of Nations Epidemic Commission, was among the first foreign medical scientists to visit the Institute in 1922.[42] News of the IGIN's inauguration reached the East Coast of the United States in 1923. Soon, letters from Saiki's mentors Chittenden and Mendel arrived in Tokyo, congratulating Saiki on the opening of the IGIN and expressed their admiration for Saiki's contributions to social undertakings in Japan.[43] Research and relief activities after the Kanto Earthquake earned the IGIN even further notice from top foreign medical experts. In the summer of 1924, upon the invitation from the Japanese government, Frederick F. Russell, the director of the International Health Board (IHB) of the Rockefeller Foundation, Victor G. Heiser, director for the East of IHB, and John B. Grant, professor at Peking Union Medical College (PUMC), visited Japan to survey the general condition of public health. On their visit to the IGIN, Saiki and two other experts, Fujimaki and Takahira, impressed them with both their research and their active engagement in the diffusion of nutritional knowledge throughout society.[44] In Heiser's words, the IGIN was "one of the most remarkable institutes that is throwing light to the medical world." Saiki's work, he remarked, was "of great benefit to the human race."[45]

Making Nutrition Science Global

The summer of 1925 was particularly busy for Japanese diplomats, bureaucrats in the Ministry of Home Affairs, and medical scientists like Saiki. They were tirelessly preparing for two major international events to be held in Japan: the sixth congress of the Far Eastern Association of Tropical Medicine (FEATM) and the League of Nations Interchange Conference of Sanitary Officers in the Far East.[46] For the first time in modern history, Japan was the host of international academic conferences. After several months' careful preparation, Tokyo welcomed hundreds of medical experts worldwide in October.[47] Citizens of Tokyo celebrated this unprecedented grand academic gathering that marked Japan's international standing as a vital contributor to the global dialogue on medical science.

From 1925 onwards, Saiki returned to his ambition of making nutrition science global with renewed fervor. During Heiser and Grant's visits to IGIN prior to the FEATM conference, Saiki introduced them to the nutritional research then being conducted by him and his colleagues. Not only had Japanese nutrition scientists succeeded in proving the correlation between gastric and uterine cancer and vitamin A deficiency, but they had suggested a new method of testing vitamin B.[48] At the FEATM conference, Saiki presented his research on beriberi and appealed for attention to awareness of the importance of more scientific milling of rice for the sake of "more than half of the world's population who ate rice as staple."[49] Then, on October 22, 23, 24 and 28, of that year, Saiki welcomed the participants of the League of Nations Interchange Conference of Sanitary Officers in the Far East to the IGIN.[50] Among these visitors from India, Philippines, Dutch East Indies, Australia, Hong Kong, and the Soviet Union, a Dr. William Mackie, stationed in Bombay, was particularly interested in the work carried out by Saiki and his colleagues.[51] He requested publications in English describing the IGIN's structure, plans and projects "in order to stimulate his government, as well as the governments of other countries of the East, in the establishment of such an institute."[52]

Thus, in 1926, at the request of the League of Nations Health Organization, Saiki sent to Geneva a detailed English monograph on the progress of nutritional research in Japan. In this manuscript, entitled *Progress of the Science of Nutrition in Japan,* Saiki included the original papers of nutritionists at the IGIN and other institutions in Japan.[53] Published by the League of Nations Health Organization, the book reached a global readership in the medical world.[54] In the same year, Saiki was invited to tour Europe, North America, and South America as the League of Nations' first exchange professor. From January to April 1927, Saiki promulgated the significance of nutrition science in human societies in lectures delivered on the podiums of Université de Paris, Institut Pasteur, Stanford University, and his alma mater, Yale University.[55] His speech, as participants in the lectures recalled, won massive rounds of applause from the international audiences.[56]

To help construct a global network of international cooperation on nutrition science, Saiki also made efforts to foster personnel exchange in medical circles between Japan and other countries. In 1925, on Saiki's recommendation, nutritionist Sugimoto Kōichi departed for the United States as a fellowship recipient of the Division of Medical Sciences of the Rockefeller Foundation.[57] From 1925 to 1927, Sugimoto worked in Mendel's laboratory at Yale University, and McCollum and Rask's laboratories at Johns Hopkins Medical School.[58] Constantly studying in the laboratories, Sugimoto was evaluated by Mendel as "a hard worker."[59] The League of Nations health officers' visit to Japan in 1925 also strengthened connections between Japanese nutritionists and their European counterparts. In 1926, Hara Tetsuichi, one of Saiki's chief assistants at the IGIN, was awarded a League of Nations fellowship to study photo-nutrition in Europe.[60] At the same time, the IGIN began to host visiting scholars from abroad. In October 1926, on behalf of the League of Nations, Egerton Charles Grey from University of Cairo arrived at the IGIN.[61] Grey was "very anxious to see some of the work in Japan," and soon started his nine-month investigation of food in Japan.[62] After returning to Europe, Grey published his findings in a book entitled *Food of Japan*, introducing his Japanese colleagues' experimental methods of food analysis to the world.[63]

