

A Focus On Diethylstilbestrol

SUMMER 2012 #133

# DES Son Mouse Study Focuses On Estrogen Receptors

***Mechanism identified for mediating neo-natal DES impacts—  
may help understanding of other synthetic estrogen exposures.***

**By Kari Christianson**

“Estrogen Receptor- $\alpha$  Mediates Diethylstilbestrol-Induced Feminization of the Seminal Vesicle in Male Mice,” *Environmental Health Perspectives*, Vickie R. Walker, et al., Volume 120, Number 4, April 2012.

The first thing to note about this research is the word “feminization” in the study’s official title does not mean what you might think. This is not about gender, but rather it’s about the way prenatal exposure to DES affects the developing seminal vesicles in male mice. Through repeated work, scientists have learned that mice are good predictors of what happens in humans exposed to DES.

Seminal vesicles are located on each side of the bladder and produce fluid that promotes movement of sperm. What the researchers set out to learn, using a series of exposed mice and controls, is the impact DES exposure has specifically on estrogen receptors in the seminal vesicles.

When treated with DES, mice bred with a particular estrogen receptor that was disabled, developed smaller seminal vesicles as adults than unexposed control mice. They also exhibited an estrogen-responsive gene, the LF gene, which is normal in a female uterus but not in male seminal vesicles.

Yet other mice—bred with that

estrogen receptor intact but without a different one—failed to exhibit the same adverse impacts resulting from prenatal DES exposure. So the scientists demonstrated that **minus a specific estrogen receptor in DES Son mice, damage of exposure appears to be limited.**

Researchers were surprised that testosterone levels were not significantly different due to DES exposure. However, there were some changes in androgen responsiveness or signaling.

Figuring out how DES interacts in the bodies of male mice and by extension, in DES Sons, doesn’t change what happened to those who

were harmed. But according to the researchers, who were funded by the National Institute of Environmental Health Sciences, this work helps inform studies regarding prenatal exposures to estrogenic compounds.

Concerns are growing about the dangers of prenatal exposures to estrogenic compounds like the plasticizer BPA, and pesticides such as DDT and DDE. It was the tragedy of DES that brought awareness of the threat, and it is research with DES that might ultimately provide important answers for understanding and protecting our health from the effects of other estrogenic exposures.

DES VOICE

## DES as the Model for Understanding Prenatal Origins of Adult Disease

“Prenatal exposure to diethylstilbestrol and long-term impact on the breast and reproductive tract in humans and mice,” *Journal of Developmental Origins of Health and Disease*, R.R. Newbold, April 2012, Vol. 3, pp. 73-82.

**Reviewed by Fran Howell**

In our early understandings of how fetal environments affect adult health, we learned of the impact

smoking, alcohol and poor nutrition have on the developing fetus. And then along came DES. Now researchers must dig deeper.

In looking for ‘developmental origins of health and disease,’ scientists want to understand how drugs and chemicals cause unhealthy prenatal environments in ways not previously suspected.

Development and Reproductive Researcher Emeritus Retha Newbold,

*continued on page 3*



**DES Action USA**  
P.O. Box 7296  
Jupiter, FL 33468

**info@desaction.org**  
**www.desaction.org**

**Yes!—I want to join DES Action to stay informed and support a cause I believe in.**

All members receive **The DES Action Voice** quarterly. Those at the **\$100 level and above receive an annual report on DES Action's work and progress.** All contributions are **tax deductible.**

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> Member: \$40  | <input type="checkbox"/> Supporter: \$100 | <input type="checkbox"/> Sustainer: \$500              |
| <input type="checkbox"/> Sponsor: \$50 | <input type="checkbox"/> Associate: \$200 | <input type="checkbox"/> Benefactor: \$1,000 and above |
| <input type="checkbox"/> Friend: \$75  | <input type="checkbox"/> Patron: \$250    |  |

Please make checks payable to **DES Action.**

I am a: ☐ DES Daughter ☐ DES Son ☐ Other ☐ DES Granddaughter or Grandson  
☐ DES Mother of a: ☐ Daughter ☐ Son

NAME

ADDRESS

CITY | STATE | ZIP

PHONE

E-MAIL ADDRESS

## Online Support Group for DES Daughters

Want to be in touch, via e-mail, with other DES Daughters? As a benefit of being a DES Action member, you can join the DES Action Daughters Online Support Group. That way you can ask questions and share experiences common only to those of us who are DES exposed.

