S. HRG. 107–293

ALZHEIMER'S DISEASE, FISCAL YEAR 2002

HEARING

BEFORE A

SUBCOMMITTEE OF THE

COMMITTEE ON APPROPRIATIONS

UNITED STATES SENATE

ONE HUNDRED SEVENTH CONGRESS

FIRST SESSION

SPECIAL HEARING

APRIL 3, 2001—WASHINGTON, DC

Printed for the use of the Committee on Appropriations

Available via the World Wide Web: http://www.access.gpo.gov/congress/senate

U.S. GOVERNMENT PRINTING OFFICE

74–574 PDF WASHINGTON : 2002

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512–1800; DC area (202) 512–1800
Fax: (202) 512–2250 Mail: Stop SSOP, Washington, DC 20402–0001

COMMITTEE ON APPROPRIATIONS

TED STEVENS, Alaska, *Chairman*

THAD COCHRAN, Mississippi
ARLEN SPECTER, Pennsylvania
PETE V. DOMENICI, New Mexico
CHRISTOPHER S. BOND, Missouri
MITCH MCCONNELL, Kentucky
CONRAD BURNS, Montana
RICHARD C. SHELBY, Alabama
JUDD GREGG, New Hampshire
ROBERT F. BENNETT, Utah
BEN NIGHTHORSE CAMPBELL, Colorado
LARRY CRAIG, Idaho
KAY BAILEY HUTCHISON, Texas
MIKE DEWINE, Ohio

ROBERT C. BYRD, West Virginia
DANIEL K. INOUYE, Hawaii
ERNEST F. HOLLINGS, South Carolina
PATRICK J. LEAHY, Vermont
TOM HARKIN, Iowa
BARBARA A. MIKULSKI, Maryland
HARRY REID, Nevada
HERB KOHL, Wisconsin
PATTY MURRAY, Washington
BYRON L. DORGAN, North Dakota
DIANNE FEINSTEIN, California
RICHARD J. DURBIN, Illinois
TIM JOHNSON, South Dakota
MARY L. LANDRIEU, Louisiana

STEVEN J. CORTESE, *Staff Director*
LISA SUTHERLAND, *Deputy Staff Director*
JAMES H. ENGLISH, *Minority Staff Director*

SUBCOMMITTEE ON DEPARTMENTS OF LABOR, HEALTH AND HUMAN SERVICES, AND EDUCATION, AND RELATED AGENCIES

ARLEN SPECTER, Pennsylvania, *Chairman*

THAD COCHRAN, Mississippi
JUDD GREGG, New Hampshire
LARRY CRAIG, Idaho
KAY BAILEY HUTCHISON, Texas
TED STEVENS, Alaska
MIKE DEWINE, Ohio

TOM HARKIN, Iowa
ERNEST F. HOLLINGS, South Carolina
DANIEL K. INOUYE, Hawaii
HARRY REID, Nevada
HERB KOHL, Wisconsin
PATTY MURRAY, Washington
MARY L. LANDRIEU, Louisiana
ROBERT C. BYRD, West Virginia
(Ex officio)

Professional Staff
BETTILOU TAYLOR
MARY DIETRICH
JIM SOURWINE
ELLEN MURRAY *(Minority)*

Administrative Support
CORREY DIVINEY
CAROLE GEAGLEY *(Minority)*

CONTENTS

ALZHEIMER'S DISEASE, FISCAL YEAR 2002

TUESDAY, APRIL 3, 2001

U.S. SENATE,
SUBCOMMITTEE ON LABOR, HEALTH AND HUMAN SERVICES, AND EDUCATION, AND RELATED AGENCIES,
COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 9:32 a.m., in room SH–216, Hart Senate Office Building, Hon. Arlen Specter (chairman) presiding.

Present: Senators Specter, Craig, Harkin, and Reid.

OPENING STATEMENT OF SENATOR ARLEN SPECTER

Senator SPECTER. Ladies and gentlemen, the appropriations subcommittee on Labor, Health and Human Services, and Education will now proceed, the hour of 9:30 having arrived.

The subcommittee has scheduled this hearing to coordinate with the 13th Alzheimer's Association Public Policy Forum. This hearing will kick off the Association's Capitol Hill Day.

This is a terrifying illness, as we all know; one where Senator Harkin and I, as ranking and chairman of the subcommittee, have been very anxious to increase funding as substantially as we can.

During the course of the last four appropriations cycles, we have taken the lead on this subcommittee, Senator Harkin and I, in moving forward to increase the funding in the National Institute of Health by some $8 billion, from $12 billion in fiscal year 1995 to now more than $20 billion. And it is our hope, this year, to add an additional $3,400,000,000 to National Institute of Health funding to move toward the stated goal of doubling the NIH budget over the course of 5 years. That funding for NIH has had a very marked impact on the funding for Alzheimer's disease.

Since 1996 the budget has risen from $308 million to $520 million this year. And we hope to reach a figure of almost $583 million for fiscal year 2002. This increase in funding is in response to a tremendous problem in America today. The statistics show that there are some 4 million Americans with Alzheimer's, and that figure will increase by 50 percent to about 6 million by the end of this decade. If projections are correct that number will double to 14 million by the middle of the next century. One in 10 individuals over 65 is afflicted with Alzheimer's, and half of those over 85 have Alzheimer's.

If we are able to delay the incidence of Alzheimer's, we will be able to save a tremendous amount of money. The statistics show that delaying the onset of Alzheimer's for 5 years would save some $50 million in annual health care costs.

Of course, we all know that President Reagan suffers from Alzheimer's, and his condition has brought to the attention of the American people the very, very serious problem. President Reagan's Alzheimer's disease is something that everyone knows about.

One additional note before turning to my distinguished colleague, and that is the issue on stem cell research. At the present time, through an opinion of counsel for the Department of Health and Human Services, Federal funds may be used on stem cell research after the stem cells have been extracted from the embryos, but it is not possible to use Federal funding to extract the stem cells from the embryos.

Stem cells hold enormous promise in virtually every line of disease. On Saturday the New York Times carried an extensive story about how stem cells may be inserted into diseased heart tissue to deal with the problems of heart attacks, heart disease, and hardening of the arteries.

The efforts to cure Parkinson's disease has benefitted enormously from stem cells with estimates that Parkinson's may be curable within 5 years.

Spinal cord injury is another ailment where stem cell research can be very, very helpful. And it may be that Alzheimer's, too, could benefit from stem cells.

During the course of today's hearing, we will hear testimony about advances which have been made to combat the onset of Alzheimer's.

Senator Harkin and I have taken the lead in sponsoring legislation which would remove the prohibition now preventing funds being used for research to extract stem cells from embryos. We realize that this is a controversial issue and that there are some who contend that the embryos constitute human life.

The fact is that the embryos were created for in-vitro fertilization and there are many excessive embryos which will be destroyed, if not put to the use of saving lives. These stem cells are a veritable fountain of youth. I mention that because I think it is important to have as much public awareness on this issue as possible, so that the people of America may be informed, may express themselves, and have an impact on Congressional action.

Now, I am pleased to turn to my distinguished colleague, Senator Tom Harkin.

OPENING STATEMENT OF SENATOR TOM HARKIN

Senator HARKIN. Well, Mr. Chairman, thank you very much. You have been a great champion for research on Alzheimer's disease over the years. We have worked very closely together. I commend you for calling this hearing. And obviously, there is more than just a little bit of interest in this hearing, as I can see by the audience here today.

I want to thank you, Mr. Chairman, for giving my remarks for me. I think you have said just about everything I wanted to say.

Senator SPECTER. So, that is what happens when you work together with someone for more——

Senator HARKIN. That is right.

Senator SPECTER [continuing]. Than a decade and have similar aptitudes.

Senator HARKIN. We have been working together, now, for 11 almost 12 years now. That is right. And it has been a great partnership. And I appreciate it, Mr. Chairman.

We are fortunate to have a distinguished panel of guests with us this morning. I especially wanted to extend a welcome to John Wagenaar, who is visiting us from George, Iowa.

Mr. Wagenaar, we have heard great things about the work you and your wife, Darlene, have done to raise awareness about Alzheimer's. And we thank you for making the trip to Washington to tell us about your experiences.

I am told that there are many who are here today who will be on the Hill today and tomorrow who have Alzheimer's. I commend you for your courage in being here. Do not fade into the shadows. Get out in front and make sure people are aware of what is going on in your families and in your lives.

The most poignant and most telling stories to have the impact, I think, on Senators and Congressmen, are your own personal stories. And so, I commend each of you who is here in Washington, who is battling this disease, this illness. And I commend you for being here and being out in front.

Like everyone here, I am deeply concerned about Alzheimer's. Four million Americans currently suffer. Unless we take immediate and dramatic action, that number could rise to about 14 million in the next 40 years.

Fortunately, researchers have made some extraordinary advances in recent years. A decade ago there were no Alzheimer's drugs on the market. Today there are four. More are on the way.

One of the areas I am interested in, and Dr. Hodes, I know, will be talking about it after a bit, is that scientists have developed a vaccine, that when tested on animals, appeared to ward off the brain-clogging deposits that are associated with Alzheimer's. Now, plans are underway to test this in humans. That is why we need more money for research.

Researchers have also come a long way in learning how to diagnose Alzheimer's. And they are doing some promising studies on the links between this disease and vascular disorders, like strokes and high blood pressure.

I also want to commend the chairman for his statements this morning and the position he has taken on stem cells. We are in lockstep on this issue, I can tell you. This is not a partisan issue, but we are in lockstep on this issue.

There are hundreds of thousands of embryos that are now frozen in nitrogen. Quite frankly, they are going to be discarded. And to think of the potential that these might have for saving human lives, because of the research that can be done, is something that we just cannot back away from.

So, I commend you for that. And we have just got to move ahead in letting our researchers do the research that is necessary.

So, again, we hope that we can raise the NIH budget this year and reach our goal, but there is one other thing I want to mention. I mentioned it to some of my friends who are here from Iowa, just before we came up here. Senator Specter and I worked together to fully fund the Family Caregivers Support Program. Seven in ten

people with Alzheimer's live at home where family members provide over three-fourths, 75 percent, of their care.

Those of us who have been touched by Alzheimer's in our families and our relatives know what kind of a toll that takes on families; the financial toll, the psychological toll. And so, hopefully, we can do something with the Family Caregivers Support Program to help provide some support for the families, for respite, the kind of support they need in their own homes to take care of their loved ones.

This year the Federal Government will spend more than a half of a billion dollars on preventing and finding a cure for Alzheimer's. Now, a lot of people say that is a lot of money, but it is pocket change compared to the $100 billion that Alzheimer's costs us every year in this country.

By 2010 the annual Medicare and Medicaid costs, alone, will rise from $50 billion to $82 billion. In Iowa, where we have a high share of elderly in our society, those costs will increase by 63 percent.

So, as the chairman said, if we can just forestall the onset by 5 years, we really save a lot of money in Medicare. That is really the answer to the problems that plague us in Medicare.

So, again, we cannot stop now. We have come too far. I thank all of you for being here. We need your help, both in the overall funding for NIH, but also in ensuring that we get the adequate monies that we need to really zero-in on Alzheimer's. We are close. We cannot give up. We cannot step back. We have got to take a big step forward.

And I thank you all for being here today and, well, they say sometimes that leadership requires a big foot in the middle of the back or maybe lower down.

So, I thank you. I am not saying you all have big feet.

But I thank you for being here and putting the foot in the back of Senators and Congressmen.

Thank you.

[The statement follows:]

PREPARED STATEMENT OF SENATOR TOM HARKIN

According to the Alzheimer's Association the costs of treating the disease in Iowa will increase more than $300 million this year, going from $480 million to $784 million.

Thank you, Mr. Chairman. You've been a great champion for research on Alzheimer's Disease over the years, and I commend you for calling this hearing.

We're fortunate to have such a distinguished panel of guests with us this morning. I'd like to extend a special welcome to John Wagenaar, who's visiting us from George, Iowa. Mr. Wagenaar, I've heard great things about the work that you and your wife, Darlene, have done to raise awareness about Alzheimer's. Thank you for making the trip to Washington to tell us about your experiences.

Like everyone here, I am deeply concerned about Alzheimer's Disease. It's a serious health problem now, but it could reach epidemic proportions in the near future. Four million Americans currently suffer from Alzheimer's. Unless we take immediate and dramatic action, that number could rise to 14 million by the year 2050.

Fortunately, researchers have made some extraordinary advances in recent years. A decade ago, there were no Alzheimer's drugs on the market—today there are four, and more are on the way. Scientists have developed a vaccine that, when tested on mice, appears to ward off the brain-clogging deposits that are associated with Alzheimer's. Plans are now under way to test this vaccine in humans.

Researchers have also come a long way in learning how to diagnose Alzheimer's. And they're doing some promising studies on the links between this disease and vascular disorders like strokes and high blood pressure.

Those advances are a direct result of this nation's growing investment in medical research. Chairman Specter and I have worked hand-in-hand for many years to provide more resources for NIH. This year, we hope to raise the agency's budget by $3.4 billion. And next year, we hope to reach our five-year goal of doubling federal spending on medical research.

The chairman and I have also worked together to fully fund the Family Caregiver Support Program. Seven in 10 people with Alzheimer's live at home, where family members provide 75 percent of their care. We all know the financial and psychological toll that Alzheimer's takes on these caregivers. They need help, too, and the Family Caregiver Support Program is a good start.

This year, the Federal Government will spend more than half a billion dollars on preventing and finding a cure for Alzheimer's. That might seem like a lot of money, but it's pocket change compared to the $100 billion that Alzheimer's Disease costs this nation every year.

By 2010, the annual Medicare and Medicaid costs alone will rise from $50 billion to $82 billion. In Iowa, the costs will increase by 63 percent, from $480 million to $784 million. But if we can find a way to delay the onset of Alzheimer's by just five years, we'll cut the cost of this disease by $50 billion a year.

So we can't stop now. We're making great progress—but we don't have much time. We need to invest more money in Alzheimer's research today, before it's too late for millions of Americans who could be stricken with this disease in the years ahead.

Again, I thank Chairman Specter for calling this hearing, and I look forward to the testimony.

Senator SPECTER. Thank you, Senator Harkin.

Senator Craig, an opening statement?

Senator CRAIG. Mr. Chairman, I do not have. I want to thank you for holding this hearing and drawing our attention to this horrible disease.

I now Chair the Aging Committee. And we are going to spend a good deal of time on this and other issues, as we examine the difficulties and the problems that an aging American population has.

What you offer us with your leadership in the necessary monies to do the kind of healthcare research that we are doing and doing very effectively now, is extremely important. We bring those forces together. And we now know that with our technology and our ability we can lick a lot of problems or diseases. This is one of them. And I think Senator Harkin has put it well; you all are here today with a very loud voice. We hear you. And we will respond.