Conclusion

This study is part of my dissertation research (tentatively titled: Nurturing a Robust Society: Japan in the Making of the Global Science of Nutrition, 1885-1951), which contributes to the growing scholarship of global public health and the history of science in modern Japan. Based on multilingual primary sources located in Japan, the United States, and Switzerland, this study has examined Saiki Tadasu's early career as an emerging champion of the global development of nutrition science.[64] From 1900 to 1927, with a strong commitment to the improvement of his compatriots' nutrition, Saiki contributed much to the promotion of the quotidian practice of nutrition knowledge in Japan. With close connections to American and European medical circles, he also led Japanese nutrition scientists as the crucial architects of a global scholarly network in the field of nutrition science.

This study departs from the usual focus in modern Japanese history on empire-building and warfare in the historiography of science in modern Japan.[65] In the early twentieth century, Japan, like other countries throughout the world, embraced the nascent scientific knowledge of nutrition and recognized healthy diets as a path to individual fitness, the scientific organization of daily life, and social well-being.[66] As demonstrated in Saiki's case, Japanese scientists belonged to an emerging international society committed to scientific progress and better qualities of life.

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[2] In this paper, names of Japanese people follow the convention in Japanese language: family name first, given name second.

[3] "High praise from expert: Rockefeller Foundation man says Japan advanced medically," *The Japan Times and Mail,* June 14, 1924.

[4] See Iris Borowy, *Coming to Terms with World Health: The League of Nations Health Organization 1921-1946* (Frankfurt am Main: Peter Lang, 2009), 237-419; and Tomoko Akami, "A Quest to be Global: The League of Nations Health Organization and Inter-Colonial Regional Governing Agendas of the Far Eastern Association of Tropical Medicine, 1910-25," *The International History Review* 38, no. 1 (2016): 1.

[5] Sōseki Natsume, *Waga hai wa neko de aru* (Tokyo: Ōkura shoten, 1905), 119.
[6] "Daikon oroshi, mottomo yūeki na shokumotsu," *Yomiuri Shimbun,* August 8, 1905.
[7] Hiromichi Hagiwara, *Nihon eiyōgaku shi* (Tokyo: Kokumin eiyō kyōkai, 1960), 28.
[8] Heinrich Botho Scheube, *Die Beriberi-Krankheit: Eine Geographisch-medicinische Studie* (Jena: Gustav Fischer, 1894). Yutaka Teruuchi and Tadasu Saiki, "Kakkei byō no kagaku teki kenkyū," *Saikin gaku zasshi* no. 108 (1904): 1-23.
[9] Hiromichi Hagiwara, *Nihon eiyōgaku shi*, 29.
[10] Tadasu Saiki, "Über die enzymatische Wirkung des Rettigs. (Raphanus sativus L.)," *Hoppe-Seyler's Zeitschrift für physiologische Chemie* 48 (1906): 469-72. Eiyōshi kai, *Eiyō kenkyū kikan oyobi eiyōshi yōsei kikan hattatsu shi sankō shiryō* (Tokyo: Eiyōshi kai, 1940), 1.
[11] For how German medicine became predominant in Japanese medical system and education, see Jun Morigawa, "Doitsu igaku no juyō katei: Myūhen daigaku ryūgakusei wo chūshin to shite," *Kyōikugaku kenkyū* 52, no. 4 (December 1985): 374-84. Hoi-eum Kim, *Doctors of Empire: Medical and Cultural Encounters between Imperial Germany and Meiji Japan* (Toronto: University of Toronto Press, 2014), 31-53.
[12] Russell H. Chittenden, "A Biographical Memoir of Lafayette Benedict Mendel: 1872–1935," *National Academy of the Sciences of the United States of America Biographical Memoirs* XVIII (1936): 127. G.R.C., "Russell H. Chittenden: An Appreciation," *The Journal of Nutrition* 28, no. 1 (July 1944): 2-6. Graham Lusk, "The Medalist," *Science* 65, no. 1693 (June 1927): 556.
[13] Tadasu Saiki, "The Chemistry of Non-striated Muscle" (Ph.D. diss., Yale University, 1907), 3-4, 43-4.
[14] *Ibid*., 14.
[15] *Ibid*., 34.
[16] From 1909 to 1912, Saiki's main research focused on bacteria as well as the improvement of biochemical experimentation methods. See Tadasu Saiki, "A Device for the Cultivation of Anaerobes in Plate Cultures, by the Use of Alkali-Pyrogallic Acid Mixtures," *Journal of Medical Research* 21, no. 2 (1909): 279-80. S. B. Wolbach and Tadasu Saiki, "A New Anaerobic Spore-bearing Bacterium Commonly Present in the Livers of Healthy Dogs, and Believed to be Responsible for Many Changes Attributed to Aseptic Autolysis of Liver Tissue," *Journal of Medical Research* 21, no. 2 (1909): 267-78. Holmes C. Jackson and Tadasu Saiki, "A Study of the Blood and Feces Before and After Bilateral Nephrectomy and Double Ureteral Ligation, and of the Urine Secreted After Reimplantation of the Ureters," *Archives of Internal Medicine* IX, no. 1 (1912): 79-98.
[17] Hiromichi Hagiwara, *Nihon eiyōgaku shi,* 32.
[18] *Kami matsuri* means "festivals in front of gods" usually held at Shinto shrines and nearby neighborhood.
[19] Tadasu Saiki, *Eiyō kenkyusho ihō* (Tokyo: Eiyo kenkyūsho, 1924), 10.
[20] "Saiki hakase no eiyō no uta, kyō kenkyūsho no kaishoshiki," *Asahi Shinbun*, December 18, 1921.
[21] "Saiki hakase no dokutoku no katsudo buri," *Asahi Shinbun,* December 31, 1919.
[22] "Eiyō keiryōki wo chūshin ni tatsu," *Asahi Shinbun,* September 6, 1921.
[23] Soo Kyeong Hong, "Food as Medicine: The Cultural Politics of 'Eating Right' in Modern Japan, 1905-1945" (Ph.D. diss., Cornell University, 2017), 54.
[24] Josep L. Barona, "Nutrition and Health: The International Context During the Inter-war Crisis," *Social History of Medicine* 21, no. 1 (March 2008): 87-90.
[25] Soo, "Food as Medicine," 54-5.
[26] "Doitsu jin seihei wa haji to hito hada nuida saiki hakase," *Asahi Shinbun,* September 18, 1920.
[27] Eiyō kenkyūsho*, Eiyō kenkyūsho ihō* (Tokyo: Eiyō kenkyūsho, 1924), 23-152.
[28] "Doitsu jin seihei wa haji to hito hada nuida saiki hakase," *Asahi Shinbun,* September 18, 1920.
[29] "Ichi nichi go sen no o sōzai," *Asahi Shinbun,* September 4, 1918.
[30] "Saiki hakase no go sen ryōri," *Asahi Shinbun,* September 5 to 14, 1918.

