other educational institutions including the Air Command and Staff College, the Institute of Aerospace Safety Engineering at the University of Southern California, the Defense Systems Management College, and Harvard University.

After completing his navigator training, Major General Phillips attended KC–135 combat crew training and subsequently served as an instructor navigator. He flew regular combat missions over Vietnam as a KC–135 navigator. Subsequently, Major General Phillips graduated from pilot training with top honors and worked as a T–37 instructor pilot. His responsibilities continued to become more complex and challenging as his Air Force career progressed. Major General Phillips has held many assignments in the logistics management field, including positions at the Pentagon and several Air Force bases. Perhaps one of his most fascinating assignment was as a logistics systems analyst at the Doshan Tappeh Air Base in Iran during 1978 to 1979. Major General Phillips had the misfortune of being held hostage for 3 weeks when the Ayatollah Khomeini overthrew the Shah of Iran. He was only released after the United States recognized the Khomeini regime.

Major General Phillips is an experienced pilot, navigator and instructor pilot with more than 3,000 flying hours, including 300-plus combat flying hours over Vietnam. He has received several major military awards and decorations; some of these include the Distinguished Service Medal, the Air Force Commendation Medal with oak leaf cluster, and the Republic of Vietnam Gallantry Cross with Palm. Despite the tremendous duties of overseeing the Sacramento ALC, Major General Phillips participates in a number of community activities. He serves on the board of directors of the Sacramento Urban League Metropolitan Chamber of Commerce, Ballet, and is the chairman of the local Combined Federal Campaign charity drive. Major General Phillips and his wife Blanche are the parents of three children and grandparents of two.

Major General Phillips is keenly aware of the struggle that African American military officers and pilots before him have faced. In recognition of this, he helps maintain their spirit and the important history of their efforts through his service as the vice president of the Tuskegee Airmen Inc.

I join my colleagues today in honoring Maj. Gen. John F. Phillips for his more than 30 years of distinguished and dedicated service to the Air Force and our Nation. I also congratulate him on his Department of Defense appointment and wish him continued success as he embarks on a new career.

NEWBERRY WOMEN'S CLUB CELEBRATES 100TH ANNIVERSARY

HON. BART STUPAK

OF MICHIGAN

IN THE HOUSE OF REPRESENTATIVES

Thursday, September 7, 1995

Mr. STUPAK. Mr. Speaker, it is, indeed, an honor for me to bring to the attention of the U.S. House of Representatives and its membership an event that occurred just last week in my congressional district, the First District of Michigan. On Thursday, August 31, 1995, the Newberry Women's Club, of Newberry, MI, celebrated its 100th anniversary. I congratulate all members of this outstanding organization, both past and present, on reaching this milestone.

First organized in 1895 as the Bay View Reading Circle, the small group of 13 women and men met to discuss issues of the day as well as matters relating to history and literature.

The organization continued to grow and in 1914 joined the State Federation and drafted its first constitution and by-laws. With more members came more involved discussions of various topics of interest to the group including art, music, education, period furniture. Individual members also composed music, wrote poetry and even wrote and produced plays that received recognition through the General Federation of Women's Clubs.

Over the years, the club changed its name to the Newberry Women's Club and involved itself in many social, civic and charitable projects including the organization of a club for girls, assistance in health clinics, contributions to the Bay Cliff Health Camp, filing Christmas and Easter baskets for the needy and even providing an arts and nursing scholarship that is awarded annually to a Newberry High School graduating senior.

As the club's second century begins, their primary focus centers on education, the arts, public affairs, home life, conservation and international affairs. While their interests have certainly broadened, they have not forgotten their origins and the primary purpose of the original club.

Mr. Speaker, it is through organizations like the Newberry Women's Club that our heritage is maintained while at the same time allowing us to look forward to meet the needs of people. I congratulate the Newberry Women's Club and wish them well in their next 100 years.

