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Transmittal Cover Sheet

TO Ms. Maria Echeveste

Company The White House

Fax Number 202-456-1907

Phone Number 202-456-6580

FROM Laura Foote Reiff, Esq.

File Number 37428*010100

Comments

Please fax 406-2076
447-4820
Chuck Jones

Date August 28, 2000

Time

No. Pages Including this cover sheet 3

Please notify us immediately if not received properly at 703-749-1300.

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GREENBERG
ATTORNEYS AT LAW
TRAURIG

Laura Foote Reiff
703-749-1376/rciff@gtlaw.com

August 28, 2000

VIA FACSMILIE

Ms. Maria Echeveste
White House
1600 Pennsylvania Avenue, NW
Washington, DC 20500

Re: J-1 Waiver for Dr. Jose Norberto

Dear Ms. Echeveste:

I am an immigration attorney and advocate currently working with a broad coalition of organizations on broad immigration issues (organized by Henry Cisneros). I am very interested in meeting with you to discuss our coalition issues, as well as the serious issues concerning a highly skilled and valued surgeon, Dr. Jose Norberto, who has been appointed the medical attaché of the Dominican Republic to the United States. We understand that after a discussion with Marjorie Tarmey your office contacted the Ambassador of the Dominican Republic to discuss this matter. However, we have not been able to receive any further updates on this case from your office. A member of the Dominican Republic government and I would like to meet with you regarding Dr. Norberto. We believe this case merits a meeting with the White House given that the President of the Dominican Republic would like Dr. Norberto to remain in the United States.

Dr. Jose Norberto is a cardiothoracic surgeon with the Ohio State University Medical Center. He received graduate medical training in the United States in valid J-1 visa status. We have applied for a waiver of the two year foreign residence requirement with the USIA and the Vermont Service Center of the INS based on hardship reasons.

In 1994, Dr. Norberto developed a mass in his chest which caused severe damage to his esophagus. He underwent thoracic surgery and was placed on an anti-Tuberculosis drug regime that helped reduce the mass in his chest. Dr. Norberto's doctors have submitted letters to USIA and INS stating that he needs to remain in the United States for follow-up treatment. He requires extensive follow-up care for this Tuberculosis-based problem and the Dominican Republic is unable to treat his condition effectively. If he returns to the Dominican Republic, his illness will very likely reoccur and he will not have access to proper medical care.

Dr. Norberto is married to a United States citizen wife and has two United States citizen children. Mrs. Norberto is a licensed cancer nurse in the U.S., but is unable to practice nursing in the Dominican Republic, as she is not licensed in the Dominican Republic and does not speak Spanish,

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703-749-1300 FAX 703-749-1301 www.gtclaw.com
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SAO PAULO FORT LAUDERDALE BOCA RATON WEST PALM BEACH ORLANDO TALLAHASSEE

Ms. Maria Echeveste

August 28, 2000

Page 2

Mrs. Norberto would only be able to work in the Dominican Republic after several years of classes to become licensed. There is only one clinic in the Dominican Republic that hires nurses who specialize in working with cancer patients, so her employment opportunities in the Dominican Republic would be severely limited.

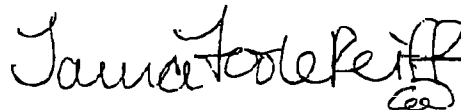
If forced to return to the Dominican Republic, Dr. Norberto will likely be the sole financial provider for his U.S. citizen wife and children because his wife's employment opportunities are so limited and would require more than one year of certification classes. There is a high likelihood that Dr. Norberto will become very ill without the treatments available in the U.S. leaving him unable to provide financially and emotionally for his family. If this occurs, the family will not have any income. In addition, the U.S. citizen children have not been raised to live in the Dominican Republic culture and do not speak Spanish. They would have great difficulty attending school conducted in Spanish.

Through his work with the Ohio State University Medical Center, Dr. Norberto has become an integral part of Heart Care International. Dr. Norberto travels with Heart Care International to Latin American countries, including the Dominican Republic, and performs open heart surgery, free of charge, on patients who might otherwise die. Dr. Norberto would be unable to continue as a part of Heart Care International if he were required to return to the Dominican Republic for two years. The Dominican Republic lacks the technological capability to allow Dr. Norberto to continue his extensive training in cardiothoracic surgery.

The President of the Dominican Republic is fully aware of the accomplishments of Dr. Norberto with Heart Care International as well as his medical condition. The President would like Dr. Norberto to remain at the Ohio State University and continue working with Heart Care International and provide invaluable assistance to the citizens of the Dominican Republic as well as other Latin American countries. Given Dr. Norberto's high level of medical skill and willingness to travel and help those less fortunate, his medical condition and the hardship that would result for his U.S. citizen wife and children, The President of the Dominican Republic would like for Dr. Norberto to remain in the United States despite the two year foreign residence requirement.

I would like to meet with you along with a member of the Dominican Republic government in order to discuss Dr. Norberto's case and a possible remedy. I look forward to meeting with you and discussing this issue. If you require any additional information, please contact me at 703-749-1372 or via email at reiff@gtlaw.com.

Very truly yours,



Laura Foote Reiff



Helen S. Castleman
07/06/2000 10:50:42 AM

Record Type: Record

To: Irene Bueno/WHO/EOP@EOP

cc:

Subject: Re: Status of letter re: Dr. Norbeto

Since we don't act as advocates for individuals we normally do not ask the agency to look into what else can be done if it has given a thorough and satisfactory response, unless we get a follow-up request from the individual that initially wrote to the White House. Although I don't remember all the details of this case, I think it is basically up to Dr. Norbeto to produce new documentation from his sponsoring employers, as well as medical documentation that will fit DOS' guidelines for a waiver. I believe DOS' response indicates that Dr. Norberto was given another avenue for applying for a waiver and that at the time of DOS' response to Ms. Reiff, the Waiver Review Division had not yet received an application from the doctor. It was also concluded by DOS' Medical Services that the Dominican Republic would be able to adequately manage the doctor's medical condition. At this point, I don't believe there is anything more I can ask DOS to do.

