



U.S. Citizenship
and Immigration
Services

Identifying data deleted to
prevent clearly unwarranted
invasion of personal privacy

PUBLIC COPY

CI

FILE:

EAC 04 131 50568

Office: VERMONT SERVICE CENTER

Date: **JAN 23 2006**

IN RE:

Petitioner:
Beneficiary

PETITION:

Immigrant Petition for Alien Worker as a Member of the Professions Holding an Advanced Degree or an Alien of Exceptional Ability Pursuant to Section 203(b)(2) of the Immigration and Nationality Act, 8 U.S.C. § 1153(b)(2)

ON BEHALF OF PETITIONER:

INSTRUCTIONS:

This is the decision of the Administrative Appeals Office in your case. All documents have been returned to the office that originally decided your case. Any further inquiry must be made to that office.

Robert P. Wiemann, Director
Administrative Appeals Office

DISCUSSION: The employment-based immigrant visa petition was denied by the Director, Vermont Service Center, and is now before the Administrative Appeals Office on appeal. The appeal will be sustained, and the petition will be approved.

The petitioner seeks classification pursuant to section 203(b)(2) of the Immigration and Nationality Act (the Act), 8 U.S.C. § 1153(b)(2), as a member of the professions holding an advanced degree. The petitioner asserts that an exemption from the requirement of a job offer, and thus of a labor certification, is in the national interest of the United States. The director found that the petitioner qualifies for classification as a member of the professions holding an advanced degree, but that the petitioner had not established that an exemption from the requirement of a job offer would be in the national interest of the United States.

Section 203(b) of the Act states in pertinent part that:

(2) Aliens Who Are Members of the Professions Holding Advanced Degrees or Aliens of Exceptional Ability. --

(A) In General. -- Visas shall be made available . . . to qualified immigrants who are members of the professions holding advanced degrees or their equivalent or who because of their exceptional ability in the sciences, arts, or business, will substantially benefit prospectively the national economy, cultural or educational interests, or welfare of the United States, and whose services in the sciences, arts, professions, or business are sought by an employer in the United States.

(B) Waiver of job offer.

(i) Subject to clause (ii), the Attorney General may, when the Attorney General deems it to be in the national interest, waive the requirements of subparagraph (A) that an alien's services in the sciences, arts, professions, or business be sought by an employer in the United States.

The director found that the petitioner qualifies as a member of the professions holding an advanced degree. The sole issue in contention is whether the petitioner has established that a waiver of the job offer requirement, and thus a labor certification, is in the national interest.

Neither the statute nor regulations define the term "national interest." Additionally, Congress did not provide a specific definition of "in the national interest." The Committee on the Judiciary merely noted in its report to the Senate that the committee had "focused on national interest by increasing the number and proportion of visas for immigrants who would benefit the United States economically and otherwise. . . ." S. Rep. No. 55, 101st Cong., 1st Sess., 11 (1989).

Supplementary information to regulations implementing the Immigration Act of 1990 (IMMACT), published at 56 Fed. Reg. 60897, 60900 (November 29, 1991), states:

The Service believes it appropriate to leave the application of this test as flexible as possible, although clearly an alien seeking to meet the [national interest] standard must make a showing significantly above that necessary to prove the "prospective national benefit" [required of aliens seeking to qualify as

“exceptional.”] The burden will rest with the alien to establish that exemption from, or waiver of, the job offer will be in the national interest. Each case is to be judged on its own merits.

Matter of New York State Dept. of Transportation, 22 I&N Dec. 215 (Comm. 1998), has set forth several factors which must be considered when evaluating a request for a national interest waiver. First, it must be shown that the alien seeks employment in an area of substantial intrinsic merit. Next, it must be shown that the proposed benefit will be national in scope. Finally, the petitioner seeking the waiver must establish that the alien will serve the national interest to a substantially greater degree than would an available U.S. worker having the same minimum qualifications.

It must be noted that, while the national interest waiver hinges on *prospective* national benefit, it clearly must be established that the alien’s past record justifies projections of future benefit to the national interest. The petitioner’s subjective assurance that the alien will, in the future, serve the national interest cannot suffice to establish prospective national benefit. The inclusion of the term “prospective” is used here to require future contributions by the alien, rather than to facilitate the entry of an alien with no demonstrable prior achievements, and whose benefit to the national interest would thus be entirely speculative.

Eligibility for the waiver must rest with the alien’s own qualifications rather than with the position sought. In other words, we generally do not accept the argument that a given project is so important that any alien qualified to work on this project must also qualify for a national interest waiver. At issue is whether this petitioner’s contributions in the field are of such unusual significance that he merits the special benefit of a national interest waiver, over and above the visa classification sought. By seeking an extra benefit, the petitioner assumes an extra burden of proof. A petitioner must demonstrate a past history of achievement with some degree of influence on the field as a whole. *Id.* at note 6.

Along with his published articles and documentation pertaining to his field of research, the petitioner submitted several letters of support.