[31] "Shinsei no pan uridashi," *Asahi Shinbun,* January 1, 1920.
[32] Hiromichi Hagiwara, *Nihon eiyōgaku shi,* 55.
[33] "Eiyō kenkyūsho happyō: kanshoku ni wa nani ga tekito," *Asahi Shinbun,* July 31, 1922. "Eiyō kenkyūsho happyō: onaka no sukanu shokuji hō," *Asahi Shinbun,* September 4, 1922.
[34] Hiromichi Hagiwara, *Nihon eiyōgaku shi*, 55-6.
[35] "Gyūniku koma kiri no nikata kara jissai chōri jitsuen," *Asahi Shinbun,* August 15, 1922.
[36] "Yowai jidō hyaku mei ni eiyō ryōri wo tabe sase te," *Asahi Shinbun,* March 25, 1923.
[37] Hiromichi Hagiwara, *Nihon eiyōgaku shi*, 65-6.
[38] "Yosō gai ni kō kekka no eiyō shoku," *Asahi Shinbun,* July 11, 1924.
[39] *Ibid.*
[40] "Appendix 1: RMP's Diary (Japan)," page 3; "Appendix 2: List of Names and Addresses of Japanese Physicians, Scientists and Others Consulted or Interviewed, or Met," page 3, 1921, Folder 160, Box 6, Western Medicine in Japan, John Z. Bowers papers, FA1415, Rockefeller Archive Center.
[41] Richard M. Pearce, "Report on Medical Education in Japan (With notes on Hospitals and Public Health", page 162-3, 1921, Folder 160, Box 6, Western Medicine in Japan, John Z. Bowers papers, FA1415, Rockefeller Archive Center.
[42] Eiyō kenkyūsho*, Eiyō kenkyūsho ihō* (Tokyo: Eiyō kenkyūsho, 1941), 206.
[43] Eiyō kenkyūsho*, Eiyō kenkyūsho ihō* (1924), 200-1.
[44] "List of Institutions Visited and Persons Interviewed," 1924, Folder 353, Box 56, Series 2_609, International Health Board/Division records, Rockefeller Foundation records, RG 5, FA115, Rockefeller Archive Center.
[45] "High praise from expert: Rockefeller Foundation man says Japan advanced medically," *The Japan Times and Mail,* June 14, 1924.
[46] Letter from Kikujirō Ishii to Eric Drummond, August 8, 1925, R902/12B/30087/30087, League of Nations Archives.
[47] "Waga kuni saisho no kokusai kaigi: sekai no gakusha zoku zoku nyūkyō," *Asahi Shinbun,* October 9, 1925.
[48] "Diary of Dr. Heiser's World Trip September 17, 1925 to June 8, 1926," page 31-3, October 9, 1925, Box 216, Officers' Diaries F-L, Rockefeller Foundation records, RG 12, FA392, Rockefeller Archive Center. https://storage.rockarch.org/206e0fcd-2d55-435e-bebe-687f60912616-Heiser_1925-1926.pdf.
[49] "Kakke byō no tōron ni wa saiki hakase ga dai i-ssen ni," *Asahi Shinbun,* October 11, 1925.
[50] The Central Sanitary Bureau of the Department of Home Affairs, "Programme of the Interchange of Health Personnel in Japan under the Auspices of the League of Nations," R902/12B/30087/30087/Jacket 2, League of Nations Archives.
[51] Eiyō kenkyūsho*, Eiyō kenkyūsho ihō* (1941), 208.
[52] "Note on Conference of Interchange Health Officers held at the Home Department of Tokyo," page 6, October 1925, R902/12B/30087/30087/Jacket 2, League of Nations Archives.
[53] Letter from Ludwik Rajchman to H. Dale, September 17, 1926, R930/12B/34384/54233, League of Nations Archives.
[54] "Book Notices: Progress of the Science of Nutrition in Japan," *Journal of the American Medical Association* 88, no. 16 (April 1927): 1291-2. "First Glances at New Books: Progress of the Science of Nutrition in Japan by Tadasu Saiki," *The Science News-Letter* 11, no. 308 (March 1927): 153.
[55] "Signification des éléments nutritifs," January 26, 1927, R985/12B/53877/54363/Jacket 2, League of Nations Archives.
[56] Eiyō kenkyūsho*, Eiyō kenkyūsho ihō* (1941), 315, 319.
[57] Letter from R. B. Teusler to Dr. Clifford W. Wells, January 9, 1924, Folder 63, Box 9, Series 609E, Rockefeller Foundation records, SG 1.1, FA386b, Rockefeller Archive Center. "Gakuhi wo itadaite beikoku e shokumotsu no tabi," *Asahi Shinbun*, February 7, 1925.
[58] "Division of Medical Sciences, Rockefeller Foundation Japanese Fellowships 1922 to date," page 3, September 1934, Folder 64, Box 9, Series 609E, Rockefeller Foundation records, SG 1.1, FA386b, Rockefeller Archive Center.

