

# FOOD Insight™

IFIC Foundation  
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November / December 2003

## Getting Personal With Nutrition

Some of us have personal trainers, monogrammed towels, vanity license plates, or at least value our “personal” space, but are we ready for “personalized nutrition?”

### Shedding Light on the Science

According to Dr. Jose Ordovas of Tufts University, society has often embraced a “one-size-fits-all” approach to current dietary recommendations, such as low-fat and low-cholesterol diets for the entire population. Although this broad approach to recommendations will likely benefit the majority of people, research indicates that a number of complicated genetic factors may minimize the benefits of such dietary changes, potentially harm some individuals, or have no effect for some.

Different species, such as mice and humans, have particular genes in common; however, the genome, or an entire set of genes in a particular arrangement, is unique to each individual. Dr. Ben van Ommen, of TNO Nutrition and Food Research in The Netherlands, stated that it is now possible to determine the sequences of a whole genome and determine how the genes in that genome are expressed; rather than focus on one gene as a single datum point. “Nobody is equal, and neither are our genes, since every gene has at least ten variants,” van Ommen said. He also emphasized that nutrition provides more subtle changes to gene expression than do pharmaceuticals.

Robert Kushner, MD, Medical Director of the Wellness Institute at

the Northwestern Feinberg School of Medicine and Northwestern Memorial Hospital, shared his perspectives on how physicians may provide information on personalized nutrition to have better quality discussions with their patients. “Nutrigenomics has the potential to spark interest among physicians in seeing that nutritional needs are more clearly determined for individuals,” Dr. Kushner stated.

Professor Michael Muller, of Wageningen University in the Netherlands, defined nutrigenomics as an attempt to study the genome-wide influences of nutrition by combining nutrition at the molecular level with genomics. He asked, is it possible that someday we might move from our broad-beam flashlight-approach to adopt more of a fine-tuned laser beam-approach to nutrition recommendations, making them very specific to an individual’s needs?

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Well, at least 130 delegates from 17 countries who attended the Second International Conference on Nutrigenomics in Amsterdam, The Netherlands in early November think we might be. A wealth of information about the role of genes in determining our health has become available with the deciphering of the human genome. The concept of “personalized nutrition,” or “nutrigenomics” as some scientists call it, takes this information one step further. Personalized nutrition involves the establishment of individual dietary recommendations based on knowledge of nutritional requirements, nutritional status, and each person’s unique genetic makeup to potentially reduce risk of disease. Many speakers emphasized that, although this new knowledge is very intriguing, we are still at early points on the learning curve despite the tremendous potential of nutrigenomics.



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# Why It Matters: How Health and Science Issues Are Reported

Over the past few years we have heard a lot about the importance of unbiased scientific research. Scientific institutions and journals have responded positively, strengthening their criteria for transparency.

But what about the communication of scientific issues? How important is journalistic clarity, objectivity, and context in disseminating often complex information to the public? When consumers make health and nutrition decisions based on stories about scientific research in the media, is there an obligation to be sure that the information reported is accurate and fully explained?

A prestigious group of organizations in Great Britain thinks so. The Social Issues Research Centre in partnership with the Royal Society and the Royal Institution of Great Britain developed *Guidelines on Science and Health Communication* specifically for

print and broadcast journalists and science and health professionals, which were issued in 2001. The guidelines represent a joining together of the information from two documents that grew from the concern expressed within the health and science communities about the manner in which scientific issues are covered in the media. In the development of the guidelines, the organizations asked, “Why does it matter how health and science issues are reported?” The answer, simply, is that misleading information is potentially dangerous; it can even cost lives.

The assumption is that all responsible journalists and scientists can agree that the general public has the right to accurate information on the basis of which individuals can make informed lifestyle decisions.

To help scientists and journalists act on that assumption, the Social Issues Research Centre and the Royal Institution of Great Britain brought together a forum of highly acclaimed scientists, physicians, medical specialists, and members of the media to establish guidelines that acknowledged the right of journalists to comment and editorialize. The guidelines emphasized, however, that there must be a clear distinction made between fact and conjecture or opinion. The Press Complaints Commission of Great Britain accepted these guidelines.

