

**MINUTES OF THE NUTRITION COORDINATING COMMITTEE (NCC)
MEETING, NATIONAL INSTITUTES OF HEALTH (NIH)
Rockledge 2, Conference Room 9100-9104, Bethesda, MD
March 6, 2008 2:00- 4:00 PM**

WELCOME

Dr. Van Hubbard, Director, NIH Division of Nutrition Research Coordination (DNRC), convened the meeting at 2:04 PM and welcomed participants. Participating via phone were Ms. Tammy Brown, IHS; Dr. Paul Coates, NIH ODS; Dr. Paul Cotton, NIH NINR; Dr. Johanna Dwyer, NIH ODS; COL Karl Friedl, DoD; Dr. Deborah Galuska, CDC; Shirley Gerrior, USDA CSREES; Dr. Judy Hannah, NIH NIA; Dr. Elizabeth Maull, NIH NIEHS; Dr. Margaret McDowell, CDC NCHS; Dr. Sri Nadadur, NIH NIEHS; Dr. Linda Nebeling, NIH NCI; Dr. Deborah Olster, NIH OBSSR; Dr. Marshall Plaut, NIH NIAID; Dr. Rick Troiano, OS ODPHP; Dr. Susan Welsh, USDA CRSEES; Dr. Ann Yaktine, IOM; and Dr. Elizabeth Yetley, NIH ODS. The agenda for the meeting is provided as Appendix A, and the list of attendees is provided as Appendix B.

APPROVAL OF MINUTES FROM THE FEBRUARY 7, 2008 NCC MEETING

Minutes from the February 7, 2008 NCC meeting had previously been sent to NCC members via email. Dr. Hubbard asked if there were any other corrections to the minutes. There were none. The minutes were thus approved and will be posted on the DNRC website, <http://www.dnrc.nih.gov>, along with the minutes from previous NCC Meetings.

POLYPHENOLICS IN FRUITS & VEGETABLES CAN IMPROVE NEURONAL AND BEHAVIORAL FUNCTION IN OLD RATS: CLINICAL IMPLICATIONS

Dr. Barbara Shukitt-Hale, a Research Psychologist at the United States Department of Agriculture, Human Nutrition Research Center on Aging at Tufts University in Boston, Massachusetts presented some of the work that she and her colleagues have done regarding the clinical implications of polyphenolics in fruits and vegetables on neuronal and behavioral function, specifically in relation to aging.

The onset of age-related neurodegenerative diseases such as Alzheimer's or Parkinson's disease, superimposed on a declining nervous system, could exacerbate the motor and cognitive behavioral deficits that normally occur in senescence. In cases of severe deficits in memory or motor function, hospitalization and/or custodial care would be a likely outcome. Thus, it is extremely important to explore methods to retard or reverse age-related neuronal deficits, as well as their subsequent, behavioral manifestations, in order to increase healthy aging. In this regard, consumption of diets rich in antioxidants and anti-inflammatory polyphenolics, such as those found in fruits and vegetables, may lower the risk of developing age-related neurodegenerative diseases. Research suggests that the polyphenolic compounds found in berry fruits, such as blueberries and strawberries, may exert their beneficial effects

either through their ability to lower oxidative stress and inflammation, or directly by altering the signaling involved in neuronal communication, calcium buffering ability, neuroprotective stress shock proteins, plasticity, and stress signaling pathways.

To explore the effects of polyphenolic-rich fruit and vegetable consumption on behavior and neuronal function, Dr. Shukitt-Hale and her lab conducted several supplementation studies in older rats. All rats were 19 months of age and supplemented for 8 weeks at 2% of the diet (supplements included grape juice, plum juice, or fruit, vegetable and nut extracts). They found that nutritional interventions can reverse deficits in learning and memory and declines in motor behavioral performance. They also found that several blueberry anthocyanins and flavonols were able to cross the blood brain barrier and localize in various brain regions important for learning and memory (e.g., cerebellum, striatum, and hippocampus), suggesting that polyphenolic compounds may deliver their antioxidant and signaling modifying capabilities centrally. These interventions, in turn, may exert protection against age-related deficits in cognitive and motor function.