Tonia ~~Se~~ Syed 703-749.1323



2000 6620
United States Department of State
Washington, D.C. 20520

May 2, 2000

Ms. Laura Foote Reiff
1750 Tysons Boulevard, Suite 1200
McLean, VA 22102

Dear Ms. Reiff:

Your fax of April 12 to Ms. Maria Echeveste of the White House concerning Dr. Jose Norberto, an exchange visitor from the Dominican Republic, who is requesting a waiver of the two year home residence requirement 212(e), was recently referred to this office for a reply.

Dr. Norberto entered the United States on a J-1 non-immigrant visa through the Educational Commission on Foreign Medical Graduates in 1990. All Foreign Medical Graduates who engage in medical training on the J-1 visa have a seven-year maximum limitation of stay.

Dr. Norberto's file indicates that in the past he applied three different times for a waiver due to hardship and was denied. It was suggested by the Waiver Review Division in a letter to you dated January 7, that Dr. Norberto may want to consider applying for a waiver based on an Interested U.S. Government Agency or State Health Department request. As of this writing the Waiver Review Division has not received the application.

Congress has stated that marriage to a U.S. citizen or legal permanent resident and/or birth of a U.S. citizen child is not sufficient reason to waive the two-year home residence commitment made by the exchange visitor. In regard to Dr. Norberto's medical condition, the Waiver Review Division consulted with the Department of State Office of Medical Services and it was determined that health care professionals in the Dominican Republic can manage the medical condition of Dr. Norberto. It was the opinion of the State Medical Service that supported the decision not to recommend a waiver for Dr. Norberto.

I hope this information is helpful. Please feel free to contact me if my office can be of further assistance regarding this matter.

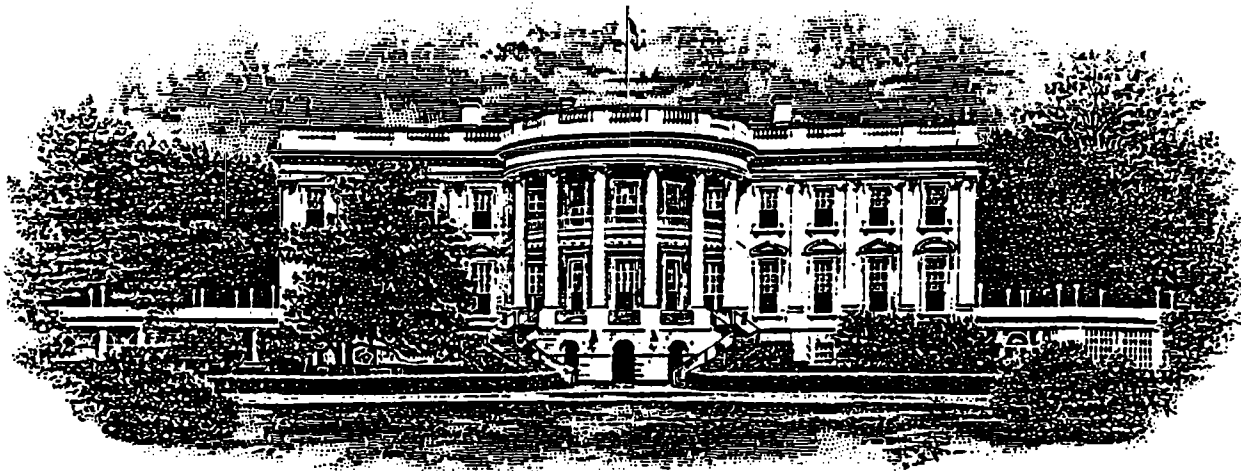
Sincerely,



Doria Rosen
Director
Office of Public and Diplomatic Liaison
Visa Services

THE WHITE HOUSE
WASHINGTON
EXECUTIVE OFFICE OF THE PRESIDENT

OFFICE OF THE CHIEF OF STAFF



Please Deliver To: Scott Busby

Fax Number: 647-8162

Sender: IRENE. BUENO 456-6594

Date: 6/29/00

Pages Including Cover: 5

Message: Per my voice mail. Thanks!

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Laura Fichte Reiff
703-749-1376/reiff@gtlaw.com

May 3, 2000

VIA FACSIMILE

Ms. Maria Echeveste
White House
1600 Pennsylvania Avenue, NW
Washington, DC 20500

Re: J-1 Waiver for Dr. Jose Norberto

Dear Ms. Echeveste:

We briefly met at the National Immigration Forum Dinner in early April. I am an immigration attorney and advocate currently working with a broad coalition of organizations on broad immigration issues (organized by Henry Cisneros). I am very interested in meeting with you to discuss our coalition issues, as well as the serious issues concerning a highly skilled and valued surgeon, Dr. Jose Norberto, who has been appointed the medical attaché of the Dominican Republic to the United States.

Dr. Jose Norberto is a cardiothoracic surgeon with the Ohio State University Medical Center. He received graduate medical training in the United States in valid J-1 visa status. We have applied for a waiver of the two year foreign residence requirement with the USIA and the Vermont Service Center of the INS based on hardship reasons.

In 1994, Dr. Norberto developed a mass in his chest which caused severe damage to his esophagus. He underwent thoracic surgery and was placed on an anti-Tuberculosis drug regime that helped reduce the mass in his chest. Dr. Norberto's doctors have submitted letters to USIA and INS stating that he needs to remain in the United States for follow-up treatment. He requires extensive follow-up care for this Tuberculosis-based problem and the Dominican Republic is unable to treat his condition effectively. If he returns to the Dominican Republic, his illness will very likely reoccur and he will not have access to proper medical care.