To join the DES Action Online Support Group simply send a blank e-mail to:

[DESactionDaughters-subscribe@yahoogroups.com](mailto:DESactionDaughters-subscribe@yahoogroups.com)

You'll receive an e-mail back from Yahoo! Groups confirming your request to join. It offers two registration options and the easiest is Option 2. Click "Reply" so the note is sent back.

Once we've checked to be sure you are a current DES Action member, you'll receive a welcome to the group letter explaining how to send messages. Then you can participate in the e-mail conversations, or just quietly read and enjoy the learning experience.

## Have You Considered Planned Giving?

Think about including DES Action USA in your estate planning, trusts and wills. Speak with your estate planning attorney to ensure your wishes are correctly put in place.

**Follow DES Action USA on:**  
**facebook twitter**

## Contacts

**United States**  
**DES Action USA**  
**Headquarters**  
P.O. Box 7296  
Jupiter, FL 33468  
[info@desaction.org](mailto:info@desaction.org)  
[www.desaction.org](http://www.desaction.org)  
800-337-9288

**DES Action Los Angeles**  
6324 Ivarene Ave.  
Hollywood, CA 90068  
[Pinkkaire@aol.com](mailto:Pinkkaire@aol.com)

**Australia**  
**DES Action Australia, Inc.**  
PO Box 282  
Camberwell 3124 Vic. Australia  
[info@desaction.org.au](mailto:info@desaction.org.au)  
[www.desaction.org.au](http://www.desaction.org.au)

**DES Action Australia - NSW**  
14 Edmundson Close  
Thornleigh NSW, 2120  
Australia  
[C\\_devine@bigpond.net.au](mailto:C_devine@bigpond.net.au)  
[www.desnsw.blogspot.com](http://www.desnsw.blogspot.com)

**France**  
**Reseau DES France**  
12 rue Martinon  
40000 Mont de Marsan  
France  
[reseaudesfrance@wanadoo.fr](mailto:reseaudesfrance@wanadoo.fr)

**Ireland**  
**DES Action Ireland**  
Carmichael House  
North Brunswick St.  
Dublin 7 Ireland  
[info@desaction.ie](mailto:info@desaction.ie)  
[www.desaction.ie](http://www.desaction.ie)

**The Netherlands**  
**DES Centrum**  
Wilhilminapark 25  
3581 NE Utrecht  
The Netherlands  
[des@descentrum.nl](mailto:des@descentrum.nl)  
[www.descentrum.nl](http://www.descentrum.nl)

### MISSION STATEMENT

The mission of DES Action USA is to identify, educate, support and advocate for DES-exposed individuals as well as educate health care professionals.

**DES Action VOICE**

Published quarterly by:

**DES Action USA**  
P.O. Box 7296  
Jupiter, FL 33468  
ISSN 1522-0389

1- (800) DES-9288 (800) 337-9288  
[info@desaction.org](mailto:info@desaction.org)  
[www.desaction.org](http://www.desaction.org)

**Executive Director**  
Fran Howell

**Program Director**  
Kari Christianson

**Board of Directors**  
*President:* Patti Negri  
*Secretary:* Litsa Varonis  
*Treasurer:* Jill Vanselous Murphy  
Joyce Bichler  
Martha Cody  
Chris Cosgrove  
Ellice Matsil

**VOICE Design and Layout**  
Solunar Graphics, Columbus  
(614) 488-9962

**Printing**  
CPMM Services Group, Columbus  
(614) 447-0165

© 2012 DES Action USA

## DES as Model for Understanding *continued from page 1*

at the National Institute of Environmental Health Sciences, examined data from her own research as well as accumulated studies by other researchers, which shows the impact prenatal DES exposure has on breasts and reproductive tracts of exposed mice and humans. What is immediately apparent is how similar the impacts are between species.