CELEBRATING THE BIRTH OF MATUSALA TEWOLDE-KUFLOM

HON. JACK FIELDS

OF TEXAS

IN THE HOUSE OF REPRESENTATIVES

Thursday, September 7, 1995

Mr. FIELDS of Texas. Mr. Speaker, with the crush of business leading up to the August district work period, I was remiss in not bringing to the attention of the House a very joyous bit of news that I know we all can appreciate and celebrate. Belatedly, I want to take a moment today to congratulate two fine individuals in Fairfax, VA on the birth of their son in May.

On May 19, Tewolde T. ''Ted'' Kuflom and his wife, Tsehainesh Ugbazghi-Adkeme became the proud parents of their first child, Matusala Tewolde-Kuflom.

''Ted'' and his wife immigrated to the United States from Eritrea in September 1988 and have worked hard since then to become successful small business owners. For the last 5 years, they have operated the D–11 Market, a corner grocery store located in northeast Washington, DC.

Their hard work and determination to build a better life for themselves, and their deep love for their son, ensure that Matusala will have what we want for all children: a loving and secure home life and a chance to fully partake in the American dream.

I salute ''Ted'' and wife, and I know you join with me, Mr. Speaker, in congratulating them on the healthy arrival of their son, Matusala Tewolde-Kuflom.

MOLECULAR BIOLOGY MAY REDUCE RISK OF BIRTH DEFECTS

HON. GEORGE W. GEKAS

OF PENNSYLVANIA

IN THE HOUSE OF REPRESENTATIVES

Thursday, September 7, 1995

Mr. GEKAS. Mr. Speaker, we have all been aware of the problems associated with birth—the possibility that an infant is born with certain defects—but up to now, we have not had a full understanding of why a child dies prematurely or fails to develop to its full human potential. Recently, at the 39th briefing before the Congressional Biomedical Research Caucus, Dr. James L. Mills, chief of the pediatric epidemiology section at the National Institute of Child Health and Human Development, described incredible advances in identifying causes of birth defects and their possible prevention.

I believe that his remarks will indicate the remarkable advances made in molecular biology at the National Institutes of Health.

BIRTH DEFECTS

(James L. Mills, M.D.)

It is a great pleasure for me to have the opportunity to come and share my enthusiasm for birth defects research with you today. Had I been asked to give this talk in 1980, when I first started doing birth defects research, I would have done so with considerable trepidation. The fact is, most birth defects research in those days was rather pedestrian. It was good work but not exciting. It consisted of classifying and describing various birth defects. We might have been fighting a war on cancer then, but we were hardly fighting a skirmish on birth defects.

Today, the situation has changed dramatically. Dr. Holmes has already pointed out that we have expanded our understanding of how birth defects occur tremendously. We have better strategies for identifying new causes of birth defects, and we are able to identify families at risk more accurately than we ever could before.

I will discuss several areas of research that have blossomed over the last decade. First, how biochemical abnormalities cause birth defects; next, how factors in the embryo's environment interact with intrinsic (genetic) factors within us to produce birth defects; and finally, how our understanding of these biochemical, environmental and genetic factors can lead to preventing birth defects.

First, I would like to speak about how biochemical abnormalities in mothers cause birth defects in their offspring. I have chosen as an example work done by us at NIH with collaborators at five major universities in the Diabetes in Early Pregnancy Study. Women who have diabetes at the time that they become pregnant have a greatly increased risk of having a child with a birth defect. Heart, brain and spinal cord defects are just a few of the many birth defects that infants of diabetic mothers are at increased risk of experiencing. We have learned that this increased risk is related to how well the mother is controlling her diabetes early in pregnancy. The better her control, the lower the risk. We also made a little bonus discovery. Diabetic women are also at increased risk for miscarriage. We were pleased to discover that a diabetic woman can also reduce

her risk for having a miscarriage by improving her control. In fact, a diabetic mother in excellent control has no greater risk for having a miscarriage than a woman with no medical problems.

