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Georgia Lyme Disease Association's Liz Schmitz with Dr. Alan MacDonald and his wife, Pat

A Wonderful Visit with Dr. and Mrs. Alan MacDonald

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In late July, GALDA president Liz Schmitz was honored to meet Lyme disease researcher Alan MacDonald, M.D. and his terrific wife, Pat. The MacDonalds were traveling through the Southeastern USA and graciously took time out to visit.

“It’s really enthralling to hear about Dr. MacDonald’s research work firsthand.” Liz said. “He has studied Lyme disease for thirty years – he’s incredibly knowledgeable and has contributed so much.”

“We discussed all sorts of issues, including my pet peeve: the myth that Lyme disease isn’t prevalent in the Southern USA...that it’s only something called “STARI”...and how that obstructs the proper diagnosis and early treatment of patients resulting in many becoming unnecessarily disabled.” Schmitz added. “Dr. MacDonald is kind, objective, interesting and interested.”

Alan MacDonald was among the first doctors to study Lyme disease in humans. As a pathologist at Southampton Hospital in the late 1970's, he worked diligently to create tests to detect the newly discovered pathogen *Borrelia burgdorferi*. MacDonald began to find and photograph Lyme disease spirochetes in the tissues of stillborn infants using dark field microscopy. He published his findings in a troubling paper about Lyme borreliosis and pregnancy as early as 1986. Three years later at a conference, MacDonald shocked the medical world by presenting his extensive collection of images taken between 1978 -1988 – images that demonstrated the tragic, sometimes fatal consequences when untreated *Borrelia burgdorferi* is transmitted from mother to unborn child. (This was known to occur in other spirochetal illnesses such as syphilis.) Although shocking at the time, it's hard to estimate just how many lives the work of MacDonald and those who followed may have saved, for it is now medically accepted that pregnant Lyme disease patients should be treated to prevent transplacental transmission.

Borrelia burgdorferi are spiral-shaped bacteria called spirochetes. Though not as genetically complex as the Lyme bacterium, *Treponema pallidum* is another spirochete – the organism that causes syphilis. Syphilis bacteria are known to take on various forms. Dr. MacDonald was the first to publish evidence for *Borrelia burgdorferi* cystic forms, granular forms and cell wall deficient forms. (See Lymeinfo.net medical abstract reports complete with photographs by clicking these titles: [Cystic Form of Bb & Other Spirochetes: Advanced](#) and [Cystic Forms of Spirochetes: A Complete Bibliography, 1905-Present](#) .)

Dr. MacDonald considered that syphilis is known to affect every system of the body, including the central nervous system. He used the syphilis model to develop a hypothesis that, in a similar way, maybe Lyme disease spirochetes cause neurodegenerative disease in some cases of Multiple sclerosis, Amyotrophic lateral sclerosis, and Alzheimer's disease.

An excerpt from an article from the [Lyme Disease Research Database](#) elaborates:

Dr. Alan MacDonald: "Using the syphilis model, I began to study some autopsied brains, and found that I was able to identify spirochetes in autopsied brain tissue in the hippocampus, which is one of the areas that Alzheimer's disease tends to target in every patient. I was able to grow spirochetes from autopsied Alzheimer's brain tissue, and stain the spirochetes with special monochromal antibodies, through the techniques I learned and developed through the study of stillborn babies with Lyme disease. And those two positive results made me think even more strongly that some Alzheimer's might be like syphilis, a late manifestation of the bacterial infection in the brain, not to say that all Alzheimer's disease is related to Lyme disease, but some."

One of Dr. MacDonald's most exciting research results comes from a uniquely well-documented case of one man who passed away from Alzheimer's disease, Paul Christensen, and was autopsied at Stony Brook in Long Island. A firefighter, Christensen was diagnosed with Lyme disease when the *Borrelia* bacteria were found in his spinal fluid. He was treated for a short time by doctors at Stony Brook University Hospital and then released. However, his diagnosis of Lyme was followed by an eight year period of mental deterioration, and he ultimately died from Alzheimer's disease.

Christensen's wife, in an effort to support and encourage Dr. MacDonald to help educate the medical community about the connection between Lyme and Alzheimer's disease, contacted him and allowed him access to study Christensen's brain tissue for clues about this connection. Dr. MacDonald was "able to show that those areas of Alzheimer-type injury in the brain also lit up for spirochetal DNA, with special florescent dye attached to the DNA probe."

Through his work in the thoroughly researched, well-evaluated Christensen case, which he confirms has been one of the most exciting cases he has worked on, Dr. MacDonald learned that using DNA probes allowed him another point of reference in order to show the spirochetal DNA in the brain tissue, and therefore, "make the connection between Lyme disease and Alzheimer's in some patients," he says.

You may learn more about Dr. MacDonald's work on *Borrelia burgdorferi* and Alzheimer's disease at the [Lyme Disease Research Database website](#) and by performing an Internet search. There are also some references at the end of this article.

In 2008, Dr. Eva Sapi and Dr. Alan MacDonald published an exciting paper proposing that, similar to other bacterial pathogens, *Borrelia burgdorferi* may form protective *biofilms*, making Bb infection harder to eradicate and more difficult to treat. (This is seen on the movie ***Under Our Skin***).

