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Blackwell's Almanac

A Publication of the Roosevelt Island Historical Society

Two historical objects from Roosevelt Island are featured in "Germ City: Microbes and the Metropolis," the current exhibition at the Museum of the City of New York (see lead article, p. 2). (Top) Goldwater Hospital laboratory sign, circa 1939, from the collection of the Roosevelt Island Historical Society. (Bottom) J. H. Emerson Co. Emerson Respirator "Iron Lung," undated, on loan from NYC Health + Hospitals/Coler. This respirator was used at Goldwater Hospital during the mid-20th century to assist the breathing of polio patients whose chest muscles were paralyzed by the disease. Photo credits: Bobbie Slonevsky.

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Blackwell's Almanac

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Germ City: Microbes and the Metropolis

This is the title of the fascinating exhibition currently featured at the Museum of the City of New York. A collaboration by the museum, the New York Academy of Medicine, and Wellcome Trust, it explores New York's centuries-old battle against infectious disease—specifically the interplay of microbes, attempts at containment, investigative methods, patient care and the urban environment. No mere article could do the exhibition justice. The material below attempts only to showcase a few of the more interesting and lesser known elements of the story in the hope that they will prompt you to visit the display. It is open through April 28, 2019.

Everyone agrees New York is an exceptionally vibrant city, a characteristic it owes to its large population, dense urban landscape, crowded public spaces and influx of people and goods from all over the country and world. Ironically, these very same factors have been responsible for its roiling stew of microbes and contagious disease. The human toll across centuries has been enormous. Yet the impact of germs and illness has not just been on health. Science, art, housing, water systems, sanitation, individual and collective rights, public policy, social activism—in fact, almost all aspects of city life—have in some way been shaped by our response to these microbial incursions.

Microbes

***Smallpox*—**The first outbreak of smallpox was recorded in 1649 during the Dutch settlement. Conventional wisdom holds that, because native Americans had not had any previous exposure, smallpox and other diseases brought here by Europeans **decimated** their population. The word "*decimate"* means literally to take one tenth of something. The reality is that these infectious diseases are estimated to have killed over 90% of the hemisphere's natives.

Promotional window card for 1950s film. ©1950, Columbia Pictures Corp.

Smallpox epidemics occurred periodically throughout the city's history until 1947, when mass vaccination, the first such comprehensive program of its

kind, effectively thwarted that year's eruption. Only 12 New Yorkers contracted the disease and only two died. Worldwide use of the vaccine led to global eradication in 1979.

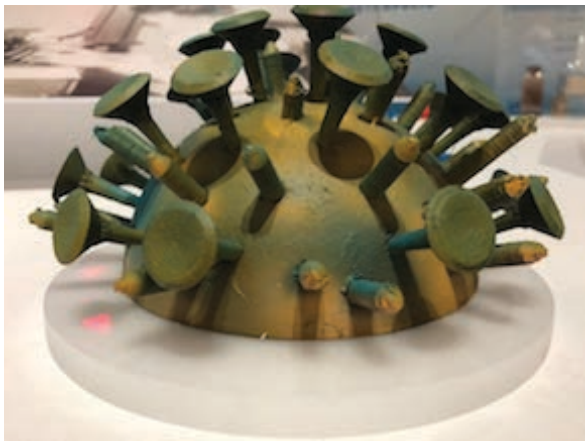
The 1950 film noir pictured above was based on the 1947 smallpox scare. It features a female diamond smuggler who unknowingly contracts smallpox in Cuba and spreads it to New York City.

***Influenza*—**The most deadly flu epidemic in history arrived in New York in 1918, exactly 100 years ago (see next article, p. 7). Although scientists worked frantically to uncover the cause of the contagion, the flu virus wasn't identified until the 1930s.

Different strains of flu are distinguished by the types and arrangement of proteins on the virus's outside surface. The head-and-stem-shaped hemagglutinin (H) protein, which allows the virus to enter a human cell, is particularly prone to mutation and modification.

To reflect the ever-changing H protein head, it is now necessary to reformulate flu vaccines every year. The stem, by contrast, does not change. Current research is directed at that part of the microbe so that, hopefully, a single vaccine will provide immunity against all strains.

