



## THE ASSOCIATION'S RESEARCH PROGRAM: WORKING TO FIND ANSWERS

*"The purpose of this letter is to thank you for all you have done for the Endometriosis Association. Through your dedication, hard work and perseverance, the Association has grown to be a successful vehicle for education and support for women with endo. As the Research Nurse Coordinator for a group of reproductive endocrinologists, I have the opportunity to meet a good number of women who have had every aspect of their lives impacted by this disease. We are made aware that endo can destroy relationships, job opportunities, hopes for a 'normal' life.*

*"Because our practice is a research-oriented practice I would like to see more funding for research for endo. We can use many things for a 'band-aid' approach, but until we find out for sure the cause, prevention and/or optimum treatment modalities, we will continue to have women who can not be in control of their lives."*

—Cynthia, California

*"We appreciate so much your researching this difficult problem. Both my daughter and I have endo, and we are worried about future generations as well. We believe that what is gained from endo research will spill over to so many other problems. (We both have chronic fatigue immune dysfunction, too.)"*

—Anonymous

*"I recently inherited some money and immediately decided to*

*"The latest research shows..."; the phrase is everywhere. One sees and hears it in magazine and newspaper articles, television ads, and radio spots. On the other side are the continuing calls for more funding for such governmental agencies as the National Institutes of Health and the National Science Foundation in order to sponsor more "research." Also, there are all of the charities that have yearly or seemingly constant campaigns by direct marketing, neighborhood canvassing, and workplace appeals that focus on obtaining funding for research for a specific disease or condition. What is this "research" that everyone seems to listen to, yet continues to need more of?*

### **What is research and how is the Endometriosis Association involved?**

There are three definitions of the noun "research" in Webster's dictionary.<sup>1</sup> Two are "careful or diligent search" and "collecting of information about a particular subject." These are short, specific, and doubtless what many think of first when considering the word. A third definition is more complex. It says that research is "studious inquiry or examination, especially investigation and experimentation aimed at the discovery and interpretation of facts, revision of accepted theories or laws in light of new facts, or practical application of such new or

*donate some of it to the Association towards the \$1 million in funds needed..."*

— Laura, Indiana

**Editor's note:** The one million was needed to begin the Endometriosis Association Research Program at Vanderbilt University School of Medicine. That program has been in operation since 1999. All contributions to keep this singularly important program and other research going are greatly appreciated!

*"Please find enclosed \$25 as my pledge to your research foundation. I believe my niece has this rotten scourge. She's 22 and already her life is miserable because of the symptoms. We never had any children because of my endo so this young woman is the closest to a daughter that we'll ever have. Sure don't want her to suffer all the years her mother, my mother, and I did!"*

— Deborah, Ontario

*"The Association newsletter was among the first to make people realize that medical science wasn't some inaccessible foreign territory for experts, but belongs to all of us."*

— Susan, New Hampshire

*"I pray that any support that I can give might help us all find a cure. I'm hoping that the mystery will be solved before my little girl becomes old enough to be tormented by this disease."*

— Rosemary, Illinois

### **VISION STATEMENT FOR THE ENDOMETRIOSIS ASSOCIATION RESEARCH PROGRAM AT VANDERBILT UNIVERSITY SCHOOL OF MEDICINE**

Millions of women and girls all over the world suffer from endometriosis, a chronic immune and endocrine disease which causes years of pain, infertility, sporadic and sometimes complete disability, and can keep a woman or girl from reaching her potential and contributing fully to her family and society. Endometriosis is a modern epidemic and appears to be growing rapidly. Because of breakthrough research by the Endometriosis Association, the work of dedicated women and their families, and selected doctors and researchers around the world, understanding of the causes of the disease is now in sight. But to reach that important goal and to hopefully save countless future generations from this scourge and all its ramifications for society, a major research effort is needed at this time. The Endometriosis Association is committed to push that research frontier forward. We believe that those affected by endometriosis and interested in it worldwide will support the effort to cure and prevent endometriosis.

revised theories or laws."

