

# DIRECTOR'S REPORT

Throughout many critical periods in the history of the Laboratory, there have been times when a decision to embark on a new research direction has been facilitated by the assembly of a small number individuals who share a common interest. Typically, the new research endeavor has focused around the interests of one or two scientists who provide a complementary approach to a single important problem. Coupled with the recruitment of these young scientists, the Laboratory helps foster interest in the research by establishing courses and meetings so that the new field becomes widely accessible to the broader scientific community. In this way, vigorous new areas of research at Cold Spring Harbor have emerged and more often than not, they have had great impact on biological research in general.

One of the most spectacular examples was the congregation at Cold Spring Harbor in the 1940s of scientists who believed that studying bacteria and the bacterial viruses known as bacteriophages would offer unique insights into the nature of inheritance and of life itself. Made possible by the ravages of war in Europe and the resultant exodus of brilliant young scientists from war-torn countries to the United States, Milislav Demerec (Director 1941–1960) assembled a group of investigators at Cold Spring Harbor who became known as the phage group. Principle among these were Max Delbrück, Salvador Luria, and Alfred Hershey, resident summer scientists at Cold Spring Harbor. Hershey later accepted one of Demerec's new appointments to the full-time scientific staff. This effective mix of permanent Laboratory faculty and visiting summer scientists ushered in a new era of biological discovery, the precursor to the field now known as molecular biology. Facilitating the expansion of the new research was the establishment of advanced courses at the Laboratory for scientists who wanted to join in on the exciting new opportunities. A repeat of this phenomena occurred when Jim Watson was appointed Director in 1968 and began to assemble the DNA tumor virus group. The huge expansion of funding for cancer research following the declaration in 1971 of the "War on Cancer" and the exciting opportunities made possible with the ushering in of the recombinant DNA era in 1973 were welcome developments that further boosted research at Cold Spring Harbor. Here again, an interesting mixture of new young staff scientists and visitors to the Laboratory brought new technologies and a research focus that caused a renaissance within the institution. Remarkably, this new research direction was accomplished by the appointment of young scientists who were at the earliest stages of their careers.

Many alumni from that era have gone on to continue their careers throughout the U.S. and numerous other countries as some of the most prominent scientists in the broad field of molecular biology. Most came to the Laboratory immediately after completion of their doctorates and many of these were later promoted to the scientific staff. I was fortunate to have the opportunity to come to Cold Spring Harbor as a Postdoctoral Fellow in 1979 when the tumor virus program was in full swing. Even though some of the earlier scientists had by then moved on to other institutions that wanted tumor virus research of their own, the constant recruitment of young new talent ensured a vigorous research program. The Laboratory was a dynamic and expanding place, with a balance of established, but still young, scientists coupled with newer recruits that hoped to join in on the excitement of the day. I

was also happy to be given the opportunity to continue my studies on the replication of adenovirus DNA that were started when I was a graduate student in Australia, even though no one was at Cold Spring Harbor working on this topic at the time. The Laboratory was, and remains today an attractive place for Postdoctoral Fellows to pursue research in an environment that offered fantastic research capabilities and a large measure of freedom to follow one's interests. Summer visitors in residence also added to the variety of research life, although with today's dual income families, this aspect of science at Cold Spring Harbor is becoming all too difficult to continue.

The success of the tumor virus program set the seeds for expansion of the Laboratory into other research areas that were partially related to the immediate focus of the 1970s. The philosophy of bringing a number of investigators together to attack a particular biological problem was repeated many times over. The assemblage of the "yeast group" to study the control of mating-type and the developmental control of gene expression by DNA transposition in the late 1970s and the early 1980s resulted in ensuring that the Laboratory was one of the preeminent institutions in the world that studied yeast genetics. This expansion also helped other research groups to begin to exploit the power of yeast genetics in their own research programs. The establishment of the yeast group was preceded by the Laboratory's holding a postgraduate course on the molecular biology and genetics of yeast that was begun in 1970 by Gerry Fink and Fred Sherman, a course that is still taught each year. In this case, the course had an impact on the future science at the Laboratory, rather than the other way around. The completion this year of the sequence of the entire genome of the yeast *Saccharomyces cerevisiae*, the first eukaryotic genome to be sequenced, ensures that this organism will remain an attractive model for understanding the more complex mammalian cells.

