NOBEL PRIZES IN MEDICINE

Geneticists rewarded

"It seems clear that most, if not all, forms of life on this planet use the same language. My guess is that cells will be programmed with synthetic messages within 25 years."

Thus a shy and modest man named Marshall Warren Nirenberg at once sums up the state of genetics and predicts its future, at the same time wondering if society will be able to keep pace. "When man becomes capable of instructing his own cells, he must refrain from doing so until he has sufficient wisdom to use his knowledge for the benefit of mankind."

NIH

Nirenberg: cracking the code.

The language of life is known because in 1961 Dr. Nirenberg, in experiments with the common intestinal bacterium *E. coli,* learned to read the coded messages that DNA (deoxyribonucleic acid) sends to RNA (ribonucleic acid) which in turn prescribes the manufacture of new proteins.

Holley: deciphering the RNA.

Building on Dr. Nirenberg's work, done at the National Institutes of Health in Bethesda, Md., an Indian geneticist at the University of Wisconsin synthesized all 64 of the possible trinucleotides, or subunits of nucleic acid, and confirmed Dr. Nirenberg's reading of the genetic code. Dr. Har Gobind Khorana confirmed that the genetic language is read in a linear and consecutive manner and that it is a triplet code.

Meanwhile, at Cornell University, Dr. Robert W. Holley successfully established the complete nucleotide sequence of a single nucleic acid—alanine-transfer RNA from yeast. Alanine is one of 20 amino acid components of proteins.

This week these three men share a $70,000 Nobel Prize in Medicine. The combined fruits of their research are a model for future efforts to reveal the relation between the detailed structure of molecules and their biological functions.

The implications are endless. Dr. Nirenberg understates when he says it will be "useful in many fields." If scientists can understand how cells are made, if they can learn how to manipulate the genetic messages of DNA, they will be able to control or alter those messages with synthetic materials, possibly correcting the biochemical mistakes that make some cells cancerous and repairing hereditary damage. Genetic surgery on microorganisms is already a reality. It will be applied to man.

Sharing prizes is nothing new to Drs. Nirenberg, Khorana and Holley, for whom the coveted Nobel Prize caps long strings of awards. A native of Urbana, Ill., Dr. Holley last year won the United States Steel Foundation Award for distinguished work in molecular biology, administered by the National Academy of Sciences. Dr. Nirenberg won it in 1962.

This week, Drs. Nirenberg and Khorana jointly received the $25,000 Louisa Gross Horwitz Prize from Columbia University, and on the same day that the Nobel Prizes were announced, Dr. Nirenberg alone won the Franklin Medal from Philadelphia's Franklin Institute.

Dr. Nirenberg, 41, is a native New Yorker, who received his doctorate from the University of Michigan in 1957. "I just don't know what to say," he said on hearing the news from Stockholm. "I'm delighted, just delighted."

Forty-six-year-old Dr. Khorana, co-director of Wisconsin's Institute for Enzyme Research, studied at Punjab University and received his Ph.D. from the University of Liverpool, England, in 1948.

Dr. Holley, a professor at Cornell's College of Agriculture, is also a Cornell graduate, earning his doctorate in 1947.

SEX EDUCATION

Teacher problems crop up

Sex education is becoming more widely accepted in the U.S. Where polls have been taken, they show that parents want schools to treat the subject, and school boards are gingerly moving to fulfill the demand. About 100 new sex education programs have been started so far, according to some informed estimates.

But while the idea and the program gain acceptance, a crucial problem continues to face the proponents of sex education: lack of suitable teachers.

The problem grows more serious as the programs become more widespread. And the lack of preparedness to teach the subject is causing some advocates to have second thoughts about sex education.

In some cases permission to teach about sex is an opening for teachers to inflict their own problems with the subject on the students, says Dr. Gerald Sandson, a child psychiatrist at the National Institute of Mental Health. Dr. Sandson believes it is better for kids to get distorted information from their own age group than from authorities in the classroom. He was enthusiastic about sex education before last spring, when he met a group of 50 teachers and counselors attending a sex education workshop.

Many of them were riding roughshod over an area that children are grappling with, says Dr. Sandson. "Some had their own sexual axes to grind; others almost relished their new found sanction to pronounce four letter words.