In addition to smallpox and influenza, New York has also battled diphtheria, cholera, typhus, scarlet fever, yellow fever, meningitis, whooping cough, chicken pox, mumps, measles, polio, HIV, Ebola, and the common cold.



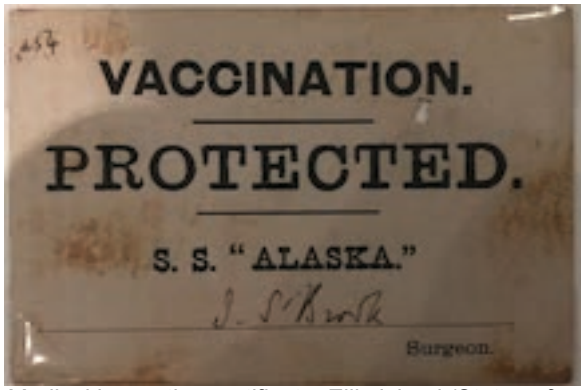
Model of a flu virus. Created by Voll, Inc.

Containment

***Ship Quarantine*—**Ships arriving from the four corners of the globe could import dangerous diseases. By the late 19th century, protocol required state inspectors to board all vessels entering New York Harbor. If there was evidence of contagious disease (typhus, cholera, smallpox), the ship was summarily quarantined. To alert harbor personnel of its status, it flew the "Lima," the yellow and black flag you see here.

Quarantine signal flag. South Street Seaport Museum.

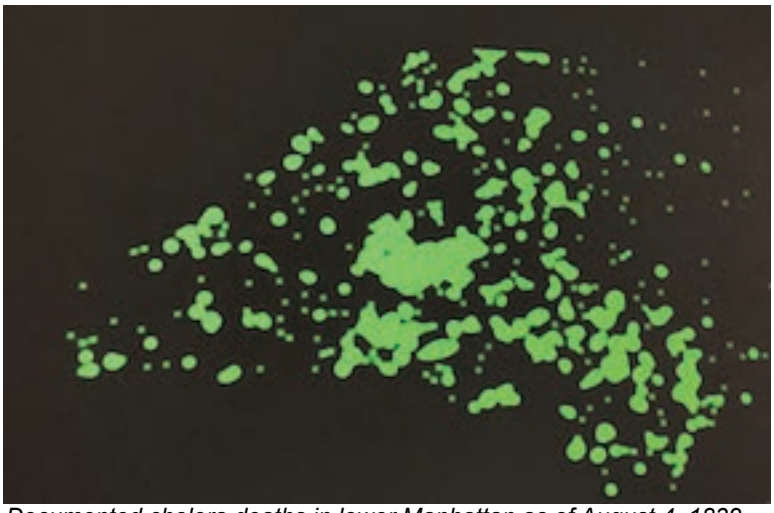
***Ellis Island*—**In 1892, this became the nation's major immigration station where all new arrivals underwent health screening. About 1% were sent home because of illness. Ship lines were fined if any of their passengers were found to be ill. So they examined passengers (particularly those traveling in steerage) at their ports of departure and issued certificates attesting that they had been vaccinated and were in good health.



Medical inspection certificate. Ellis Island (Statue of Liberty National Monument).

Nevertheless, when immigrants fell ill, the public blamed it on germs they had brought with them rather than neighborhood contagion. Southern Italians were associated with and blamed for tuberculosis, Jews for trachoma (an eye disease). This fueled anti-immigrant activism and the draconian immigration restrictions instituted in 1924.

Today the first line of defense against incoming disease is our airports. During known outbreaks, people arriving from disease-affected regions are carefully observed. Significant symptoms can lead to quarantine and controversy around the need to balance public safety, science, politics, and individual rights.



Documented cholera deaths in lower Manhattan as of August 4, 1832 (southern tip of Manhattan is at left). Sonia Shah, "Mapping Cholera: A Tale of Two Cities," 2015.

Investigation

Kew Gardens Spotted Fever— Pinpointing the source of new disease outbreaks requires exhaustive research. Information from people, medical and lab reports and fieldwork are all pieces of the puzzle.

In 1946, almost 100 residents of a community in Kew Gardens, Queens, came down with a mysterious chickenpox-like sickness. Investigators ultimately identified a rare species of rickettsial pox as the causative organism. Working with a local exterminator, they further discovered that it was spread by mites that bred on mice. The culprit, it was thought, was luggage brought to the U.S. by Russian refugees following World War II.

