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New Genome Center to Bring Sequencing, Bioinformatics Muscle to Big Apple

Fearing that the city has fallen behind in biotech, 11 academic medical centers *Alex Philippidis* joined forces to form the \$125 million New York Genome Center.

If New York City is ever to become a top-tier biopharma cluster, the \$125 million New York Genome Center (NYGC) set to start operations in spring will be one way to achieve this. NYGC unites 11 academic medical centers that have the shared goal of developing one of North America's largest genomics facilities. The hope is to close the gap between New York and the top bioclusters in grant financing and infrastructure, including the San Francisco and Boston/Cambridge regions.

"In many ways, New York missed the genomic era, and I don't think anyone really realized how deep the problem was until they stopped to look at it," Nancy J. Kelley, founding executive director of NYGC, told GEN. "When we looked at the number of sequencers that were available for the eight initial institutions that we started with in the city, there were 29, versus 142 in Boston.

"Most of those sequencers were not the latest model, so you weren't talking about an Illumina HiSeq or SOLiD 5500 series," Kelley continued. "You were talking about Sanger, 454, older models that just weren't providing the same kind of firepower as the new technologies."

Illumina will provide primary sequencing technology for NYGC, though the arrangement isn't exclusive. "We will be working with Life Technologies and Oxford Nanopore and other companies in the area," Kelley noted.

"We are also in discussions with other companies to conduct scientific collaborations at the center," she added. Roche, which has a facility in Nutley, NJ, is a founding pharma member.

Center's Mandate

NYGC's plans include lab space for principal investigators (PIs), sequencing instrumentation, robotics for high-throughput library preparation, IT storage hardware for buffering and final data storage, as well as bioinformatics and other computational capabilities.

The center's research will be carried out by investigators from member institutions plus its own internal PIs. "We'll start with two internal groups in the first year, and then we'll grow to six groups by the end of year five," Kelley explained. Each group consists of about 11 people.

NYGC faces a key question as it begins operations: Should it embrace the for-profit model of China's BGI, now expanding globally? Or should it mimic the model of nonprofit, academic-focused universities and research institutes such as Baylor College of Medicine's Human Genome Sequencing Center and the Broad

Institute?

“We hope to be positioned somewhere in between, where we will be servicing the academic market but also look to being a very good service provider to others who need sequencing and bioinformatics interpretation,” Kelley said.

NYGC’s research programs will be overseen by a new director. A search panel is reviewing some 100 candidates, one of which is expected to be named to the position in spring.

Bringing Members Together

Despite the genome center’s name, not all of its member institutions are from New York City. Cold Spring Harbor Laboratory, Stony Brook University, and much of the North Shore-LIJ Health System are on Long Island. The Jackson Laboratory’s main campus is in Bar Harbor, ME, with another facility in Sacramento, CA.

Jackson Lab is planning to expand in Farmington, CT, where it wants to build The Jackson Laboratory for Genomic Medicine, focusing on systems genetics and genomic medicine; Connecticut’s legislature authorized \$291 million in bond funding toward the project in October.

“Once you’ve done the sequencing and interpretation of data to be able to understand where the variants actually lie, and you want to begin testing in models what will happen in terms of preclinical work and phenotyping once you get into clinical trials, the Jackson Laboratory can provide those models and do that phenotyping work,” Kelley commented.

NYGC will help in building those models as well as perform much of the sequencing for UConn’s collaboration with Jackson Lab. “Jackson will be a natural extension of the science that will be done at the New York Genome Center,” Kelley added.

Joining Jackson Lab, Cold Spring Harbor Lab, Stony Brook, and North Shore-LIJ as founding members of the genome center are Columbia University, Cornell University/Weill Cornell Medical College, Memorial Sloan-Kettering Cancer Center, Mount Sinai Medical Center, New York-Presbyterian Hospital, New York University/NYU School of Medicine, and The Rockefeller University. The Hospital for Special Surgery is an associate founding member, participating in the center’s scientific collaborations but not its governance since its investment is smaller than those of the 11 founding institutions.

Instituting the Culture of Collaboration

Kelley and Thomas Maniatis, Ph.D., led the planning for NYGC, which began almost a year and a half ago. Within a month, the genome center concept found early success; six institutions pledged initial seed financing for a feasibility study. By August, all 11 founder institutions made their first contributions.

Each institution was given equal representation no matter their size, through a member on NYGC board, its executive committee, and to any ad hoc committees that may emerge. That proved crucial in fusing the often fractious institutions into a smooth coalition with a single goal. That fractiousness over the years has led to numerous small-bore genomics initiatives that failed to draw the talent and grant funding needed to grow into top-flight programs.

“We adopted the principle of transparency: All institutions get the same info at the same time and have the same vote with respect to what’s going to happen,” Kelley said.

“All of this dialogue did change the culture over the course of the year to one where, 1) there was a gradual

understanding that there was a problem, 2) there was a gradual understanding that the problem couldn't be overcome without collaboration and interinstitutional contribution, and then 3) that this was an entity that was being created by the institutions, and they could be creative with it in terms of how it operated," Kelley remarked. "It was a gradual realization and ultimate willingness to take a very important step."

Fund Raising

In addition to institutional and corporate members, the center is raising funds from private philanthropic individuals and foundations. The center had garnered about \$100 million as of November 18.

NYGC has matched \$5 million of a \$20 million challenge grant from the Simons Foundation, won \$5 million from New York Mayor Michael R. Bloomberg's Bloomberg Philanthropies, and received what Kelley called substantial undisclosed sums from NYGC board chairman Russell L. Carson, Anthony B. Evnin, and pro bono legal work from WilmerHale.

The center also received \$5 million in subordinated debt funding from the New York City Economic Development Corp. and the private New York City Investment Fund (NYCIF).

Commenting on the role of the NYGC, Maria Gotsch, NYCIF's president and CEO, told GEN, "It's really important on two levels. It's very important for the competitiveness of the academic sector, furthering their research and ability to attract talent—and with talent comes research dollars.

"We also think it has a comparable benefit on the economic development side in terms of either companies that might spin off from the center but also in terms of being a draw for more IT talent to help build some of the analytical tools, either in partnership with or as a companion to the center."

Finding a Location

NYCIF's support is among efforts to build New York's biotech cluster. Growing NYC's biotech footprint, though, depends on the ability to allocate space for initiatives like the NYGC.

The genome center has yet to decide where to locate its planned 120,000 sq. ft. facility. "We are looking at three sites in Manhattan right now," Kelley said, adding that they were close to making a decision by year's end.

Few Big Apple sites can house a 120,000 sq. ft. lab. Life science space has long been in short supply, and as Gotsch correctly notes, little of what's available is affordable. The Alexandria Center™ for Life Science-New York City, where Kelley's former employer Alexandria Real Estate Equities completed a 310,000 sq. ft. lab-office tower last year, is full, though Alexandria has approvals for two more towers totaling nearly 700,000 square feet.

Another option, the Audubon Business and Technology Center campus, was ruled out because it was developed by Columbia; the center will not choose a spot tied to any of its institutional members.

Once a location emerges, NYGC can step up its director search. That should get done in a few months and will be a simpler task than the one he or she will be faced with: managing relations between the institutions while expanding the group with new members. With fundraising under control, NYGC and the director will have to prove as adept in maintaining the marriage of institutional members as it has been so far in bringing the partners together.