The research programs of the Endometriosis Association encompass all of these aspects. These include:

- \* discovery and analysis of the dioxin-exposed rhesus colony,
- \* establishment of the first research registry on endo,
- \* consulting on protocols for and aiding recruiting for clinical investigations,
- \* partnering with established university and clinic-based experimental research efforts,
- \* sponsorship of work by new investigators,
- \* workshops on the status of endo research,
- \* brainstorming sessions for future directions,
- \* collaboration with NIH on studies,
- \* EA/NIH research fellowship,
- \* Over \$26 million in direct & indirect support for research

Taken together these efforts have uncovered links between endo and environmental influences as well as links between endo and a variety of other diseases and medical problems. In addition, the information being gathered is continuing to change established dogmas and is furthering our understanding of the complexities of

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## **Association Research Program** *(Continued from page 1)*

this disease. Most importantly, through its many activities, the Association's research program is a key participant in the search for better diagnostic tools, better treatments and, hopefully, prevention of and a cure for endo.

### SEARCH FOR AND COLLECTING OF INFORMATION

#### **The Research Registry**

The membership of the Association itself has been responsible for much of the initial research about multiple aspects of endo.<sup>2</sup> Data was gathered through surveys completed by members that outlined each person's own medical history and that of their families. Of the almost 8,000 completed surveys, over 7,000 have been analyzed at this time. The data have provided documentation for a variety of groundbreaking information, such as the typical long delay in diagnosis, pain as the prominent disease symptom, and the association of many other symptoms with endo. The survey data also supplied important feedback on the effectiveness of surgical, medical, and alternative treatments.

Perhaps the most astonishing and important information obtained from the research registry is the link that has been found between endo and other diseases. Data obtained from the research registry indicate that autoimmune and endocrine disorders occur more frequently in women with endo than in the general population.<sup>3</sup> The results also show an association of endo with immune dysfunction and cancer. This information has provided a better appreciation of endo as a multifactorial problem. The data obtained from the research registry has provided strong support for use of a multi-disciplinary approach in order to reach a full understanding of this puzzling disease.

#### **Assisting in Clinical Investigations**

Special panels at universities or companies that wish to conduct experiments involving human subjects carefully review the protocols, that is, the methods to be used, for all such investigations. However, many researchers also turn to the Association for additional review of the appropriateness of their proposed study and for help in recruiting study participants. Examples of the help the Association has provided include distribution of surveys about laparoscopic complications and possible new treatment and diagnostic technology. In other cases, mailings to Association members alert them of clinical trials or other studies in which they might wish to participate. Two examples are a study of a progesterone receptor modulator (see *Endometriosis: The Complete Reference for Taking Charge of Your Health* for more information), and a study of physician attitudes toward endo. Member participation in such clinical trials aids in coordinating the gathering of information and provides an excellent means for the voice of women with endo to be heard by health care providers and research investigators.

### INVESTIGATION AND EXPERIMENTATION

#### **The Tracy H. Dickinson Research Chair**

Because of her undaunted search for a cure for endo and her generosity, Tracy H. Dickinson made possible the Association's first significant participation in experimental research. The scientist who has held the Tracy H. Dickinson Research Chair since its inception in 1994 is Sherry E. Rier, Ph.D. Due to this support, as well as that of the members of the Association, Rier and her co-workers were able to document the correlation of exposure to environmental toxins with endo in rhesus monkeys.<sup>4,5</sup> She has since expanded her work to include investigation of immunological changes associated with

endo.<sup>6</sup> Rier is also much in demand for consultation on the role of persistent organic pollutants in the development of the disease.<sup>7</sup>

#### **Member-sponsored Research**

There are several instances in which member donations have provided the means for the Association to sponsor new and exciting research studies. For example, Rier's work on the investigation of the role of immune function in endo attracted the interest of a fellow immunologist while both were working at Dartmouth Medical School.<sup>8</sup> Through generous gifts from Association members and donors, support was then provided to Grant Yeaman, Ph.D. This resulted in his laboratory's identification of a specific immune-stimulator in women with endo.<sup>9</sup> These specific markers have potential both for diagnosing endo without surgery and for treatment of the disease.