Thank you.

Senator SPECTER. Thank you very much Senator Craig.

We have invited the co-chairman of the House Alzheimer's Task Force, Congressman Markey and Congressman Smith. It is always a question as to who goes first. And I note that we have two very, very senior Members of the House here today; Congressman Smith being elected in 1980, and Congressman Markey being elected in 1976.

STATEMENT OF HON. EDWARD J. MARKEY, U.S. REPRESENATIVE FROM MASSACHUSETTS

Senator SPECTER. We will lead with Congressman Markey. I would read you Congressman Markey's biographical resume, but it would take longer than the few minutes which are allotted to Congressman Markey. Suffice it to say that he is a leader in many fields in the House, including telecommunications issues, and just yesterday received the Alzheimer's Association Humanitarian Award for 2001.

Thank you for joining us Congressman Markey, and we look forward to your testimony.

Mr. MARKEY. Thank you, Mr. Chairman, very much.

And as amazed as I am that I have been a Congressman for 25 years, it is even more amazing to everyone I went to high school with.

So, I agree with you. Each of us, I think, kind of still wonders how we got here and got to serve in this amazing institution that allows us to help so many people.

Senator SPECTER. Senator Bumpers said to me shortly after I arrived: "Arlen, you are going to spend the first 6 months wondering how you got here, and the next 5½ years wondering how everybody else got here."

Mr. MARKEY. Well, I actually still have the opposite. I wonder how I got here. I have great respect for, obviously, this committee and honestly, the wonderful work that it has done over the years, not only for Alzheimer's, but for every other disease.

Chris Smith and I founded the Alzheimer's caucus 2 years ago. We now have 131 Members of the House who are members of the Alzheimer's caucus.

To be honest with you, my mother contracted Alzheimer's back in the mid-eighties. Up until the eighties, I had been focusing upon Alzheimer's as the disease which I've worked on in the House of Representatives, little knowing that my wife—that my mother had it. And once she had it, and I am sure that many people behind me know what I am talking about, it became impossible for me, really, to even talk about it.

My mother was valedictorian of her high school class. She was able just—without going to college, of course, because in that era women did not go to college. She graduated in 1926 from high school. Her mother had died the year before. The Social Insurance Program for the United States, in 1926, was that if the mother died, one of the daughters would have to stay home and raise the rest of the family. And that is the way it was.

So, that as we grew older, my brothers and I, we realized that the fun that she used to have in solving calculus problems, trigonometry problems for us in college was strictly a reflection of the strength of this brain that God had given to her.

Now, by the time she was able to get married, because she had to raise that other family, she was in her late thirties. She married my father, who was a milkman for the Hood Milk Company. My father always said to us that he was going to do the best he could to make sure that my mother never stepped foot in a nursing home, because it was an honor that she had married him; that the valedictorian had married a milkman.

And so, at 81, 82, 83, 84, 85, 88, he stayed—he kept her in the home. He got up five, eight times a night, lifted her up, put her on the toilet, wiped her off, put her back in the bed again; fed her all day long, because it was an honor.

Now, the interesting thing about this disease is that unlike just about any other disease, the people who are afflicted by it cannot be their own advocates, with the exception of those who are in the early stages. Moreover, those who are their principal caregivers at home cannot be their advocates.

So, unlike just about every other disease, those who are afflicted by it and their primary caregiver in the home cannot go out and lobby. They cannot go out and march. They are trapped. They are trapped by this disease.

Now, there are 4 million people who have it today. And 14 million by the time all of the baby boomers retire. Fourteen million people, plus a principal caregiver at home. That is 28 million people, at a minimum, whose entire lives will be Alzheimer's. That is all they will have in their life, because once it hits, it becomes all encompassing, as the people over my shoulder know.

So, what we advocated last year and you were good enough to help us to make that come true, was for an $85 million increase in Alzheimer's research funding, which brought the number up to $525 million. A $2.25 million program for clinical research awards, so that we could focus upon the clinical aspects of this disease. We hope that it is cured, but we are not confident it will occur in the next few years. We just pray that it will.

And we also were able, with your help, to clarify the homebound definition, because up until the end of last year, if anyone wanted to take this other person in their home to church, to mass, to synagogue, to a mosque, or to an adult day care center, they would lose the benefits in the home; someone coming in for an hour or two a day to help out.

That was a huge restriction on these people. They almost had to be prisoners in their home with this person who they might be able to take out for an hour, especially to go to church. So, that was a great boon to these families to repeal that. And I understand that it was $1.2 billion over the next 10 years, but, still, I think it is critical, because so much of this ultimately is affecting the caregivers, as well. And so, not only is it good for the person victimized by it, but also by the family caregiver.

So, this year, what we are asking for is a $200 million increase in the research budget. And in addition, that we fully fund——

Senator SPECTER. Congressman Markey, I am sorry to interrupt you, but the time is—you are a bit over, and we have a large number of witnesses, and the budget is on the floor. Senator Harkin and I are going to have an amendment pending to try to raise NIH funding. So, we are going to have to stick very close to time.

Mr. MARKEY. Could I have 1 minute, then, to complete, Senator?

Senator SPECTER. Sure.

Mr. MARKEY. I thank you. On the Apollo 13 mission, the chamber had lost its oxygen. It was about to head for a crash. They called back to Control Center in Houston. And Jim Lovell was there. And he said, "We are going to have to find a way to adapt; to find a way in which we are going to solve this problem," because the wires were on fire; the oxygen had been lost.

And those astronauts did not know if they could do it. And Jim Lovell sent back the message that they were going to use any device they could, find any means they could, to solve this problem. And when they questioned it again, Jim Lovell said, "Failure is not an option."

The same kind of oxygen is being lost. The same kind of wires are on fire in the brains of these Alzheimer's victims. And for these families and for our country, failure is not an option. We must find

the cure for this before 14 million victims and their spouses or their loved ones are trapped forever.

And so, you have the power to increase this budget by $100—by $200 million this year; $2.25 million for the clinical program and $25 million to expand the Alzheimer's matching grant program by $6 million. And I hope that you can make that possible.

Thank you.

[The statement follows:]

PREPARED STATEMENT OF REP. EDWARD J. MARKEY

Good morning. I would like to thank Chairman Specter, Ranking Member Harkin and the entire Subcommittee for holding this important hearing and for your ongoing support for research funding for Alzheimer's Disease.

In addition, I thank you for this opportunity to testify on behalf of the 4 million Americans afflicted and the countless others affected by this devastating illness.

In 1999, I approached my good friend Chris Smith with one thing in mind . . . to make Alzheimer's a top priority issue for Congress. That June, we started the Bipartisan Congressional Task Force on Alzheimer's Disease. Our objectives included increasing federal research dollars to aid in the discovery of treatments, preventative measures and a cure; and addressing the needs of patients and their caregivers burdened with the daily duty of dealing with an afflicted loved one.

Today the Task Force is at a membership of 131 and growing. And thanks to the efforts of many, the 106th Congress took three significant steps toward meeting the goals of the Task Force. These steps included: (1) increasing research funding for Alzheimer's by $85 million (2) creating a new clinical research and training awards program to fund physician-scientists in clinical research and (3) clarifying the "homebound" definition in the Medicare law so that all beneficiaries could attend religious services as well as adult day care. For Alzheimer's beneficiaries this was a crucial clarification in the law as adult day care is not only a proven therapeutic treatment for patients but it provides a much needed break in the day to family caregivers.

This Congress we want to build on our past successes by encouraging scientists to build on the progress that we've made in Alzheimer's research.

Research is medicine's field of dreams from which we harvest new findings about the causes, treatment, and prevention of disease. Since 1950, we have learned more about health and disease than in the entire history of medicine. In fact, we've eliminated some of the major scourges that killed us at the turn of the century like smallpox and diptheria.

That's why we must make sure that research not only survives but thrives. We are asking for a $200 million increase in federal funding for the National Institutes of Health—with an ultimate goal of $1 billion by 2003. In addition, we ask that the program which the Task Force was instrumental in authorizing—The Alzheimer's Clincal Research and Training Awards—be fully funded at $2.25 million. In addition to building on successful research, it's also important to build on successful programs. Specifically, we are asking that funding for the Alzheimer's Matching Grant Program currently available in only 16 states be increased by $6 million to $25 million. Expanding this program which encourages innovation in long-term care, will enable all 50 states to reach Alzheimer's families in underserved areas, particularly minority and rural communities.

As many of us here today know, Alzheimer's Disease is cruel and indiscriminate—it attacks the brain, captures the mind and erodes the mental and physical abilities of its victim before ultimately stealing his or her life. If you have one parent affected with Alzheimer's you are three times more likely to develop the disease yourself and if both of your parents are affected, you are at a fivefold increase in risk.

In fiscal year 2001, the Federal Government spent an estimated $520 million on Alzheimer's research—this is a modest investment compared with the annual $100 billion cost of the disease. We know that the disease process begins 10–20 years before symptoms begin. If science can find a way to delay the onset of Alzheimer's for even five years, our nation will save an estimated $50 billion in annual health and long term care costs.

In 1900, the average life expectancy was 48. In 1999, life expectancy at birth reached an all-time high of 77 years. In 1900 about 1 in 25 Americans were over the age of 65. In 1990, the proportion rose to 1 in 8—a 10-fold increase. It is estimated that by the year 2040, 1 in 5 Americans will be over the age of 65 and there will be almost four times as many very old people over the age of 85 as there are

today. Right now we know that one in ten Americans over age 65 and half of all persons over the age of 85 have Alzheimer's. This means that by 2050—if we fail to find a way to prevent or cure Alzheimer's 14 million Americans we fall victim.

Pasteur once observed that "Chance favors the prepared mind." We can choose to prepare, or we can turn a blind eye and leave the fate of our future aging population to chance.

So, as we leave here this morning, let us all continue to work together to soon reach that day when children will have to turn to their history books to find out what Alzheimer's Disease was.

I thank you.

Senator SPECTER. Thank you very much, Congressman Markey.

Every witness is going to be allowed 5 minutes. And I regret to say that we are going to have to stick very close to time. The budget is on the floor. And let us repeat, Senator Harkin and I will offer an amendment to the Budget Resolution that will raise the figure for NIH, and we may be called upon to offer that amendment today. So, we are going to be under very considerable time constraints.

STATEMENT OF HON. CHRISTOPHER H. SMITH, U.S. REPRESENTATIVE FROM NEW JERSEY

Senator SPECTER. We turn, now, to our Congressman Christopher H. Smith, who is the co-chair of the House caucus on Alzheimer's. Congressman Smith is in his 11th term, having been elected in 1980. He chairs the House Veterans Committee. And in that capacity, he and I have worked very closely together, since I chair the Senate Veterans Committee.

Thank you for joining us, Congressman Smith, and we look forward to your testimony.

Mr. SMITH. Thank you very much, Mr. Chairman and members of this committee. Thank you for this opportunity. And let me just say that when Ed Markey was talking about his mother doing his homework, it is good to know that somebody else's mother did his homework in high school, as well.

I have just a couple of points, and Ed has asked—and the bottom line is we are requesting $200 million in NIH increases for Alzheimer's—on the issue of basic research; the $2.25 million for the Alzheimer's clinical research and training program; and the $6 million increase for the matching grant program, so that all the States that would like to participate, can.

We have a very short window of opportunity here. We know that the onset of this can take between 10 and 20 years. We need to get to the bottom of it. And hopefully, more money will make a difference.

And bottom line, 25 percent of all the promising and meritorious Alzheimer's applications receive funding; meaning, many others that are very, very good and—and viable—never get funding. So, the money, I think—we think, would be very well utilized.

Since, Senator, you did raise the issue—a controversial issue of—of embryo stem cells, let me just address some of my comments to that, because many of us do believe, quite passionately, that destroying human embryos for so-called medical research purposes is unethical.

We believe that human life cannot be reduced to the level of a guinea pig; that there is no such thing as a "spare embryo." There may be those that are in cryogenic tanks, but there is no such

thing as a spare human being. And thankfully, there are alternatives. And I hope that this hearing today begins to refocus on the other stem cells, and that is adult stem cells.

You mentioned, over the weekend, the remarkable breakthrough reported in The New York Times, and elsewhere, on the use of stem cells to treat cardiac patients. The study you mentioned was not an embryonic stem cell study, but adult stem cells. Robert Bazell made a comment on MSNBC about this study. And in his report, he has a Dr. Orlic from the National Human Genome Research Institute in Bethesda, making some very profound comments that can hopefully keep us in consensus, rather than shattering that consensus.

And this is Dr. Orlic's statement, "Until now, researchers thought that stem cells from embryos offered the best hope for rebuilding damaged organs, but this latest research shows that embryos, which are politically controversial, may not be necessary. We are currently finding," he goes on to say, "that adult stem cells can function as well, perhaps even better than embryonic stem cells."

Dr. Douglas Melton of Harvard University recently wrote, "Human embryonic stem cells are trickier than even mouse; they are more tedious to grow."

Molecular biologist Michael Shamblock, a Ph.D., sums up the concerns with embryonic stem cell research when he said, and I quote, "We thought, from the first, that problems would arise from using HPSCs [human pluripotent stem cells, or embryonic stem cells] to make replacement tissues. The early stage stem cells are both difficult and slow to grow. More important, there are risks of tumors. If you are not very careful when coaxing these early cells to differentiate to form nerve cells and the like, you risk contaminating the newly differentiated cells with stem cells. Injected into the body, stem cells can produce tumors."

There are a number of other similar suggestions that there is another way, there is another path—that I would respectfully submit needs to be followed—which does not take human life and turn human life into the status of a guinea pig.

So, having said that, we can have a consensus; we can work in a way that everyone can feel good, and we can have very, very fine research using adult stem cells, because they offer great promise. And the breakthrough over the weekend, which is one item in an ongoing series of breakthroughs, suggests that there is a path around which we can all rally. Use the money and use it for many kinds of research, including adult stem cell.

I thank you for this opportunity and look forward to any questions you may have.

[The statement follows:]

PREPARED STATEMENT OF REP. CHRISTOPHER H. SMITH

THE RACE FOR ANSWERS TO ALZHEIMER'S DISEASE

Mr. Chairman, thank you for providing me with an opportunity to urge the committee to set aside sufficient funding for critical lifesaving and life affirming medical research.

Congressman Markey and myself are here to represent the interests of the four million Americans afflicted with Alzheimer's Disease and the 19 million caregivers who look after loved ones suffering from the disease.