Furthermore, the forum emphasized that scientists themselves have a similar role to play in presenting their research findings accurately and responsibly; thus, a set of guidelines was developed for scientists, research departments, and professional bodies. The guidelines were prepared in consultation with the leading medical and scientific institutions and societies. Subsequently, the Royal Society published *Scientists and the Media: Guidelines for Scientists*

*Working with the Media and Comments on a Press Code of Practice*, which was endorsed by the House of Lords Select Committee on Science and Technology.

The two sets of guidelines have been combined to create a common set of guidelines with the goal of achieving more balanced and accurate reporting of health and science issues and much improved working relationships between scientists and the media. A checklist was developed for members of the media and for science and health professionals to serve as a guide to ensure that important facts — including why the data may or may not warrant a change in diet or behavior — are included in the public discussion of scientific findings.

In a similar vein, a publication based on the findings of an advisory group convened by the Harvard School of Public Health and the International Food Information Council Foundation, *Improving Public Understanding: Guidelines for Communicating Emerging Science on Nutrition, Food Safety and Health* provides “guiding principles” for all communicators. That document was originally published in the *Journal of the National Cancer Institute* and was elaborated on in a referenced white paper, *IFIC Review: How to Understand and Interpret Food and Health-Related Scientific Studies*. To access these documents, go to <http://ific.org>.

These Guidelines from both sides of the Atlantic offer more than admonitions to communicators; they provide reasonable “how to” steps that can improve the quality of science communication in an era when sound bites and headlines seem to rule the day. Consumers, often confused by conflicting scientific stories in the media, can only benefit from any attempt to clarify the issues.

*(continued on page 3)*



# Summary Checklist for Print and Broadcast Journalists

## *Credibility of sources*

- Have the findings been published in a peer-reviewed journal?
- Do the researchers have an established track record in the field and are they based at a reputable institution or organization?
- What are the affiliations of the researchers?

## *Procedures and methods*

- Were the research methods appropriate?
- What do other professionals in the field think of the methods?

## *Findings and conclusions*

- Is this really a “breakthrough?”

## *Significance of findings*

- Are the findings preliminary or inconclusive?
- Do the findings differ markedly from those of previous studies?
- Do these findings appear to contradict mainstream scientific opinion?
- Are these findings based on small or unrepresentative samples?
- If the conclusions are from animal studies can they be generalized to humans?
- Have the researchers found only a statistical correlation?

## *Communicating risk*

- Has the risk been expressed in absolute as well as relative terms?
- Can the risk be compared with anything else?
- Have the researchers been asked, “How safe is it? Instead of “is it safe?”

## *Anticipating impact*

- Will the report cause undue anxiety or optimism among audiences or readers?
- Have important caveats been prominently included?

## *Role of specialist correspondents and editors*

- What do specialist journalists think about the report?

## *Role of sub-editors*

- Is the headline a fair reflection of the report?
- Is the caption a fair reflection of the report?

## *Expert contacts*

- What do other professionals in the field think of the research?

# Summary Checklist for Science and Health Professionals

## *Dealing with the media*

- Should I talk to journalists about my work?
- Who can give me advice about dealing with the media?

## *Credibility*

- Have I mentioned whether the study has been published yet in a peer-reviewed journal?
- Have I mentioned that the results have yet to be replicated?
- Have I mentioned that the results differ markedly from those of previous studies?
- Have I mentioned that the findings are derived from samples that may be too small or unrepresentative?
- Have I mentioned that the findings are based entirely on animal studies?
- Have I mentioned that the findings are based only on correlation?

## *Accuracy*

- Have I exaggerated the significance of the findings?
- Are there other possible interpretations of the results?
- Have I made speculations on the basis of opinions or beliefs that are not related to the study itself?

## *Communication of risk and benefits*

- Have I cited the absolute risks as well as the relative risks?
- Have I warned of drawing the wrong conclusions about the risk?
- Can the risk be compared with anything else?
- Could the reporting of my work lead to undue anxiety or optimism among audiences or readers?

## *Is it safe?*

- Have I explained properly why it is not possible to offer an assurance of absolute safety?
- Should I complain (if the research is inaccurately reported)?

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Source: *Guidelines on Science and Health Communication*. The Royal Institution of Great Britain; Social Issues Research Centre; the Royal Society. November 2001.

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## What's New at [IFIC.ORG](http://ific.org)?