William Jellison of the U.S. Public Health Service and Queens exterminator Charles Pomerantz examining Kew Gardens incinerator for clues. Stetten Museum of Medical Research, National Institutes of Health.

Mapping Cholera— Among the most dreaded of 19th-century diseases, cholera brought death by dehydration within 24 hours. Dating back to the 17th century, a critical tool in investigating disease outbreaks in order to better manage them has been data collection.

In July 1832, New York City was struck by a fast-moving cholera epidemic. Mapping showed that it disproportionately affected the poorer sections of lower Manhattan because, as we know now, much of the drinking water in these neighborhoods was contaminated with human excreta, garbage and street filth. Above is a 21st century hi-tech display of the deaths documented just one month into the outbreak. At its peak, the epidemic was killing 100 New Yorkers a day; by its end it had sickened 5,800 and killed almost 3,000.

Care

***Diphtheria*—**Usually an upper respiratory infection accompanied by fever, sore throat and malaise, the illness's key sign was formation of a gray-green membrane at the site of infection. The membrane was so thick, it often blocked the airway and caused patients to suffocate.

Brass and gold intubation set, circa 1899. The New York Academy of Medicine.

In 1881, New York physician Joseph O'Dwyer dramatically improved survival rates by inventing a tube that could be inserted into the throat to assist in breathing. His original set was made of hard rubber lined with gold-plated metal and included various sizes for a range of ages. These were improved upon by a number of surgical instrument makers, as pictured here.

In the 1890s, scientists developed an anti-toxin, produced from the blood of animals (mostly horses in this country) that had been immunized. Once patients were inoculated, the serum fought the infecting bacterium. Today the disease is prevented through childhood vaccination.

***Activism*—**Despite our many medical advances, access to good health care has always been inequitable. Both professional and ordinary New Yorkers have addressed this problem with a wide range of activism.

In their effort to improve medical care in East Harlem and other underserved communities, the Puerto Rican group the Young Lords staged an historic coup: In June 1970, they seized a mobile chest X-ray unit to bring TB detection to neighborhoods where it was lacking.

Chest X-ray unit heist. Estate of Hiram Maristany.

***Ebola*—**When Ebola-outbreak volunteer Dr. Craig Spencer was quietly brought to Bellevue Hospital showing signs of the disease, staff summoned urgently to the Special Pathogens Unit thought it was a drill. It wasn't.

Those caring for the patient had to wear a type of Personal Protective Equipment (PPE) that covered every square inch of their body. Composed of overlapping parts, it included Tyvek scrubs, coveralls, a surgical gown, hood, knee-high boots, a helmet and gloves. But exposure prevention didn't end there. To avoid contact with bodily fluids that might have stained the PPE, staff had to follow punctiliously a 20-step protocol for removing the gear. All materials were

Multi-layered, full-body "armor" against Ebola. The trick is getting out of the equipment after use. NYC Health + Hospitals/Bellevue.

destroyed following the one-time use. Dr. Spencer fully recovered.

Urban Environment

Inadequate Housing—The tenements of late 19th-century and early 20th-century New York were infamous. Bastions of overcrowding, inadequate sanitary facilities and lack of air and light, they were breeding grounds and vectors of contagion for many of the diseases that plagued New York City.

Years of reform activism and scandalous exposés led, in 1916, to the first zoning laws ever. Height restrictions on commercial buildings helped minimize the dark shadows they cast on surrounding buildings and streets. Buildings in strictly residential zones were permitted to rise only as high as the streets in front of them were wide.

This New Deal-era poster reflects the city's recognition of the connection between housing conditions and disease. Plans called for slum clearance and social services. Unfortunately, the necessary funding never materialized.

New York City Housing Authority (NYCHA) poster, circa 1937. Library of Congress.