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Ms. Maria Echeveste
May 3, 2000
Page 2

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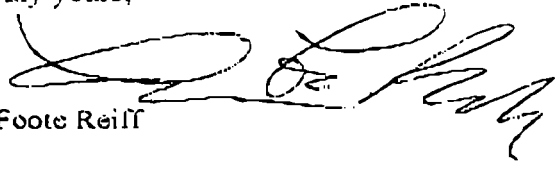
If forced to return to the Dominican Republic, Dr. Norberto will likely be the sole financial provider for his U.S. citizen wife and children because his wife's employment opportunities are so limited and would require more than one year of certification classes. There is a high likelihood that Dr. Norberto will become very ill without the treatments available in the U.S. leaving him unable to provide financially and emotionally for his family. If this occurs, the family will not have any income. In addition, the U.S. citizen children have not been raised to live in the Dominican Republic culture and do not speak Spanish. They would have great difficulty attending school conducted in Spanish.

Through his work with the Ohio State University Medical Center, Dr. Norberto has become an integral part of Heart Care International. Dr. Norberto travels with Heart Care International to Latin American countries, including the Dominican Republic, and performs open heart surgery, free of charge, on patients who might otherwise die. Dr. Norberto would be unable to continue as a part of Heart Care International if he were required to return to the Dominican Republic for two years. The Dominican Republic lacks the technological capability to allow Dr. Norberto to continue his extensive training in cardiothoracic surgery.

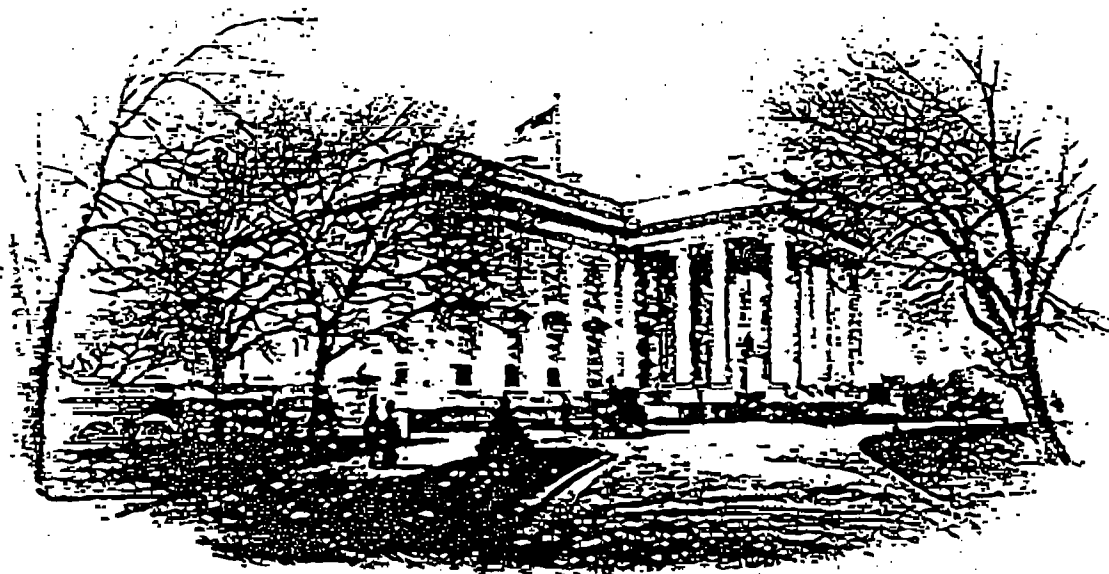
The President of the Dominican Republic is fully aware of the accomplishments of Dr. Norberto with Heart Care International as well as his medical condition. The President would like Dr. Norberto to remain at the Ohio State University and continue working with Heart Care International and provide invaluable assistance to the citizens of the Dominican Republic as well as other Latin American countries. Given Dr. Norberto's high level of medical skill and willingness to travel and help those less fortunate, his medical condition and the hardship that would result for his U.S. citizen wife and children, The President of the Dominican Republic would like for Dr. Norberto to remain in the United States despite the two year foreign residence requirement.

I would like to meet with you along with a member of the Dominican Republic government in order to discuss Dr. Norberto's case and a possible remedy. I look forward to meeting with you and discussing this issue. If you require any additional information, please contact me at 703-749-1372 or via email at reiffn@gtlaw.com.

Very truly yours,


Laura Foote Reiff

EXECUTIVE OFFICE OF THE PRESIDENT
Facsimile Transmittal Sheet



Date 6/20/00
From Helen Castleman
Number of pages including cover 3
Fax number _____ Phone number _____
To Irene Bueno
With Office of the Chief of Staff
Regarding Laura Forte Reiff correspondence
Comments _____

The attached correspondence received in the White House is faxed to your office for handling. Please return the fax with a copy of your written response or telephone report to the following address:

Mrs. Helen S. Castleman
Director, Office of Agency Liaison
Room 6, OEOB
The White House
Washington, D.C. 20502