On a related matter, as a follow up to Dr. Shukitt-Hale's presentation, "B Vitamins and Berries and Age-Related Neurodegenerative Disorders", an evidence-based review completed in 2006, may be of interest to the NCC. The review was supported by AHRA, ODS and NCCAM and is now available:

<http://www.ahrq.gov/clinic/tp/berrytp.htm>

NANOHEALTH ENTERPRISE: OPPORTUNITY FOR NUTRITION RESEARCH?

Dr. Sally Tinkle, Senior Science Advisor at the National Institute of Environmental Health Sciences (NIEHS), provided an overview of the NanoHealth Enterprise Initiative, a broad-based program to examine the fundamental physicochemical interactions of engineered nanomaterials (ENM) with biological systems at the molecular, cellular, and organ level. The unique phenomenon of working with matter approximately 1-100 nanometers enables novel applications, but it also produces novel risks. Currently, there are 135 applications related to food technology under development. Examples include applications in quality and safety (sensors, preservation systems), food processing (catalysis, membrane separation), and ingredient technologies (flavors, antioxidants, antimicrobials, and bioactives). Despite the proliferation of ENM materials, little is known about their interaction with biological systems, which makes research in this area critically important.

The NanoHealth Enterprise is an integrated, interdisciplinary program that draws upon the expertise and interests of the NIH institutes and centers, in partnership with private industry, to address critical research needs for the safe development of nanoscale materials and devices. This partnership promotes dialogue and a coordinated effort across government, industry and academia, and therefore

avoids duplication, leverages investment, accelerates high priority projects by procuring services in new ways, and minimizes the time from research to application. The research framework includes five specific components: materials science research, basic biology research, pathobiology research, informatics, and training. The flexible structure of the initiative will allow for the accommodation of new projects, new partners, and new research needs as they emerge. The NIEHS, in partnership with the Trans-NIH Task Force, invites participation in this initiative.

For more detailed information about the initiative, visit the following website: <http://www.niehs.nih.gov/research/supported/programs/nanohealth/docs/nanohealth-initiative2.pdf>

Action Item: As mentioned at the January, 2008 NCC meeting, Dr. Hubbard will be convening a group of individuals interested in discussing how best to address the opportunities/challenges of nanotechnology as it relates to food and nutrition. If you have not already submitted your name and would like to be part of this group, please contact Dr. Hubbard (Van.Hubbard@nih.hhs.gov) at your earliest convenience. A conference call will be scheduled shortly.

REPORTS FROM NCC MEMBERS AND LIASONS

- Dr. Margaret McDowell, CDC/National Center for Health Statistics (NCHS), reported that the National Health and Nutrition Examination Survey (NHANES) 1999-2004 dual energy X-ray absorptiometry (DXA) data and the NHANES 2003-2004 food frequency questionnaire data were released recently. Both datasets are EXAMINATION data files.

Reminder: Interested researchers should check the “What’s New” link on the NHANES website often:

LINK: <http://www.cdc.gov/nchs/about/major/nhanes/whatsnew.htm>

- Dr. Nobuyo Tsuboyama-Kasaoka, National Institute of Cancer (NCI) informed the NCC that registration for the upcoming workshop, “Frontiers in Cellular Energetics, Diet and Cancer Prevention,” which will take place on March 12, 2008, is now closed.
- Dr. Cindy Davis, NCI, reminded the NCC about the upcoming Stars in Nutrition and Cancer lecture that will take place on March 18, 2008 at 3:00 PM. The speaker will be Dr. Martin Wiseman and he will be delivering a talk titled, “Nutrition and Cancer: From Genotype to Phenotype.”
- COL Karl Friedl, Department of Defense, announced that the IOM Committee on Military Nutrition Research (CMNR), which advises the US Department of Defense on the need for and conduct of nutrition research and related issues, is pursuing a new project that will focus on the neuroprotective effects of

nutrition. Please contact COL Friedl if you have ideas or would like more information (karl.friedl@us.army.mil).