#### **The Endometriosis Research Program at Vanderbilt University**

In 1990, the Association successfully persuaded Congress to designate research money to study endometriosis. Kevin G. Osteen, Ph.D., received one of only four grants awarded by the National Institutes of Health at that time. With this funding, Osteen was able to investigate production of matrix metalloproteinases (MMPs) and their involvement in endo. MMPs are enzymes, proteins that carry out specific chemical reactions. They are necessary for normal tissue remodeling, such as occurs during wound healing. Although it is now well-known that these enzymes are also critical to implantation and establishment of pregnancy, Osteen was part of the team which first described the pattern of MMPs in the normal, cycling endometrium.

Since production of excess MMPs had been previously associated with disease states, including cancer, Osteen reasoned that these enzymes might also play a role in the establishment of endo. Osteen and his laboratory went on to demonstrate the production of MMPs in endometrial tissue.<sup>10,11</sup> They also developed an animal model of the disease that implicated MMPs in the development of endo.<sup>12</sup> At about the time that these results were obtained, Osteen met Rier at a research conference. Their mutual interest in endo led them to form a research collaboration. Together with the work and ideas of Mary Lou Ballweg, President of the Endometriosis Association, and generous funding from the Harry & Betty Quadracci family of Milwaukee, this partnership ultimately led to the establishment of the Endometriosis Association Research Program at the prestigious Vanderbilt University School of Medicine.

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*The Endometriosis Association's research has uncovered links between endo and environmental influences as well as links between endo and a variety of other diseases and medical problems*

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The program was designed to couple dedicated research space and stable funding with a multidisciplinary, multinational team of investigators in order to explore endo from a "big picture" viewpoint.<sup>13</sup> That is, experts in immunology, endocrinology, toxicology, and embryology would all focus their attention on the basic biological mechanisms underlying the disease. In addition to having a core of resident scientists, the design of the program provided for three-year "New Investigator Awards" and funding to bring international scholars to work at Vanderbilt for two- or three-year periods. In these ways, the program would provide cross-cultural input into the research process, develop potential lead investigators for endo research groups around the world, and train new investigators in the field.

The goals of the Endometriosis Association Research Program at Vanderbilt are to understand the causes of endo and to work toward

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methods to cure, or neutralize the impact, of the disease. Toward that end, the scientists in the program are focusing on several themes that have emerged in the basic biology of the development of endo:

- \* the mechanism of action of progesterone in normal endometrium and how this may fail in women with endo,
- \* the role that environmental chemicals, such as TCDD (commonly known as dioxin), have in disrupting hormonal and immunological function in normal endometrium and in endo,
- \* the mechanisms through which cellular adhesion molecules and tissue remodeling enzymes are involved in establishment and progression of the disease,
- \* differences in hormone regulation of endometrial tissue in women with and without disease and how such differences may relate to fertility.

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Since the creation of the program in 1999, Osteen and his research team have obtained many exciting results. As discussed earlier, Rier and her colleagues published the first paper linking exposure to TCDD with the spontaneous development of endo in monkeys.<sup>4</sup> TCDD is an anti-estrogen and endo is clearly estrogen dependent, so Osteen's team was puzzled by Rier's results. In subsequent studies initially funded by the U.S. Environmental Protection Agency (EPA), Osteen's laboratory became the first to indicate that TCDD also acts as an anti-progesterone.<sup>14</sup> Toshio M. Igarashi, M.D., Ph.D., from the University of Tokyo, has extended these studies during his time spent in the Osteen laboratory as the first International Endometriosis Association Fellow. Igarashi demonstrated that TCDD changes endometrial production of the progesterone receptor, which is the membrane-bound protein that recognizes the hormone. This results in a lower biological action of progesterone within endometrial cells.<sup>15</sup>