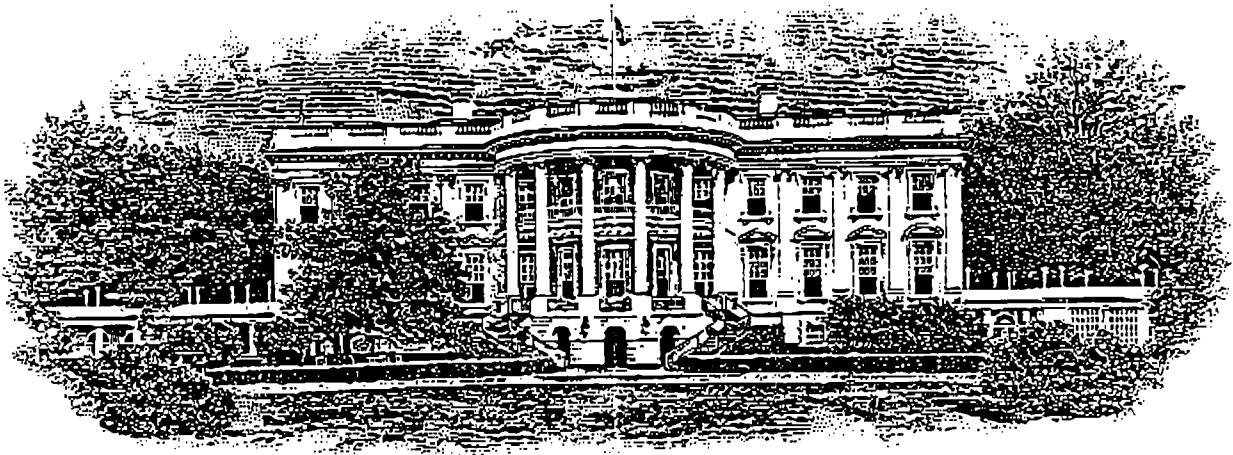
Telephone No.: 202/456-7486
Fax No.: 202/456-2992

Call Maisha Preer
663-2866

CM

March 6
643-2866

THE WHITE HOUSE
WASHINGTON
EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF THE CHIEF OF STAFF



Please Deliver To: Irene Buena

Fax Number: _____

Sender: M. Tarmey

Date: _____

Pages Including Cover: _____

Message: Please call me about this

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Transmittal Cover Sheet

TO Ms. Maria Echeveste

Company The White House

Fax Number 202-456-1907

Phone Number 202-456-6580

FROM Laura Foote Reiff, Esq.

File Number 37428*010100

Comments

Date May 3, 2000

Time

No. Pages Including this cover sheet 3

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Irene Bueno



 **05/12/99 07:21:32 PM**

Record Type: Record

To: Michael L. Goad/OMB/EOP

cc:

Subject: USDA J-1 Visa Account- proposed legislation

I have a couple questions/comments:

1. Are the other agencies who act as IGA requesting this same authorization? If not, why not and why should this include the other agencies?
2. Is this legislation being cleared with HHS and USIA since they are heavily involved in this process?

Please let me know. Thanks.



**DEPARTMENT OF AGRICULTURE
OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20250**

**The Honorable Albert Gore, Jr., President
United States Senate
The Capitol
Washington, D.C. 20510**

Dear Mr. President:

I am transmitting by this letter for the consideration of the Congress a draft bill "To provide authority to the Secretary of Agriculture to charge a fee for the processing of recommendations with respect to medical graduates seeking a waiver of the two-year home-country requirements for an immigrant visa" that the Department of Agriculture (USDA) recommends be introduced and passed.

Foreign medical graduates may be granted J-1 visas to perform their medical residency in the United States. Under the terms of the visa, these individuals must return to their home countries, or last place of residence, for 2 years following the completion of their residency. Since 1993, USDA has acted as an "Interested United States Government Agency" (IGA) pursuant to section 212(e) of the Immigration and Nationality Act for foreign medical graduates desiring a waiver of the 2-year home-country requirement. These individuals must practice medicine for no less than 3 years in a health professional service area, medically underserved area, or where there exists a medically underserved population. In addition, they must service the population as a primary care physician. USDA is one of only a few Federal agencies willing to act as an IGA for this purpose, has done so for more than 3,000 physicians in virtually every State, and receives over 500 requests annually from foreign medical graduates seeking support for the waiver.

The draft bill would authorize the Secretary to charge a processing fee to foreign medical graduates or sponsoring entities seeking USDA's support for waivers pursuant to section 212(e) of the Immigration and Nationality Act. USDA would use the fees authorized by the draft bill not only to defray its costs for performing the requests, but to denote additional resources, as appropriate, to this task to expedite the process and reduce the backlog of applicants, thus getting medical care to our under-served rural areas sooner. In addition, with added resources, USDA could better monitor the graduates' compliance with the program.

The Office of Management and Budget advises that there is no objection to the presentation of this proposed legislation and that enactment would be in accord with the Administration's program.

Honorable Albert Gore, Jr.

2

I am sending an identical letter to the Speaker of the House of Representatives.

Sincerely,

DAN GLICKMAN
Secretary

Enclosure

A BILL

To make amendments to provide the Secretary of Agriculture authority to charge fees for the processing of recommendations with respect to individuals seeking a waiver of the two-year home-country requirements for applying for an immigrant visa and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

(a) IN GENERAL.- Notwithstanding any other provision of law, the Secretary of Agriculture may charge fees for the processing of recommendations with respect to individuals seeking a waiver of the two-year home-country residency requirement pursuant to section 1182(e), 8 U.S.C.

(b) FUND.- The fee so charged and collected shall be deposited in a fund to be established in the Treasury of the United States. This fund shall be known as, the "Department of Agriculture J-I Visa Account."

(c) USE OF FUNDS.- These funds shall be made available to the Secretary, without further appropriation, for processing recommendations described in subsection (a) and shall be in addition to other funds available for such purpose. Funds in this account shall remain available until expended.