- Dr. Deborah Olster, Office of Behavioral and Social Sciences Research (OBSSR), announced the speaker for the next Behavioral and Social Sciences Seminar Series. Dr. Nicolas Christakis, from the Harvard Medical School, will be presenting his talk on “Person-to-Person Spread of Health Behaviors in a Large Social Network” on March 20, 2008. The seminar will take place from 3:00 to 4:00 at the Neuroscience Center (6001 Executive Blvd.) in Room C. All seminars are open to NIH staff and to the general public.

UPDATE FROM THE DHHS OFFICE OF DISEASE PREVENTION AND HEALTH PROMOTION (ODPHP)

Dr. Rick Troiano, ODPHP, gave a brief report about recent ODPHP activities.

Physical Activity Guidelines

The third and final meeting of the Physical Activity Guidelines Advisory Committee was held on February 28 and 29 in the Hubert H. Humphrey Building, Room 800. Approximately 120 people were in attendance. The Committee summarized their scientific evidence review and drafted overall conclusive statements on the relationship between physical activity and health for youth, adults, older adults, persons with disabilities, and avoidance of activity-related injuries. Conclusive statements focused on the most clearly established areas of evidence relating physical activity to health. One recurring observation was that evaluation of dose response is challenging because intervention research primarily uses the currently recommended levels of physical activity, with few or no studies examining levels below or above those recommended. The Committee will refine their conclusions and complete their report over the next month or so.

The HHS Physical Activity Guidelines writing group has been formed. It is chaired by Dr. David Buchner of CDC and includes members from NIH, CDC, the President’s Council on Physical Fitness and Sports, and the office of the Assistant Secretary for Planning and Evaluation (ASPE). In addition to subject matter experts, the group includes communication specialists from ODPHP, CDC and ASPE.

On March 3, Rick Troiano attended a meeting in Ottawa, Canada to participate in discussions about an ongoing project to evaluate and revise physical activity guidelines in Canada. The Canadian project is being coordinated by Statistics Canada and the Canadian Society for Exercise Physiology, with funding support from the Public Health Agency of Canada. Ongoing communication is planned to attempt to harmonize physical activity guideline development in both countries and by the WHO. Opportunities for cooperation are likely to benefit all parties.

Other Physical Activity

At least 2 letters have been written to Dr. Zerhouni commenting on the observation that no topics related to physical activity or inactivity appear among the 450 areas listed on the “Estimates for Funding for Various Diseases, Conditions, and Research Areas.”

Healthy People

The Healthy People 2010 Nutrition and Overweight Progress Review will be held April 3 from 1:00-2:30 pm. Space to attend the meeting at the Humphrey Building is extremely limited. Telephone access may be available, but is also likely to be limited. Members of the interagency working group will receive call-in information. If you are not part of the working group and would like information about the meeting, contact Dr. Hubbard (Van.Hubbard@nih.hhs.gov).

A workshop on the Healthy People 2020 development process is scheduled for March 11, 1:00pm – 4:30 pm at the NIH Natcher Center. The workshop is open to current Healthy People 2010 focus area coordinators and others interested in additional information on this HHS effort.

The first Healthy People 2020 regional meeting (regions 3 and 4) will take place Monday, March 17, at CDC’s Conference Center in Atlanta. Five other meetings are scheduled for:

- April 1, San Francisco (regions 9 and 10)
- April 14, Fort Worth (regions 6 and 7)
- April 30, Chicago (regions 5 and 8)
- May 14, NYC (regions 1 and 2)
- May 28, Bethesda (DC area stakeholders meeting)

OFFICE OF DIETARY SUPPLEMENTS (ODS) UPDATE

Dr. Regan Bailey provided several updates on behalf of ODS.