As co-founder of the Bipartisan Congressional Task Force on Alzheimer's Disease—which is currently comprised of 133 members—we are seeking Committee support in three areas: (1) adequate support for Alzheimer's research at the National Institute of Health so as to accommodate a $200 million increase in research funding (2) an increase of $2.25 million to fully fund the Alzheimer's Clinical Research and Training Program—a worthwhile program authorized last year to improve diagnosis, treatment and prevention, and (3) a $6 million increase in the Alzheimer's Matching Grant Program so we can bring funding to $25 million and allow all eligible states to participate in the program.

Mr. Chairman, your committee gets many requests for increased funding. So you would be justified in asking why these three requests are worthy of your support. The bottom line is that we have a very narrow window of opportunity to save millions of Americans from developing this disease. The disease process begins 10 to 20 years before symptoms appear. This means we must find a way to stop or slow the disease process within the next five or ten years. Right now, 50 percent of every American aged 85 and above suffer from some kind of dementia. As life spans increase, the number of Alzheimer's patients will rise from 4 million to 14 million over the next 50 years. Thus, if we fail to seize this unique moment in history, the implications for our society and our economy will be staggering.

Unlike many diseases, Alzheimer's affects the entire family, as caregivers make enormous sacrifices of time, money, and even then own health status. There is simply no way we can save Medicare if we let 14 million baby boomers develop Alzheimer's disease. Medicare patients with Alzheimer's cost 70 percent more to treat than those who do not. And a lifetime cost of just one case can run between $174,000 and $200,000. If every Alzheimer's patient needed a long-term stay in the nursing home, state and federal Medicaid budgets would burst at the seams, threatening the nation's safety net for all indigent persons.

So what needs to be done? First, we need to boost NIH funding so that it can accommodate a $200 million increase in total Alzheimer's research across all agencies. An increased investment will allow for researchers to search for simple, practical, widely available, and affordable ways to detect the earliest changes in the brain. This is the only way physicians will be able to identify who needs the treatment that will help alter the course of the disease while there is still enough time to make a difference. It will also allow for additional large-scale trials aimed at prevention of Alzheimer's disease, including studies of persons with mild cognitive impairment and new longitudinal studies of persons who are aging successfully. Part of the answer to Alzheimer's may lie in discovering why many live well into their 90s with their cognitive abilities intact. Furthermore, appropriate funding will permit us to establish additional large-scale clinical trials of early intervention to slow or prevent decline. Scientists have many more sound ideas for effective treatments that they can test with increased funding.

Sadly, only 25 percent of all promising and meritorious Alzheimer's disease applications receive funding from the NIH. Thus, it is evident that the overwhelming percentage of well-scoring Alzheimer's applications do not receive support from the NIH. Many valid scientific opportunities that could enhance our knowledge of Alzheimer's have been lost. Mr. Chairman, we are headed in the wrong direction—we need to be funding most, if not all, promising and viable Alzheimer's studies. We certainly should not be rejecting nearly 75 percent of every promising new research project presented to the NIH.

Secondly, and building upon the first request, is $2.25 million for the Alzheimer's Clinical Research and Training Program This program was authorized last year to improve diagnosis, treatment and prevention of Alzheimer's disease. Better training and education will allow professionals to improve their diagnosis, management, and prevention of Alzheimer's disease. The program is designed to help promising young researchers who wish to make Alzheimer's research, their life's work. The $2.25 million asked for in this program is a modest amount to train a core group of bright and upcoming professionals in managing Alzheimer's disease.

Finally, we believe that states who wish to participate in the Alzheimer's Matching Grant Program ought to be allowed to do so and receive some level of federal support. This is a focused program to promote innovation and experimentation in state long-term care programs treating Alzheimer's patients. This 15-state demonstration has operated for 8 years with enormous success. A $6 million increase, bringing total funding to $25 million, would allow all states who are expected to apply for funding the ability to receive support. I believe the states have often led the way for new ideas. If we are serious about letting states continue to innovate, we need to get behind this program.

Mr. Chairman, we have seen that the Alzheimer's investments Congress has made in the past decade are now paying off in rapid discoveries regarding the basic

mechanisms of the disease, the complex interplay of genetic and environmental risk factors, and the treatment and interventions that can slow decline. Discoveries in the past year alone have generated great excitement in the field of Alzheimer's. For instance, scientists have developed a third FDA-approved drug designed for the treatment of the disease's cognitive symptoms. In addition, scientists have completed Phase 1 of a clinical trial involving humans in which they used a vaccine that appears to prevent in the brains of mice the amyloid deposition that forms plaques which characterizes Alzheimer's disease.

The United States enters the 21st Century facing an imminent epidemic. By 2050, 14 million of today's baby boomers will have Alzheimer's disease. For most of them, the process that will destroy their memories, their lives, and their savings has already begun, The annual cost of Alzheimer's disease will soar to at least $375 billion, overwhelming our health care system and bankrupting Medicare and Medicaid. The only way to avoid this crisis is to act now.

Senator SPECTER. Thank you very much, Congressman Smith. You and I have a somewhat different view on the subject. And we had a chance to discuss it at some length on a train ride to Philadelphia when we visited the Veterans' Hospital there. When the Secretary was en route to go to New Jersey with you.

And there will be an opportunity to go into some detail as to the issue of whether adult stem cells are adequate. I have seen the body of the literature on it. And I have a different conclusion. But I very much respect what you have said.

When you talk about human life, I quite agree with you; that I would not do anything to invade human life and would not want to make any form of life or any human life a guinea pig. The difficulty that I have is that these embryos are going to be destroyed. And I know your view is that action ought to be taken to avoid the destruction. And this is a very, very sensitive matter and a very important matter.

I know that there will be time for extended debate, both in the House and in the Senate. And I appreciate your point of view. We will give you the last word, if you want to make an additional comment.

Mr. SMITH. I appreciate that, Senator and Mr. Chairman. You know, when you say they are going to be destroyed, that is a possibility. It is not an absolute certainty. And with—if the concept and if the proverbial Rubicon is crossed, that there are certain human beings that could be destroyed, in the process of having their stem cells taken away, it does indeed turn them into the status of a guinea pig.

And there will be, after that, once that bridge is crossed, other efforts will be made—I mean, if we can take those human embryos and use them, it undermines the sanctity of human life and puts us on a slippery slope where all of our lives are put at risk and devalued.

You know, there is no such thing as a spare embryo. There is no such thing as a spare human being. I would argue, passionately and hopefully persuasively, that from the moment of fertilization until natural death, we need to have protection for innocent human life to the greatest extent possible.

And thankfully—and I cannot stress this enough—there is an alternative that offers greater promise and does not have the ethical baggage that embryonic stem cells have. It is the adult stem cell approach.

Senator SPECTER. Thank you very much. Unless there is some question, we will move to panel two. Thank you very much.

Senator HARKIN. I must say, Mr. Chairman, you and I have both put too much into this whole effort. Listen, Chris knows I respect him highly. And he is a very principled person. I hope you give us the same benefit; that we are principled, also.

Both Senator Specter and I have been involved in the stem cell thing from the beginning. I believe that we have crossed all of the t's and dotted all of the i's, in terms of the ethical underpinnings of this. I just say two things; that I think there is a lot of misconception about stem cells. I have talked to many people who think that you are talking about embryos and that equals the fetus.

I always do this: I hold up a piece of paper. What is on that piece of paper? I defy anyone there to see it. You cannot see it. I put a little dot. I took my pencil and put a little dot on it. That is how big those embryos are. It is not a fetus. It is an embryo.

These are the leftovers from women who, for one reason or another, could not have a child. And so, they went through embryo placements. They now are happy parents. They have a child. But obviously, you know, a lot of embryos are left over and they are now in cryogenic tanks. To think that we are going to keep those for the next 10,000, 1 million, 2 million years—no. Yet they hold a lot of promise.

Now, I do disagree with you, Congressman Smith, about the pathways. Yes, there are other paths. This premise is where we differ. I think we ought to go down that path of adult stem cells. I think it may hold a lot of promise, but basic research, I have always said, is like you have 10 doors that are closed.

If you open one door, the odds are 10 to 1 that you are going to find a cure. If you open five doors, it is 2 to 1. We are trying to open doors. And to shut off one pathway that may lead to a cure and which scientists believe that can be done ethically, under sound ethical guidelines that have been set up, to me, is to cut off the possibility that they may lead to the kind of interventions and cures that we need for a host of different illnesses, not just Alzheimer's.

And so, yes, I think we do have a disagreement there, but I believe it can be done very ethically. And I believe it can be done in a manner that takes these little embryos the size of a dot, size of a pinhead, and further enhance human life. And it seems to me that is what we all ought to be about.

Thank you, Mr. Chairman.

Mr. MARKEY. Tom. I'm sorry. Tom. Can I say that I agree with you and agree with Senator Specter on stem cell research? So, I think——

Senator SPECTER. Thank you, Congressman. I think we better——

Mr. MARKEY. I take the position we choose—just so you will know that the Congressional Task Force on Alzheimer's does not take a position on the subject. Chris and I have different points of view.

Senator SPECTER. Sure.

Mr. MARKEY. I share your view on the subject. We try to find agreement on all the issues upon which we do agree.

Senator SPECTER. We will have an opportunity at a later time to explore it in some detail.

I spoke, perhaps, too soon, Congressman Smith, in promising you the last word. I should have known better, with Senator Harkin at my side.

But I respect——

Mr. SMITH. But do I get another last word?

Senator SPECTER. I respect your views, Congressman.

Senator CRAIG. Mr. Chairman, I will remain silent.

Senator SPECTER. It is too late, now, Senator Craig.

But I respect your views. And I think you are passionate beyond any question. And I think you are persuasive, as well. Thank you very much, Congressman Markey and Congressman Smith.

STATEMENT OF DR. RICHARD J. HODES, DIRECTOR, NATIONAL INSTITUTE ON AGING, NATIONAL INSTITUTES OF HEALTH, DEPARTMENT OF HEALTH AND HUMAN SERVICES

Senator SPECTER. We will now turn to Dr. Richard Hodes, who, since 1993, has been the Director for the National Institute on Aging. He has had several other posts at NIH, including Clinical Investigator at the National Cancer Institute, Program Coordinator for the U.S.-Japan Cooperative Cancer Research Program. He is a graduate of Yale University and an M.D. from Harvard Medical School.

President Kennedy would say, Dr. Hodes, you have the best of both worlds. Thank you for joining us and we look forward to your testimony.

Dr. HODES. Thank you, Mr. Chairman and members of the committee, for this opportunity to appear before you, again, to describe some of the progress over the past year in the research to understand and ultimately to treat and prevent Alzheimer's disease.

Alzheimer's disease is a progressive and devastating disorder of the brain, which is a result of a long cascade of events. It results in the deterioration of intellectual functioning and ultimately a loss of independence.

As noted, some 4 million Americans currently suffer from the disease. And due to the unprecedented increase in the number of aged among the American population in years to come, this number threatens to increase and create a true crisis of both personal and public health.

With this understanding of urgency, the National Institutes of Health have been acting, through the Congressionally supported Alzheimer's Disease Prevention Initiative, to understand the processes which underlie the disease and to translate this understanding into means of intervening.

I would like, briefly, to review for you some of the clinical activities that exist today, built upon prior years of basic research, and then also to share with you the excitement of some of the current research that offers hope for next generation of interventions.

The National Institutes of Health now support a number of clinical trials. Among these, some of the most challenging, most expensive, but most important, are those which attempt to intervene and prevent Alzheimer's disease before its symptoms occur.

Some of the active studies that are ongoing now are listed in the first transparency and visual. They represent trials of a number of agents, the promise of which was provided by prior studies of epidemiology and basic biology.

They include studies of classes of agents, such as antioxidants, anti-inflammatories, estrogen, ginkgo biloba. As you note, from the timeline, these studies, because they are aimed at preventing the appearance of disease, require many years to completion. They are, therefore, a type of study that needs to be carried out in parallel, as we explore multiple avenues to opportunity, not knowing which is going to be the one that offers the greatest promise.

In addition to these studies of clinical trial, we focus, as well, upon the needs of caregivers; those persons, loved ones, family members, taking care of individuals with Alzheimer's disease. And there are, indeed, clinical trials that are underway in attempts to minimize this burden, as well.

Some of them focus on patients with Alzheimer's, reducing symptoms, such as agitation, improving sleep, to the benefit of both patients and their caregivers. Others have demonstrated the effects of interventions as diverse as exercise or the use of computer web-based resources to decrease stress among caregivers.

And there is a large scale clinical trial now, nearing the stage of interpretation of reporting of data, the Resources for Enhancing Alzheimer's Caregiver Health, or REACH initiative, which is attempting, in a large and diverse population of American caregivers, to look for techniques and methods to ease the burden on caregivers and to improve the quality of life for those for whom they provide this care.

In addition to these ongoing studies, as we, as scientists, and as the public awaits their results, we turn to basic studies to try to improve our understanding at a molecular and genetic level of what is responsible for the devastation of Alzheimer's disease, in an effort to then translate these findings into a new generation of promising interventions.

Over the past years, excitement has occurred in a number of areas, tracing discoveries that included the identification of the chemicals involved in the lesions, plaques, and tangles in the brains of Alzheimer's patients, then the genes which encode these products. And ultimately, it allowed us, for example, to transfer these genes by genetic engineering into mice, creating, for the first time, mouse models of Alzheimer's disease.

What you see in this schematic is the demonstration of the process by which a normal membrane protein in cells, the amyloid precursor protein, is cut by chemicals called secretases or enzymes, that, as indicated by the two scissors, can, to the misfortune of the individual involved, clip the protein into a peptide that can lead to amyloid plaques and on to Alzheimer's disease and may thus be responsible for the disease.

Now, armed with the information about what causes formation of these plaques, we can intervene to inhibit enzymes, and through that route, attempt to arrest or prevent disease.

In the next transparency, you will see the example that Senator Harkin referred to.

Now, with animal models available of Alzheimer's disease, we can generate animals that are bearing human Alzheimer's genes. As a result of this expression, they have, as shown in the upper left corner, the amyloid plaques stained in brown here, which are similar to the lesions seen in the brains of Alzheimer's patients.

And now, over the past year, we have seen interventions that have taken the approach of immunizing against this peptide, with the results seen in the bottom left, where, indeed, these plaques are prevented or in fact disappear.

The figure to the right shows that it is not only the plaques that disappear. The high level of errors made in the abnormal mice, because they have poor memory can, in fact, be corrected or reversed by immunization with this peptide. These are studies now which move on to clinical trials.

I thank you for the time to discuss with you the advances and the promise for future advances, as we translate our understanding of Alzheimer's into clinical interventions. And I welcome an opportunity to answer any questions you may have.

Thank you.

