The Nanobacteria Link to Heart Disease and Cancer

Nanoparticles are implicated in the harmful calcification that's common to many illnesses. A simple treatment is now reversing the symptoms, especially in heart disease, so why aren't the health authorities telling patients and doctors about it?

Extracted from Nexus Magazine, **Volume 12, Number 5** (August - September 2005)
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From our web page at: **www.nexusmagazine.com**

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Based on the book *The Calcium Bomb*
by Douglas Mulhall and Katja Hansen
(The Writers' Collective, 2005)

Millions of seriously ill patients are unaware that heart disease is being measurably reversed with an approach pioneered by researchers at the National Aeronautics and Space Administration (NASA) and in Finland, aided by Mayo Clinic and Washington Hospital Center findings. This approach is now prescribed by hundreds of doctors for thousands of patients. A similar approach has been developed with prostate disease at the renowned Cleveland Clinic in Florida. According to doctors, both approaches

are practical options for those whose other medicines and surgery have failed. So why aren't other desperately ill patients whose treatments don't work being told about it?

In July 2004, the medical journal *Pathophysiology* published a peer-reviewed research paper with the innocuous title "Calcification in coronary artery disease can be reversed by EDTA–tetracycline long-term chemotherapy".1 In plain terms, it meant that hardening of the arteries was being reversed. Not only were rock-hard calcium deposits being reduced, but chest pains were being resolved in most patients and bad cholesterol levels were being cut beyond what other medicines had achieved. The findings were important for patients whose other drugs and surgery weren't working, i.e., the "cardiac cripples", whose numbers are in the millions and whose doctors have told them there is nothing more to be done. They were the ones who responded most favourably to the new approach.

Then, in February 2005, a paper published in the prestigious *Journal of Urology* by researchers from the Cleveland Clinic, one of the leading urology hospitals in America, reported "significant improvement" in chronic prostatitis—a growing problem for millions of men—again, where other approaches had failed.2

The studies, although otherwise separate, had a compelling link. They used a cocktail of well-known, inexpensive medicines that have been around for half a century but were never before used in this combination. Both reports urged more studies to confirm their conclusions, and emphasised that not every patient experienced a reversal; only a majority did. Nonetheless, the results were encouraging. Chronic diseases that had befuddled modern medicine were being reversed.

To put a human face on this, take the case reported by Dr Manjit Bajwa of McLean, Virginia, who did not participate in the clinical studies but whose experience with one patient paralleled study results. Dr Bajwa reported in a testimonial of 5 May 2005:

"Two years ago I had a patient with severe coronary artery disease with a 75–85% blockage in left coronary and two other arteries. Open heart surgery was recommended as stents could not be put in. The patient was told he would probably die within two weeks if surgery was not performed.

"He declined surgery and instead chose chelation. [Author's note: chelation in this case is an intravenous form of heavy metal removal.] After twenty-five treatments of chelation, his angina *worsened* [author's emphasis]. With [his] heart calcium score of 2600, I started the nanobacteria protocol. Within two to three weeks his angina abated. He was able to return to all his normal activities and exercises in two months.

"Nanobacteria protocol helped this patient measurably, when other treatments had failed. I am quite impressed with his results. With heart calcium scores of 750 or more, nothing else seems to work."

Bajwa and her patient are far from alone. In Santa Monica, California, general practitioner Dr Douglas Hopper said he recorded impressive results with a diabetic patient when he used the treatment to help her recover from congestive heart failure. Hopper then put his patient on the same treatment used in the clinical study: a regimen of tetracycline, EDTA and nutraceuticals,3 administered by the patient at home. Note that this was not intravenous chelation, which has been broadly analysed and critiqued, but, instead, a mix of oral and suppository treatments.

In Toledo, Ohio, cardiologist Dr James C. Roberts, who pioneered early patient treatment with this approach, has on his website case histories from dozens of patients who have shown remarkable improvement. In Tampa, Florida, cardiologist Dr Benedict Maniscalco, who supervised the clinical study [*Pathophysiology* study,

referenced previous page], reports that patients who stayed on the treatment after the study was completed showed dramatic reductions in their heart disease symptoms. There are many more examples.
Normally results such as these, when reinforced by clinical studies, however preliminary, would be cause for loud celebration. If the findings had been reported by a major pharmaceuticals company, they could have easily made the front pages of medical news services because, until then, no one had reported reversing the symptoms of such diseases to such an extent. More encouraging still, because the medicines have been around for many years and their side effects are minimal and well known, the new approach is already available across the USA and used with thousands of patients. That leaves thousands more doctors with millions more patients who might benefit right now. On top of that, a blood test based on the new approach has been used to identify heart disease early in patients who show no outward symptoms.
Why, then, has the response from government authorities, medical associations and health experts been cavernous silence?
To understand this requires looking at a scourge that has been with us for millennia, and which science has been at a loss to explain until now. It is known as *calcification*.