The two International Endometriosis Association Fellows following Igarashi have also made important contributions. Dagmara Piestrzeniewicz-Ulanska, from Poland, contributed to research demonstrating that reduced progesterone receptor expression in the endometrium of women with endometriosis is associated with reduced expression of an important growth factor (TGF-beta2). Tultul Nayyar, Ph.D., from India, showed in her work that exposure of mice to dioxin at the time of pregnancy diminishes the ability of the uterus to respond to progesterone and support pregnancy. More recent work in the laboratory using these mice indicates that the reduced progesterone response and diminished fertility continues through multiple generations even with no additional exposure to dioxin.<sup>16</sup>

It has long been known that progesterone is critical to establishing and supporting pregnancy. Osteen's research group has found important information about the role of this steroid hormone in the normal, non-pregnant menstrual cycle. Their studies show that progesterone both reduces MMP production<sup>17,18</sup> and inhibits the effects of inflammatory cytokines.<sup>19</sup> These are small protein molecules that have hormone-like effects on particular cells, especially those of the immune system.

Kaylon L. Bruner-Tran, Ph.D., whose work in Osteen's laboratory is sponsored by the Association, has demonstrated that in tissue from

women with endo, progesterone is not as effective in controlling production of MMPs as in women without endo. This leads to an increased ability to establish experimental endo. Her studies also indicate that maintaining the proper amounts of MMPs requires not only progesterone but also retinoic acid (the active form of Vitamin A) and a specific factor that controls cell growth. This is transforming growth factor beta (TGF-b). Addition of these two compounds to endometrial tissue samples from women with endo restored progesterone's ability to suppress MMPs and prevent experimental endo.<sup>20</sup> This work suggests that failure of progesterone action is an important part of the cellular events that lead to endo and may also play a role in abnormal uterine bleeding and infertility.

Another research group was added to the team within the Endometriosis Association Research Program by relocation to Vanderbilt of Grant Yeaman, Ph.D. His skills provide the ability to more fully integrate studies of the effect of environmental toxins on both immune and hormonal systems as related to endo. Yeaman's laboratory is continuing studies aimed at understanding autoimmune processes in women with endo and how they may play a role in the development and maintenance of disease.<sup>9</sup> The long-term goal of this research is to develop new diagnostic and therapeutic approaches for endo. Yeaman is also continuing studies of the role of the local immune system in both normal endometrium and that from women with endo.<sup>21,22</sup>

The success of, and need for, the Endometriosis Association Research Program at Vanderbilt should be clear from the research results summarized here. However, perhaps the best indication comes directly from Osteen. When asked what impact the program has had on his research, he responded, "Government funding can be sporadic and is often quite restrictive, allowing only limited thinking outside the box. Not only has the Association provided a means for bringing in young, enthusiastic scientists, but it also gives us the latitude to go after novel avenues of research. Moreover, when our EPA grant ended, the Association support allowed us to continue our dioxin studies. As a result, Dr. Igarashi has made incredibly important discoveries in understanding the potential role of TCDD in endometriosis. These studies would simply not have occurred without the Endometriosis Association."

### EXPERIMENTATION COUPLED WITH PRACTICAL APPLICATION

#### **The Open Research Fund**

The Endometriosis Association now has another mechanism that provides financial support for scientific research. The aims of the Open Research Fund are to:

- \* promote new ideas,
- \* attract new investigators to endo research,
- \* supply start-up funds for pilot projects with the expectation that the results will lead to major funding from governmental and other sources.

The Fund also provides a way for the Association to focus financial support on particular subjects and balance our research efforts. For example, the Vanderbilt University partnership is strongly focused on "basic science," which looks at fundamental biological mechanisms underlying endo. By means of the Open Research Fund, support can be provided for more "clinical" experimentation, that is, investigation of practical applications in treating endo. Other topics of special interest have included research regarding teen and adolescent endo

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as well as menopause and endo, interrelationships with other diseases, and effects of exposure to hormonally active compounds.