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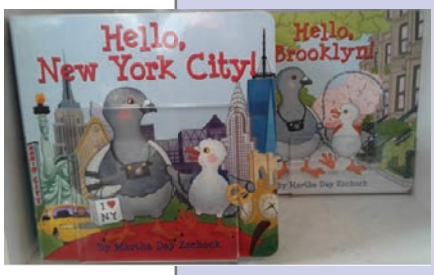

100 Years Ago:
The Influenza Pandemic

In the spring of 1918, with World War I still raging, an illness thought of as “three-day fever” suddenly emerged. Many became sick, especially in New York and in the military. But in most cases, this first wave of disease ran its course, patients recovered and relatively few deaths were reported. Then, in the fall, the disease returned…explosively.

Despite attempts to hospitalize and isolate victims, the spread was rampant—it reached cities and hamlets, coasts and heartland, remote geographic outposts and ultimately the entire world. Many medical staff, already in short supply because of the call to military service, contracted the disease, leaving vast shortages of doctors and nurses. It is estimated that some 500 million people, one-third of the global population at the time, were affected. And this second wave was agonizing and deadly.

The ill bled from their noses and ears and frequently coughed up blood. Some coughed so hard, autopsies later revealed that they had ripped apart abdominal muscles and rib cartilage. They complained of devastating headaches and body aches so severe, many writhed in pain. Vomiting was a common symptom, as was delirium. Most strange were the skin color changes from lack of oxygen. Sometimes a patient’s mouth area or fingertips were tinged with blue, while other patients exhibited skin so darkened, it was difficult to tell Caucasians from Blacks.

Death came fast and relentlessly, sometimes within hours of the appearance of symptoms. Those who didn’t die of flu or accompanying viral pneumonia, often expired from a subsequent bacterial pneumonia.

A third wave flared-up in the winter and spring of 1919. Although it was less deadly than the previous wave, it still added significantly to the body count.

Before the pandemic subsided in 1920, an estimated 50 to 100 million people succumbed worldwide. Just for purposes of comparison, that’s multiples more than the 16 million who died in World War I, and more than were killed over a century by the Black Death of the Middle Ages. In the U.S., there were, conservatively, some 675,000 fatalities.

Boston Red Cross volunteers assembled gauze sanitary masks for use in flu-racked Camp Devens in Massachusetts. Photo credit: https://www.cdc.gov/flu/pandemic-resources/1918-commemoration/historical-images.htm

In a single year, average life expectancy plummeted by 12 years.

What? Why? Countermeasures?
The obvious questions are: What caused the disease and why was it so virulent?

Pandemic Flu Strains

1918—H1N1, probably bird flu
1957—H2N2, bird flu
1968—H3N2 (Hong Kong flu)
2009—H1N1, swine (pig) flu

We now know that the cause was the H1N1 virus (not a bacterium, as was originally suspected). Though it is still uncertain where the virus came from, the consensus points to birds, since they are natural repositories for these organisms. The world has since experienced other flu pandemics (see box), including the 2009 epidemic caused by a related H1N1 virus. But none has been anywhere near as widespread or lethal as in 1918.

Of course, medicine in the early part of the 20th century was still in its infancy. We were only four decades removed from development of the germ theory of disease and there were no antiviral drugs or antibiotics. But other factors have been implicated as well. Some blame the war. Military camps were the site of early outbreaks, and troops constantly on the move worldwide would have aided the spread. Others suggest a low level of immunity in the global population. The last major attack of flu had been in the 1880s. While the very young and the very old are usually the most vulnerable to any contagious disease, the 1918 pandemic disproportionately affected young adults 20 to 40 years of age. Roughly half of those who died were in this age group—a unique phenomenon attributed to the fact that they would not have been alive during the previous epidemic and thus lacked the immunity of the middle-aged.

In the absence of modern medicine, the authorities did what they could, which was to impose “non-pharmaceutical interventions.” In New York, health officials tried to isolate or quarantine the sick—in hospitals while there was still room, in their own homes, and on some of the islands of exile surrounding the city, including Blackwell’s. They also attempted to regulate behavior: fines were issued for spitting; people who did not cover their coughs or sneezes were fined or jailed; and the liberal use of disinfectants was encouraged. In many cities, public facilities such as theaters, movie houses, and schools were closed and public gatherings were prohibited. Masks were a required accessory for public servants and were strongly recommended for ordinary residents when leaving their home.