More work remains to be done on diabetes. Although we know that some aspect of maternal diabetic control causes malformations, diabetes is not just high blood glucose. It is more complicated than that. In addition to raising blood glucose, diabetes can cause numerous other metabolic changes. Scientists are now trying to determine which of the many biochemical abnormalities caused by diabetes is responsible for birth defects—as a way of identifying more precisely those at highest risk, and to improve our understanding of the mechanisms by which these defects occur.

Diabetes illustrates another fascinating riddle about birth defects. We know that those diabetic women in very poor control are at highest risk for having a malformed infant, 20 percent or more of their offspring will have major birth defects (that's about ten times the rate in the general population). Why is it that the other 80 percent are not affected? We know that women who take medications that are known to cause birth defects during the critical period when the embryo's organs are developing still do not have a 100 percent chance of having affected offspring. What we do not know is why some embryos escape unscathed.

We do have some ideas, however. One of the reasons we think not every exposed embryo gets malformations brings me to the next topic; that is, how factors from outside the developing embryo—in the embryo's environment—and genetic factors interact to cause birth defects. Now let me explain just what I mean by factors outside the developing embryo. The embryo's environment means whatever is in the mother's blood—drugs she takes for acne, high blood glucose, or low vitamin levels. By genetic factors, I mean anything hereditary that make the embryo directly susceptible to birth defects.

In order to illustrate how the embryo's environment and genetic factors together produce birth defects, I want to tell you a story about neural tube defects and folic acid. Neural tube defects are a malformation of the nervous system. They are among the most devastating defects. Anencephaly is a uniformly fatal defect in which most of the brain is missing. Spina bifida is a disruption of the spinal cord that is often fatal. In survivors, it causes paralysis, bladder and bowel problems and severe disability.

Many years ago scientists observed that neural tube defects were much more common in poor families. Some suspected that dietary deficiency was an important factor. When women who had delivered an affected child were tested, they were found to have significantly lower levels of several vitamins—notably folate—in their blood. This prompted scientists to give women vitamins before they became pregnant to try to prevent neural tube defects. When investigators gave women vitamin tablets containing folic acid before they became pregnant, they were able to decrease the risk for neural tube defects, thus proving that folic acid was an important factor in the causation of NTDs. In fact, the United States Public Health Service now recommends that all women who could possibly get pregnant take folic acid to prevent these defects. So, investigators had found the environmental piece of the puzzle—folate. But remember, I said this was a story about an environmental-genetic interaction. What about the genetic piece that completed the puzzle?

We know something else about the causes of neural tube defects; certain ethnic groups are known to be at high risk. In the Celtic population, in particular in Scotland and Ireland, the risk is up to five times higher than the risk in the U.S. They call neural tube defects the curse of the Celts. So there is clearly a high risk genetic group.

We saw this as a golden opportunity to look for an environmental, that is vitamin-related, genetic, that is Celtic, interaction. We at NIH and our collaborators at the Health Research Board of Ireland and Trinity College, Dublin explored what it was about these high risk Irish mothers that put them at risk for having a child with a neural tube defect.

We had several clues. First, we knew that folate was important. This made it very likely that these women or their embryos had a problem absorbing folate from their diet, or using folate normally in their metabolic reactions. Unfortunately, humans use folate in over a dozen different reactions, making it very difficult to determine where the problem was. But we were lucky.

We had a second clue—low vitam B12 levels also seemed to increase the risk for neural tube defects, and of all the dozen plus reactions that involved folate, only one involved B12 as well. In this reaction, B12 and folate are used to eliminate a chemical known as homocysteine. Homocysteine is converted into methionine, an essential ingredient in the production of proteins, DNA and other critical items for the embryo.

We hypothesized that women whose fetuses had neural tube defects could not covert homocysteine to methionine normally. We were able to measure homocysteine levels in the blood of women who were pregnant, carrying fetuses with neural tube defects. The homocysteine levels were higher than normal, indicating that these women were not able to convert homocysteine normally.