- On March 27th the ODS Trans Working Group meeting will take place from 12:30–3:30 PM at the Neuroscience Center, Room C. The meeting will focus on 4 key areas:
 - a. Current ODS Strategic Plan Goals;
 - b. Current guidelines on for ODS programs and activities;
 - c. Future guidelines for IC and Agency co-funding of research
 - d. Identification of future research needs and opportunities of mutual interest and priority.

The agenda for the March 27th meeting will focus on discussion of the comments received on these four topics as a component of the revision of the ODS Strategic Plan for 2010-2014.

- ODS welcomes two new faculty members. Dr. Julia Freeman will be joining ODS to guide the strategic planning project as a successor to Dr. Ken Fisher.

Marguerite Klein has joined ODS from the National Center for Complementary and Alternative Medicine (NCCAM) and will partner with Joe Betz in ODS on botanical dietary supplements.

- As a reminder, ODS will hold its second “Intensive Practicum on Current Issues and Recent Developments in Dietary Supplement Research,” from June 9-13th at Natcher. Please contact Dr. Mary Frances Picciano (piccianm@od.nih.gov) or Dr. Paul Thomas (thomaspau@od.nih.gov) for more information.
- ODS entertains proposals for grant, intramural and conference co-funding on a quarterly basis. A memo was forwarded last week to the IC Directors reminding them that the next receipt and review dates are April 28th and May 28th. For additional information contact Dr. Rebecca Costello, ODS, costellb@od.nih.gov or 301-435-3605.
- ODS is busy preparing for Experimental Biology, which will take place in San Diego from April 5-9. ODS will have an exhibit booth at the meeting. In addition, they will host a late breaking symposium on Vitamin D on Tuesday, April 8th at 8:00 AM and will also participate in a symposium on evidence-based reviews for nutrition applications. Please see the Experimental Biology program for more detailed information.
- The conference proceedings from “Vitamin D and Health in the 21st Century: An Update” (held in September 2007 at NIH) were well received by the AJCN offices, and responses to reviewer comments are due back on March 11th.
- Dr. Ken Setchell is unavailable to give his scheduled seminar at ODS for March 12. In his place, Dr. Regan Bailey, ODS, will be giving the seminar entitled, “Development and Evaluation of a Dietary Screening Tool for Older Adults”. Dr. Setchell’s talk will be rescheduled for later in 2008.

UPDATE OF DNRC ACTIVITIES

The DNRC has introduced web conferencing capabilities for individuals participating in the NCC meetings via phone. Power Point presentations can now be viewed live by logging into the NCC meeting website <https://webmeeting.nih.gov/ncc>. If you have not used Acrobat Connect previously, you can visit the following website in order to test your computer and network connections to see that they are properly configured before logging into a future NCC meeting.

http://webmeeting.nih.gov/common/help/en/support/meeting_test.htm

Because the March meeting was the first time this feature was used for the NCC, we would greatly appreciate feedback from anyone who participated. Please contact Rachel Fisher with any comments. (Rachel.Fisher@nih.hhs.gov).

Nutrition Education Subcommittee (NES). Dr. Jean Pennington, DNRC, provided an update of the activities of the NIH NCC NES. Since January 2008, the NES has reviewed (or forwarded for joint DHHS/USA review) 7 documents, 6 from NIH (1 each from ODS, and NIA and 2 each from NHLBI and NICHD). Materials reviewed/forwarded since the last NCC meeting are:

- *Energize Our African American Families* (NICHD)
- *Media-Smart Youth: The Essentials* (NICHD)
- *Spot the Block Parent Web Site* (FDA)
- *Dietary Supplements Age Page* (NIA)
- *U R What You Eat* (NHLBI)

The DNRC maintains a listing of NIH nutrition education materials on its website (http://dnrc.niddk.nih.gov/nutrition_education/index.shtml); NCC members are requested to check the information on the website and provide any needed changes or new materials to Karen Regan, DNRC. The DNRC also keeps hardcopies of NIH publications in display shelves for staff and visitors. Many of the materials on display are several years old. We would appreciate receiving 10-20 copies of various publications for display/distribution purposes. Please send them through interoffice mail to Dr. Pennington, Democracy 2, room 629.