In both, prenatal and neonatal DES exposure results in breast cancers, reproductive tract malformations and infertility, among other adverse impacts. Mice are studied because their reduced life spans bring to light prenatal exposure health problems sooner than they appear in humans, where it often takes decades to become apparent. That makes them good predictors of the human experience and helps guide researchers looking for DES links to health issues in DES Mothers, Daughters, Sons, and Grandchildren.

The developing fetus with its rapid cell division and differentiation

is especially vulnerable to disruptions caused by environmental exposures. This is a time when cells are programmed for operating during their lifetimes. When DES is introduced, it can cause the process to go awry and alter the functioning of cells, which in turn during adulthood can “manifest as latent disease including cancer,” says researcher Newbold.

Scientists are using DES to study the importance of dose and timing in prenatal exposures. They are also interested in learning how DES in combination with other chemical exposures can potentially trigger or intensify adult onset diseases.

According to Newbold, DES *in utero* research is ongoing to study the different ways early life exposures can do harm:

- Cause disease that otherwise would not have happened.
- Increase the risk for a disease that would normally be of lower prevalence.
- Cause an earlier onset of a disease that would have probably occurred anyway.

---

**“DES caused a major medical catastrophe that continues unfolding today.”**

---

- Exacerbate the disease once it occurs.

While Newbold studies DES from a researcher’s perspective, she can step back and see the human tragedy it created. “DES caused a major medical catastrophe that continues unfolding today.”

She also is quite clear that studying diseases originating from exposures in the womb is not simply historical. Newbold acknowledges that such exposures continue to be of critical concern, “as estrogens, progesterone and glucocorticoids are still being prescribed during sensitive prenatal and neonatal time periods, thus potentially sensitizing children to a variety of changes later in life.”

**DES VOICE**

## Tribute Donations—A Terrific Idea!

As an undercurrent in our lives, DES exposure doesn’t often come to mind when recognizing milestones, either celebratory or sad. But it should.

When a *beloved mom dies*, we reflect on how she, as a DES Mother, dealt with the medical tragedies that befell her family. Some moms faced wrenching and unfair feelings of guilt, even though our DES Mothers did nothing wrong by following doctors’ orders.

When a *child is born*, it isn’t hard to suddenly flash on the reality that this DES Grandchild came into the world in spite of the DES exposure that crept into our family health histories.

Some bereaved husbands *bury their DES Daughter wives*, who so unfairly suffered with cancers linked to exposure.

DES is there, pulling adverse health and emotional strings behind the scenes, but isn’t often in the forefront of our thoughts—unless we put it there, where it belongs!

**In celebration and in sadness, tribute contributions to DES Action USA remind us of what is truly meaningful and important in our lives.**

When you make a tribute donation to DES Action, you are tangibly honoring passages worthy of recognition. How important it is

to acknowledge these experiences and lives!

Tribute donations to DES Action help us with work on your behalf. Fittingly, our focus relates to issues integral to births, deaths, and anniversaries of living. At such a times you can find comfort in significantly helping a cause you passionately believe in.

**To make a tribute donation go to [www.desaction.org](http://www.desaction.org) and click the Join/Donate link. Or send a gift to DES Action USA, P.O. Box 7296, Jupiter, FL, 33468. Don’t forget to mention the reason for your tribute so we can appropriately acknowledge it.**

**DES VOICE**



# YOUR VOICE

*Here is another in our series of personal stories published in the VOICE. This one is by DES Action USA Treasurer Jill Vanselous Murphy. We hope you enjoy reading about the spirit of our members who are living good lives in spite of, and with, DES exposure. If you have a story that communicates positive living around the DES issue, please email us at [info@desaction.org](mailto:info@desaction.org) for information about submitting it.*

It started with an email in 1998. I'm not sure who wrote whom first, but it has continued almost daily since then. Nancy lives in France and I live just outside Washington, DC, and we connected on an old DES listserv because our lives paralleled in so many ways. We are both married to French husbands, we are about the same age, we like a lot



*The girls on a Rhine River bridge, standing in the middle, between France and Germany.*

of the same things and of course we have both suffered at the hands of DES.