Finally, education, particularly aimed at New York’s usually fearful immigrant community, sought to enlist cooperation with health officials’ agenda and reporting function. Advertisements in such publications as *Il Progresso Italo-Americano* and the Jewish *Daily Forward* described symptoms, encouraged readers to call a doctor when someone fell ill and to keep kids home from

To help prevent mass hysteria, Seattle police patrolled the streets en masse. All wore Red Cross-made masks. Photo credit: https://www.archives.gov/exhibits/influenza-epidemic/records-list.html.

school. They also warned against kissing corpses or children, or drinking from someone else's glass.

It is difficult to know what, if any, success these measures had. The life of the city almost came to a standstill. The contagion destroyed the intimacy of family life and thwarted the companionship of school and church. Some people were actually starving because the usual suppliers were afraid to deliver food. In certain places, the only street traffic consisted of priests driving horse-drawn carriages asking stricken families to bring out their dead.

Seattle public health officials required employees and passengers to wear masks on public transit. Conductor refused to allow passenger without mask to board. Photo credit: National Archives at College Park, MD.

Could It Happen Again?

This is the question medical science has been wrestling with ever since. It's true we have many more weapons today. Taking New York as an example, the city has one of the best and most experienced Departments of Health, as well as extensive hospital and critical care facilities equipped with ventilators to support breathing. We have several antiviral medications, a stockpile of flu vaccines that might confer some protection, and antibiotics to fight secondary bacterial infection. Personal protective equipment would help keep healthcare workers from harm.

Nevertheless, the prospect of a mass influenza strike is the thing the Centers for Disease Control and Protection still worries about most. A major problem is that flu vaccines are not entirely reliable against a constantly changing and completely unpredictable microbe. While our immune systems will recognize and fight the exact strain to which a vaccine has exposed us, a slight change in the proteins that make up the virus may allow it to go undetected. In addition, some strains are simply more pathogenic than others. If a situation arose where 20%–30% of the population became sick at the same time, medical resources would be overwhelmed.

What can we do to prevent such an occurrence? One answer is to heed history. As a recent panel* on the subject of the pandemic recounted, New York suffered only 33,000 deaths, the lowest per capita of any city despite the infectious vulnerability posed by its overcrowding and port traffic. Experts are quick to point out that it had little to do with any special measures the Health Department might have put in place. They credit, instead, the well-defined first-wave "three-day fever" that hit the city in the spring. Estimates are that it conferred 59% to 89% immunity against the second wave. This is seen as a potent argument for putting more resources toward vaccine research and development. The goal should be to develop a universal flu vaccine to provide dependable and years-long protection.

Should another pandemic occur, there is also another humble lesson to be learned from 1918: the importance of telling the truth. Many cities, including New York, did not at first level with their citizenry. Because of the war, authorities did not want to ruin morale and so insisted there was nothing to fear. When the facts emerged, the result was a complete loss of trust in public health leaders, which, under slightly different circumstances, could have led to a complete collapse of public order.

To avoid the contagion of indoor crowds, the San Francisco Board of Health recommended that all services and social functions not cancelled be held outdoors. Accordingly, justice was meted out at open-air police courts. Photo credit: https://www.cdc.gov/flu/pandemic-resources/1918-commemoration/historical-images.htm

Withholding information from the public did, in fact, lead to something else: a quirky misrepresentation of its own. Although the pandemic virus is believed to have originated in the U.S., the scourge is often called "The Spanish Flu." The reason is that Spain remained neutral during the war; thus it freely reported news of flu activity and so was early associated with the disease.

It is an oddity of our educational curriculum that the influenza epidemic of 1918 is rarely discussed in the teaching of American history. Our commemoration 100 years later of this tragic turn of events will hopefully connect us to our past and help us understand its connection to our present.

Sources:

*"The World's Deadliest Pandemic: A Century Later," panel discussion with John Barry, DHL, Nicole Bouvier, MD, Allan Kraut, PhD, at the Museum of the City of New York, September 27, 2018.
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https://www.archives.gov/exhibits/influenza-epidemic/
https://www.cdc.gov/flu/pandemic-resources/1918-commemoration/index.htm

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From the RIHS Archive:

Blackwell's Island Pioneers the Dedicated TB Infirmary

by Melanie C. Colter

The Roosevelt Island Historical Society has been collecting materials pertaining to our island's past for over 40 years and encourages use by the public. If you are interested in investigating some aspect of Roosevelt Island history, contact RooseveltIslandHistory@gmail.com for an appointment.