[REDACTED] University Professor of Chemical Engineering, Carnegie Mellon University, and member of the National Academy of Engineering, states:

[The petitioner] was working on analysis of metabolic fluxes (rate of reaction) in living cell. The metabolic flux analysis is a fundamental but complicated problem. Increasing fluxes that leading [sic] to specific product is the goal of most genetic engineering work. Without the information of metabolic flux, scientists have difficulty to interpret the result of genetic modifications applied to a cell.

* * *

Specifically, [the petitioner] developed a novel method for finding all the optimal solutions of the linear programming that arises in the area of metabolic engineering for flux analysis in bacteria. . . . What [the petitioner] did was to conceive of a tree search algorithm in which he would strategically pivot on the simplex tableau in order to identify multiple solutions with the same objective. This algorithm, which leads to the same solutions as our recursive mixed-integer linear program, led to much faster solution times and was implemented by him in a novel software platform called *Metabologica* that allows setting up automatically these complex optimization problems.

* * *

This work has been quoted by some of the leading researchers in the area, and several biotechnology companies have expressed an interest in this program.

Besides the contribution of developing novel mathematic methods and software in the metabolic flux analysis, [the petitioner] also contributed to the U.S. by his extraordinary work on the engineering work of enhancing folic acid production using microorganisms. His experiment data shows a genetic engineering strategy proposed by his group has improved the folic acid production by 6 folds in *E. coli* culture. [The petitioner's] continuous work on this project will leads to strains that is [sic] capable of producing folic acid with higher yields, which can be used in industry to replace the currently chemical synthesis methods.

The petitioner's initial submission included citation indices showing that the petitioner's published work has been frequently cited by other researchers. When judging the influence and impact that the petitioner's published work has had, the very act of publication is not as reliable a gauge as is the citation history of the published works. Publication alone may serve as evidence of originality, but it is difficult to conclude that a published article is important or influential if there is little evidence that other researchers have relied upon the petitioner's findings. In this case, the frequent citation of the petitioner's articles shows that other researchers have acknowledged his influence and found his work to be significant.

[REDACTED] Whiteford Professor of Chemical Engineering and Bioengineering, University of Pittsburgh, submitted two letters of support [REDACTED] November 18, 2003 letter states:

[The petitioner] developed a computer program for an integrated and comprehensive analysis of metabolic reaction networks. The program can be used to predict feasible flux distributions that optimize an objective function. It also allows the user to simulate the NMR spectra of a signal molecule. The experimental outcome can then be used to distinguish between different feasible flux distributions. [The petitioner's] expertise in integrating various metabolic reaction analysis tools in a highly efficient software for comprehensive metabolic engineering analysis has placed him at the forefront of the discipline.

His experimental work focused on analysis of metabolism of *E. coli* and *B. subtilis* pyruvate kinase mutants. Based on measurements and theoretical analyses, [the petitioner] confirmed that deletion of pyruvate kinase (PYK) activity as a possible route for elimination of acid formation in bacterial cultures grown on glucose minimal media. Evidence consistent with the attenuation of PYK flux has come from metabolic flux calculations, metabolic pool and enzymatic activity measurements and series of NMR experiments all suggesting a nearly complete inhibition of PYK activity may lead to suppression of inhibitory acidic byproduct and significant enhancement of product and cellular yields.

[REDACTED] January 30, 2004 letter states:

[The petitioner's] software is the first and the only software for tracer experimental data analysis and design. His work has provided a fundamental tool for biologists to analyze their experimental data.

More importantly, [the petitioner's] software has an open architecture that allows for adding other metabolic modeling tools. The software, Metabologica, is also a very good educational tool for the undergraduate or graduate students in biochemical engineering. Several labs and companies have applied this software in their research work.

* * *

[The petitioner's] modeling work in folic acid pathways is an important work in metabolic engineering. It is the first step to replace the chemical synthesis with the environmental benign fermentation progress. . . . The work is also important for understanding the regulation and engineering of secondary metabolites derived from phosphoenolpyruvate.

[REDACTED] Research Fellow, Genencor International, Inc., Palo Alto, California, states:

[The petitioner] is currently working on NSF [National Science Foundation] funded project for overproduction by bacteria of folic acid, a dietary supplement recommended by FDA, to reduce the incidence of certain birth defects and for other health-related reasons. [The petitioner] has identified several genetic engineering targets in bacterium *Bacillus Subtilis* and validated one of the target[s] using experiment methods. His recent presentation at the annual ACS conference showed that metabolic engineering can increase the folic acid production 6-fold, and it could be greater than 100-fold if multiple targets are genetically engineered.

In addition to his excellent experimental work, [the petitioner's] mathematical modeling of metabolic pathways is key to the U.S. basic biochemical engineering research. High-throughput technologies such as Functional Genomic tools have yielded abundant data about the molecular composition of cells and expression level of different genes. The challenge now is to formulate reliable mathematical descriptions of the integrated systems. [The petitioner] has developed metabolic network software "MetaboLogica", which models flux distribution based on system constraints. [The petitioner] proposed and implemented a new method to design tracer experiment (NMR and MS), which provide valuable information about the flux distribution of metabolic network. The software "MetaboLogica" is a significant contribution to metabolic engineering field.