**Department of Health and Human Services
Room 639-H, HHH Building
200 Independence Avenue, S.W.
Washington, D.C. 20201**

Telephone: 202-690-6174

Fax: 202-690-7127

Date:

6/25/99 6/16/99

To:

Jane Buena

Organization:

Telephone:

456-6558

Fax:

456-7928 ~~557~~ 3381

Number of Pages:

6

From:

Jane Buena

MESSAGE:

Hi Jane - attached is an interesting "think piece"
re: US & our foreign scientists - also attached
are my comments on the prop. Agric. bill -
Jane - 456-7928 (fax) won't go there?



To: Sondra S. Wallace@OGC.LEG
From: Joyce Jones@IOS.OIA
DEPARTMENT OF HEALTH & HUMAN SERVICES
CC:

Office of the Secretary

Bcc:

Subject: Comments on J-1 visa proposed Dept. of Agriculture bill
Attachment: Exchange Visitor
Waiver Review Board

Date: 5/18/99 4:00 PM

Washington, D.C. 20201

I have spoken to Brenda Frank OGC, PHS re this. It appears to be a user fee and she, as well as this office, who processes the waivers for HHS have no objection to Dept. of Agriculture charging a fee. Do we know what kind of fee they will be charging or how it will be collected. It would presumably be due upon submittal of an application. USIA is now also charging for their processing of waivers. Has anyone informed USIA that Dept. of Agric. is considering this, since the exchange visitor waiver program is USIA's.

My comments are addressed to the wording of the Bill. They are not charging for the "recommendation", they are charging for "the review of an application for a waiver" If the system is more than a rubber stamp process, there would be some that were denied although the processing fee would still be in effect.

America's dependency on foreign scientists.

CONN

UNCONTROLLED EXPERIMENT

By Scott Stossel

By almost any measure, the United States is the world's scientific superpower. We spend more money—more government money, more industry money—on basic research than any other nation. U.S.-based scientists have won the vast majority of important science prizes, including more than two-thirds of the Nobel Prizes in physiology and medicine over the past 20 years. The United States is the best, too, at the application of science: we have eradicated more diseases, invented more new technologies, and synthesized more new materials than any country in history. Indeed, if the material existence of much of the world's population can be said to have improved over the last half-century, much of this improvement can be traced directly to basic research done originally in this country.

And yet, if you were to wake up one morning in a typical American research university laboratory, you probably wouldn't know what country you were in. In most labs, the smell of ethnic food and the sound of foreign tongues fill the air. Asian faces frequently outnumber the non-Asian, and the ethnic composition of some labs resembles the starting line of one of the more polyglot Olympic events. The laboratory of Li-Huei Tsai, at Massachusetts General Hospital, is typical. Her research team has recently consisted of one German, one Scot, one Swede, one Frenchwoman, one Italian, someone who is half-Serbian and half-British, and two Americans. Tsai herself, a professor of pathology at Harvard, is originally from Taiwan. Some labs—some whole departments—have not a single American citizen.

According to a recent report by the National Science Foundation (NSF), nearly a third of all students who earned their doctorates in the sciences—and more than half of all students who earned their doctorates in engineering—in this country between 1991 and 1995 came from foreign countries. The number of doctoral degrees awarded in engineering, math, and computer science nearly doubled between 1985 and 1995, and nearly all of this growth can be accounted for by the influx of foreign students.

Foreign nationals are also prevalent at higher levels. According to figures published last year in the Institute

for International Education's annual *Open Doors* report, 1998 saw a five percent increase in the number of foreign scholars (defined as academics—post-doctoral appointees, visiting professors, or junior faculty—who are not working toward a degree) doing research in this country, 68 percent of them in the sciences. As of 1993, 87 percent of engineering professors and 27 percent of math and computer science professors were foreign-born.

What does all of this say about the practice of scientific research in this country? First, it signals that something is clearly working. From the perspective of scientific research, the U.S. system continues to function brilliantly. One major reason this country attracts scientists and aspiring scientists from all over is that our scientific resources and opportunities are the best in the world. Second, however, it also signals that something is clearly *not* working. Recent studies reveal growing disaffection among young scientists, who face more and more competition for teaching jobs. This in turn is discouraging American undergraduates from pursuing careers in research science, which could have negative implications for both our economy and our culture. Hence, the challenge: to adjust national science policy to fix what is not working while preserving what is.

The reliance on foreigners actually evolved from a well-designed system. In 1945, Vannevar Bush of the fledgling Office of Scientific Research and Development (OSRD) published *Science: The Endless Frontier*, which effectively became the blueprint for America's scientific research enterprise. The report proposed the creation of a set of agencies—like the NSF, the National Aeronautics and Space Administration (NASA), and the National Institutes of Health (NIH)—that would provide a steady stream of funding to research institutions, which would in turn control their own projects and be responsible for training future scientists.

Two elements of this system have worked particularly well. First, American research universities combine cutting-edge research with teaching and doctoral research training. As a result, principal investigators—the faculty members who run their own labs—have been able to attract talented individuals to their research

SCOTT STOSSEL is executive editor of *The American Prospect*.

teams with small stipends. Under the implicit agreement between professor and student, in exchange for providing cheap labor the student will get the training and credentials necessary to become a principal investigator with his or her own lab. Second, using "peer review" to determine which grant requests to fund ensures that research is funded meritocratically. In Germany or India, by contrast, scientists of a certain vintage have generally been guaranteed a base level of funding regardless of merit; financial support in American science goes, at least in theory, toward the most promising research.

But here's where the part of the system that works blends into the part that doesn't work. In 1957, the Soviet Union's launching of Sputnik set off a panicked increase in science funding. The result was a nine percent annual increase in the number of science doctorates awarded between 1959 and 1971. This led to a creeping decline in the quality of American students entering the field, because, in order to fill all the new slots during this period of rapid growth, science had to become less selective. By 1970, the best students had already been taken, along with the second-best—leaving only the mediocre students. In order to keep their labs stocked with enough high-quality research talent to sustain scientific growth, universities began to recruit abroad. By the late '60s, foreign nationals had grown to 25 percent of all the doctoral students in the sciences, math, and engineering.