CALCIFICATION
Calcification is a rock-hard mix of the most plentiful minerals in the body: calcium and phosphorus. Normally this calcium phosphate mix is essential for building bones and teeth. But as we age, and sometimes when we are still young, some of it goes haywire, stiffening arteries, roughing up skin, destroying teeth, blocking kidneys and salting cancers.
The arithmetic is frighteningly easy. Calcification doubles in the body about every three or four years. We can have it as teenagers and not notice, although it mysteriously accelerates in some athletes. Then as we age and also live longer, it becomes so endemic that most people over seventy have it.
For decades, calcification has been growing imperceptibly in tens of millions of baby boomers. Politicians and pundits are among the high-profile victims of this slow-motion explosion that is ripping apart healthcare with skyrocketing treatment costs. In December 2004, doctors diagnosed US President George W. Bush with one of the more commonly known forms: coronary artery calcification. Former President Clinton required emergency surgery because doctors missed much of his calcification when they used older tests to track it. Vice President Dick Cheney and many of his Senate colleagues are calcified. At least three sitting US women governors have had it in breast cancer as well. And they are not alone. Media types who cover politics or poke fun at it haven't escaped. Larry King and David Letterman are both calcified, as are many ageing news anchors. A much younger CBS *Early Show* co-host, Rene Syler, has it too.
As we learn more about it, calcification is competing to be the leading medical disorder. Although it is nowhere on the "Leading Causes of Death" list, it contributes to most diseases that kill us, including heart disease, diabetes and cancer. The numbers are staggering. For the 60 million Americans who have heart disease, most have calcification. Of the millions of women who develop breast or ovarian cancer or who have breast implants, calcification is a warning. Men with prostate disease often have it, as do kidney-stone sufferers. Athletes with stress injuries like bone spurs and tendonitis get it frequently.
Most of us don't know the pervasiveness of calcification because it has a different name in many diseases, and here are just a few: dental pulp stones, hardening of the

arteries, kidney stones, pitcher's elbow, bone spurs, microcalcification in breast cancer and "brain sand".
Unsuspecting patients aren't the only ones in the dark. Many doctors are unaware of new studies that show calcification is toxic, causing acute inflammation, rapid cell division and joint destruction. Oddly, these nasty effects are well known to specialists who study calcification in arthritis, but awareness of them hasn't translated very well to the cardiovascular community, with the result that calcification is still misperceived by many as an innocent bystander instead of an inflammatory devil.
The double-think about calcification is illustrated by how it is treated in breast cancer. When microcalcification is detected in the breast with routine scans, it is a warning sign for cancer and the deposits are biopsied for malignancies. This was the case, for example, with Connecticut Governor Jody Rell in early 2005. Doctors found cancer in the calcium deposits in her breast before scans detected a tumour. This let them surgically remove it before it spread to her lymph nodes.
That typifies one perverse advantage of calcification: it helps doctors pre-empt more serious disease. In some ways, it is a canary in the mine of the body. And yet, if cancer is not found in calcium deposits, these are often declared as "benign" and patients are told there is nothing to worry about.
The same thing goes for heart disease. Coronary artery calcification is seen as an excellent predictor of the illness. Tens of billions of dollars are spent every year on scanning technology to identify the telltale thin white lines that betray its presence. Yet most doctors see calcification in the arteries as something that comes along later once the disease takes hold, despite evidence that calcium phosphate crystals generate the same type of inflammation that, according to cardiologists, plays a big role in heart attacks.
Incredibly, with all the advanced detection techniques, there has been no way to find calcium deposits where they get started in the billions of capillaries in the human body—so, without being able to see the starting point, doctors often conclude that what they don't see isn't there. But make no mistake: calcification is there, and it is a medical disorder. It was registered in 1990 as a disorder under the International Classification of Diseases list of the World Health Organization and was adopted by WHO member states as of 1994 (see **http://www.who.int/classifications/icd/en/**).
When well established, calcification stares defiantly at radiologists every day from X-rays as it multiplies incessantly. There has been no proof of where it comes from, and there is no known way to prevent it or sustainably get rid of it without removing it surgically. Due to its gestation period of years before it triggers real trouble, it has just begun sucking the life out of baby boomers and their healthcare budgets.
Among its more exotic effects, it threatens space exploration when it disables astronauts with unexpected kidney calcification and it is a budget-breaker for pro-sport-team owners who lose athletes to its ravages. At the more mundane level, it complicates root canals and it disrupts the lives of otherwise healthy young people when it strikes as kidney stones. Worst of all, it infiltrates plaque in heart disease and stroke and it plugs bypasses and stents used to fix our internal plumbing.
The US National Library of Medicine holds thousands of research documents referencing calcification, and various medical journals cover it in depth. GE Healthcare, Toshiba, Philips and Siemens sell thousands of machines for detecting it.