For food safety and nutrition information galore

Go to [ific.org](http://ific.org) in 2004

# Traveling The Road To *Trans* Fat Labeling

One hundred years ago a newly patented process for hardening liquid fats by partial or full hydrogenation revolutionized food technology. Animal fats that people used for cooking and baking tended to spoil and produce off-flavors. Hydrogenation allowed the development of shelf-stable vegetable-based fats with neutral flavor. Vegetable shortenings and margines eventually became household items because of wartime rationing of scarce animal fats. The versatility of the hydrogenation process promoted the industrial development of fats to achieve specific physical and chemical characteristics in processed foods.

Hydrogenated fats received another boost when scientific evidence related saturated fatty acid (saturated fat) intake to elevated low-density lipoprotein (LDL) cholesterol levels and risk for coronary heart disease. Health professionals advised people to reduce their intake of animal fats and choose products made with vegetable fats. With the realization that coconut, palm kernel, and palm oils contain a relatively high amount of saturated fat compared to other vegetable oils, dietary advice specified avoiding products containing these “tropical oils.” In response, manufacturers replaced tropical oils with partially hydrogenated oils to maintain desirable freshness and texture in products such as French fries and baked goods. Although products made with partially hydrogenated oils are lower in saturated fat they also contain *trans* fatty acids (*trans* fat). *Trans* fats are produced during hydrogenation, with the amount depending on the degree of hydrogenation. Although *trans* fats are chemically unsaturated, they have functional properties similar to those of saturated fats.

Hydrogenated fats came into question when research during the 1990s indicated that increasing *trans* fat

intake raises LDL cholesterol levels and possibly reduces high-density lipoprotein (HDL) cholesterol levels, thereby increasing the total cholesterol to HDL-cholesterol ratio. To address this public health concern, the Food and Drug Administration (FDA) proposed mandatory labeling of *trans* fat contents in 1999 and published a final rule in July 2003.

Manufacturers have until January 1, 2006 to list the *trans* fat content on food labels. However, the *trans* fat-phobia that has developed during recent years has already prompted many manufacturers to disclose whether their products contain no declarable amount of *trans* fat (< 0.5 grams per serving) and others to reformulate products to eliminate or lower the *trans* fat content. Expect more food labels to declare the *trans* fat content well before 2006.

One unresolved issue is the lack of a Daily Value (DV) for *trans* fat. The DV is used to calculate a percent DV. Establishing a percent DV would help put a product's *trans* fat content in perspective on the food label by indicating to consumers how much *trans* fat is present compared with a daily amount. While the Food and Nutrition Board's Committee on Use of Dietary Reference Intakes in Nutrition Labeling recommended that saturated and *trans* fat content of foods use a combined DV, no scientific entity has recommended an amount of *trans* fat that FDA could use to establish a DV. A DV also would provide FDA with a basis for developing criteria and disclosure or disqualifying levels for nutrient content and health claims. Generally a 5 percent DV or less is “low” and a 20 percent DV or more is “high.”

The 2002 Institute of Medicine (IOM) Dietary Reference Intakes Macronutrient Report did not provide quantitative dietary guidance for *trans* fat, saturated fat or cholesterol. Instead the IOM recommended that the intake of *trans* fat, saturated fat and cholesterol be as low as possible while consuming a nutritionally adequate diet.

The IOM recommendation has raised several questions. Can the available scientific evidence relating *trans* fat intakes and LDL cholesterol levels be re-evaluated in order to establish a DV? Should the current DVs for saturated fat (20 g) and cholesterol (300 mg) be reconsidered or revoked to provide a consistent labeling

rationale? If there is no DV, what is the best way to put the *trans* fat (or saturated fat or cholesterol) content of a food into perspective?

In the absence of *trans* fat quantification on the food label health professionals and media have been instructing consumers to consult the ingredient list of each food product for “hydrogenated or partially hydrogenated” oils to detect the presence of *trans* fat. This practice is tricky at best and does not serve as a fool-proof way to determine the presence or amount of *trans* fat in a particular product (see sidebar). When *trans* fat content is labeled, the FDA and health organizations are advising consumers to select products that have a lower amount of *trans* fat and saturated fat combined — a concept that may be difficult to communicate to consumers. It is apparent that we have not reached the end of the road to *trans* fat labeling.