This was only the beginning. Flush with funding in the '60s, universities overstaffed their faculties. In the early '70s, however, job opportunities for science Ph.D.s dried up, as universities struggled to absorb the glut of researchers taken on in the '60s. Growth in federal funding for graduate fellowships slowed; graduate student stipends, never princely, failed to keep pace with inflation. The post-doctoral appointment became more common, largely as a mechanism for assimilating the graduate-level scientists who couldn't find faculty positions. Declining pay and job prospects, in turn, increasingly turned American undergraduates away from science. According to *American Professors: A National Resource Imperiled*, a 1986 book by Howard R. Bowen and Jack H. Schuster, between 1945 and 1969 1.2 times as many Phi Beta Kappa members chose careers in business, law, and medicine as careers in academia. By the '70s, the study found, five times as many students did.

To compensate, domestic research institutions continued to look abroad. Not only were foreigners willing to work for low wages—but they were, on balance, better qualified. The literature on immigration suggests that, at all strata of society, the people who immigrate are the relative elite; after all, you have to be highly motivated to uproot yourself from your family and culture in search of a better opportunity. And as David North reported in his 1995 book *Soothing the Establishment: The Impact of Foreign-Born Scientists and Engineers on America*, U.S. graduate schools actually discriminate against foreigners, meaning only the brightest get in.

An unpublished study by Sharon Levin (a professor of economics at the University of Missouri) and P. Stephan (the associate dean of Georgia State University) bears this out. They found that, while the foreign-born represented only 20.4 percent of the physical scientists in this country in 1980 (and fewer than nine percent of the overall U.S. population), they constituted 26.7 percent of the membership in the prestigious National Academy of Science (NAS) in that field. And, while they constitute only 15.4 percent of the life-science population, the foreign-born comprise 29 percent of the most cited authors in the life sciences between 1980 and 1990.

Given that foreign graduate students must be both highly motivated and talented to win admission to American programs—and given that, once here, many foreigners concentrate on their work as a means of coping with feelings of cultural and social isolation—it is perhaps not surprising that they produce so disproportionately well. And there is an additional motivating factor: residency here is contingent on the good graces of the principal investigator who sponsors the visa.

From a national economic perspective, foreign graduate students represent a net gain. A 1988 Brookings Institution study found that the total value transferred to the United States by the immigration of scientists and engineers between 1954 and 1975 was \$8.6 billion per year. And a 1996 report by the National Academy of Engineering concluded that "foreign students and long-term visiting researchers are an indispensable asset to U.S. university and federal laboratory research."

What's more, the majority of foreign nationals who study here remain in the country after graduation, paying taxes and contributing to the economy. Statistics just published by the NSF reveal that 57 percent of Chinese and 59 percent of Indians in doctoral programs intend to settle here indefinitely and that 68 percent of all foreign-born students who earned science or engineering Ph.D.s between 1988 and 1996 planned to settle here, as well. A study by Michael Finn at the Oak Ridge Institute for Science and Education in Tennessee found that 79 percent of the Indians and 88 percent of the Chinese who received science doctorates in 1991 were still working here in 1995.

Even when foreign students do return home, the American economy may still benefit. The National Academy of Engineering reports that, for example, the entire energy establishment of South Korea may be run by graduates of Rensselaer Polytechnic Institute and MIT and that all senior civil engineering experts in the People's Republic of China are Cornell graduates. If true, these countries will be more likely to call on U.S. companies for equipment and technology, thereby contributing to our GDP.

There is always the possibility, of course, that a foreigner will take specific research findings to his home country and use them to beat American companies in the race to market a product. In fact, the public dissemination

ination of research findings that is an integral part of the system makes our scientific enterprise easy to exploit economically. But, as long as the United States continues to dominate pharmaceutical and high-tech trade, this should not be a major concern. (And, to the extent that it is a concern, it is a matter of trade policy, not science policy.)

→ **B**ut that doesn't mean reliance on foreign students is an unqualified good. First, there is the issue of national security: sometimes giving foreign nationals access to cutting-edge scientific research indeed means exposing the United States to high-tech espionage. Just recently, Wen Ho Lee, a Taiwan-born scientist working at Los Alamos National Laboratory, was fired because the FBI suspects he may have been providing nuclear secrets to China. To be sure, most of what a rogue state would need to synthesize nuclear or chemical weapons is already in the public domain. And, while MIT, for example, does do lots of Pentagon-subsidized defense research, the classified work is done not at the university proper but rather at affiliated facilities with restricted access. (Only cleared U.S. citizens are allowed without an escort.) An MIT graduate student in computer science told me: "Could a foreign country send a spy to infiltrate MIT as a student? Sure. But anything the spy learned would become known publicly shortly anyway, and it really wouldn't be a big deal." Still, Wen Ho Lee's case gives many people pause, both for its national security implications and for the possibility that foreign-born U.S. citizens may be wrongly accused of "dual loyalty."

There is also the question of whether foreigners' willingness to work for less tends to depress the wages of American scientists. Unions have protested the recent temporary raising of the ceiling on H1-B visas—which permit skilled foreign workers to enter the country when sponsored by an American company—from 65,000 to 115,000 annually. And it's not hard to find engineers who claim to have been replaced by cheaper immigrants or that the presence of foreign scientists and engineers at high-tech firms has lowered American incomes in that field.