The first three rounds of research proposals submitted to the Open Research Fund were reviewed with the help of the scientific and medical Advisors of the Association and other active research scientists and physicians. The review criteria included relevance to and potential impact on endo, originality and innovation, as well as soundness of experimental approach. With the available funds, support of \$750,000 has been provided to 20 projects in six different countries (U.S., Canada, England, Scotland, Sweden, and Belgium). Within the U.S., grants have been made to investigators at 13 different institutions.

Seven funded studies are focused on clinical findings or applications. Based on his surgical observations, Khaled Zeitoun, M.D., at Columbia University in New York, is testing whether growth of endo lesions can be prevented or reduced by interfering with angiogenesis, that is, with the process of developing the necessary arteries that supply blood. Aydin Arici, M.D., and Neal Mahutte, M.D., at Yale University in Connecticut, are performing a pilot randomized controlled trial regarding the outcome of IVF (*in vitro* fertilization) and surgical treatment for endo. That is, they are comparing pregnancy rates in women who have surgery to treat endo before beginning the hormonal stimulation required for IVF, to the result when no prior surgery is done. Rajkumar Kadaba, Ph.D., and colleagues at the Cleveland Clinic Foundation are working on a non-surgical way to diagnose endo by screening the proteins made in endometrial tissue from women with and without disease. The goal is to find antibodies found only in women with the disease and to identify the associated proteins that have induced their production.

Four of the clinical projects are investigating endo-related pelvic pain. Fred Howard, M.S., M.D., of the University of Rochester School of Medicine and Dentistry in New York, is conducting a study to compare the ability of mifepristone (RU-486) with Lupron to relieve pelvic pain. John Jarrell, M.D., at the University of Calgary in Alberta, Canada, is conducting a randomized trial to evaluate whether women who have or have not had surgical removal of endo lesions have better reduction in pain and whether this leads to fewer subsequent medical and surgical treatments. Michael Diamond, M.D., and his colleagues at Wayne State University in Detroit are studying formation of adhesions associated with endo by measuring levels of the enzymes, growth factors, and additional protein components involved, by taking tissue samples from women with and without endo from areas with and without adhesions. The goal of this work is to find ways to reduce adhesion-related problems including infertility and pelvic pain. Karen Kuntz, Sc.D. (Doctor of Science), and her team at Harvard University in Massachusetts, are interviewing women with endo to assess patients' preferences for the treatment of pain. Their aim is to help women develop better strategies to weigh treatment options and so better share decision-making between patients and their physicians.

Another major focus of projects funded by the Endometriosis Association concerns the study of how exposure to chemicals in the environment might influence the development of this disease. Farideh Bischoff, Ph.D., at Baylor College of Medicine in Houston, is investigating whether there are differences in the genes for enzymes that process pollutants in women with and without endo, and how these relate to stages of the disease. The aim of this work is to provide information about whether susceptibility to endo can indeed be inherited. The results could lead to improved methods for early

### HEALTH EFFECTS RELATED TO DIOXIN

#### Female Reproductive Effects

Endometriosis  
Decreased fertility  
Inability to maintain pregnancy/miscarriages  
Ovarian dysfunction  
Hormonal changes

#### Male Reproductive Effects

Reduced sperm count  
Abnormal testicles  
Reduced size of genital organs  
Lower testosterone levels  
Male feminization  
Decreased sex drive

#### Fetal Effects

Birth defects  
Alteration in reproductive systems  
Reduced fertility  
Neurological and developmental problems  
Fetal death  
Delayed puberty

#### Other Effects

Chloracne  
Hirsutism  
Hyperpigmentation  
Immune suppression  
Hormonal changes  
Altered glucose response  
Altered fat metabolism  
Wasting syndrome  
Diabetes  
Liver, spleen, thymus, and bone marrow damage  
Lung cancer  
Stomach and liver cancers  
Nerve system damage  
Non-Hodgkin's lymphoma

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detection and perhaps prevention of endo. At the State University of New York in Buffalo, Diane Bofinger, Ph.D., and James Olson, Ph.D., are looking directly at the effect of one pollutant (dioxin) on how the liver processes such toxins. Also included are measurements of any associated changes in the forms of the steroid hormones (estrogen and progesterone) that are important in growth and suppression of endo lesions. Thomas D'Hooghe, M.D., Ph.D., at the Leuven University Fertility Center in Belgium, is testing whether concentrations of toxic pollutants, such as polychlorinated biphenyl compounds (PCBs) and dioxins are higher in the blood of women with than without endo.