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## Getting Personal With Nutrition

### Consumers Lead the Way

The conference featured an impressive array of scientific findings and experts showing great enthusiasm about future possibilities, but what do consumers think about all of this?

Unveiling highlights from a comprehensive, landmark survey of US consumer attitudes toward the broad area of genomics, including nutrigenomics, Christy White, principal of Cogent Research in Cambridge, Massachusetts, indicated that consumers are ready to learn more.

Three-fourths of Americans are interested in obtaining their personal genetic information to identify their risk of diseases like cancer, osteoporosis, and heart disease, and nearly half of Americans are prepared to use diet-related products tailored to their health needs on the basis of their genetic makeup, according to Cogent's October 2003 survey of 1,000 Americans. "Americans are ready and willing to buy products based upon their genetic information, but the science is only in the early stages of being able to deliver," said White. "The good news is consumers aren't looking for complete diet regimens, but for individual approaches and basic recommendations."

The survey reveals that more than 90 percent of Americans are aware of the connection between diet and health, and 71 percent believe that genetics play a crucial role in health throughout life. However, 73 percent are concerned about how personal genetic information would be stored and who would have access to that information (see sidebar on page 6).

In October 2003, the US Senate unanimously passed the Genetic Privacy Bill, which would prevent health plans from providing access to insurance companies on the basis of genetic information and from using such information to underwrite policies.

Employers would be allowed to collect genetic information only to determine overall workplace exposures but could not use the information in hiring. Although the Bush administration supports the bill, the House must still approve it.

Cogent Research also found that consumers most strongly preferred the term "personalized nutrition" with the term "nutrigenomics" being the least-liked term among the terms tested to describe this emerging area. Other terms tested included "nutrigenetics," "individualized nutrition," and "nutritional genomics." Cogent's conclusions on terminology are consistent with research that the International Food Information Council Foundation commissioned Cogent to conduct in December 2002. The findings of Cogent Research are from a broader, syndicated research study on genomics that explored applications including pharmaceuticals, health and beauty products, and nutrition. The study marks one of the largest efforts to understand consumers' acceptance of the use of their genetic information to influence the balance between health and disease.

What will it take to bring the promise of personalized nutrition to reality? Dr. Bruce German of the University of California at Davis painted the big picture for the delegates in Amsterdam. He sees this new knowledge as an opportunity to empower individuals to make informed and personal choices for their diet and lifestyle. According to German, "Scientists can enable the joys of life but not tell people what to do with their lives. We don't want to be the same — we want to be as healthy as we want to be. Success will involve personalizing health and delight simultaneously!"

(continued on page 6)

## Traveling The Road To Trans Fat Labeling

### What to Know about Trans Fat in Foods

Some products have already listed the amount of *trans* fat on the Nutrition Facts Panel. All others will do so before January 1, 2006. Since the presence of "hydrogenated" or "partially hydrogenated" oils does not serve as the best determinant of the *trans* fat content in foods, here are some facts to consider:

- Some margarines contain some partially hydrogenated oils, but the combined amounts of *trans* and saturated fats are often less than the amount of saturated fat in butter.
- Spreads with plant stanol or sterol esters also contain partially hydrogenated oils. The plant stanol/sterol esters provide a LDL-cholesterol labeling benefit and *trans* fat content is a negligible 0.5-1 gram per tablespoon.
- Peanut butters, which are rich in mostly beneficial unsaturated fat, may contain 1 to 2 percent partially hydrogenated oil to prevent oil separation. The resulting amount of *trans* fat is not detectable in a 2-tablespoon serving.

## Examining the Ethical Issues of Nutrigenomics

New research designed to help consumers create customized diets on the basis of their genetic make-up could create ethical and legal challenges with serious implications for the scientific and medical communities, according to a panel of international experts.

Dr. David Castle of the University of Guelph presented a paper in Amsterdam, *Nutrition and Genes: Science, Society and the Supermarket*, a joint project of the University of Toronto Joint Centre for Bioethics (JCB) and the University of Guelph philosophy department, the study examines the ethical questions surrounding nutrigenomics, the study of how nutrients and genes interact, and how genetic variations can cause people to respond differently to food nutrients. Castle cautioned against a rush to embrace nutritional genomics before there has been a detailed examination of its moral and ethical implications, backed by national awareness campaigns and public consultations.