This issue's archival excerpt reveals that the public health response to the 1918 Influenza pandemic was not entirely novel: It built upon previous developments in public health applied during the devastating tuberculosis (TB) outbreak at the turn of the 20th-century. To combat rapid contagion, a progressive movement known as the "health crusades" sought to promote public health education programs and establish TB treatment centers throughout the U.S. By 1917, laws were passed that mandated counties with populations of more than 35,000 to maintain a dedicated sanatorium or hospital for the treatment of TB patients. However, the first treatment center of this kind in the country actually pre-dated this mandate—it was the Division of Tuberculosis at Metropolitan Hospital on Blackwell's Island.

Metropolitan Hospital moved from Wards Island into the former Lunatic Asylum on Blackwell's Island in 1894. The Asylum had left behind an enormous footprint. Despite Metropolitan's occupation of the main Octagon building, many buildings associated with the campus were still vacant at the turn of the century.

Following a persuasive letter from the Medical Board of Metropolitan Hospital to the Commissioner of Public Charities, this was about to change. In January of 1902, the vacant stone buildings to the south of the Octagon, known as Wards M, N and Q, were surveyed for their suitability as a dedicated tuberculosis treatment center. The Commissioner approved the expansion of hospital operations, and refurbishment of the former ward buildings took place immediately.

By the end of January, the first TB patients were transferred from the general care at Metropolitan to the Center. Women and men with TB resided in separate wards on the same campus, which also had a separate dining hall. The buildings accommodated the ill with generous exposure to light and fresh air.

Interior of Men's Ward at the Tuberculosis Center. Photo credit: https://www.harvardartmuseums.org/collections?q=tuberculosis

Those who administered the programs at Metropolitan Hospital saw the new Tuberculosis Center as "merely an outgrowth of the original institution," catalyzed by the belief that segregating consumptives from other patients was essential to eradicating the epidemic. With this separation came later facility developments: solariums and semi-temporary open-air structures were used to treat longer-term TB patients, namely those

with advanced cases of pulmonary tuberculosis.

The TB Center was the main feature of the Annual Report of the Department of Public Charities that year. This reflected its official establishment as the first dedicated infirmary for consumptives at a municipal hospital in the country. It also introduced the development of data collection from patients, including their nationality, place of origin, race, ethnicity, and religion. (Unfortunately, because many patients were recent immigrants or children of immigrants, this group became stigmatized as spreaders of the disease.)

These practices were enacted at a time when cities had done little to proactively combat TB or study the conditions that caused it to become widespread. Thus, the infirmary on Blackwell's Island was retrospectively characterized as the product of great leadership within the Medical Board at Metropolitan. In fact, it helped the hospital develop its reputation as a leading healthcare provider in NYC by the time the 1918 influenza pandemic erupted.

Sources:
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Author(s): Robert E. Plunkett M.D.
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Solarium built for TB patients, circa 1902. Photo credit: https://www.harvardartmuseums.org/collections?q=tuberculosis

RIHS Calendar

Roosevelt Island Historical Society Lecture Series—FREE
@ the New York Public Library Branch, 524 Main St., 6:30 pm

Thursday, November 8
"Hidden History of Queens"
Richard Panchyk talks about his new book on the secrets and surprises behind the borough's development.

Thursday, December 6
"Damnation Island"
A deep dive into 19th century Blackwell's Island and its institutions, based on author Stacy Horn's new book.

Thursday, January 17
"Architectural Restoration"
Architect Thomas Fenniman reviews his recent restoration projects.

Thursday, February 7
"Eleanor Roosevelt"
Blanche Weisen Cooks discusses her new book (part 3 of a series) about our historic First Lady.

Tuesday, December 11 at 4:30 p.m.
Cornell Tech Art Tour
Includes an exclusive view of the Cornell Tech campus and building interiors, the extraordinary Goldwater Murals, and other commissioned artwork. Space is very limited; sign up now. Tickets: $25 donation to the RIHS (check and cash accepted). E-mail rooseveltislandhistory@gmail.com to attend.

Date and Time TBA
Roosevelt Island Medical History Tour
Look for more detailed information on this members-only tour.

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