[The statement follows:]

PREPRED STATEMENT OF DR. RICHARD J. HODES

Mr. Chairman and Members of the Committee: Thank you for inviting me to appear before you today on an issue of interest and concern to us all, Alzheimer's disease. I am Dr. Richard Hodes, Director of the National Institute on Aging (NIA), the lead federal agency for Alzheimer's disease (AD) research. It is an honor to return to the Subcommittee with promising news about the progress that has been made in the past year to understand, treat and prevent AD. The fast pace of research is providing insight into AD as well as other neurodegenerative diseases and normal brain function.

PREVENTING ALZHEIMER'S DISEASE: THE AD PREVENTION INITIATIVE

Alzheimer's disease is the most common cause of dementia among older persons. It is a progressive, and at present irreversible, brain disorder that leads to a devastating decline in intellectual abilities and changes in behavior and personality. AD patients eventually become dependent on others for every aspect of their care. Scientists believe that AD develops as a result of a complex cascade of events, influenced by genetic and non-genetic factors, taking place over time inside the brain. These events cause the brain to develop lesions, including beta amyloid plaques and neurofibrillary tangles, and to lose nerve cells and the connections between them in a process that eventually interferes with normal brain function.

As many as four million Americans now suffer from Alzheimer's disease.[1] The prevalence of AD doubles every five years beyond the age of 65, which will lead to dramatic increases in the number of new cases as the population ages. The last Census Bureau projections indicated there will be approximately 20 million people in the United States aged 85 or older by 2050, suggesting that there will be many more people at very high risk for AD. The National Institutes of Health (NIH) recognizes the urgency of this public health threat and is committed to supporting critical bench-to-bedside research to develop strategies for treating and, more importantly, preventing the onset of this devastating disease.

The AD Prevention Initiative is a congressionally-supported intensive coordinated effort among several NIH Institutes, including the NIA, National Institute of Neurological Disorders and Stroke (NINDS), National Institute of Nursing Research (NINR), and National Institute of Mental Health (NIMH), to accelerate basic research and the movement of basic research findings into clinical practice. Improved understanding of the initial stages of AD has allowed researchers to focus on the development and testing of new treatments targeted at the earliest stages of the disease process. The core goals of the initiative are to invigorate discovery and testing of new treatments, identify risk and protective factors, enhance methods of early de-

[1] Evans, D.A., Estimated prevalence of Alzheimer's disease in the U.S. Milbank, Q. 1990;68:267–289.

tection and diagnosis, and advance basic science to understand AD. The initiative also endeavors to improve patient care strategies and to alleviate caregiver burden. (Chart #1)

ONGOING CLINICAL TRIALS

The NIA is currently supporting 17 AD clinical trials, seven of which are large-scale cognitive impairment and AD prevention trials. Prevention trials are among the most challenging and costly of research projects but, if successful, the payoff for people at risk, their relatives and society will be significant. Many of the agents being tested in these trials have been suggested as possible interventions based on long-term epidemiological and molecular studies. For example, epidemiology studies show that persons who have taken anti-inflammatory drugs have a lower risk of developing AD; and in basic research, inflammation around plaques is a hallmark of the disease. (Chart #2) There are similar rationales for estrogen and for anti-oxidant therapies. The first large-scale AD prevention clinical trial supported by the NIH, the Memory Impairment Study (MIS), is evaluating vitamin E and donepezil (Aricept) over a three-year period for their effectiveness in slowing or stopping the conversion from mild cognitive impairment (MCI) to AD. MCI is a condition characterized by a major memory deficit without dementia. The trial is being conducted by the NIA-funded Alzheimer's Disease Cooperative Study (ADCS) group at medical research institutions in North America, including NIA-supported Alzheimer's Disease Centers. The trial is scheduled to end in 2003. Other recently-started primary prevention trials will be completed in the years from 2003 through 2008. These trials are testing a variety of agents, such as aspirin, antioxidants such as vitamin E, combined folate/B6/B12 supplementation, estrogen, anti-inflammatory drugs, and ginkgo biloba, to determine if they will slow the rate of cognitive decline or prevent AD onset. (Chart #3) As scientists await the outcome of these ongoing studies, the next generation of drugs is being developed, targeting specific pathways in plaque and tangle formation and dysfunction and death of brain cells.

Information about ongoing clinical trials and recruitment opportunities is available to the public through the NIA-supported Alzheimer's Disease Education and Referral Center web site (http://www.alzheimers.org) and toll-free number (1–800–438–4380), as well as on the NIH clinical trials web site (http://www.clinicaltrials.gov).

FROM BASIC SCIENCE TO TREATMENT

Developing effective treatments for AD based on advances in basic research is a major focus of NIA-supported studies. Important progress has been made in recent years by generating animal models of AD through genetic engineering of transgenic mice that express human AD genes and that express features of the human disease, such as the formation of amyloid plaques. In addition, the ability of researchers to develop drugs for effective treatment of AD was greatly enhanced last year by the discovery of enzymes called secretases. These enzymes are involved in the clipping of a normal cell surface protein to produce the amyloid peptide that forms the senile plaques found in the brains of AD patients. (Chart #4) The discovery of these enzymes, together with availability of animal models of AD, will be critical to the development and testing of effective and safe amyloid-preventing drugs. Major advances were also reported by researchers in the public and private sectors regarding the amyloid immunization approach to blocking the formation of amyloid plaques. In another major development, vaccine treatment prevented much of the cognitive decline usually seen with age in two AD transgenic mouse models. (Chart #5) To accelerate research into the vaccine approach to treating AD, NIA and NINDS have announced a Request for Applications (RFA) for research to understand and enhance vaccine-related therapies for AD prevention.

Research on tau, the protein that forms the other major AD lesion, the neurofibrillary tangle, has also accelerated this year. Mutations in the tau gene have been shown to cause some forms of another late-onset dementia. A transgenic mouse strain was developed in the past year that expresses one of the human tau mutations and develops AD-like tangles. This animal model will help researchers understand why tangles form and what role they play in the pathology of AD and other dementias.

Understanding the subtle physical changes that accompany aging and developing treatments to address these changes may also be useful in treating early stages of other neurodegenerative diseases such as Parkinson's disease. For example, new results from a study on reversing the age-related shrinkage and dysfunction of certain brain cells that produce the memory-related chemical messenger acetylcholine show that nerve growth factor can reverse the age-related reduction in transport of

acetylcholine from these cells to different parts of the brain important to attention and memory. This approach is now being tested in a small industry-funded clinical trial. Results from another recent breakthrough have shown that, contrary to prior belief, the nervous system retains the ability to make new neurons even in old adults. This research has uncovered environmental factors such as exercise that can increase the numbers of new brain neurons, improving memory function in adult mice. Studies are beginning to unravel the molecular steps that control the production of new neurons in different areas of the nervous system, including the spinal cord. These findings are major steps forward not only to enhancing nerve cell development, but also to replacing nerve cells lost through age, trauma, or disease.

Major breakthroughs in our understanding and treatment of AD are coming from identifying the mutated genes responsible for early onset AD. In the more common late onset form of AD, a combination of risk factor genes and non-genetic factors seems to be key. In the early 1990s, APOE4 was identified as the first major risk factor gene for late onset AD. In the past year, three groups simultaneously discovered a region containing another risk factor gene on chromosome 10. Identifying this gene and other still unknown risk factor genes will lead to greater understanding of the molecular processes underlying AD, and will result in new treatment strategies, some of which will likely be tailored to an individual's unique genetic profile. New risk factor genes will also lead to better prediction of a person's individual genetic risk profile for AD. Strategies are being developed for large-scale collection of appropriate families and analysis of genetic data for these studies.

DRUG DISCOVERY, DEVELOPMENT AND TESTING

The only currently FDA-approved treatments for AD are tacrine, donepezil, rivastigmine and galantamine, each of which boosts levels of acetylcholine, the chemical messenger involved in memory. However, there are currently many drugs at various stages of testing that have shown promise in either treating the symptoms associated with AD or slowing the progression of the disease. To screen as many potential drugs as possible, the NIA has developed the infrastructure for preclinical drug discovery and testing for drug safety in animals. Pilot and planning mechanisms have also been developed, along with NIMH and NINDS, to facilitate development of full-scale clinical trials, and this year, the first pilot clinical trials have been funded through this mechanism.

NIA supports AD clinical trials through a variety of mechanisms. In addition to individual investigator-initiated clinical trials, the NIA supports the Alzheimer's Disease Cooperative Study (ADCS), established to support multi-site clinical trials on compounds that large pharmaceutical companies generally would not test. The ADCS is also designed to develop and test new instruments for effective clinical trials. Several clinical trials now in progress are being supported by the NIA through the ADCS. The ADCS has also been key in developing standardized procedures and measurements in clinical trials, widely accepted in both academia and in industry. The ADCS will continue to be an important part of NIA support of large-scale AD prevention trials as well as the search for biological markers for monitoring the efficacy of drugs in clinical trials.

EARLY AD DIAGNOSIS

Much of our understanding of the clinical course of AD and the underlying brain pathology comes from longitudinal, interdisciplinary studies of persons with AD and normal controls. Many of these studies have been coordinated through the NIA-funded Alzheimer's Disease Centers. A newly-funded collaborative infrastructure, the National Alzheimer's Coordinating Center, is enhancing collaboration among the Centers to study important new areas of research. One such area involves understanding the preclinical stages of AD, a major new frontier in AD research and of the utmost importance in implementing future preventative treatments.

Recent advances in imaging and in clinical and pathological assessment are focusing on identifying persons diagnosed with mild cognitive impairment (MCI) accompanied by memory impairment. Prevalence estimates show that there are as many persons with MCI as there are persons with a clinical diagnosis of AD. In one study, 80 percent of persons diagnosed with MCI had developed clinically diagnosed AD within eight years. Distinguishing between persons with MCI who will and will not progress to AD is a critical objective. In a recently published study, the degree of impairment found in clinical assessment predicted those who would develop AD more rapidly; and in an imaging study of persons with MCI, the smaller a particular brain region at the beginning of the study, the greater the risk of developing AD later. (Chart #6) Abnormally low brain activity, identified by positron emission to-

mography (PET) scanning, may be able to identify abnormal patterns of activity predictive of later AD diagnosis earlier than other currently available tests.

Besides their potential utility in early diagnosis, these imaging techniques are also being assessed for their ability to determine the effectiveness of early treatments or interventions, such as those being tested in the AD Prevention Initiative. Investigators believe that they may be more rapid and cost-effective indicators of treatment efficacy than conventional measurements.

RISK AND PROTECTIVE FACTORS

Recent epidemiology studies focus attention on cardiovascular risk factors such as high blood pressure in middle age and elevated cholesterol as risk factors for AD. Further animal and human studies and clinical trials will be required to determine if AD and cardiovascular disease share common risk factors and possibly concurrent intervention strategies. One approach to identifying causal factors is to compare populations with very different life styles. One recent study showed that the rate of AD diagnosis was approximately half in an urban population of older Africans in Nigeria than it was in African Americans of Nigerian origin now living in Indianapolis. The Africans in the study had much lower prevalence of risk factors for cardiovascular disease such as high blood pressure, high cholesterol and diabetes than did the U.S. population. Future studies will pinpoint exactly which of these or other factors was responsible for the difference in AD development between the two groups.

Early life environment has been implicated as a risk factor for several late life chronic diseases. Socioeconomic or environmental variables may affect brain growth and development, perhaps affecting the risk of developing AD in later life. Other life course variables such as exposure to environmental toxins or traumas may increase susceptibility to cognitive decline and neurodegenerative diseases in later life. One risk factor may be severe head injury, as shown by a recent study of World War II Veterans. Recent studies correlate a number of other variables including education, occupation, leisure mental activities and social support systems with the risk of cognitive decline or AD. Evidence that particular environments or lifestyles would reduce the risk or delay the onset of AD would have enormous implications for lifestyle changes to maximize healthy cognitive aging. Older Americans already have better education and health and are less disabled than in previous generations. It is possible that one or more of the above factors may already be causing a lower prevalence of severe cognitive decline in the elderly than would have been predicted from earlier studies.

PATIENT CARE STRATEGIES AND CAREGIVER BURDEN

Perhaps one of the greatest costs of Alzheimer's disease is the physical and emotional toll it takes on family, friends, and other caregivers. There is clearly a critical need to develop more effective behavioral and pharmacological strategies to treat and manage problem symptoms in people who have AD and to alleviate caregiver burden. This is one of the major goals of the NIH Alzheimer's Prevention Initiative. (Chart #7)

Agitation and sleep disturbance are two of the major behavior problems in AD patients that increase caregiver burden. Two clinical trials are determining whether drugs can reduce agitation in patients with AD. In another small trial, melatonin is being tested for reduction of sleep problems in patients with AD. In other studies focusing on elderly caregivers of patients with dementia, moderate-intensity exercise showed marked improvements in caregiver physiological reactions to stress and in sleep quality when compared to a control group maintained on a nutrition program. In another controlled trial, caregivers given web-based support experienced significantly reduced strain, while greater use of the support system resulted in lower strain among caregivers who lived alone with care receivers. To make the web more accessible to older caregivers, the NIA and National Library of Medicine are testing a senior-friendly web site model that features information about Alzheimer's disease and caregiving. The project will be launched later this year.

As part of the AD Prevention Initiative, the NIA, in collaboration with the National Institute of Nursing Research, is supporting the Resources for Enhancing Alzheimer's Caregiver Health (REACH) initiative. This large, multi-site intervention trial is testing the effectiveness of different culturally sensitive home and community-based interventions for families providing care to loved ones with dementia. The interventions that are being tested include psychological education support groups, behavioral skills training, family-based systems interventions, environmental modifications, and technological computer-based information and communication services. Some 1,000 families are enrolled in the REACH study, including

large numbers of African-Americans and Hispanics. Results from the REACH study will be available in the next year, and I look forward to sharing any significant advances with the Congress and the general public.

In conclusion, the pace of scientific discovery in the area of Alzheimer's disease research has further accelerated this year and optimism is growing that effective treatment may follow from the current generation of clinical trials. Much remains to be understood about the underlying causes of AD, and the NIA continues to support a spectrum of basic and clinical research aimed at comprehending the multifaceted factors interacting throughout the lifespan to cause AD. Only by understanding these varied factors will we be able to develop the most effective and safe strategies for defeating this much-feared scourge of later life. I am happy to answer any questions you may have at this time.

U:\GRAPHICS\FY2002\07AP031.EPS

U:\GRAPHICS\FY2002\07AP032.EPS

U:\GRAPHICS\FY2002\07AP033.EPS

U:\GRAPHICS\FY2002\07AP034.EPS

U:\GRAPHICS\FY2002\07AP035.EPS

U:\GRAPHICS\FY2002\07AP036.EPS

U:\GRAPHICS\FY2002\07AP037.EPS

Senator SPECTER. Well, thank you very much, Dr. Hodes.