We believe that this inability to convert homocysteine is the reason that these women have babies with neural tube defects—either because homocysteine is toxic to the embryo, or because the embryo does not receive a sufficient amount of the products of the reaction. Genetically, these women seem to have an abnormal enzyme (a chemical that moves the reaction forward). Adding more of the vitamin, folic acid, in essence pushes this chemical reaction forward and converts the homocysteine normally.

Here then was the missing piece of the puzzle. A combination of an environmental factor—insufficient folate—and a genetic factor—impaired ability to clear homocysteine—causes neural tube defects.

This leads me to the last major topic—how our understanding of these biochemical and genetic factors can lead to the prevention of birth defects. After all, it may be very satisfying to know how birth defects occur, but we are really in this business to save children from death and disability. In order to do this, we are constantly on the lookout for markers to identify women at risk, and for interventions to prevent birth defects.

We now know of several biochemical risk factors. The diabetes specialist can use clinical markers like blood glucose to identify women in poor metabolic control, women who should avoid getting pregnant until their medical problems can be corrected. We hope that we will soon have a practical test to identify women who do not convert homocysteine well and, thus, are at increased risk for having children with neural tube defects. These women could then be targeted to receive extra folic acid to prevent neural tube defects. In the meantime, we can still prevent many neural tube defects by ensuring that all women who might become pregnant take folic acid supplements.

What will the future bring? To use the illustration of neural tube defects again, we expect to find the specific biochemical reaction that is working too slowly in converting homocysteine. Once this is done, we will look at the enzyme that is supposed to move that reaction ahead. Because each enzyme is manufactured by a specific gene, it will be possible to see if the women with the homocysteine abnormality have a defective gene for that enzyme. This is as simple as finding out whether the genetic code contains an error for that gene. When that is accomplished, women can be screened by gene testing as another method of identifying women at higher risk for having babies with neural tube defects—those who especially need additional folate before they become pregnant.

Looking even farther into the future, we may be preventing birth defects by gene therapy. When a couple has a gene abnormality that prevents them from having normal children, it may be possible to perform in vitro fertilization and insert the proper gene into the fertilized egg to correct the defect—and to do it even before the fertilized egg is put into the mother's uterus.

Of course, we face new challenges with these new scientific advances. Moral issues, such as when to perform genetic testing and gene therapy, will require very careful consideration. Fortunately, when the goal is to save the life of the child by preventing birth defects, the moral questions often have clear answers.

In conclusion, Mark Twain once said that everybody always talks about the weather but nobody ever does anything about it. Until recently it could have been said that we scientists always talked about birth defects but never did anything about them. Now we are in an exciting new era where we are not just talking about birth defects; now we are doing something about them. We are preventing them.

EUNA M. THOMPSON, EXCELLENT TEACHER

HON. TONY P. HALL

OF OHIO

IN THE HOUSE OF REPRESENTATIVES

Thursday, September 7, 1995

Mr. HALL of Ohio. Mr. Speaker, I rise today to salute Euna M. Thompson, a teacher in my district, who embodies excellence in the field of education. Ms. Thompson is an outstanding example of the vital and significant impact that a teacher can make on students' lives.

Ms. Thompson is a recipient of the 1995 Excellence in Teaching Award of the National Council of Negro Women. The Excellence in Teaching Award honors teachers who uphold the legacy of Mary McLeod Bethune, eminent educator and founder of the National Council of Negro Women, by making significant contributions to the education of African American students.

Ms. Thompson strives to effect change in her students by strengthening their self-esteem, self-discipline, creativity, and critical thinking skills. She creates opportunities for her students to explore, create, perform and develop positive attitudes about themselves.

Ms. Thompson uses her considerable musical talents to enhance her teaching methods. She views art and music as means to enrich oneself culturally and academically. By leading her students to a second place victory in a New York singing competition and spearheading a $40,000 fund-raising campaign, Ms. Thompson created a once-in-a-lifetime opportunity for her students to sing for Pope John Paul II in Rome.