International Committee Information: On behalf of Dr. Dan Raiten, The Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), Dr. Van Hubbard directed everyone's attention to a recent NIH press release entitled, "NIH Receives Gates Foundation Grant to Investigate Role of Iron Supplements in Malaria." See Appendix C for the full press release. To discuss specific studies that might be possible through this mechanism, please contact Dr. Raiten (Daniel.Raiten@nih.hhs.gov).

HNRIM: Mr. Jim Krebs-Smith, DNRC, reminded the NCC that the deadline for submission of the FY07 HNRIM data has passed. Approximately 75% of the nutrition data has been received to date, and several Institutes have asked for an extension. Mr. Krebs-Smith will be contacting Institutes who have yet to submit their data with a follow-up request.

Mr. Krebs-Smith also provided an update on the Research Condition and Disease Classification (RCDC) nutrition fingerprint validity test. Over 4,000 projects are being reviewed by IC representatives to determine whether each is scientifically defensible and appropriately categorized as a nutrition project. The completion date for the nutrition validity reviews is March 17th. An update will be provided at the next NCC meeting regarding the level of agreement between the nutrition fingerprint and IC reviewers. If you would like to be involved in the fingerprint validation process, you are encouraged to immediately contact your IC RCDC representative.

Website Update: It was mentioned in the previous NCC minutes that the DNRC would like to make sure that the information regarding NIH Institute/Center descriptions and future research directions are up to date in the DNRC report:

The National Institutes of Health Program in Biomedical and Behavioral Nutrition Research and Training. If you have not done so already, please visit the following webpage (http://www.dnrc.nih.gov/dnrc/program_93-95/) and click on the link for your Institute/Center. If you see any changes that should be made, please contact Ms. Karen Regan (Karen.Regan@nih.hhs.gov).

Nutrition Fact Sheets: At the September, 2007 NCC meeting Dr. Megan Miller, NIDDK, Office of Scientific Program and Policy Analysis (OSPPA), presented a proposal to create fact sheets on nutrition research for the NIH website. Fact sheets are released by the NIH Office of the Director to show the public “how NIH is pursuing its goal to make important medical discoveries that improve health and save lives.” The fact sheet format is specific; each fact sheet should be 1-2 pages and designed to show progress in three sections. The sections are titled “Thirty Years Ago/Yesterday,” “Today,” and “Tomorrow.” Several topic ideas were submitted from NCC members, but we would like to encourage ongoing submission. If anyone is aware of a research area that could be highlighted in this specific format, please contact Dr. Hubbard (Van.Hubbard@nih.hhs.gov).

To see a list of topics and example fact sheets, visit the following website:
<http://www.nih.gov/about/researchresultsforthepublic/index.htm>

NEXT NCC MEETING

The next meeting will be May 1, 2008

ADJOURNMENT

The meeting was adjourned at 3:45 PM

LIST OF APPENDICES

Appendix A: NIH NCC Meeting Agenda for March 6, 2008

Appendix B: NIH NCC Meeting Attendees for March 6, 2008

Appendix C: NIH Press Release: “NIH Receives Gates Foundation Grant to Investigate Role of Iron Supplements in Malaria”

**APPENDIX A: NIH NUTRITION COORDINATING COMMITTEE MEETING
AGENDA**

1. **Welcome**..... Van Hubbard
2. **Approval of Minutes of the February 7, 2008 meeting**..... Van Hubbard

3. Nutrition Month Presentation:

“Polyphenolics in Fruits & Vegetables Can Improve Neuronal and Behavioral
Function in Old Rats: Clinical Implications”