What can you tell us in concrete terms what has been done with the increase in funding? When the funds rose from $456 million in fiscal year 2000 to $520 million, what did that enable you to do to justify that increased expenditure?

Dr. HODES. Well, I think, Senator, some of the concrete examples were portrayed in the information that I have shared with you. For example, the prevention trials. As noted, these trials take many years, many individuals. They are perhaps the most expensive form of research that we carry out.

Individual trials of this sort may involve a cost in the range from $20 million to $40 million or $50 million. The ability to carry out these trials of the multiple agents, for each of which there was promise shown by past research, was facilitated, indeed, by the increase in the budget that NIH has enjoyed over past years.

Equally so, the basic research described has been, to a large extent, enabled by the increase in budget and allocations through appropriations.

Senator SPECTER. One of the questions, which understandably comes to this subcommittee repeatedly, from our colleagues, is are you just throwing money at the problem, or is it effectively used? If we are successful in increasing your budget from $520 million to $582 million, a $62 million increase, what would you project to use that additional funding for next year?

Dr. HODES. I think we already are able to see in the applications we are receiving and in conversations and input from the scientific community, that the opportunities, both for basic science and for the generation of new clinical trials for treatment and prevention, are highly meritorious, have been reviewed as such, and will easily allow us to spend the magnitude of budget increase that you mentioned, continuing to find only the highest quality of outstanding applications.

Senator SPECTER. Will easily allow us to spend? I am a little concerned with your articulation, Dr. Hodes, of "easily allow us to spend." It is not too hard to spend. Are we getting the bang for the buck?

Dr. HODES. Absolutely. The rest of the sentence was "easily allow us to spend supporting still the most outstanding caliber of research." And so, yes, the direct response is that that amount of money would be spent, supporting the very highest quality of research. As noted, our success rate, that is, the proportion of applications we currently fund, is approximately 25 percent now.

There are many applications we are not able to fund, which have high promise, as reviewed by peers, by experts in the field. When the question was raised and it is a critical question—3 years ago, when the proposal of doubling the NIH budget over 5 years, the question was raised whether we could, indeed, wisely and appropriately use these resources.

I think that the experience of the past 3 years has indicated that indeed we can; that the research supported with this increased funding has been outstanding and highly meritorious. And I think every indication, the prospect for the years to come, is that we can continue this trend.

Senator SPECTER. One of the questions which is customarily asked by the subcommittee, although very obviously very difficult to answer is: What are the prospects for finding the answer to Alzheimer's? On Parkinson's we have—after some question, had gotten comments from the experts at NIH that we may be within 5 years of conquering Parkinson's.

Now, it is put in "may" terms, not absolute terms. But could you give us a projection, if the funding is increased, as to the likelihood or some ballpark figure on time span when we might conquer Alzheimer's?

Dr. HODES. I truly and sincerely do not know, Senator. For example, the time that it takes to carry out studies, such as those which are now ongoing. If some of these studies were to be successful, we would know those answers in the range of the next 5 to 10 years.

From the point of such findings, there would still be a need then to look at how they generalize to the larger population. So, I can provide you, in that sense, only with the minimum, the amount of time it would take if the current interventions, the current trials under study, were to prove to be successful.

We, unfortunately, as is the nature of science, particularly in biology, do not know if they will be, and for that reason, cannot provide even an informed and responsible estimate of how long I think it may be to arrive at an ultimate cure.

Senator SPECTER. Well, I can understand that. You make a projection of 5 to 10 years where you will know what results the current studies will produce. To what extent is that period of 5 to 10 years acceleratable by the increase in funding which we want to get for you next year?

Dr. HODES. The increase in funding would make it possible to study a larger number of candidate agents; and as noted, the more doors open, the more paths taken, the greater the probability of finding, as rapidly as possible, the correct one.

We do not have the luxury, in terms of these sorts of trials, in waiting until we have the outcome of one study before beginning the next. If we, in that sense, conducted a new study or a new set of studies only every 7 to 10 years, the path would undoubtedly be slowed beyond what we can accomplish with the resources we have, those we project, by being able to bring each promising candidate to clinical trial.

Senator SPECTER. My red light just turned on. So, I am going to yield at this point, because of time pressures, and turn to Senator Harkin.

Senator HARKIN. Thank you very much, Mr. Chairman.

And Dr. Hodes, thanks for coming back to the committee and testifying and for your leadership at the National Institute on Aging.

I have two paths, two questions. One has to do with the here and now and the immediate, in the REACH program, and—because I hear from so many families that are just at wits' end in terms of how they are dealing with this.

And if you could just elaborate a little bit more on what your plans are for the REACH initiative. And would that be part of the increases, aside from the basic research that we are doing, that you would envision?

Dr. HODES. I would be happy to answer this important question. Clearly, research for the here and now—research involving the welfare of those who currently give care is as important as our research aimed at the future and prevention.

The REACH initiative, which is a trial involving multiple centers and a diverse population, is exploring different means of reducing stress, providing respite for caregivers. The actual study has been completed, and it is now in its first stage in the state of data analysis.

We would expect, over the next few months, to have that analysis completed and hope that its successes would then be translated into a future, next generation of intervention trials. The appropriations that will be available in the next year, would, in addition to the many other areas of research that we intend to pursue, allow us to follow-up on positive findings that may have come from this first stage of REACH to design further interventions to the benefit of caregivers and those for whom they care.

Senator HARKIN. Thank you. Second, on the research side, how soon will you be going to human clinical trials on the vaccine?

Dr. HODES. The clinical trials on the vaccine are currently being carried out by Elan Pharmaceuticals. These studies have progressed through the state of initial, so-called, phase one to determine if there are any toxicities. This intervention is now being taken to larger numbers of individuals in the so-called stage two or preliminary phase of clinical trials.

We will be meeting and working with Elan in what we hope in the best spirit of public/private partnerships, as we attempt to facilitate the best and most rigorous quality of research from which we will learn the most about the effectiveness of this approach.

Senator HARKIN. Okay. I like that. This is Elan?

Dr. HODES. Yes.

Senator HARKIN. Elan——

Dr. HODES [continuing]. Pharmaceutical.

Senator HARKIN. Pharmaceutical. There are no other pharmaceuticals involved in this.

Dr. HODES. Currently not.

Senator HARKIN. I see. And this is a vaccine in which NIH had been very heavily involved, if I am not mistaken.

Dr. HODES. Yes, sir. For example, the discovery of the gene——

Senator HARKIN. Yes.

Dr. HODES [continuing]. The making of the animal models in which this was carried out, were NIH-supported. Some of these results that I have shown you about the vaccine in animal studies were supported by NIH, as well.

Senator HARKIN. Yes. Now, again, I just want to be very clear about this. I believe in the public/private partnerships. They have brought us great drugs in the markets.

I am not a scientist. Do I know how much promise this has? I do not know, but I have been reading about the initial stages of this and it looks like it holds a lot of promise. I do not know when the phase two trials will be done. Do you have any idea about that?

Dr. HODES. My understanding is that patients are currently being accrued onto the phase two trial presently.

Senator HARKIN. Do you know the length of time? Is it 2 years, 3 years? What is it? Do you know?

Dr. HODES. I do not know the specifics of the trial, but we can certainly find more information and come back to you for the record.

Senator HARKIN. Well, I just want to state for the record that we have to move as rapidly as possible on these trials. And I want NIH to be involved to the maximum extent possible, but I just hope and trust that if these prove out and there is that kind of vaccine, that it is not so expensive that families cannot afford it once we

develop it. And I intend, as long as I am here, and I am sure Senator Specter and others, we are going to keep a watchdog eye on this.

Now, I believe that pharmaceuticals have got to make a good return. They are putting a lot of their money up. But nonetheless, we have put a lot of public involvement and a lot of the public's money into this. And these drugs have got to be affordable when they come on the market.

Thank you very much, Dr. Hodes.

Senator SPECTER. Thank you very much, Senator Harkin.

Senator Reid.

Senator REID. Mr. Chairman, I would ask your permission and that of Senator Harkin to have my statement made part of the record as if read.

Senator SPECTER. Without objection, your full statement will be made a part of the record.

Senator REID. I apologize to you and the rest of the committee and the witnesses. I have a meeting I was supposed to be to at 10 o'clock. But I wanted to come here to indicate how important this hearing is and to congratulate you and Senator Harkin for your continued efforts in trying to find some relief to this terrible disease.

[The statement follows:]

PREPARED STATEMENT OF SENATOR HARRY REID

Good morning Mr. Chairman, members of the Committee, and distinguished guests.

I want to thank the Alzheimer's Association and the families who are here today for their willingness to share their personal stories and insights. You bring an important voice and focus to our discussion today.

My home state of Nevada has the fastest growing population in the country. In southern Nevada alone, one-half of the population is over the age of 65. Statistics predict that 10 percent of this group will develop Alzheimer's Disease.

I strongly support increasing the federal investment in basic and clinical research as the best avenue we have for solving the complex puzzle that is Alzheimer's Disease. This investment will lead us toward better treatment and management of those affected by this progressive condition.

However, until our research achievements provide a cure for Alzheimer's Disease, I do not want us to forget the vital role played by family and professional caregivers who make it possible for Alzheimer's Disease patients to remain in their homes as long as possible.

When I am home in Nevada talking with young families, it is clear that the phrase "sandwich generation" is an apt term. These parents are squeezed emotionally and economically by the need to provide care both to their young children and to their aging parents.

While it is clear that the longer Alzheimer's patients can remain in their homes, the better they and their families cope with the condition, it is also clear that we must support programs such as the Administration of Aging grant program, which provides funding that allows states to make available needed respite care to families.

The future demand for home health workers, respite care services, and family member support are going to be staggering. As we progress in our understanding about the cause and treatment of Alzheimer's Disease, we need to also actively and responsibly support the family and professional caregivers who serve these patients.

Senator SPECTER. Thank you very much, Senator Reid.

Thank you very much, Dr. Hodes. We very much appreciate your work at NIH. And we intend to do our very best to continue to give you financial assistance to move toward delaying, if not solving, Alzheimer's disease. Thank you.

I would like to call, now, Dr. DeKosky, Ms. Frey, Mr. Wagenaar, and Mr. Pierce.

STATEMENT OF STEVEN T. DEKOSKY, M.D., PROFESSOR OF NEUROLOGY, PSYCHIATRY, NEUROBIOLOGY AND HUMAN GENETICS, AND DIRECTOR, ALZHEIMER'S DISEASE CENTER, UNIVERSITY OF PITTSBURGH MEDICAL CENTER

Senator SPECTER. Our next witness is Dr. Steven DeKosky, director, Alzheimer's Disease Research Center and director, Division of Geriatrics and Neuropsychiatry at the University of Pittsburgh's School of Medicine.

Dr. DeKosky chairs the National Medical and Scientific Advisory Board—Advisory Council for the Board of Directors of the Alzheimer's Association; he also chairs the Professional Advisory Board of the Greater Pittsburgh Chapter of the Alzheimer's Association; and his, perhaps, greatest accomplishment is the father of Ally DeKosky, who is one of my key staffers.

Ally, are you here today? Would you mind standing, please?

She is an extraordinary young woman, and the apple has not fallen far from the tree, Dr. DeKosky. We look forward to your testimony.

Dr. DEKOSKY. Thank you, Senator. I would like to compliment you, by the way, not only on your perspicacity in picking personnel, but also on the quality of your staff.

Senator SPECTER. How do you spell perspicacity, Dr. Dekosky?

Dr. DEKOSKY. I will put it in the record, Senator.

Senator Specter, Senator Harkin, and members of the subcommittee, I am very glad to be back before this committee to report on some truly amazing progress that has been made in AD over the past year, and to express our thanks for your steadfast efforts to double funding at the NIH, and make what we believe is a compelling case for an immediate and major additional investment to prevent the epidemic in Alzheimer's disease.

As you know, I head the Alzheimer's Center at the University of Pittsburgh, one of 29 such centers in the United States, created by the NIA for—as an infrastructure for studying Alzheimer's disease. And I am here today as Chair of the Medical and Scientific Advisory Council of the Alzheimer's Association.

The Association is calling upon Congress to double its investment in Alzheimer's research to reach an annual funding level of $1 billion over the next 3 years. This will require an increase of $200 million in fiscal year 2002.

And we realize that if Congress agrees to the very tight spending caps that have been proposed in the pending budget resolutions, the subcommittee will have to make some very difficult choices about where to put the money. Why should that choice be Alzheimer's research?

The answer is simple and has two parts. First, demographics alone demand that we find a way to stop the progress of Alzheimer's disease before it bankrupts us all. If we want to protect the surplus, assure the future of Medicare and Social Security, and leave money in the Federal budget for other urgent national priorities, we have to find a way to prevent 14 million baby boomers from getting this disease.

Second, we can now say with confidence that the answers are within reach. We are at an unprecedented place in Alzheimer's research, facing possibilities that did not exist when I first came before this committee in 1998. That is because of the investment you have already made, not just in AD research but in the human genome project, and imaging techniques, and in basic science.

We will lose that investment, however, unless we escalate efforts in three broad areas of research: Large-scale clinical trials aimed at prevention; basic research to complete our understanding of the disease, risk factors, early detection, and potential treatments; and social and behavioral research to improve management of the disease and reduce its burden.

The NIA continues to lead the war against AD. You have heard Dr. Hodes, who has been the able leader of this effort, but as our knowledge has expanded, the effort has attracted attention in resources from across the National Institutes of Health. The progress we have made in the last 12 months has truly been astounding, and investigators have identified multiple targets, multiple doors, as Senator Harkin put it, for further research, and new ones are emerging in laboratories across the country almost on a daily basis.

In 1998, at this subcommittee's direction, the NIH stepped into a whole new area of Alzheimer's research, the Prevention Initiative. Based on a simple premise that scientists knew that changes in the brain begin 10 to 20 years before symptoms first appear.

We began to change strategies, some of which you see on the board with the studies on prevention, which is now being organized, to look for ways to interfere with the process early, before symptoms occur, and slow it down or stop it. And if successful, we can keep people who are at risk from ever being disabled by the disease.

The first of these prevention trials started in 1998. Eight are now in progress. Some are testing with early mild cognitive impairment, a memory disorder that appears to put people at increased risk of developing the disease. Most of these studies are testing relatively inexpensive and readily available compounds, including vitamins and over-the-counter drugs. We are looking for cheap and simple ways to stop this disease from draining billions from families, from State and Federal treasuries, and from our economy.