In October of 2000, Nancy was going to be in the Boston area visiting family and had plans for dinner with two other DES Daughters we 'knew' from the listserv. I couldn't resist the chance to join them, so I hopped on a USAir flight on a Saturday morning, spent the day with Nancy in Boston and met our other two email friends for dinner. Ginny was in from Boulder, CO, visiting her family with her newly adopted son Mattias. And Kate, who lives in the area, joined us with her 2 year old adopted daughter Olivia. We all had a wonderful time! I spent the night with Nancy's family and the next morning was back on a plane to DC.

Fast-forward thousands of emails and 12 years later. Every spring we travel to France to visit my mother-in-law

who lives in Paris. Typically we spend our time visiting friends and the sites in Paris, but this year I made a point of getting us out of the city for a few days. We had talked about visiting the Alsace region for years but never made the trip. We took the TGV high speed train to Strasberg out on the France/German border and a few hours after we got off the train I met Nancy for the first time in 12 years in front of the Cathedral. During the next two days, our families got to know each other. We had some really good meals, a lot of wine, many laughs, lots of stories to share and our adopted girls became BFFs. It was hard to tear them apart from each other that last night.

Over the years we have coached, supported, laughed and cried with each other through infertility, ectopic pregnancies, bad Pap exams, lawsuits, failed adoptions, successful adoptions, sleepless nights and that's just the DES-related topics. Most days, our email conversations center around our daughters, family, vacations and many "I wish it was Friday" emails.

I hope it won't be another 12 years before we see each other again. But in the meantime, we still have our daily emails and will always be connected by DES.



*Jill and Nancy 2012*

# DES ACTION PROVIDES INPUT YOU WANT THE CDC TO HEAR

*On behalf of the millions of DES-exposed individuals in the United States, DES Action USA submitted comments to the Centers for Disease Control and Prevention for the draft of the CDC's "National Public Health Action Plan for the Detection, Prevention and Management of Infertility" (Docket Number CDC-2012-0004). Here are excerpts from our letter:*

DES (diethylstilbestrol) is a cautionary tale about what could happen if we don't pay attention to synthetic hormones (endocrine disruptors) in our environment. And the DES story is not just a history lesson. Because the 1971 warning against giving DES to pregnant women did not result in a ban of the drug, a small but significant number of DES-exposed Daughters and Sons were born in the U.S. until at least 1984. It is these DES Daughters in particular who are still having infertility and pregnancy problems today.

The CDC estimates that there are millions of DES-exposed individuals in this country, but far too few know about it. The exposed population often is uninformed about their exposure status, either prenatally or generationally. Likewise, most in the health care community have been uninformed and/or silent about DES exposure and reproductive tract changes causing infertility.

As reported in the October 6, 2011, issue of the *New England Journal of Medicine* on research by the National Cancer Institute DES Follow-up Study, DES Daughters are at higher risk for infertility and negative pregnancy outcomes compare to unexposed women. Based on these experiences, we offer the following comments on the draft of the action plan:

Pg. 7 – *"Early exposures (e.g., in utero or in childhood) could permanently reprogram men and women for fecundity or biologic capacity (e.g., gynecologic or urologic health or gravid health during pregnancy) and fertility outcomes (e.g., multiple births or gestational age at birth), which could affect later adult onset diseases. Thus, infertility could have public health implications beyond simply the ability to have children."* This statement is certainly true for the DES-exposed population, and we want to prevent future harmful exposures that result in DES-like health, fertility and reproductive tract problems.

Pg. 13 – We recommend adding "prenatal and generational exposures" to the list of *"surveillance of risk factors"* on this page. Similar to understanding the impact of environmental exposures, a family history of prenatal DES exposure needs to be considered a risk factor for infertility.