Two projects are investigating the link between cancer and endo at the biochemical level. Agneta Bergqvist, M.D., Ph.D., at the Karolinska Institutet in Sweden is analyzing tissue samples both from women with endo and with ovarian cancer to look for similarities in cell marker proteins and cell growth behavior. In her second research award from the Association, Farideh Bischoff, Ph.D., is investigating

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whether specific pre-malignant (pre-cancer) changes in genes for certain proteins and at specific locations in chromosomes also occur with endo.

Four of the projects supported by the Open Research Fund are investigating the basic biology of endo. John O. White, Ph.D., and his coworkers at Imperial College in London, England are directly analyzing potential changes in how progesterone and estrogen are utilized in women with endo. In the course of this work, they plan to establish conditions for long-term test tube growth of normal endometrial cells and ones from endo lesions. Use of these cells will help in the search for genetic or other diagnostic markers for the disease. Three research groups are studying biochemical events that occur within endometrial cells and their role in establishing endo lesions. Craig Witz, M.D., and his colleagues at the University of Texas Health Science Center at San Antonio are developing an *in vitro* model [a test tube model; not in a living environment] of how endometrial cells actually attach and invade the peritoneal lining forming lesions. Richard Phipps, Ph.D., and Sireesha Reddy, M.D., at the University of Rochester Medical Center in New York, are investigating how stromal or supporting matrix cells become activated to produce the bioactive compounds that are likely responsible for implantation and growth of endo lesions. Sun-Wei Guo, Ph.D., and colleagues at the Medical College of Wisconsin are using a genetic approach to identifying what molecular changes may trigger endo. Their use of the technique of DNA microarray analysis is expected to reveal which genes are either “turned on” or “turned off” with respect to normal tissues. That is, they hope to learn which proteins are made at either higher or lower amounts in the peritoneal tissues of women with endo.

The association of endo with other diseases is being studied through the Open Research Fund at both biochemical and epidemiological levels. Farr Nezhat, M.D., and Tamara Kalir, M.D., Ph.D., at The Mount Sinai School of Medicine in New York City, are comparing cell-surface proteins from endo lesions and endo-associated cancers in order to identify markers that could determine risk for and possible progression of these diseases. Rafet Gazvani, M.D., Paul Fowler, Ph.D., and their colleagues at the University of Aberdeen in Scotland are working toward an explanation of why infection with the yeast *Candida albicans* is so often seen in women with endo. By using defined conditions of laboratory cell culture, they are investigating how *Candida* may directly stimulate growth of endometrial cells. Nancy Hedrick, L.C.S.W. (Licensed Clinical Social Worker), at the Portland Veterans Administration Medical Center, is analyzing patient records in order to determine how often diagnoses of psychiatric disturbances and endo are linked. Some of the potential significance of her work lies in determining whether treatments (hormonal or surgical) trigger psychiatric distress, whether this added problem should be treated on a short or long-term basis, and whether a psychiatric diagnosis is more likely with increased severity of disease. Finally, Ninet Sinaii, M.P.H., at the National Institute of Child Health and Human Development, is con-

tinuing analysis of the Association’s research registry. Sinaii will focus on other diseases occurring in women with endo and their families and the relationship of these diseases with endo across time, as well as duration and effectiveness of endo treatments.