Although officially retired, Dr. MacDonald continues to collaborate with Dr. Sapi at the University of New Haven and his research on Alzheimer's and *Borrelia burgdorferi* continues.

GALDA's Liz Schmitz: "It was a pleasure meeting Dr. MacDonald and his wife. His investigations are fascinating. There are so many of us who appreciate his dedication to this important research. Given what is known about syphilis and how Lyme disease spirochetes are being found worldwide, it makes perfect sense to pursue the possibility of linking *Borrelia burgdorferi* to neurodegenerative diseases of unknown etiology. Others (such as Miklossy) report similar

findings, so it's troubling that more researchers aren't looking into this. But, as in everything else in the scientific realm of Lyme disease, there are controversies and naysayers."

"The biased denial and dismissal of peer-reviewed, published scientific evidence about Lyme Borreliosis by many, really calls to mind the skeptical medical community in the stories of Semmelweis and his antiseptic procedures theory and Nobel Prize laureate Barry Marshall who had to actually drink the bacterium *Helicobacter pylori* before others would accept that it is the cause of most peptic ulcers." continued Schmitz. "One would *like* to think that such stories taught us to be a bit more humble and objective lest we be made fools later. I have a big feeling that some day, when this incredibly complex bacterium is better understood and accepted, the medical community as a whole will more fully appreciate and embrace Alan MacDonald's investigations and will rightfully celebrate him and others like him as groundbreaking, medical-science pioneers."

You can read more about Alan MacDonald and his early and recent research in Pamela Weintraub's book ***Cure Unknown: Inside the Lyme Epidemic***. He and his work are also featured in the Lyme disease documentary ***Under Our Skin***.

Dr. MacDonald will present at the 2012 International Lyme and Associated Diseases (ILADS) conference in Boston. http://www.ilads.org/lyme_programs/boston/speakers/bio_macdonald.php His website may be found at: <http://www.molecularalzheimers.com>

Below is a select list of publications:

Biofilms of *Borrelia burgdoferi* in chronic cutaneous borreliosis.

Sapi, E. and MacDonald A.
Am J Clin Pathol . 2008 129. p.988-989.

Alzheimer's disease Braak Stage progressions: reexamined and redefined as **Borrelia** infection transmission through neural circuits.

MacDonald AB.
Med Hypotheses. 2007;68(5):1059-64. Epub 2006 Nov 17.

Alzheimer's neuroborreliosis with trans-synaptic spread of infection and neurofibrillary tangles derived from intraneuronal spirochetes.

MacDonald AB.
Med Hypotheses. 2007;68(4):822-5. Epub 2006 Oct 20.

Spirochetal cyst forms in neurodegenerative disorders...hiding in plain sight.

MacDonald AB.
Med Hypotheses. 2006;67(4):819-32. Epub 2006 Jul 7.

A life cycle for **Borrelia** spirochetes?

MacDonald AB.
Med Hypotheses. 2006;67(4):810-8. Epub 2006 May 22.

Plaques of Alzheimer's disease originate from cysts of **Borrelia burgdorferi**, the Lyme disease spirochete.

MacDonald AB.
Med Hypotheses. 2006;67(3):592-600. Epub 2006 May 3.

Transfection "Junk" DNA - a link to the pathogenesis of Alzheimer's disease?

MacDonald AB.
Med Hypotheses. 2006;66(6):1140-1. Epub 2006 Feb 14.

Clinical implications of delayed growth of the **Lyme** borreliosis spirochete, **Borrelia burgdorferi**.

MacDonald AB, Berger BW, Schwan TG.
Acta Trop. 1990 Dec;48(2):89-94.

Gestational **Lyme** borreliosis. Implications for the fetus.

MacDonald AB.
Rheum Dis Clin North Am. 1989 Nov;15(4):657-77. Review.

Temporal arteritis associated with **Borrelia** infection. A case report.

Pizzarello LD, MacDonald AB, Semlear R, DiLeo F, Berger B.
J Clin Neuroophthalmol. 1989 Mar;9(1):3-6.

Use of an autologous antigen in the serologic testing of patients with erythema migrans of **Lyme** disease.

Berger BW, MacDonald AB, Benach JL.
J Am Acad Dermatol. 1988 Jun;18(6):1243-6.

Lyme disease. A neuro-ophthalmologic view.

MacDonald AB.
J Clin Neuroophthalmol. 1987 Dec;7(4):185-90. Review.

Stillbirth following maternal **Lyme** disease.

MacDonald AB, Benach JL, Burgdorfer W.
N Y State J Med. 1987 Nov;87(11):615-6.

Human fetal borreliosis, toxemia of pregnancy, and fetal death.

MacDonald AB.
Zentralbl Bakteriol Mikrobiol Hyg A. 1986 Dec;263(1-2):189-200.

Serological evidence for simultaneous occurrences of **Lyme** disease and babesiosis.

Benach JL, Coleman JL, Habicht GS, MacDonald A, Grunwaldt E, Giron JA.
J Infect Dis. 1985 Sep;152(3):473-7.