The director requested further evidence that the petitioner had met the guidelines published in *Matter of New York State Department of Transportation*. In response, the petitioner submitted additional letters of support and a citation history reflecting further cites to his published articles.

[REDACTED] Professor of Microbiology, Wageningen University, The Netherlands, states:

With [the petitioner's] software, a task used to take a month of programming could be done now in less than an hour. Also such a program allows ordinary biologists to do metabolic flux analysis without writing a single line of code. This software is the first program to quantify metabolic reaction rate using tracer experimental data and it is now used in several research groups and companies.

[REDACTED] Professor of Chemical Engineering and Materials Science, University of Minnesota, states: "One of [the petitioner's] major contributions is his work on metabolic flux analysis using mass

spectra and NMR data. [The petitioner] substantially improved existing methods by automating the algorithm and by making it publicly available to researchers in the field.”

The director denied the petition, finding that the petitioner failed to establish that a waiver of the requirement of an approved labor certification would be in the national interest of the United States. The director acknowledged the intrinsic merit and national scope of the petitioner’s work, but concluded that the petitioner had not demonstrated the ability to serve the national interest to a substantially greater degree than would an available U.S. worker having the same minimum qualifications.

On appeal, the petitioner submits additional letters of support.

[Redacted] of Biomedical Engineering and [Redacted] of Chemical Engineering at Cornell University, is also a member of both the National Academy of Engineering and the American Academy of Arts and Sciences. [Redacted] states:

[The petitioner] has made exceptional contributions to our understanding of metabolic engineering of bacteria. He has experimentally demonstrated that a highly efficient microbe can be constructed to produce bioproducts with minimum waste formation. Further, he has made computational contribution as well as through experiment. In particular he has developed a computer program, Metabologica, which predicts the consequence of gene deletions, additions, or other alterations on metabolic and energy fluxes. This contribution has broad impact on metabolically engineering bacteria for bioprocess development or for bioenvironmental applications. It also facilitates developments in the area of bioinformatics where the consequence of gene deletion, addition, and substitution are of paramount importance. The achievement level and contributions that [the petitioner] has reached can by no means be substituted by someone with minimum qualifications.

His work has formed more efficient approach to production of folic acid in a highly digestible form, while the current chemically synthesized folic acid is difficult to be absorbed by humans. Supplementation of folic acid to a woman before she is pregnant can help prevent major birth defects of her baby’s brain and spine.

[Redacted] Distinguished Professor [Redacted] School of Engineering, University of Maryland, states:

[The petitioner’s] software, Metabologica, uniquely combines mathematical pathway analysis with NMR data, which enables researchers to more accurately track the inner workings of cells — cell that may be cancerous or otherwise diseased. [The petitioner] has also created a novel biological route to the production of folic acid (an essential B vitamin). This is a significant advancement because it enables a more efficient “green manufacturing” rout [sic] to a vital nutritional supplement taken by children and, in particular, pregnant women. A sufficiency of folic acid prevents birth defects of the baby’s brain (anencephaly) and spine (spina bifida). His contributions and achievements demonstrate that [the petitioner] is a true asset to the scientific and technological endeavors of the Nation.

In this matter, we find that the evidence presented by the petitioner is adequate to meet the three-prong test established by *Matter of New York State Dept. of Transportation*. The number of cites to the petitioner’s

published work, along with the statements of witnesses from outside of the petitioner's immediate circle of colleagues, shows that the petitioner's work has advanced his field to a substantially greater degree than that of other similarly qualified researchers. Upon careful consideration of the documentation presented, we find that the petitioner has shown that researchers from throughout his field view his findings as significant breakthroughs in metabolic engineering. The record of proceeding in this matter does not put forward the strongest possible national interest waiver claim, but nevertheless its strengths outweigh its weaknesses and, on balance, the claim is strong enough to merit approval of the petition.

It does not appear to have been the intent of Congress to grant national interest waivers on the basis of the overall importance of a given field of research, rather than on the merits of the individual alien. That being said, the above testimony, and further evidence in the record, establishes that the greater scientific community recognizes the significance of this petitioner's research rather than simply the general area of research. The benefit of retaining this alien's services outweighs the national interest that is inherent in the labor certification process. Therefore, on the basis of the evidence submitted, the petitioner has established that a waiver of the requirement of an approved labor certification will be in the national interest of the United States.

The burden of proof in these proceedings rests solely with the petitioner. Section 291 of the Act, 8 U.S.C. § 1361. The petitioner has sustained that burden. Accordingly, the decision of the director denying the petition will be withdrawn and the petition will be approved.

ORDER: The appeal is sustained and the petition is approved.