In fact, this may not be as much of a problem as it first appears—at least in the private sector. David North, for example, was surprised to find that foreigners who stay in the United States after their education are actually slightly *better* paid than their American counterparts. Data from both the NAS and NSF bear this out, showing that foreign-born scientists and engineers earned higher salaries than their native-born counterparts who received their degrees in the same year. (This makes sense given evidence suggesting the foreign-born are also more productive.) Though American private industry does have a disproportionate number of foreign-born workers toiling in scientific jobs—and U.S. corporations are continually lobbying Congress to raise the number of skilled-worker visas granted—private corporations are for now relatively less dependent on the non-native-born than academia. (That may change over

time, of course. Many firms in Silicon Valley and Massachusetts's Route 128 loop are heavily foreign, and, as graduate schools continue to produce disproportionate numbers of non-native Ph.D.s, the scientific labor pool in this country will have an increasingly international complexion—particularly in fields like biotechnology, where the links between academia and industry are especially direct. Of course, most of these people will also become U.S. citizens.)

It's also true that some unethical "consulting companies" have figured out illegal ways of getting around visa restrictions, bringing Third World workers into the country as "tourists" and then putting them to work as cheap contract labor for Fortune 500 companies that need low-level applied research. This sort of thing is especially prevalent in the computer programming industry and probably does depress wages. But this is a generic challenge posed by free trade. Like Algerians sweeping streets in Paris or Mexicans cleaning toilets in Los Angeles, Indians doing computer programming are a cheap alternative to American labor. These workers by and large do not have highly specialized skills, and federal regulations are supposed to ensure that foreign workers are not generally allowed into the country unless they are not going to be displacing American workers or lowering American wages. Strengthening—and enforcing—skilled-worker visa restrictions will help reduce the burdens on native-born scientists and engineers working for private companies.

In academia, however, the situation is different. The NIH sets the basic funding minimums for research and training grants, partly to prevent principal investigators from lowballing labor costs in order to make their grant proposals more competitive. Yet, today, most graduate students earn less than \$20,000 per year, and most postdocs earn less than \$30,000—substantially less than what many of their U.S. college classmates are earning at the same stage of life with just their bachelor's degrees. It is hard to avoid the conclusion that the willingness of so many foreign students to live on modest stipends perpetuates a depressed wage scale. This creates a vicious circle: undergraduates see the low wages and scant job opportunities (not to mention the relative rigor of science courses compared to those in the humanities and social sciences) and shy away from science.

Of course, some would say that the real problem is that U.S. schools are not producing enough students capable of high-level science. But, in national assessments of math and science, American students are performing as well as 25 years ago, before the steepest decline in native representation in U.S. science began. Indeed, nine- and 13-year-olds are performing better in math and science than they did in 1973, while the performance of 17-year-olds has remained about the same. And, while the average American student may not be as well trained in math as the average educated European or Asian (though most studies show American students compare well on tests of science), this is partly because public education in

this country is universal—meaning everybody, even the least able, figures into the test-score calculations.

Indeed, while deficiencies in our secondary and undergraduate science teaching might play a modest role in our nonproduction of scientists—and some longtime science professors aver that the declining quality of undergraduates, for whom the number and rigor of science courses have declined, plays a large role—the real problem seems to be that our best students are not choosing science because they don't see it as an attractive career option. "My daughter says to me, 'Daddy, it takes seven years to get a Ph.D. and then three or four years for a postdoc,'" says Michael Teitelbaum, a demographer at the Alfred P. Sloan Foundation, who has studied this issue. "I'd rather do modern dance." A J.D., in contrast, makes you a full-fledged professional in three years, with greater earning potential than you'd ever have as a scientist.

Talented college graduates from China or India, on the other hand, have fewer options. They would have to pay their own way to an American J.D. or MBA; only a tiny few could afford that. They can't get jobs in the United States without a work permit. But they can apply to an American graduate school and get their tuition paid—and get a \$15,000 annual stipend, which is considerably more than even the average college-educated Chinese or Indian could expect to earn at home. American Ph.D. programs are also a gateway to permanent residence; if an international student stays seven years or more, he or she has a good chance of getting naturalized.

In American labs, you'll find Chinese surgeons who have left family and prestigious positions back home in order to get a Ph.D. among students half their age. You'll find foreign postdocs who win their lab positions here by telling their principal investigators that they have funding from external sources when actually they don't—so that once here they have to work illegally at jobs like dishwashing or gypsy-cab driving. Many developing countries encourage (and pay for) their scientists to come here, understanding either that they'll return with knowledge of the American system they can apply back home or that they'll stay, providing a connection in the United States that might help them win business in the future or serve as a helpful contact for future students.

On balance, this might not sound so bad. Americans don't want these jobs, but talented foreigners do. Medical and scientific problems, like physical laws, are universal—who cares who solves them or where? Yet what happens if China's economy continues to grow at its current, turbocharged rate? Job opportunities there will proliferate, living standards will improve—and at some point the United States might find that many of its physicists or civil engineers have gone home. What happens if war breaks out between India and Pakistan, or between North and South Korea? The United States might suddenly find its flow of new research manpower in biology and chem-

istry severely constricted. And we've already seen what happens when a global economic crisis suddenly devalues the currency of developing countries in East Asia, leaving them unable to continue funding their graduate students abroad. Graduate school deans have been getting letters from the Thai Embassy, requesting tuition waivers for the graduate students those countries had been partially subsidizing. This has caused real problems on the West Coast, where these students are prevalent: How do you house and feed them when their money from home becomes effectively worthless but visa requirements prohibit their taking additional jobs?

Moreover, despite all the rhetoric about math being a universal language, you need to be able to speak English in order to teach American students. And while most graduate programs require that international students demonstrate English competency in order to gain admission, many native-born undergraduates cannot understand their teaching assistants, especially in math and engineering (which may be one reason that so few Americans continue science studies through college).