By Barbara Shukitt-Hale, Ph.D.
Research Psychologist
USDA, HNRCA at Tufts

4. **“NanoHealth Enterprise: Opportunity for
Nutrition research?”**.....Sally Tinkle, NIEHS
5. **Reports from NCC Members and Liaisons**.....NCC Members
6. **ODPHP Activities Update**.....Rick Troiano, ODPHP/OS
7. **ODS Activities Update**Regan Bailey, ODS
8. **Current DNRC Update
Activities**.....DNRC Staff
 - Nutrition Education Subcommittee Update.....Jean Pennington*
 - International Committee Information.....Pam Starke-Reed/Dan Raiten*
 - HNRIM Update.....Jim Krebs-Smith/Karen Regan
 - HHS Obesity Related Activities.....Van Hubbard
9. **Next Meeting** - May 1, 2008

*** Updates will be included in the minutes of the meeting only**

APPENDIX B: NCC MEETING ATTENDEES FOR MARCH 6, 2008

| | Members Present | Members Absent | Alternates Present |
|--|-----------------|-------------------|--------------------|
| <u>Chairperson:</u> | V Hubbard | | P Starke-Reed |
| <u>NIH Members:</u> | | | |
| NCI | | J Milner | S Ross |
| NHLBI | D Danford | | |
| NIDCR | | R Nowjack-Rayner | |
| NIDDK | C Miles | | |
| NINDS | | M Mitler | |
| NIAID | M Plaut | | |
| NIGMS | | S Somers | |
| NICHD | | G Grave | |
| NEI | | N Kurinij | |
| NIEHS | E Maull | | |
| NIA | J Hannah | | |
| NIAMS | | J McGowan | |
| NIDCD | | B Wong | |
| NIMH | | W Riley | |
| NIDA | | G Lin | |
| NIAAA | | R Breslow | |
| NINR | P Cotton | | |
| NCCAM | | J McKay | |
| NCRR | | K Arora | |
| FIC | | M Levintova | |
| NHGRI | | S Basaric | |
| <u>NIH Liaison Members:</u> | | | |
| CC | | N Sebring | |
| CIT | | J Mahaffey | |
| CSR | S Kim | | N Sheard |
| NLM | | S Phillips | |
| OBSSR | D Olster | | |
| OC | | | |
| ODS | P Coates | | |
| OD/ODP | B Portnoy | | |
| OLPA | | | |
| ORWH | | | |
| PRCC | | M Vogel-Taylor | |
| <u>Agency Liaison Representatives:</u> | | | |
| AHRQ | | I Mabry-Hernandez | |
| CDC/NCCDPHP | D Galuska | | |
| CDC/NCHS | M McDowell | | |
| FDA | K Ellwood | | S Blakely |
| HRSA | | M Lawler | |
| IHS | T Brown | | |
| ODPHP | | K McMurry | |
| USDA | | M Kretsch | |
| DOD | K Friedl | | |
| OPHS | | | |

DNRC: R Fisher, S Frazier, W Johnson-Taylor, J Krebs-Smith, C McDade-Ngutter, K Regan

Guests: R Bailey (ODS), C Davis (NCI), J Dwyer (ODS), J Engel (ODS), A Ershow (NHLBI), B Footer (NIAMS), S Gerior (USDA CRSEES), P Hans (NINDS), A Jerkins (CSR), Y Kim (NCI), M Klein (ODS), S Nadadur (NIEHS), L Nebeling (NHLBI), B Shukitt-Hale (USDA/HNCRA), S Tinkle (NIEHS), R Troiano (OS/ODPHP), N Tsuboyama-Kasaoka (NCI), A Yaktine (IOM), A Yaroch (NCI), E Yetley (ODS), and S Welsh (USDA CRSEES).

APPENDIX C

NIH Receives Gates Foundation Grant to Investigate Role of Iron Supplements in Malaria

Do iron supplements worsen the course of malaria? Researchers aren't sure, and the uncertainty has jeopardized efforts to treat the debilitating effects of iron deficiency in parts of the world where malaria and other infectious diseases are common.

The National Institutes of Health has received a grant from the Bill and Melinda Gates Foundation to establish a research program to find the best ways to diagnose and treat iron deficiency and better understand its interaction with malaria and infectious diseases in parts of the world where such diseases are common. The Gates Foundation grant is \$9.3 million over a five-year period.