But it takes time, as you can see, and money to do this kind of research. Because AD develops slowly, large numbers of people must be enrolled in these trials and they must be followed over time.

For example, I am the principal investigator for a multi-site trial of ginkgo biloba funded by the National Center for Complementary Alternative Medicine, NHLBI, and the NIA. We are enrolling 3,000 people over the age of 75 and will follow them for 5 years. This one study will cost at a range of $18 million to $20 million.

All told, NIH is already investing over $80 million in these prevention trials, but we will need the money to start new trials soon, both to replicate those that are underway and test new compounds. We have a narrow window of time to make this work.

We found lots of pieces to the puzzle, which is why the Prevention Initiative could get started, but we need to continue the basic

research to complete that puzzle. Without these additional resources, we will have to rob Peter to pay Paul.

In fact, one of the points that I think is very important is that since there have never been clinical trials to try and prevent Alzheimer's disease, the monies to do all of these clinical trials simply come out of de novo budgets.

The vaccine, we have already discussed. Imaging techniques in plaques of animals and duplicative experimental studies in imaging let us, we hope, be able to derive images of amyloid load in humans, while——

Senator SPECTER. Dr. DeKosky, your full statement will be made a part of the record. So, if you could summarize at this point, we would appreciate it.

Dr. DEKOSKY. I think if you showed the pictures that Dr. Hodes showed you of the mouse to a researcher 5 years ago, they all would have broken their jaws when they hit the table.

The knowledge of the basic science of what happens with amyloid in this disorder and the progress that we have made, both with mice and with men, is absolutely astounding. We have this disease, we think, on the ropes. And this is not a time to let up.

Thank you.

[The statement follows:]

PREPARED STATEMENT OF DR. STEVEN T. DEKOSKY

Senator Specter, Senator Harkin, and Members of the Subcommittee. I am delighted to be back before the Subcommittee to report on the truly amazing progress in Alzheimer research over the past year, to express our thanks for your steadfast efforts to double funding at the National Institutes of Health, and to make what we believe is a compelling case for an immediate and major additional investment to prevent an epidemic of Alzheimer's disease.

As you know, I head the Alzheimer's Disease Research Center at the University of Pittsburgh, one of 29 such centers funded by the National Institute on Aging to create an infrastructure for this critically important research. I am here today as the Chair of the Medical and Scientific Advisory Council for the Alzheimer's Association.

The Alzheimer's Association is calling upon Congress to double its investment in Alzheimer research, to reach an annual funding level of $1 billion over the next three years. That will require an increase of $200 million in fiscal year 2002. We realize that if Congress agrees to the very tight spending caps that have been proposed in the pending budget resolutions, this Subcommittee will have to make very difficult choices about where to put the available funds. Why should that choice be Alzheimer research?

The answer is simple and has two parts. First, demographics alone demand that we find a way to stop the progress of Alzheimer's disease before it bankrupts us all. If we want to protect the surplus, assure the future of Medicare and Social Security, and leave room in the federal budget for other urgent national priorities, we must find a way to prevent 14 million babyboomers from getting Alzheimer's disease.

Second, we can now say with confidence that answers are within reach. We are at an unprecedented place in Alzheimer research—facing possibilities that just didn't exist when I first came before this Subcommittee in 1998. That is because of the investment you have already made, not just in Alzheimer research but in the human genome project, in imaging techniques, and in basic science.

We will lose that investment, however, unless we escalate our efforts in three broad areas of research:

—large scale clinical trials aimed at prevention,

—basic research to complete our understanding of the disease, risk factors, early detection, and potential treatments, and

—social and behavioral research to improve management of the disease and to reduce the staggering health and long term care costs that are associated with it.

The National Institute on Aging continues to lead the war against Alzheimer's disease, under the very able leadership of Dr. Richard Hodes. But as our knowledge has expanded, this effort has attracted attention and resources from across the National Institutes of Health. The progress we have made in the past twelve months has been truly astounding. Investigators have identified multiple targets for further research and new ones are emerging in laboratories across the country, on an almost daily basis.

THE PREVENTION INITIATIVE

In 1998, at this Subcommittee's direction, the National Institutes of Health stepped into a whole new area of Alzheimer research—the Prevention Initiative. That initiative was based on a simple premise. Scientists could now say with some certainty that the changes in the brain that lead to Alzheimer's begin 10 to 20 years before symptoms first appear. We began to change our strategies, to look for a ways to interfere with that process early, to slow it down and perhaps to stop it. If we succeed, we can keep most people who are at risk from ever being disabled by the disease.

We were beginning to identify compounds that might do that, but they needed to be tested in large numbers of people to prove if they would really work. The first of those prevention trials got started in 1998; eight are now in progress. Some are testing compounds in people with mild cognitive impairment; others are enrolling older people who are cognitively normal.

Most of these studies are testing relatively inexpensive and readily available compounds—including vitamins and over-the-counter drugs. We may be able to find cheap and simple ways to stop this disease from draining billions from families, from state and federal treasuries, and from our economy every year.

But it takes time and money to do this kind of research. Because Alzheimer's disease develops slowly, large numbers of people must be enrolled in these trials and they must be followed over time. For example, I am the principal investigator for a multi-site trial of gingko biloba funded by the National Center for Alternative Medicine. We are enrolling 3,000 people over the age of 75 who are not demented and will follow them for 5 years. This one study will cost $18 million.

All told, NIH is already investing over $80 million in these prevention trials. But we will need the money to start more trials soon—both to replicate the findings of those already underway and to test new compounds that look equally promising.

We have a very narrow window of time to make this prevention strategy work. In 10 years, the babyboomers will reach the age where the symptoms of Alzheimer's disease begin to appear. If we haven't found an answer by then, the numbers of people with the disease—and the costs of their care—will explode. We are in a Race against Time.

COMPLETING THE PUZZLE

We have found a lot of the pieces of the puzzle of Alzheimer's disease, which is why we could begin the Prevention Initiative. But we must continue the investment in basic research to complete that puzzle. Without additional resources, however, we will have to rob Peter to pay Paul. We are already seeing this in the declining "success rate" at the National Institute on Aging. Because the prevention trials are expensive, NIA is able to fund a lower percentage of the high quality research grants it receives. In 1997, NIA was funding almost 40 percent of the grants it received. In 2000, that success rate was down to about 26 percent. This means we are missing important opportunities to advance our knowledge of Alzheimer's disease and to discover new targets for treatment.

There are few areas of scientific research where the progress has been as rapid and far-reaching. The excitement that surrounds the science of Alzheimer's disease was dramatized last summer at the World Alzheimer Congress here in Washington. That meeting drew over 3000 Alzheimer scientists from around the world—from Nobel Prize winners to new postdoctoral students.

Consider just a few of the far-reaching discoveries that have been reported since the Subcommittee met about Alzheimer's disease last year:

—A "vaccine" has been developed that appears to prevent in the brains of mice the accumulation of the plaques that are the hallmarks of Alzheimer's disease. Phase I clinical trials in humans have shown the vaccine to be safe. Phase II trials to test effectiveness will begin this year.

—A new imaging technique has identified plaques in the brains of living mice—something that until now could only be identified at autopsy. If that technique works in humans, we may have an important new tool for early and even presymptomatic identification of people for whom treatments will be effective.

These mouse studies underscore the importance of animal models in Alzheimer research. They allow us to explore theories and potential treatments without putting human subjects at risk. But it is very expensive to develop and maintain these animal models.

—We now understand the role of certain enzymes, called secretases, in the production of amyloid, a protein implicated in Alzheimer's disease. That is the first step toward developing a compound that could block the production of the protein and the development of disease.

—Discoveries about the role of nerve growth factor may open the way to protecting brain cells from damage and possibly rebuilding them. Work is already underway on a drug that may mimic the activity of nerve growth factor in the brain; another is exploring a therapy that would prompt brain cells to produce the protein.

—Another essential area of Alzheimer research is the investigation of how genetic and environmental risk factors combine to produce disease. Even in identical twins, some get the disease and others do not. A new study of World War II veterans has produced importance evidence that establishes a clear link between serious head injury in early adulthood with Alzheimer's disease in later life.

One of the most important scientific questions involves the connection between vascular disease and Alzheimer's. These vascular disorders include stroke, high blood pressure, aetherosclerosis, and diabetes. They disproportionately affect Hispanic and African-Americans—the largest growing segment of our elderly population.

We now have evidence to suggest that risk factors associated with these disorders, including high cholesterol and high fat diets, may also be associated with increased risk for dementia. If that is true, we can do something about these risk factors and could have a major impact on future prevalence of the disease.

—Two separate studies have shown that cholesterol-lowering drugs called statins may reduce the risk of Alzheimer's disease.

—Other research has suggested that a high-fat diet in early and middle adulthood may be associated with an increased risk of Alzheimer's.

—A new report, just in, on an 8-year cross-national study found the rate of dementia among African Americans to be twice that of residents of Nigeria. It suggests that environmental risk factors such as diet and exercise may combine with genetic risk factors to cause disease.

There is an immediate need for investment in additional research to follow up on these leads, to determine the exact relationship between vascular disorders and Alzheimer's. This will require additional basic research on molecular and cellular changes as well as large-scale population studies to test potential drug treatments and life style changes that can reduce the risk of both vascular disease and dementia. This is a particularly promising area for collaboration between the National Institute on Aging, the National Heart, Lung and Blood Institute, and the Center for Minority Health Research.

THE CHANGING FACE OF ALZHEIMER'S DISEASE

However quickly we get to the finish line in the Race against Alzheimer's disease, it will not be soon enough for millions of people for whom the disease process has already progressed too far. Some of those people are in this hearing room today—including John Wagenaar who will testify in a moment. Frank Carlino, who testified before you last year, is also here and has brought with him a number of members of his support group. They have been raising money all year to come to Washington to ask Congress to do something about Alzheimer's disease.

These courageous people represent the new Face of Alzheimer's Disease. We are identifying and diagnosing people at early stages of the disease—when available treatments are likely to be most effective and when they can have time to make decisions about how they and their families will live through the course of the disease. We need to continue the search for more effective treatments to stave off the most devastating impact of the disease, even if we can't prevent it for them. And we need to educate both the public and clinicians, especially primary care physicians, about the importance of early diagnosis.

We also need to make sure that our health and long term care systems will adapt to accommodate changing care needs. People will be living with the disease longer, and differently than they have in the past. Congress must invest in the social, behavioral, and health services research—not just at NIH but also at the Agency for Healthcare Research & Quality, the Health Care Financing Administration, and the Centers for Disease Control—to develop the outcomes measures, quality indicators,

and other evidence that will support high quality and cost-effective care throughout the course of the disease.

The Alzheimer's Association will continue to its own investment in research. We have already budgeted over $20 million for research in fiscal year 2002. We will continue to provide the early money to encourage new researchers to the field, and to collaborate with the National Institute on Aging and other institutes at NIH in this all-important Race against Time. But we must turn to Congress for the $1 billion that we need to get to the finish line, before it is too late.

Thank you for inviting me here again today.

Senator SPECTER. Thank you very much, Dr. DeKosky.

STATEMENT OF CHRISTINE FREY, ADVOCATE, ALZHEIMER'S ASSOCIATION

Senator SPECTER. We turn, now, to Ms. Christine Frey, a probation officer from Peoria, IL. Her family suffers from Early-Onset Alzheimer's, a form of the disease that prematurely strikes patients in the fourth or fifth decade of their lives. To date, 32 members of Ms. Frey's extended family, including her father, grandfather, aunt and uncle, have died as the result of Alzheimer's disease.

Ms. Frey is active in the Central Illinois chapter of the Alzheimer's Association and organizes an annual fundraiser in Peoria for Alzheimer's research.

You certainly have had tremendous impact in your family, Ms. Frey. We welcome you here and look forward to your testimony.

Ms. FREY. Thank you. Thank you very much, Senator Specter and Senator Harkin, for inviting me to testify at this hearing. I want to thank you, in advance, for your continued commitment and support to Alzheimer's research and for your leadership in securing funding for the National Institutes of Health. I am very grateful for this opportunity to speak to you about an issue that has so deeply affected my family.

My name is Christine Frey and my commitment and dedication to this cause is very personal, because this disease has claimed over 32 members of my family in just the last five generations.

My family suffers from Early-Onset Alzheimer's disease, meaning, we get it at a much earlier age. My great grandmother was 35 years old and pregnant with the last of her seven children when she started to become easily confused. At 37, she was hospitalized. And by 39, she could no longer walk and could barely speak. She died at the age of 40.

Both her mother and grandmother also had the disease, but at the time, they were declared insane and both died in mental institutions in their forties. Because of their ages, no one thought to consider Alzheimer's as the cause of their illnesses. Of my great grandmother's six siblings, three died of this disease, again, all in their forties.

My grandfather, Joseph Esposito, a major in the Army, began showing symptoms of Alzheimer's at the age of 37 and eventually took a medical retirement. At the age of 42, he was placed in a VA Hospital, where he remained until his death at the age of 55. Of his six siblings, four would eventually die from this disease.

My dad, Robert Esposito, was the oldest of six children born to my grandfather, Joseph, and my grandmother, Adeline. All of his life, my dad was haunted by the knowledge that he, too, might carry the deadly gene that had plagued his family before him. Misplacing his car keys would send him into a month-long depression.

And although every doctor he went to told him he just suffered from stress, he was convinced that he would get Alzheimer's. Unfortunately, he was right.

When I was in college——

Senator SPECTER. Take your time, Ms. Frey. Take a glass a water.

Ms. FREY. When I was in college, he started showing signs of memory loss and confusion. He would get into his car, drive away, only to sit at a stop sign for 10 minutes, forget where he was going, give up, and return home. By 46, he was diagnosed——

Senator SPECTER. Ms. Frey, we understand the difficulty of the things you are talking about, so just take your time.

Ms. FREY [continuing]. And at 51, he was dead.

Three months later, his brother, Joey, passed away at the age of 48. Four years earlier, his sister, Barb, died at the age of 47. His brother, Richard, although never formally diagnosed with the disease, was showing signs of Alzheimer's when he committed suicide the day after Christmas in 1999. We believe he simply could not bear the thought of living the nightmare he had seen so many times before.

The news of Richard's death was delivered to me, along with the news that my Uncle Michael, my godfather, age 40, and my Aunt Jennifer, age 38, had just been diagnosed with the disease. Both are in the early to moderate stages of the disease today.

My family has long been involved in the research to find a cure for this disease. My family is one of the case studies for the National Institutes of Health. And the research done on my family has helped to find the gene that causes Alzheimer's. My family has donated blood, skin. And several members of my family, including my dad, donated their brains for research.