TREATMENT A THREAT TO PHARMCO PROFITS

But with all this money being thrown at calcification, there has been virtually no success at finding the cause. So when researchers such as those at Mayo Clinic and NASA find something that seems to cause it, and clinical studies show that a new

approach seems to get rid of it, you'd think that most of the medical establishment would be rapt with attention, right? Wrong.
Only a few small studies have been co-financed by the National Institutes of Health (NIH) to look into this, and neither has to do with the treatment. The only thing the Food and Drug Administration (FDA) seems to have done is to make rumblings about whether the treatment is legitimate, although the active ingredients—tetracycline and EDTA—have been FDA approved for other uses for decades. So far, no government agency has made public note of the peer-reviewed studies that many physicians say are so promising.
According to doctors familiar with the approach, here are a few reasons why the treatment has not been given the attention that it seems to merit...
• The most perturbing for patients: the treatment is relatively inexpensive and produces poor profits compared to other drugs. It is exponentially cheaper than open heart surgery. Because it does not have to be taken for life at full dose—as is the case with most other heart drugs—it does not provide the steady cash flow that other medicines do.
• Although the treatment is initially used alongside other medicines as a precaution to make sure patients don't switch prematurely and suffer problems, evidence suggests that the new approach might replace more profitable blood thinners and anti-inflammatories that are staples of the pharmaceuticals industry.
• And if the approach continues to reverse coronary artery disease, it will cut down on expensive surgical procedures that are the financial mainstay of hospitals.
That's not to say surgeons don't want to get rid of calcification. New stents that go into arteries are specially coated with time-release drugs that seem to ward off calcification. But that only happens where the stent is located, not in the other 99.999 per cent of the arteries.
Also, the EDTA–tetracycline–nutraceutical combo that has demonstrated such promise is not the only treatment shown to work. A group of drugs known as bisphosphonates, used for example to treat osteoporosis, has been shown to be effective in the lab against some calcification. But bisphosphonates can have nasty side effects, especially with the type of regular application that seems to be necessary to reverse heart disease in seriously ill patients. Due to these risks, the only present approach that seems to be safe and effective in reversing heart disease is the one that uses the EDTA–tetracycline–nutraceutical mix.
Critics claim the reason why the treatment isn't adopted more broadly has nothing to do with money but instead with science. They say researchers can't show how the treatment works.

NANOBACTERIA DISCOVERED IN OUR BLOOD
It all comes down to a sub-microscopic blood particle known as a nanobacterium, discovered in 1988 by Finnish researcher Dr Olavi Kajander at Scripps Research Institute in California.
The particle has a special habit no other blood particle has been known to possess: it forms a rock-hard calcium phosphate shell that is chemically identical to the stuff found in hardening of the arteries, prostate disease, kidney disease, periodontal disease and breast cancer. The problem is, the particle is so small that it apparently can't accommodate nucleic acid strings that, according to commonly accepted wisdom, would let it replicate on its own and be alive. So scientists are stumped over how it manages to self-replicate.
For 15 years, microbiologist Dr Neva Ciftcioglu (pronounced "shift-show-lew") has been peering with an electron microscope at this blood particle that critics say doesn't