The paper, prepared by a nine-member panel of international experts, stops short of prescribing specific ethical guidelines for the development and implementation of nutritional genomics technology. Rather, it is designed to foster public debate, setting out the issues that must be considered as consumers begin customizing diets to prevent and mitigate chronic health conditions. The panel wants input from professional groups, citizens' organizations, and individuals before it issues recommendations, which it will do in 2004.

Environmental and lifestyle factors are thought to play a large role in the development of many diseases. However, science has determined, for example, that most people's genetic predisposition to cardiovascular disease is dependent upon variations in scores of genes, each of which appears to lead to small increases in susceptibility. As well, it appears that one gene can be involved in a number of conditions. Genetic testing may be able only to indicate an increased susceptibility to cardiovascular disease, rather than the certainty of future disease, the paper says.

The paper identifies the following as principal concerns:

- When is the science strong enough to market genetic tests in a widespread way?
- Who should have access to nutritional genomics information, who should not, and how should improper access be prevented?
- How should nutritional genomics information be delivered to consumers?
- How can society prevent potential nutritional genomics-related inequities, especially those

created between developed and developing countries?

- Which nutritional genomics concerns should be the subject of regulation and oversight?

### Use of Nutritional Genomic-Related Information

"As more is learned about individual genetic susceptibility to disease, information from genetic tests may become increasingly attractive to outside parties who stand to gain from it," the paper says. "There is a concern that employers or insurers could use genetic information to the unfair disadvantage of some people." Two-thirds of respondents in a 1997 survey said that they would not undergo genetic testing if they thought that health insurers and employers would have access to the results.

One of the most important issues is whether private genetic information should be treated as confidential in nature and not communicated to others without consent. Personal medical information usually remains private, but genetic tests may be relevant to blood relatives. Physicians may therefore face situations in which they must choose between patient confidentiality and providing potentially useful information to other members of the same family.

The main purpose of looking for food-gene interactions is to prevent or reduce the risk of disease; so the sooner useful dietary changes are made, the better the chances of avoiding nutrition-related diseases are. This suggests that testing children early would provide the widest range of health benefits. However, a balance must be maintained between acting in the interests of children before they are mature enough to make decisions and interfering with their right to the confidentiality of their genetic information. "This raises the question of whether the decision to administer a nutritional genomics test to a child falls within the legitimate range of parental discretion," says Dr. Castle.

"The collection, storage, and use of genetic information will be one of the most hotly debated medical issues of the coming decade," says Dr. Abdallah Daar of JCB and director of the Program in Applied Ethics and Biotechnology. "Even at this early stage, scientific progress is outstripping the public's ability to make informed choices about what kind of regulations should be introduced to address ethical and privacy concerns."

For more information go to the JCB Web site (<http://www.utoronto.ca/jcb>).

## Health Canada Publishes Review of Caffeine Scientific Literature

For centuries, many cultures have enjoyed caffeine-containing foods and beverages. In fact, as long ago as 2,700 BC the Chinese Emperor Shen Nung sipped hot brewed tea. In 575 AD coffee beans were used as currency and were consumed as food in Africa.

Today, caffeine is widely consumed around the world and is one of the most extensively studied ingredients in terms of its potential effects on health.

To investigate the findings from research on caffeine and health, scientists at Health Canada conducted a comprehensive literature search of more than 250 research studies focusing on caffeine and health. (Health Canada is the federal department responsible for helping Canadians maintain and improve their health.) Among the many health issues investigated were cardiovascular effects, effects on calcium balance and bone status, behavioral effects in adults and children, carcinogenic potential, and reproductive effects. The findings of the 2003 report, *Effects of Caffeine on Human Health*, provided answers to some frequently asked questions about caffeine and, on the basis of the data reviewed, concluded that there is “ample evidence indicating that for the general population of healthy adults, moderate caffeine intake ... is not associated with adverse effects.”

Source: Effects of Caffeine on Human Health. P. Nawrot, S. Jordan, J. Eastwood, et al. *Food Additives and Contaminants*, 2003, Vol. 20, No. 1, pg. 1-30.