The Open Research Fund program allows the Association to support a wide variety of research projects, that is, to find more pieces of the endo puzzle. Several investigators have already achieved results and communicated them to the scientific and medical community through articles in research journals. For example, biochemical mechanisms that may be part of the link between endo and cancer have been reported by Nezhat and his colleagues,<sup>23</sup> as well as by Bischoff and her research group.<sup>24</sup> (For detailed information on endo and cancer, see the Association’s book *Endometriosis: The Complete Reference for Taking Charge of Your Health*.) Also, Witz and his colleagues have successfully developed a model system to study the way that endo cells attack and invade the peritoneum.<sup>25</sup>

The amount of money awarded to each investigator through the Open Research Fund has been modest compared to other sources of research funds. Nonetheless, the number of applications received in each round has consistently been at least three times the number that have received research awards. Obviously, the amount of available monies is much smaller than the number of endo-related projects for which researchers (especially beginning investigators) are seeking funds. This is a strong indication of the need for and excitement generated by this program, as well as the need for additional funds for endo research.

### Biotechnology Transfer

An important phrase in all research circles is “biotechnology transfer.” This is development of a marketable “product,” such as a diagnostic kit or new treatment, from results obtained from basic research. To many, this marks a tangible return on investment in studies of what often appear to be esoteric topics. Results from research funded through the En-

dometriosis Association have reached this status. As described earlier, Yeaman identified a molecule that promotes formation of a specific type of antibodies in women with endo.<sup>9</sup> Based on these results, a biotechnology transfer company invested in the project with the aim of developing a non-invasive diagnostic test for endo.

### REVISION OF ACCEPTED THEORIES

By the very nature of the day-to-day work of most physicians and research scientists, they become very focused on a specific area within their fields. So even though many are working on individual aspects of a particular disease, there are often limited opportunities and time to reflect on the “big picture.” This is made even more difficult for endo because of the many pieces of the puzzle. Another common occurrence is that certain results appear in review after review in the scientific literature and take on the status of dogma, that is, the established opinion in the field. It is usually extremely difficult to shift such entrenched opinions, even in light of new or alternative view-

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Kevin G. Osteen, Ph.D.

Director, Endometriosis Association Research Program  
at Vanderbilt University School of Medicine

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points. The Association has been an active participant in processes that help change outdated, but long-accepted theories and to make sure that as many people as possible are aware of non-traditional, but potentially important data and opinions. There are three major venues where this takes place.

Every three years, a World Congress on Endometriosis is held. These meetings bring together leading scientists and physicians who present their latest findings. At several of these meetings, "brainstorming sessions" have been held on a variety of topics in order to encourage "thinking outside the box." For example, at the latest such Congress, the Association hosted a session to determine how to break endo out of its pigeonhole as a gynecological/pelvic disease so that all are aware of the additional immunological, hormonal, systemic, and environmental exposure aspects of the disease.

On two occasions, workshops have been held at the National Institutes of Health in order to bring together practicing physicians and laboratory scientists to discuss the status of research on endo. The Association was intricately involved in both. Through a mixture of formal presentations and lively informal discussions, both clinical and basic science specialists were able to learn of the latest advances, as well as the most pressing needs, in each area.

The Anniversary Conferences of the Endometriosis Association (held every five years) are notable for the breadth of their programs. Speakers present findings not only on the newest medical and surgical treatments of endo, but also on such topics as alternative medicine approaches and nutritional aspects of the disease. The Anniversary Conferences have also been uniquely important because they provide opportunities for women with endo to speak directly with both clinicians and scientific investigators who are at the forefront of efforts to solve the endo puzzle.

#### INTERCONNECTION OF RESEARCH WITH ALL AIMS OF THE ENDOMETRIOSIS ASSOCIATION

In 1980, Mary Lou Ballweg recognized the lack of information about endo and founded the Association with three aims: education, support, and research under the overarching theme that "Together we make a difference." As described in this article, endo is now an active field of research. It is of great encouragement that many pieces of the puzzle of endo are now being identified and progress is being made in fitting them into an overall picture.

Also worthy of note is that the research progress that has been made has relied heavily upon and is intertwined with the other two aims of the Association. That is, women with endo are directly involved in research by such means as completion of survey information, sharing their experiences, donation of endometrial tissues, participation in clinical trials, and of course, donation of dollars. The research results in turn provide the information needed for education. Both of these form the foundation of the support needed in order to cope with and overcome endo.

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