Pg. 19 – *"Transgenerational and in utero effects"* are among factors listed as needing more research. We agree! While much has been learned about infertility in DES Daughters, the impact of prenatal and generational exposure deserves additional research for the offspring of DES-exposed women and men, to determine if the devastating reproductive effects of prenatal exposure to diethylstilbestrol could affect additional generations, and to prevent similar harmful exposures to potent endocrine disruptors.

Pg. 25 – *"In addition, the long-term effects of infertility treatments on adults—as well as the children conceived as a result of the treatment—need to be assessed."* As a population whose health and fertility was harmed by a drug intervention given to our mothers during pregnancy, we are particularly invested in making sure current and future infertility treatments are safe and effective for women, men and offspring in both the short-term and long-term. A pharmaceutical failure like DES should never happen again.

Pg. 26 – *"Additional research is needed to improve the effectiveness of communication with diverse populations of men and women requiring medical intervention to conceive."* Communication among all those seeking medical intervention for infertility, the medical community providing the care and the research community offering a better understanding of the harm caused by environmental exposures needs to increase. Unless we seek to understand current exposures, to learn from past exposures and to heed current research findings, we will continue to repeat the pharmaceutical and environmental mistakes that contribute to infertility.

Thank you again for the opportunity to share our comments and concerns, which are based on our DES experiences with infertility. We look forward to hearing more about the public health action plan on infertility as it develops.

Sincerely,  
Kari Christianson, Program Director  
DES Action USA



# Forever Home for Historical Bottles

By Debra Scarborough, MLS, AHIP,  
DES Action USA Member

A little over four years ago a dream was finally realized at the headquarters of the American College of Obstetricians and Gynecologists (ACOG), a professional association for Board-certified Ob-Gyns, located in Washington, DC.

For years the staff talked about carving out a space for a museum in which to display the many artifacts that had been donated to the College and were stored away in the History Library. A fortuitous move of some large copy machines from a small space between the Resource Center and the Fitness Room to the Mail Room resulted in just the space needed.

With the Executive Board's

**"They are hard to miss and will continue to tell the DES story by their mute testimony."**

blessing the room was fitted with glass-fronted wooden cabinets, new flooring, special lighting, and HVAC and fire suppression systems separate from the rest of the building. The Ralph W. Hale, MD, History Museum came into existence.

Out came the boxes of items ranging from 18th-century obstetrical forceps to 19th-century vaginal specula to 20th-century birth control pill packets. A 19th-century, ornately carved, quarter sawn oak exam table was brought out of storage. Each cabinet was "themed," one large cabi-

net being reserved for the display of pharmaceuticals. Slowly the museum filled up as members donated items found in the backs of closets and drawers and the staff bid for items on eBay.

Although the pharmaceutical display was extensive, from Dr. Pierce's Favorite Prescription to Glovarian Pills to a huge brown bottle that used to contain a mixture of opium and glycyrrhiza, we were still disappointed that the only representation of DES was a box of Vaggestrol vaginal suppositories that we had. Hope sprang eternal every time another box arrived that maybe this time we'd luck out with a DES pill bottle.

As the Medical History Librarian responsible for the History Library, I became the curator for the new History Museum. One of my responsi-





bilities is to give tours of both the library and the museum to a constant stream of visitors. The tour ends at the pharmaceutical cabinet where I always point out the suppositories box. I then tell visitors that I am the "living artifact" of the museum as I am a DES Daughter; that certainly sparks their interest.


So it was with great interest and rising excitement when I turned to the last page of the Spring 2012 issue of the DES Action VOICE newsletter and read an article by Fran Howell about DES Action USA receiving three donated Eli Lilly DES pill bottles. A plan formed in my mind.

After a quick discussion with the Director of the Resource Center of which the History Library and History Museum are a part, we put the plan in motion; offer to give the bottles a "forever home"—can you tell I'm a typical librarian with adopted shelter cats? We thought the bottles would be appreciated here for their important place in reproductive health history, and viewed by many who understand their significance.

Of course, Fran checked with the DES Action member who sent the pill bottles to the organization and she was all for it. "They would probably do some good living where lots of interested people can see them. And hopefully they will serve as a 'visual aid' in many teachable moments regarding one of the more horrific chapters in the history of the US pharmaceutical industry."