live. But according to NASA colleagues and Mayo Clinic researchers, the question of whether it lives is less important than what it does. Despite or perhaps due to its tiny size and genetic elusiveness, this speck may be the Rosetta stone for a calcified language found in most diseases on the Leading Causes of Death list.
Like her science, Ciftcioglu's life is full of unusual turns. Being a woman microbiologist from Turkey speaks volumes. Throw into that her once-fluent Finnish, a position at NASA and professorships on both sides of the Atlantic, and you've got a determined character struggling with a stubborn scientific cryptogram.
Ciftcioglu's work with nanobacteria began when her PhD scholarship took her to the University of Kuopio in Finland, where alongside her once mentor, biochemist Olavi Kajander, she developed the antibodies necessary to find the particle in the human body. A decade later, her work caught the eye of NASA chief scientist Dr David McKay and she ended up at the Johnson Space Center in Houston, gathering science awards that testify to her success.
Now Ciftcioglu and long-time collaborator Kajander, who discovered the nanoscopic artifact, stand at the eye of a growing storm. They and their colleagues are garnering praise and scorn because they claim to have evidence for why most of us are literally petrified by the time we die. More profoundly, their work may influence how new life is found on Earth and other planets.

SELF-REPLICATING NANOPARTICLES
An intense dispute has raged for years that connects how we look for infection in the body with how we look for bio-kingdoms on Earth and throughout the universe. Researchers have long sought terrestrial extremophiles that tell them what might survive on Mars, while others doubt the wisdom of looking for life on Mars at all. The mystery remains: what is the most effective way to find novel organisms?
Until recently, every life-form was found to have a particular RNA sequence that can be amplified using a technique known as Polymerase Chain Reaction (PCR). Nucleic acid sub-sequences named 16S rRNA have been universally found in life-forms. By making primers against these sub-sequences, scientists amplify the DNA that codes for the 16S rRNAs. Resulting PCR products, when sequenced, can characterise a life-form.
One high-powered group persuaded NASA with a "Don't fix it if it ain't broke" line and lobbied successfully to use the same method employed for years: get a piece of RNA and amplify it. The group—led by scientists such as Dr Gary Ruvkun at the Department of Genetics in Massachusetts General Hospital, Boston, and advised by luminaries such as Dr Norman Pace at the University of Colorado—got money from NASA to build a "PCR machine" that would automatically seek such clues in harsh environments such as those found on Mars.
Other scientists known as astrobiologists say the PCR machine approach is a waste of money because such amplification shows only part of the picture—not what nature might have done on other planets or, for that matter, in extreme Earthly environments.
However, their argument always suffered from lack of evidence—that is, until 2003 when scientists associated with the San Diego–based Diversa Corporation and advised by Professor Karl Stetter, of the University of Regensburg, Germany, published the genome of an extremophile known as *Nanoarchaeum equitans*, which Stetter's team had discovered in Icelandic volcanic vents.
N. equitans was special because it had the smallest known genome found so far, but it also had another intriguing trait. With Nanoarchaeae, the particular 16S rRNA sequence found in other life-forms wasn't in the place that it was expected to be and

did not respond to conventional PCR tests. The 16S rRNA sequence was different in areas addressed by the PCR primers and did not amplify. Stetter noted that the so-called universal probes that work with humans, animals, plants, eukaryotes, bacteria and archaeae did not work in this organism.

How, then, was the discovery made if the organism couldn't be sequenced in that way? Stetter had found that the organism's sequence where the traditional "universal" primers are located was abnormal. This finding let him use other means to sequence the gene. In reporting their discovery in the *Proceedings of the National Academy of Sciences*,4 the Stetter team observed that the information-processing systems and simplicity of Nanoarchaeum's metabolism suggests "an unanticipated world of organisms to be discovered". In other words, it might be the tip of a nano-lifeberg.

Stetter's finding gave ammunition to scientists such as Neva Ciftcioglu who say they have found other extremophiles, including human nanobacteria, that cannot have their nucleic acids detected with standard PCR amplification.

One of the differences between Stetter's *N. equitans* and the nanobacteria found by Ciftcioglu and Kajander's team is that Nanoarchaeae need another organism to replicate, whereas at least some nanobacteria seem to replicate by themselves. Another difference is that Nanoarchaeae are slightly wider: 400 nanometres compared to 100–250 for nanobacteria. The greater size allows for what conventional wisdom says is the smallest allowable space for life-replicating ribosomes.