For more information about caffeine and health, visit the International Food Information Council Foundation Web site at <http://ific.org>.

## Planning Ahead for National Nutrition Month

Now is the time to prepare your nutrition education outreach activities for the March 2004 National Nutrition Month®. The American Dietetic Association sponsors this month-long nutrition education and information campaign annually. The campaign is designed to focus on the importance of making informed food choices and developing sound eating and physical activity habits.

The slogan for this year's event is “Eat Smart, Stay Healthy.” The theme is meant to reinforce the importance of nutrition, along with physical activity, as a key component of health. The following are the key points of “Eat Smart, Stay Healthy.”

- Healthful eating helps you get the most out of life.
- Individual needs and preferences determine your personal food choices.

- Actively pursue variety. Expand your range of choices and explore new tastes, within and among food groups.
- Make moderation your goal — you decide how much and how often. Healthy eating doesn't mean feeling deprived or guilty.
- Develop a personal fitness plan that fits your lifestyle. The key is to find a variety of activities that you enjoy.

Many nutrition communicators schedule presentations and workshops or write newspaper and magazine articles on the benefits of healthful eating and physical activity using National Nutrition Month® as a springboard.

To help you get a head start on the March 2004 National Nutrition Month® events, the International Food Information Council Foundation has included as a special insert in this issue of *Food Insight* a Publications List with numerous nutrition and food safety education materials that are ideal for use with National Nutrition Month® activities. You can use the Publications List to order the materials for your outreach planning. By ordering now, you'll be assured of receiving the materials you need in plenty of time for the National Nutrition Month® celebration of one of life's greatest pleasures: enjoying a variety of delicious and healthful foods. Some of these materials are also available online at <http://ific.org>.

## New IFIC Foundation Publication

### Everything You Need to Know About Aspartame Brochure Updated

Now available on the International Food Information Council (IFIC) Foundation Web site are updated text and PDF versions of the Everything You Need to Know About Aspartame brochure. This consumer friendly, eight-panel brochure answers the most common questions about the safety of aspartame and its usefulness in the diet. The brochure, revised in June 2003, was developed in partnership with the American Academy of Family Physicians (AAFP) Foundation and favorably reviewed by the AAFP Foundation.

Aspartame is one of the most thoroughly tested food ingredients in the history of the U.S. Food and Drug Administration. The information in this brochure highlights the repeated reaffirmation of the safety of aspartame, and the brochure discusses its use as a food ingredient as part of a healthful diet for the general population, including diabetics and people interested in effective weight management. Download a copy today at: <http://www.ific.org/publications/brochures/aspartamebroch.cfm>.

# New IFIC Foundation Publications

Below are the newest releases from the IFIC Foundation. Single copies of most publications are available free-of-charge. For a comprehensive listing of publications or for bulk prices, please request the IFIC Foundation Publications List below.

**Publications List (MI-4010)**

A complete list of publications and *Food Insight* reprints available from the IFIC Foundation.

**Fish & Your Health (EB-2095)**

This brochure takes a look at the benefits of fish and seafood in a healthful diet. Provides information on the impact of omega-3's and seafood consumption for the general consumer, children and issues on guidance for pregnant women. Favorably reviewed by the American Academy of Family Physicians Foundation.

**Weight Loss; Finding A Weight Loss Program that Works for You (EB-2090)**

This helpful, easy-to-use brochure provides information and check lists for evaluating weight loss programs and services and helps consumers ask the right questions to choose a safe and effective weight loss method.

**Prevent Childhood Choking: It's Up to You! (MI-4260)**

This colorful 2-sided poster in both English and Spanish is suitable for home or daycare use to help parents and caregivers take the necessary steps to prevent childhood choking on food or other objects. Developed in partnership with the National SAFE KIDS Campaign. Single copies free, multiple copies \$1.50 each.

**Caffeine and Women's Health (EB-2040)**

Revised and updated brochure providing current scientific facts about caffeine and women's health, including such topics as pregnancy and osteoporosis. This referenced document was developed in partnership with the Association of Women's Health, Obstetric and Neonatal Nurses.

**IFIC Review: Understanding Food Allergy (IR-3070)**

This referenced white paper offers the latest scientific information on food allergy. It provides an overview on how to distinguish a food allergy from other sensitivities to food.

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