Researchers have studied my family since the 1960s and have traced my family back as far as the 1700s. My sisters and I are on the list as possible research subjects and are committed to finding a cure.

Every year I organize and hold a fundraiser to raise money for research. This year I hope to raise $3,000, which may seem inconsequential to some, but $3,000 might pay for that last test that would lead to a cure. And if I thought that raising money for research did not matter, then somebody else might think it does not matter, and then maybe you would not think it does not matter. But every dollar committed to Alzheimer's research is worthwhile. Every dollar matters. And I will continue to do my part in raising money for research.

By profession, I am an adult probation officer in Peoria, IL. I currently supervise 170 clients, which would tax any normal person's memory. I try not to follow in my father's footsteps, but with a history like mine, it sometimes makes me wonder, when I cannot put a face to a name or when I cannot remember certain information about my clients. I truly believe that my occasional forgetfulness is brought on by doing too many things at once, but there is always that little voice in the back of my mind telling me otherwise.

The average age of diagnosis in my family in 39, and I am 31. My thoughts are of nursing home and long-term care policies, and

whether or not my husband should divorce me if I get sick, so that he does not go bankrupt trying to take care of me.

My thoughts are of trying to start a family right away, so that I have more time to spend with my kids in case I get sick. My thoughts are with my 33-year-old sister, who has two kids and one on the way, and whether she will see them graduate from high school or college or get married. My thoughts are with my 24-year-old sister, who is starting her adult life and has so much to look forward to. My thoughts are with my mom, who might be the only one left to tell our children who we really were.

Strangely, I imagine the only thing worse than actually having this disease would be the guilt of the family members who were spared and the sorrow of people like my grandmother, Adeline, who had to watch helplessly as generation after generation after generation after generation died one by one.

We need this funding now, to find the cure in time, so that she will be spared the pain of watching my generation die, too.

Thank you.

[The statement follows:]

PREPARED STATEMENT OF CHRISTINE FREY

Thank you very much Senator Specter and Senator Harkin for inviting me to testify at this hearing. I am grateful for this opportunity to speak to you about an issue that is very dear to me.

My name is Christine Frey and I live in Peoria, Illinois. In my professional life, I am a probation officer for the State of Illinois. I have been a probation officer for the last six and a half years. My work is very rewarding and challenging. Right now, I have a caseload of 170 clients.

In my other life, I advocate for increased funding for Alzheimer research. My dedication to this cause is deeply personal. My family suffers from what is known as Early-Onset Alzheimer's disease. Nearly six years ago, my dad, Robert Esposito, passed away from Alzheimer's disease at the age of 51. He was diagnosed with Alzheimer's at age 46 and my stepmother, who had Multiple Sclerosis, took care of him at home for 2 years. He spent the last 3 years of his life in a nursing home. I was in college when my dad was diagnosed but he had the signs of Alzheimer's for some time before he actually received his diagnosis. I would call home from school and talk to my dad and I knew something was wrong with him. He underwent a lot of testing but the doctors told him that he was just suffering from stress. My dad however, was convinced that he had Alzheimer's. He had a good reason to be.

You see, my dad's younger brother, Joey, had also been diagnosed with Alzheimer's. He died three months after my dad. He was 49 years old. My dad's sister, Barb, died of Alzheimer's in 1987 at age 43. My dad's other brother, Richard, died the day after Christmas in 1999 at the age of 44. Although he was never positively diagnosed with Alzheimer's, he committed suicide due to the stress of watching his brothers and sisters succumb to this terrible disease. My father's remaining siblings, Michael and Jennifer were both diagnosed with Alzheimer's in 1999. Michael was 40 when he received his diagnosis and Jennifer was only 38 when she got hers. My dad's father, Major Joseph Esposito, died in his early 50's after suffering from Alzheimer's for 12 years, the last ten of which were spent in a nursing home. Of my grandfather's six siblings, four died from Alzheimer's. My great-grandmother also had Alzheimer's but because of her young age when she was diagnosed, the doctors thought she was insane and she was put in an asylum.

My family is one of the American case studies at the National Institutes of Health (NIH). My mom and dad participated in NIH research, as did all of my aunts and uncles. When my dad died, we donated his brain to NIH for further research. My two sisters and I are currently on the list for future research subjects. In fact, one of the genes that is associated with Alzheimer's was found in part by the research done on my family. The NIH has traced my family tree back through America, Italy and France and has found at least 32 members who died of Alzheimer's disease over the last five generations. The average age of diagnosis of Alzheimer's in my family is 39. I am 31 years old.

In 1996, I got married and I cried all the way down the aisle because my dad was not there to give me away. My husband Mike and I really want to have children but we feel like we are in a race against time because of Alzheimer's disease. It scares me that if we do not have kids soon, I might not be around to see my children enter high school, let alone get married. I do not want my husband to have to explain to our nine-year old that mommy can't come to his or her soccer game because she is in a nursing home. At age 31, I should be excited about my future. Instead I am thinking about long term care insurance policies and nursing homes. I've already told my husband that he should divorce me if I get Alzheimer's because I don't want him to go broke taking care of me. Three years ago, when I was 28, I looked into buying a long term care insurance policy. The agents I talked to told me I was too young to buy a policy and said to call back when I turned 30. Because of my family history, it is not clear that anyone would even sell me a policy.

My husband and I both have good jobs and we work hard. We are trying to plan for our future but there are things we want to do today while we are still young. Most other couples our age are going on exotic vacations or saving for their first house. It's hard to look at our budget each month and know that we should be putting money aside in case I get Alzheimer's. A few months ago I really wanted to buy a new chair for our living room but we decided that we should hold off on the expense for now.

Over the last few years, I have spent a lot of time talking to doctors in Chicago and Springfield. I have also talked to researchers at NIH. Everyone I have talked to is excited about the pace of Alzheimer research right now. I have read news articles that talk of preventing Alzheimer's and I pray that science will find the answers. I pray not only for myself and my family, but also for the millions of baby-boomers who will soon be entering the age of increased risk for Alzheimer's. We need to make a huge investment in Alzheimer research because if we do not, we will be paying for this disease a hundred times over.

Every year for the last few years I have organized a fundraiser in my dad's name to raise money for Alzheimer research. The first year I did the fundraiser it was a lot of work and we only raised $1,700. I almost didn't do it again the next year because I figured that doing all of that work to raise so little money didn't make any sense. But then I started thinking about my family, particularly my two and a half-year-old niece. Will her mother, my 33-year-old sister, be around to watch her daughter grow up? What about my 24-year-old sister? Will she get Alzheimer's too? Alzheimer's disease terrifies me but the one thing I am most scared about is what if my two sisters get it and I do not? I could not deal with that.

So Senators, I will continue to hold the fundraiser in honor of my dad because I cannot afford not to contribute to the fight against Alzheimer's disease. There is too much at stake not only for me personally, but also for millions of other Alzheimer families. I am here today to thank you for your commitment to Alzheimer research and for your leadership in securing funding for the National Institutes of Health. I will continue to do my part to raise money for research and I ask you to remember my family as you make future decisions about funding for the NIH.

Thank you for taking the time to listen to my story. And thank you for holding this hearing to educate your colleagues and the rest of the country about the importance of investing in Alzheimer research.

Senator SPECTER. Ms. Frey, we really very, very much appreciate your coming in. Obviously, it is very difficult for you to talk about what has happened to your family. It has been extraordinarily debilitating and devastating to your family. I can see why you worry. I can see why, understandably, you are very emotional about it.

And that, as the expression goes, puts a face on Alzheimer's in a way which the statistics and generalizations cannot do. So, we thank you for coming here today and sharing that experience with us.

Ms. FREY. Thank you for having me.

STATEMENT OF JOHN WAGENAAR, PATIENT, ALZHEIMER'S DISEASE

Senator SPECTER. Our next witness is Mr. John Wagenaar, diagnosed with Alzheimer's in 1998. With substantial help from his wife, Darlene—40 years married—his children, grandchildren, em-

ployer, and co-workers, Mr. Wagenaar continues to lead an active life in George, IA.

He is an advocate for Alzheimer's disease research and is active in the Sioux City chapter of the Alzheimer's Association.

Thank you for coming in, Mr. Wagenaar, and telling us your own personal experience to help us better understand this terrible ailment.

Mr. WAGENAAR. Thank you very much. It is a pleasure being here. I am John Wagenaar. And 3 years ago I worked at a factory that was just right across the highway from us. We lived right along the highway. I went to work that morning and there was one certain part of the plant that was brand new.

I had to check the plant in the mornings, first, when I got there for—if there was any trash laying around or if the dumpsters were out of place or—I tidied the place up was my job, first.

So, then, I got that done. I walked into this new part of the building and it was just like the lights went out. I just—I didn't remember a thing. I walked and I walked and couldn't get my way out of that building.

Then toward noon, we decided—had to go to—we would walk home and have dinner, me and my wife. They had noticed, in the plant, then, that there was something wrong with me. They thought that I had a stroke. So, we walked home; walked across the highway, a busy highway, to get the mail. I do not remember it. Had my dinner. I do not remember it.

But as soon as—we have our medical doctor—I mean, nurse at the plant, and when I took off just walking across the highway, then Darlene had called the nurse in the plant. They checked me over right away and took me with the ambulance to the nearest hospital. They put me on oxygen, which the further we got down the road, the better I started to recognize a little bit. But at that time, when we got there, there was—they did a lot of tests and stuff, and then they—the next day they sent me on to Sioux City to check things out.

While we were in Orange City, they checked everything and it was all done. They—my son and my daughter and their spouses and my wife was along. They took her in a separate room and with the—with the kids. They said that I had—they told the family, first, that I had Alzheimer's.

Then he come to my room, and he says, "You have Alzheimer's. Expect 1 to 3 years." That did not—did not hit good, but we—oh, to drop this on you, he said 1 to 3. Well, about 3 weeks ago, I hit number 3, plus 3. So, I am ahead of it, if I can just keep going.

But when something like that happens and you get—you get your stuff in order, because the time could be short, it could be long. So, we—I had a toy collection that—half the basement was not walkable. It was full. We had over 600 tractors in there. The two boys—I also have a son that lives in Anchorage, AL. So, when he—we called him and he says, "Go ahead and sell it." That's the most honest way, because you hand a couple of pieces to this child and you hand some to that child. So, anyway, we got all the stuff out of the basement. We went to a community building. And we had a sale on Friday night. And then we had a sale all day Saturday.

So since that—after that was over with, I thought, now is the time to—to buy a house. I owned houses before, but we was renting at the time. So, we found a house and we got that.

My son, up in Alaska, has a new motor home. And when we—we flew up there. And then he gave us a ride back to George, IA. It was a little over 8 hours—or 8 days, continuous. We had three grandsons with us. So, we would stop early at night, so they could go swimming. And later in the morning we would leave again.

So, to make the long story short, the lights have not gone out yet on me. I am going to stay one ahead of that switch. But while I am still able, I want to do whatever I can to speak out for Alzheimer's disease. I have traveled to Washington to meet my Senators and Representative. I am testifying today to urge you to continue to investigate Alzheimer's research, so that we can spare my children and grandchildren and others from the disease. We are in a race against time. And if we do not find the answer soon, Alzheimer's will be an epidemic.

Thank you so much for giving me the opportunity to speak to you today.

[The statement follows:]

PREPARED STATEMENT OF JOHN WAGENAAR

Thank you very much Senator Specter and particularly Senator Harkin for giving me the opportunity to speak to you this morning. I am truly honored to be here.

My name is John Wagenaar and I am a proud resident of George, Iowa. For those not familiar with Iowa geography, George is a small community of a few thousand people in the northwest corner of the state. With me today is my beautiful wife, Darlene. We will celebrate our 41st wedding anniversary this May. We have three grown children—a son and daughter who live in Iowa and a son who is in Alaska. We also are blessed with eight wonderful grandsons and one adorable granddaughter.

Despite these blessings, our family is facing some challenges. Three years ago, in March of 1998, I was diagnosed with Alzheimer's disease. I was 60 years old. My problems actually started about five months before I received my diagnosis. I was on vacation with Darlene. We had taken our trailer on a camping trip to South Dakota. I had trouble backing into our camping spot which was very unusual because I was an expert at parking the trailer. The whole time we were camping Darlene kept asking me if I felt sick because I was very quiet and was not my usual bubbly self. Even before we went on vacation, I remember feeling more tired than usual around that time. I would come home from work at night, have supper and then fall asleep right away. Sometimes I would sit in my favorite chair and stare off with a blank look on my face. I was losing weight as well and our friends were asking Darlene if something was wrong with me because I didn't look good. I went to the doctor and had a complete physical but the exam didn't find anything wrong with me.

Several weeks after my physical, I got up one morning and went to my job at the DEMCO manufacturing plant in Boyden, Iowa as I had done everyday for the past 11 years. Sometime that morning, I got lost in the plant's new addition. I knew something was wrong with me. Darlene thought maybe I had had a stroke so she called the nurse at the plant. I spent that night under observation in the local hospital but the doctors concluded that I had not had a stroke. The next day I went to a larger hospital in Sioux City. I saw a neurologist, had a CAT scan and underwent many tests. A few days later the neurologist called me, my wife and family in to her office and told us that I had Alzheimer's disease. We looked at the CAT scan which showed that my brain was shrinking away from my skull. I left the hospital devastated at the news. I took some time off work and went to see my son who lives in Alaska because I figured that it might be my last chance to make the trip.

Today, my life is a little more calm than it was in the days immediately following my diagnosis. I am still working at the DEMCO plant. My employer has been incredibly sympathetic, supportive and understanding over the last three years. I was able to adjust my schedule so that I can work a later shift. Darlene works at the

plant with me and switched from a part time job to a full time position so she can watch out for me at work. The plant manufactures car caddies, like the kind you pull behind motor homes, farm machinery, grain carts, tow bars and some chemical sprayers. It's a busy place but my coworkers look out for me and I can ask them questions anytime I'm not sure about what I am doing or how to use a machine. That's what Alzheimer's does to you—it makes you unsure of yourself and sometimes you can get in dangerous situations and get hurt. A few months ago we got a new computer system to replace the time clock that we used to record when we started a job and when we finished one. My coworkers help me push the right buttons so that I record my work properly.

I am on the Alzheimer's drug Aricept and it has made a huge difference. I felt better and more like my old immediately after I started taking it. Once I forgot to take my pill and I could tell the next day because I wasn't as talkative as usual. Darlene noticed too and now she reminds me to take my pill every night. Even though the Aricept is helping me now, the doctors have told me that it is not a cure and that it will not stop Alzheimer's disease.