[59] "Comments on Ability and Work of Japanese Fellows: Medical Sciences," page 8, November 22, 1934, Folder 64, Box 9, Series 609E, Rockefeller Foundation records, SG 1.1, FA386b, Rockefeller Archive Center.
[60] Letter from Ludwik Rajchman to H. Dale, September 17, 1926, R930/12B/34384/54233, League of Nations Archives.
[61] "Egerton Charles Grey (1887-1928)," *Biochemical Journal* 23, no. 1 (January 1929): 1.
[62] Letter from Dr. Andrew Balfour to Dr. D. M. Pantalioni, July 29, 1926; letter from F. G. Boudreon to Dr. Andrew Balfour, August 10, 1926, R930/12B/34384/53142, League of Nations Archives.
[63] Egerton Charles Grey, *Food of Japan* (Geneva: League of Nations, 1928).
[64] Despite a lack of sufficient supportive primary sources in other languages, Nobuhisa Namimatsu's research in Japanese offered some important descriptions regarding this topic. Nobuhisa Namimatsu, "The Formation of Nutrition Science and Tadasu Saeki," *Acta Humanistica et Scientifica Universitatis Sangio Kyotiensis Social Science Series,* no. 34 (March 2017): 41-4.
[65] Aaron Stephen Moore, *Constructing East Asia: Technology, Ideology, and Empire in Japan's Wartime Era, 1931-1945* (Stanford: Stanford University Press, 2013), 5-9. Janis Mimura, *Planning for Empire: Reform Bureaucrats and the Japanese Wartime State* (Ithaca: Cornell University Press, 2011), 9.
[66] Works by two historians in the field of modern American history are particularly inspiring. See Helen Z. Veit, *Modern Food, Moral Food: Self-control, Science and the Rise of Modern American Eating in the Early Twentieth Century* (Chapel Hill: University of North Carolina Press, 2013); Aaron Bobrow-Strain, *White Bread: A Social History of the Store-bought Loaf* (Boston: Beacon Press, 2012).