In the past, public health officials have treated iron deficiency in these areas by distributing iron supplements to local populations. Although a few people who had received the supplements were not iron deficient, it was assumed that the extra iron would not do them any harm.

Recently, a few studies have indicated that extra iron may in fact place individuals who are not iron deficient at greater risk for death from malaria or another infectious disease, and at greater risk for hospitalization from the complications of malaria. Consequently, public health officials have become hesitant to continue giving iron supplements to entire populations in parts of the world where malaria rates are high, depriving large numbers of iron-deficient people of the health benefits of iron supplementation.

"Previously, public health officials would provide iron supplements to entire populations, assuming that they would do no harm to those few individuals who didn't require them," said Dr. Elias A. Zerhouni, M.D., director of the National Institutes of Health. "The purpose of this project is to find ways to identify those people who need iron supplements and the most efficient ways to provide it to them."

"To improve global health, effective health interventions are critical," said Ellen Piwoz, Sc.D., M.H.S., senior program officer at the Gates Foundation. "By addressing important unanswered questions about the relationship between iron supplements and malaria, this research will help guide public health practice in developing countries."

Iron deficiency can result from insufficient iron in the diet or from blood loss, explained the project officer for the initiative, Daniel J. Raiten, Ph.D., a health scientist administrator at NIH's National Institute of Child Health and Human Development. Among its roles in the body, iron is an essential component of red blood cells. Iron deficiency can progress to anemia, the shortage of red blood cells. As a result, people with iron deficiency may feel weak and fatigued.

"Iron deficiency is a tremendous economic and social problem," Dr. Raiten said. "The fatigue and weakness hinder adults' ability to work and function, and the neurological

complications of iron deficiency can have a negative impact on children's ability to learn."

Although iron is found in vegetables, fruits, grain, and legumes, iron in plant-based foods is not absorbed as readily by the body as iron from red meat, liver, and egg yolks. As a result, vegetarians and other people who consume little or no red meat or eggs are at risk for iron deficiency. Women who have heavy menstrual periods, as well as pregnant women who must supply blood to meet the needs of the fetus, are also at high risk for iron deficiency.

Dr. Raiten said that by some estimates, there are two billion people worldwide who may be anemic, and about half of those cases are due to iron deficiency.

Iron deficiency commonly occurs in parts of the world where malaria and other major infectious diseases are also common, Dr. Raiten said. Malaria, caused by a parasite transmitted through the bite of an infected mosquito, can result in severe headache, high fever, chills, and vomiting, and can be fatal. The World Health Organization estimates that 300 million cases of malaria occur around the world each year. More than a million of these result in death, most often among children.

Dr. Raiten explained that the objectives of this project are:

- to test the safety and effectiveness of various methods and strategies for preventing or treating iron deficiency;
- to identify screening tests and other measures to gauge how much iron a person has (for example, levels of iron in the blood) and how it's being used by the body;
- to understand the biological processes by which iron might affect a person's response to malaria or other infections;
- to translate information gained from these studies into practical means for providing sources of iron to communities with a high proportion of iron-deficient people. This transfer of information will be accomplished through a partnership with the World Health Organization.

To begin this work, the project will constitute a technical working group to review the current evidence and identify the most significant research questions to be pursued.

The NICHD sponsors research on development, before and after birth; maternal, child, and family health; reproductive biology and population issues; and medical rehabilitation. For more information, visit the Institute's Web site at <http://www.nichd.nih.gov/>.

The National Institutes of Health (NIH) — *The Nation's Medical Research Agency* — includes 27 Institutes and Centers and is a component of the U.S. Department of Health and Human Services. It is the primary federal agency for conducting and supporting basic, clinical and translational medical research, and it investigates the causes, treatments, and cures for both common and rare diseases. For more information about NIH and its programs, visit www.nih.gov.

<http://www.nih.gov/news/health/mar2008/nichd-05.htm>