I still drive but only when someone else, like Darlene, is in the car with me. Mostly I drive the 12 miles from our house to work and back. Darlene and I are both active with the Alzheimer's Association chapter in Sioux City. Last year we participated in their Memory Walk with a group of members from our church. I was so pleased that members of the church did the walk with us. The Alzheimer's Association in Sioux City has been wonderful to us as well. One of the people who works there came to DEMCO to talk to everyone about Alzheimer's disease because most of my coworkers didn't know what it was or what was happening to me. Some of them wouldn't even talk to me when I told them I had it. The presentation that the Association person made to my coworkers was very helpful and helped them understand more about the disease. They learned how they could help me at work and keep me safe.

While I am still able, I want to do whatever I can to speak out about Alzheimer's disease. I have traveled to Washington to meet with my Senators and Representatives and I am testifying here today to urge you to continue the investment in Alzheimer research so that we can spare my children and grandchildren and others from this devastating disease. We are in a race against time and if we don't find the answers soon, Alzheimer's will be an epidemic. Darlene is truly my angel and I am grateful that she is in my life. Perhaps the best thing to come of this terrible experience is that our love for each other has grown deeper. But we know what the future holds and I would do anything to spare her from the years of caregiving she is facing. If the research can proceed fast enough, there may be something that will make a difference for me, but I pray that the discoveries will come in time for the next generation.

Thank you so much for giving me the opportunity to speak to you today.

Senator SPECTER. Thank you very much, Mr. Wagenaar. We appreciate your coming in and telling us of your own personal experience. And we agree with you that if we do not act, it will be an epidemic. But we are going to do our very best to respond to the needs of the research community.

STATEMENT OF DAVID HYDE PIERCE, ADVOCATE, ALZHEIMER'S DISEASE

Senator SPECTER. Our final witness is Mr. Hyde Pierce, best known for his role as Niles Crane in the hit NBC series "Frazier," for which he has won an Emmy and Screen Actors' Guild Awards.

Mr. Hyde Pierce has been actively involved with the Alzheimer's Association for years, serving on the National Board of Directors. His personal fight stems from his father and grandfather's struggles with the disease. He helped raise some $15 million for the 1999 Alzheimer's Association's Memory Wall. In March 1999, he was awarded the first ever Elsa Rose Fabares Award given by the Los Angeles chapter of Alzheimer's Association.

Thank you for joining us, and we look forward to your testimony.

Mr. HYDE PIERCE. Thank you, Mr. Chairman. Thank you, members of the subcommittee.

I am very proud to be testifying today, but I am especially proud to be able to be here to hear the testimony of these extraordinary people who are sitting next to me.

I am here today on behalf of millions of families, like mine, across America, who have confronted the challenge of Alzheimer's disease. I am also here on behalf of the 14 million people of my generation, the baby boom generation, and their families, who, right now, have a death sentence of Alzheimer's looming in their future.

I want to thank you both for your extraordinary work in helping to double the funding for the NIH. And please know that the Alzheimer's Association is here on Capitol Hill en masse today to help make sure that your colleagues are following your lead.

Two of our friends who are not here today wanted to express their thanks and send their wishes; Shelley Fabares, who is, as you know, recovering from liver transplant surgery at home, and Maureen Reagan, who is fighting her own personal battle now with malignant melanoma.

And Senator, you mentioned before the idea of throwing money at a problem. Well, Maureen said to me before I came out, she said, "You know how you cannot throw money at a problem? Well, you can with Alzheimer's. And you have to."

And there are three compelling reasons why I believe that is true. The first reason is just basic human decency. We have to stop what is happening to people like Chris and John, here.

The second is the promising research that Dr. DeKosky and Dr. Hodes have referred to, and all the breakthroughs that we have had so recently.

The third is basic economics. If Alzheimer's is not stopped in its track, it will bankrupt the nation, just as it is now bankrupting families across the nation.

This morning, the Alzheimer's Association is releasing a report on the cost of Alzheimer's disease to Medicare and Medicaid. And I would like to offer a copy of that report for the record.

Last year, Medicare spent $31.9 billion to care for beneficiaries who had Alzheimer's. That cost will rise to $49.3 billion by the year 2010, an increase of 54.5 percent.

And as for Medicaid, last year, the States spent $18.2 billion just on nursing home care for people with Alzheimer's disease. And by 2010, the cost will be $33 billion, an 81.3 percent increase.

The shocking part of these projections is that all of these huge costs, all of these huge increases occur before the baby boomers hit the age of maximum risk and the number of people with this disease explodes.

We cannot go on like this. We cannot sustain these skyrocketing human and financial costs to families and Federal and State budgets. And fortunately, we do not have to. But we have a very narrow window of time in which to act. Half of us in this room today already have the time bomb of Alzheimer's disease ticking in our brain.

Congress has to find a way to diffuse that time bomb, or it will destroy us.

I do not know if you all remember polio, but I do not. Fifty years ago polio was the dread disease that threatened every American

family; that struck down presidents and factory workers alike. And today most of us only know about polio from the history books.

Two of the scientists who helped develop the polio vaccine, Dr. Joseph Melnick and Dr. Dorothy Horseman, died last year of Alzheimer's disease. If only we can do for Alzheimer's what they were able to do for polio.

I believe, with your leadership and our advocacy, that we can. I believe that we will reach the day when young people, like Christine, no longer have to live in fear of the terror of Alzheimer's disease. And I hope, for all of our sakes, that that day comes soon.

Thank you.

[The statement follows:]

PREPARED STATEMENT OF DAVID HYDE PIERCE

Mr. Chairman and Members of the Subcommittee, thank you for inviting me. I am here today on behalf of millions of families like mine from across the United States who have confronted the challenge of Alzheimer's disease. Even more, I am here for the 14 million babyboomers and their families who, right now, have a death sentence of Alzheimer's disease looming in their future.

For all of them, I say thank you, Senator Specter and Senator Harkin, for your steadfastness in leading the fight to double funding for the National Institutes of Health. And for holding your colleagues feet to the fire. The Alzheimer's Association is here on Capitol Hill today, en masse, to meet with our own Senators and Representatives to make sure they are following your lead.

As Dr. DeKosky already told you, the Association is asking Congress to escalate the war on Alzheimer's disease, by increasing funding to $1 billion within three years. That will require an increased investment of $200 million this year. I am here to add my voice to the eloquent testimony you have already heard about the urgency of this request.

My grandfather and my father died of Alzheimer's disease. That is why I got involved in the Alzheimer's Association. I stay involved because of the incredible people who have dedicated their lives to fighting this disease. Some are well known—people like Shelley Fabares and Maureen Reagan who have testified before you in the past.

(As an aside, I recently visited Maureen Reagan, who as you know is fighting her own personal battle with malignant melanoma. I am happy to report she is doing well and her prognosis is good. She asked me to tell you she is disappointed that she couldn't be here today—but to warn you that she will be back, to work with you until we conquer the disease that has stolen her father from us all.)

The real heroes, however, are not the celebrities. They are all the people from the Alzheimer's Association sitting behind me, and the two courageous people sitting here at the witness table with me. Each of us has a personal story to tell about the devastation of Alzheimer's. Undoubtedly, members of this Subcommittee could add their own accounts of family or friends whose lives were fundamentally altered by this awful killer.

There are three compelling reasons why Congress must accelerate its investment in Alzheimer research now.

The first reason is just basic human decency. We need to put a stop to the kinds of stories you heard from Christine Frey and John Wagenaar.

The second reason is the scientific opportunity that Dr. Hodes and Dr. DeKosky discussed.

The third reason, which I want to talk about, is basic economics.

This Congress is engaged right now in a far-ranging debate about how we will use the projected budget surplus. That is a discussion about our future—how to pay down the national debt, how to preserve Medicare and Social Security, how to protect sufficient discretionary spending to meet our urgent national priorities.

But unless we stop Alzheimer's disease in its tracks, we will not be able to answer any of those questions adequately. Because Alzheimer's disease will bankrupt the nation, just as it is already bankrupting individual families.

This morning, the Alzheimer's Association is releasing a startling report on the cost of Alzheimer's disease to Medicare and Medicaid. It is a wakeup call to us all. (I would like to offer a copy of that report for the record.)

When you look at the numbers, it is hard to see how you can protect the Medicare trust fund if we don't find a way to stop Alzheimer's disease. Last year, Medicare

spent $31.9 billion to care for beneficiaries who had Alzheimer's. That cost will be $49.3 billion by 2010, an increase of 54.5 percent.

The numbers are just as frightening when we look at Medicaid. Because Medicare does not pay for prescription drugs or long term care, nearly half of beneficiaries with Alzheimer's disease use up their personal resources and become eligible for Medicaid as well. Last year, the states spent $18.2 billion, just on nursing home care for people with Alzheimer's disease. By 2010, the cost will be $33 billion—an 81.3 percent increase.

The most alarming part of these projections is that these very large cost increases come even before the baby boomers reach the age of risk, and the number of people with Alzheimer's disease explodes. Neither Medicare nor Medicaid will be able to survive the onslaught of 14 million babyboomers with Alzheimer's disease.

The only reason that Alzheimer's has not already bankrupted Medicare and Medicaid is that those programs don't pay for much of the care a person with Alzheimer's needs. We rely heavily on families, to provide most of that day to day care.

But we are incurring a lot of collateral damage. One in eight Alzheimer caregivers becomes ill or injured as a direct result of caregiving. Older caregivers are three times more likely to become clinically depressed than others in their age group. And elderly spouses strained by caregiving are 63 percent more likely to die than others their age.

We simply cannot go on like this. We cannot sustain these skyrocketing costs—to families or to federal and state budgets. The good news is that we don't have to do so.

But our window of time is very short. Half of us in the room already have a time bomb ticking away in our brains, each and every day. Congress must find a way to defuse this bomb, before it destroys us.

The possibilities have never been greater. Think about what we did with polio. Fifty years ago, polio was the dread disease that terrified every American family. It struck down Presidents and factory workers alike. Today, most of us know about polio only from the history books.

Two of the scientists who helped develop the polio vaccine died this year—they both had Alzheimer's disease. If only we can do for Alzheimer's what they did for polio. I know, with your leadership and our advocacy, we can. I believe that we will reach the day when young people like Christine Frey and her sisters won't live with the terror of Alzheimer's disease. They will only read about it in the history books. I hope that day comes soon.

Mr. Chairman, the Association has made a strong case for research in its National Public Policy Program to Conquer Alzheimer's Disease. I request that the text of the program be inserted in the hearing record.

I would also like to take a moment to thank the Subcommittee and urge its continued support for two programs that are providing immediate help to people who are living with Alzheimer's disease. We urge you to fund further expansion of the Alzheimer matching grant program, to support model programs to reach underserved communities, particularly minority populations and rural areas. And we support continued full funding of the $125 million Family Caregiver Support Program.

Let me close by reiterating my personal thanks and that of the entire Alzheimer's Association for your continued leadership in the fight to conquer Alzheimer's disease. Each of us pledges to intensify our own advocacy in support of your efforts. Thank you for the privilege of testifying today.

Senator SPECTER. Thank you very much, Mr. Hyde Pierce. You characterize it very well when you refer to polio. That is a disease, at least in the United States, which has been conquered. It is worth mention that it has not been conquered worldwide.

Mr. HYDE PIERCE. No, that is true.

Senator SPECTER. I had occasion to be in India recently, and was asked to administer some polio vaccine to babies in India. Quite an experience to do that. It really brings it home how a few drops placed in an infant's mouth can immunize the child from the onset of polio.

I recall the problem growing up in Wichita, KS. We could not go swimming in the summer, because it was thought that that would subject someone to the problem of polio.

Thank you for your testimony. We very much appreciate Ms. Frey sharing with us her family's experience; and Mr. Wagenaar,

his own personal experience and obviously the difficulties in coming here; and you, too, Mr. Hyde Pierce, who have had the family problem.

I want to ask Dr. DeKosky just one line of questioning. Alzheimer's is interested in having an increase of $200 million in fiscal year 2002. I believe that health is number one. There is nothing more important than health. As we have seen in this subcommittee, with the variety of illness which we have hearings on, it is really, really heartbreaking. When you ask for $200 million, I would like to see you get $200 million, but I do not know quite how to square that with what we are seeking to do on other ailments.

If we are successful in getting a budget increase of $3,400,000,000, right now—the administration budget is at $2,750,000,000, that projects to an administration increase of $62 million for Alzheimer's disease—we would have to do more than triple the overall award, which would be in excess of $10 billion for this year. And candidly, my colleagues are not very happy about what Senator Harkin and I are doing by putting in the money we have.

We tried for $1 billion a few years ago and were turned down. So, the next year we tried for $2 billion and were turned down. And the next year we tried for $2.3 billion and were turned down. Finally, we went for $2.7 billion and we won. I will not give you all of the statistics, but I think, this year, when we ask for $3.4 billion, we will win. But I think even our winning streak or our abilities to get the funding would balk at $10 billion.

Now, I know, Dr. DeKosky, you do not suggest that we rob Peter to pay Paul, as you stated earlier in your testimony, or take it from somewhere else. And the allocation is really the job of NIH. They make the determination on a non-political basis as to how the money ought to be allocated.

If you were sitting in my chair, Dr. DeKosky, and with that background in mind, how would you respond to—Senator DeKosky, how would you respond to Dr. Specter's request for $200 million? I just demoted you and promoted me.

Dr. DEKOSKY. My first thought would be Aunt Rose would give me the money. My second thought has to do with the issue of the future and having the investment to put back into the Federal budget, instead of having to spend money taking care of people as the programs that are on the rise, even before the boomers hit their age of high risk, causes us to lose. This, I see, rather than an open-ended issue, being more of an investment.

We have the ability, we believe, to head off the disorder. We would like to be able to turn the graphic which shows the effect of a decline in the number of cases, which represents real dollar savings, into reality.

So, my belief is, in terms of the timing of when these cases will begin to increase, that the money spent now makes much more sense.

My only other comment is that the research that is done directed towards Alzheimer's disease has a whole variety of spin-outs into disorders of stroke, cerebrovascular disease. It will probably have effects on diabetes and a variety of other illnesses. So, although

this is focused on Alzheimer's, the people who have come to it and the advances in different areas and for different diseases have been surprising; sometimes unpredictable.

Senator SPECTER. Well, that is a good answer, Dr. DeKosky. And we will do our very best to get the maximum funding we can.

On a parochial matter, may I ask all those from Pennsylvania who are here today, I understand we have a very large contingency, to stand up?

[Pennsylvania group stands.]

CONCLUSION OF HEARING

Senator SPECTER. Thank you all very much for being here, that concludes our hearing.

[Whereupon, at 10:45 a.m., Tuesday, April 3, the hearing was concluded, and the subcommittee was recessed, to reconvene subject to the call of the Chair.]

○