"Few showed any knowledge of child dynamics or an appreciation that this was a subject they should approach with care," says Dr. Sandson. He is not sure this group is typical of most sex educators. Probably they represent "a vanguard which is most apt to be fringy." He notes, for example, that a second workshop sponsored by the National Association of Independent Schools seemed to draw more level-headed and sensitive people.

But he believes that if sex education is to be seriously undertaken, teachers must be trained for it in the schools of education and offered some means of working out their own problems.

Even teachers who don't have their own sexual problems are not necessarily prepared to handle the subject. According to anthropologist Dr. Margaret Mead, adults are not prepared to teach young people about sex.

"Today's adults did not grow up learning to talk about such things to children," says Dr. Mead. There are only a handful of people who can talk simply and clearly about sex before a

mixed audience without turning beet red, she says.

"If we're going to meet the urgency," says Dr. Mead, "we'll have to find a method of amplifying what we've got." The use of films may be the best way to do this, she says.

Training teachers in sex education is a task to which the prestigious Sex Information and Education Council of the United States (SIECUS), now four years old, is more and more bending its efforts.

The organization is attacking the problem by sending out consultants to speak in schools and before teacher workshops. This year there were 58 such workshops, contrasted to 12 in 1967.

The group's aim is to provide people who can serve as models in communicating about sex. It may be more instructive for teachers to hear experts talk about sex than to receive what is called sensitivity training—a kind of group therapy—says Dr. James Lieberman, chief of the NIMH center for study in child and family health and a member of the SIECUS board.

Sensitivity training lacks direction when teachers often need a model to follow, says Dr. Lieberman. He disagrees with pessimism about teachers' capabilities in sex education, but concedes that problems arise from both the sexually inhibited adult and the over eager, whose desire to teach about sex often arises from their own exhibitionism.

Nevertheless, he adds, "the more sources from which young people get sex information the better—so long as some of the sources are good. A school teacher is likely to be better than a garage mechanic."

COMMITTEE NOMINEE

Handler named for Academy post

Dr. Philip Handler, James B. Duke Professor of Biochemistry at Duke University, has been nominated to be the next president of the National Academy of Sciences. He is the choice of the Academy's nominating committee, set up to find a successor to Dr. Frederick Seitz, who has resigned to become president of Rockefeller University.

Dr. Handler is currently chairman of the National Science Board, an advisory panel of the National Science Foundation, and has served on the President's Science Advisory Committee.

Although selection by the nominating committee is a prestigious recommendation it may or may not amount to election. The election is still to be held, and other nominations may come from any member of the Academy. In fact in the Academy's 1950 election the nominating committee's choice, Dr. James B. Conant, was rejected in favor of Dr. Detlev W. Bronk, who was nominated from the floor.

The new president will take office at a time when there is as much questioning of the Academy's role as there was in 1950. The Academy was set up originally to provide scientific advice to the Government. This it has done when asked; it has sponsored meetings, run a publishing program, and performed other administrative chores. Though its influence on policy has been large, it has not, as some think it should, tried to be a lobby for the interests of the scientific community, especially on budgets and funding.

On these subjects Dr. Handler has expressed views, which though they are similar to those of many scientists, may not jibe so happily with prevailing opinion in Congress.

He is cautious about geographical equality in distribution of research funds (SN: 6/22, p. 591). Although he favors building up new centers of scientific excellence, he feels that scattering scientists evenly over the country will not do this. Scientists work best when they can communicate easily with each other, and a certain critical mass of them must be present in a given place before individuals can work efficiently, he says.

Although he favors institutional grants for construction of large equipment and improvement of instruction —another Congressional favorite—he is strong for retention of individual grants and for administering such money from Washington, rather than from the office of the dean or department head. "I have little confidence in the ability of the university . . . to arrive at decisions concerning whether a given professor should be supported at the rate of $100,000 or $10,000 a year, much less deny him support."

Dr. Handler also favors a new level of grant recipient—a whole academic department—which could use the money for common equipment, personnel and continuing programs.

And he thinks the American public, like the European, will become a patron of science for its own sake. "Increasingly science will be fostered and research supported by our Government, not only because its derived technology prolongs and makes our lives more comfortable, but because science enhances our perception of the world about us. But only if science is understood by nonscientists. . . ."