More recently, the outstanding success of the Laboratory's neurobiology research program that is devoted to understanding cognition derives from decisions in 1990 and 1991 to bring together young scientists who all have a common interest in learning and memory. Following in the tradition of the Laboratory, it was also decided to focus on a genetic approach to the complexity of brain function. There was much concern among our advisors that a genetic approach to understanding cognition would not work, but our belief in the program and in the young scientists, coupled with the ability to find the necessary funds to support the establishment and operating costs over the first critical three or four years, has resulted in a remarkable program. Just as other successful programs have in the past, we must now ensure that the learning and memory program can continue to expand and evolve. Part of this can be achieved by the establishment of new postgraduate courses at the Laboratory to foster new technologies and expansion of the research to other institutions. This year saw the introduction of a course on Mouse Behavioral Analysis as an important addition to our rich stable of courses on neurobiology. This course will couple genetic and behavioral techniques that were foreign to each other a short while ago.

Our history suggests that the bringing together of a number of talented, young investigators who share a common interest creates a research environment that transcends the sum of the individual research programs. It also helps enormously to have scientists who develop their independent research careers at the Laboratory so that they more easily fit into the Cold Spring Harbor style of science. It is by no accident that all of our scientific staff were recruited to the Laboratory at the early stages of their independent research careers. It is also exciting to witness the development of these individuals and their research programs, some of which will forever change the Laboratory.

Flexibility to pursue new research areas has been one of the key ingredients to the

success and high productivity of the Laboratory. While we regret that our highly successful scientists get lured to senior positions in universities, the Laboratory takes the opportunity to appoint bright young investigators who come here and develop their own programs at the cutting edge of research. Thus, a healthy mixture of senior faculty positions together with an influx of new blood seems to be essential for our continued success.

In 1986, one aspect of this approach was formalized when the Laboratory began the Cold Spring Harbor Fellow program. Modeled in part after the Junior Fellows program at Harvard, it is intended to offer opportunities for very talented research scientists who have just completed their Ph.D. or M.D. degrees. These unique scientists work at the Laboratory for a period of three years, unencumbered by the normal constraints of formal postdoctoral training in someone else's laboratory. The Laboratory provides salary, technical support, and the necessary funds to support research on a topic of the Fellow's choosing, sometimes in collaboration with existing faculty members, but more often than not, independent of research that involves collaboration. Each of the Cold Spring Harbor Fellows appointed to date has been highly successful. Two former Fellows, Adrian Krainer and Carol Greider, completed highly successful fellowships and were promoted to the scientific staff as independent faculty members. Both are now well respected, senior scientists in their field. Two other former Fellows completed outstanding research at the Laboratory but unfortunately, were then lured to universities; David Barford returned to a faculty position at Oxford University and Eric Richards moved to a faculty position at Washington University in St. Louis. Our initial intention was to have a single Fellow in residence at any one time, but the success of this program suggests that we should expand the number of Fellows in residence. Outstanding students can be nominated for appointment as a Fellow at any time by scientists at universities.

Although tradition has it that recently graduated students will benefit from the ability to perform postdoctoral research in someone else's laboratory, I believe that a few selected students have the ability to continue their graduate studies as independent investigators. The Cold Spring Harbor Fellows program offers this opportunity in a highly supportive research environment. The success of this program is reflected by the fact that this year we appointed two Cold Spring Harbor Fellows, Scott Lowe and Ueli Grossniklaus to the Laboratory faculty, where they will be able to expand their research by recruitment of additional personnel.

This year also saw a reorganization of the structure of the faculty positions at the Laboratory. This was done in part because the new appointments at the Assistant Investigator, Associate Investigator, or Investigator level parallel similar appointments at research universities and the Howard Hughes Medical Institute. Perhaps the most significant change was the appointment of our new faculty to an initial five-year term, rather than the old three-year appointment. Although this provides additional financial burdens on the Laboratory, it also offers these new investigators the time to develop innovative research programs that may take some time to develop. The constant recruitment of new investigators, with their accompanying start-up funds, the need to renovate laboratories and to provide the necessary research equipment, taxes the ability of the Laboratory to support such research, but in the long run, it is these new research areas that often provide the focus for longer term stability.

It is with considerable pride that we reflect on the accomplishments of our alumni who very often made their first important discoveries at the Laboratory. At the same time, the vigor of our current research programs suggest that the Cold Spring Harbor style of doing science continues to be productive.