But the real problem with the foreign influx is that it has successfully masked a fundamental flaw in the way the United States produces scientists. The American system of research and training operates on the implicit assumption that research funding will *always* be growing. Consider that the typical principal investigator requires, say, ten researchers for her lab and has the grant funding to cover that many. Her ability to hire ten good researchers is predicated less on financial incentives than on her ability to assure her lab team that they'll get faculty positions in the future. Let's say she succeeds in holding up her end of the bargain, and all ten go on to get their own labs, each with ten researchers of their own. Unless a huge number of older labs suddenly disappear, the system won't work without a large net increase in the available funding.

American science, in other words, is based on a Ponzi scheme. As long as research funding increases, the system works. Between 1985 and 1994, university-based scientific research received funding increases of nearly \$1 billion per year. (The explosion in the number of Ph.D. students, postdocs, and foreign scholars at all levels of American science tracks this funding trajectory fairly closely.) But, when funding levels stabilize, the system breaks down. This is what happened in the early '70s: there was a glut of scientists with no place to go. If it hadn't been for the expanding reservoir of postdoctoral positions, many of these people would have had to leave science entirely.

Now even that reservoir is overflowing. According to a recent article by Elizabeth Marincola and Frank Solomon in *Molecular Biology of the Cell*, "Biomedical science is experiencing a 'Malthusian Crisis': a pyramidal growth in trainees which is generating demand for jobs and funding that outpaces even the impressive growth

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in federal funding of biomedical research." The way to correct this problem is simple but expensive: stop holding out the hope of faculty positions for young scientists, and raise the wage level of lab researchers. But the availability of high-quality foreign labor gives research institutions no incentive to do this. After all, the NIH, like the NSF, has an ambiguous mandate: it is supposed to support the interests of American science as well as the interests of basic science generally. It's clearly in the interest of science generally to let foreigners in; that keeps labor costs down and allows more experiments to be funded. But it may not be in the interest of American science to do this, since admitting large numbers of foreigners indirectly convinces at least some Americans to stay out.

One reason this problem hasn't gotten public attention is that scientists and graduate students are not a very effective political constituency. (Universities and high-tech companies are, but, again, their interest in cheap labor means their interests are often not congruent with those of researchers.) The first step in remedying the problem is to air the concerns of scientists and graduate students, not only for the benefit of aspiring American researchers but also for the benefit of the taxpayers who are helping finance foreign graduate students at their state universities. The second step is to regulate the flow of foreign scientists more carefully. Some of this can be done at the federal level through immigration policy. But the hard decisions are going to have to be made at the university level; that's where the decisions about which scholars come into the country get made.

C.W. "Bud" Minkel, dean of the graduate school at the University of Tennessee, is one of the few university administrators who have attempted to do this. While careful to disavow anything that smacks of "quotas," Minkel has set up what he calls "guidelines" for his department chairs: foreign graduate students should not compose more than 20 percent of a department, and there should not be too many students from a single country. If a department's international composition rises above 25 percent, Minkel will speak to the chair and insist that each additional foreigner be justified on a case-by-case basis. Over the vociferous objections of his department chairs, who complain that they will not be able to fill their research assistantships with talented people, Minkel's guidelines have worked (with, Minkel says, no perceptible decline in quality). No department is currently much more than 20 percent foreign.

But even Minkel concedes that, if he were running a science department, he would want to recruit freely from abroad. Ultimately, the system will not be fixed until somebody alters the costs and benefits of a career in science for U.S. citizens. Under the current system of incentives, graduate school is a much more attractive option for a foreigner than for an American. "This is not a case of gross labor abuse," says Michael Teitelbaum. "Principal investigators are not out to 'exploit'

foreign labor. They're just operating in the context of the incentive structure" in which foreign students provide the best, cheapest option. To its credit, the NIH recently raised the starting post-doctoral research fellowship from \$22,000 to \$26,000, which in percentage terms is a substantial increase. Still, as long as the average postdoc position (requiring ten years of higher education) pays less than the average auto assembly job, a but the most altruistic of America's best and brightest will pursue alternative career options.

Working in scientific research needs to be made into a viable middle-class career trajectory. To that end, a recent study by the National Research Council (NRC) recommended that the number of Ph.D. trainees be more carefully regulated and that prospective graduate students be better informed about their job options. The NRC study also recommends that master's programs in the sciences be strengthened and used to produce highly skilled lab technicians who will help alleviate the Ph.D. glut. The current system of training and research, in which Ph.D. students multiply like rabbits, is unsustainable. But if master's of science degrees became tickets to permanent lab positions that started at, say, \$35,000, then you could have people starting in professional positions at age 23. Many might choose this over staying in school till age 35 and then graduating to jobs that pay considerably less than \$35,000, with no guarantee of a permanent position in the future. By establishing a permanent class of highly educated technicians, principal investigators would also worry less about always having to train so many new researchers. More important, as the supply of Ph.D.s shrank, principal investigators would be better able to honor their implicit contracts of work-cheap-for-me-now-and-you'll-be-assured-your-own-lab-later. And, as independent researcher positions became more plentiful relative to the number of Ph.D. holders, the average time spent in graduate school would come down again, reducing the cost of a graduate degree.

Fundamentally, science is an international enterprise. As transportation and communication technologies (especially the Internet) effectively shorten distances between countries, it becomes even more so. Between 1981 and 1995, while total science-article output grew by 20 percent, the number of articles with international coauthors grew by 200 percent. We should be exceedingly wary of arresting this trend. Any limit placed on the number of foreign scientists that are allowed into this country could have significant economic and scientific costs—and could, moreover, signal a reactionary resistance to international cooperation in general. But, unless something is done to adjust our system of research and training, we may ultimately endanger our claim to national scientific excellence. Somehow, we must find the proper way to balance international interdependence with development and encouragement of our domestic talent—all in all, a fitting parable for the global economy.