Letters, emails and official forms flew back and forth, and before I knew it I was finally opening a package that held what we so long hoped to find for the museum—Eli Lilly DES pill bottles!

The three little bottles (I can't believe how small they are) now reside in a place of prominence at the front of the museum's pharmaceutical cabinet, at chest level, lined up in front of the suppository box. They are hard to miss and will continue to tell the DES story by their mute testimony.

If you would like to see the Museum, complete with Eli Lilly DES pill bottles, please call 202-863-2578, or email [history@acog.org](mailto:history@acog.org) to schedule a tour. Be sure to mention you read about us in the VOICE. 

## Share Your Thoughts About DES Action USA

DES Action soon celebrates 35 years of action! Yes, it's been that long since together we started keeping a focus on diethylstilbestrol.

Will you help us acknowledge this anniversary? Please send us your thoughts on what DES Action USA means to you. We want to hear from those who've been with us for decades and from those who've newly discovered the importance of DES in their lives. How has DES Action made a difference for you?

Our plan is to collect your remembrances to share with others via the VOICE and social media. Just email your thoughts to [info@desaction.org](mailto:info@desaction.org) or mail to DES Action USA, P.O. Box 7296, Jupiter, FL 33468.

We look forward to hearing from you, as we recognize an important anniversary and acknowledge how our organization has positively affected so many of our lives.

## LETTER TO THE EDITOR

To the Editor:

Joanna Katzen, you are my soul sister. You are me, and I am you. After reading the YOUR VOICE segment in the Spring 2012 DES Action Voice newsletter, I was inspired and validated. I am not alone in this DES-exposed life.

Your DES experience with your mother took me back to mine. It was as if I were reading my own story. The doctors (Gods), our unquestioning trust of the "Gods," my mother's guilt, my pain, the miscarriages, ectopic pregnancy, infertility treatments, breast cancer, radiation and surgeries.

Happily, I am also now in a position where I can calmly ask

myself the question you are asking: What can we do to enable an improved decision-making process during times of upheaval and need?

I, too, am a DES Daughter and seven year survivor of breast cancer. My children are sixteen and thirteen, and I am a healthy and happy mom and working-woman (27 years as a flight attendant). I follow your philosophy completely. Stay informed, enlist help and do the research.

Yes, DES is also an integral part of who I am, and I also do not let it define me. Neither does my breast cancer. I will read your article daily because it's what I live by.

Joanna, you and I continue on

this wonderful existence because we won't have it any other way. Together we will enjoy the ride!

—Lori

*Editor's Note:*

*Lori has connected with the essence of the YOUR VOICE column. It allows each of us to validate our experiences, share ideas and our ways of living well, in spite of DES exposure. Both Lori and Joanna hit the mark perfectly!*

*Want to write a YOUR VOICE segment? Please contact us at [info@desaction.org](mailto:info@desaction.org) for information about submitting it.*

**DES Action USA**  
P.O. Box 7296  
Jupiter, FL 33468

[www.desaction.org](http://www.desaction.org)

Forwarding Postage Guaranteed  
Return Service Requested

**Moving? Please let us know...**



## Update on DES Action's Health History Survey

A big "Thank You" to all of you who completed the survey! Our health experiences and our voices will be heard.

Epidemiologist Deborah Wingard, Ph.D., Professor in the Department of Family and Preventative Medicine at the University of California San Diego, will analyze the health information from over 1100 surveys.

The written responses from DES Daughters, Mothers and Sons have been hand entered to the computer survey program, joining the online responses. Once the entry is done, Wingard is able to study the raw data and begin a diligent and thorough comparison of our health experi-

ences. She'll compare them with the Centers for Disease Control and Prevention information on U.S. national health and disease incidence. Unfortunately, it appears the number of responses from DES Grandchildren is very small, which will limit the ability to compare any health experiences.

Although this survey is an anecdotal gathering of our health histories, it will provide interesting and important clues about the on-going effects of exposure to DES.

We'll keep you updated on the status of Wingard's research and, of course, report the full study in the VOICE as soon as it's available.