Which leads to the question: how do nanobacteria copy themselves? Evidence for self-replicating nanoparticles has been around for years in everything from oil wells to heart disease, but failure to sequence them using regular PCR led some to dismiss them as contamination or mistakes. However, researchers have found characteristics that make the particles hard to explain away. They replicate on their own, so are not viruses. They resist high-level radiation, which suggests they are not bacteria. They respond well to light, where non-living crystals don't. So if they aren't viruses, regular bacteria or crystals, what are they?

Some supporters of standardised 16S rRNA tests are quick to discount nanobacteria. That's not surprising. If a novel nucleic sequence holds true with other extremophiles as with *N. equitans*, then a machine that searches for life using standard PCR tests might miss them and be obsolete. Conscious of this, the PCR machine team has said that as part of their work, they plan to "search for the boundaries" of the 16S sequences, but what exactly that means and how they plan to overcome the problem hasn't been set out yet.

Reputations, money and perhaps the foundations of life ride on the 16S rRNA dispute. Resolving it may determine who gets money to find the next great biological kingdom.

NANOBACTERIAL INFECTION

How relevant is the outcome for human welfare? In 2004, researchers reported finding nanobacteria in everything from heart disease to cancer and kidney stones. Medical researchers reported to the American Heart Association's Scientific Sessions 2004 that a test for nanobacteria is an accurate predictor of heart disease risk. But the work that these researchers say may already have saved lives has been ridiculed by critics who claim that such nanobes don't exist, which in turn has made funding for basic research hard to get.

Who is right? One well-respected astrobiologist observer qualified the struggle this way: "Unless we declare [the nano-organism scientists] incompetent, then the info they have gathered is rather compelling that something interesting is going on."

That's why a few intrepid investors have plopped US$7 million and counting into a Tampa biotech start-up devoted exclusively to Ciftcioglu and Kajander's discoveries about the calcifying particle. For the big pharmaceuticals companies that's pocket change, but for these entrepreneurs it's a pocketful of faith that's been keeping them on edge for years. And it's starting to show some results, as published research from NASA, Mayo and various universities indicates. Moreover, despite its relative financial insignificance, this venture may end up wagging the dog due to a long-overdue paradigm shift in, of all things, the space program.

After decades of resistance, NASA—provoked by successful upstart private projects such as the X Prize, which led to the first private foray into space—is now collaborating with fledgling companies, instead of just corporate behemoths, on intractable problems: in this case, why perfectly healthy astronauts come down with kidney and other calcifying disorders. The result: in March 2005, NASA's Johnson Space Center put the finishing touches on a tightly secured lab aimed at decoding nanobacteria found at the core of kidney stones. After some serious growing pains, the lab is finally beginning to look into what Ciftcioglu and Kajander began examining so many years ago: the genetic content of nanobacteria. Meanwhile, Ciftcioglu and others have published results showing that nanobacteria multiply five times faster in weightlessness than in Earth gravity,5 which may explain why calcification shows up so suddenly in space.

But while researchers argue over what this nanobacterium is and how it multiplies, doctors are finding that, when they treat it with a medical cocktail, their patients improve.

Nor is it unusual that doctors are succeeding before science figures out why. Antibiotics were used successfully against bacteria long before scientists deciphered DNA. Doctors stopped infecting patients by washing their hands long before they were able to identify all the viruses and bacteria that they inadvertently transported from patient to patient.

Most recently, a vaccine that prevents cervical cancer has been put on the market. It apparently works by targeting the human papilloma virus. Problem is, researchers can't show exactly how the virus causes cancer; they can only show that when it is stopped, the cancer doesn't occur. But that hasn't prevented the drug from being patented and put on the market. The history of medicine is full of such examples where patients improve with treatments whose mechanisms aren't fully understood at the start.

The idea that infection could be at the heart of chronic illness is intriguing because it has been around for more than a century but only now is regaining favour due to discoveries of, for example, a vaccine that prevents cervical cancer (as mentioned above). The resulting debates over infection in chronic disease have a novel twist because they are driven by new diagnostic technologies that give researchers the molecular accuracy required to confirm older theories about infection. On one hand, clinical results suggest antibiotics alone do not prevent the rate of heart attacks among coronary patients. On the other, discoveries that infection is responsible for most stomach ulcers and some cancers support the long-held idea that the same might be true in heart disease, if only science could find the right infection and get rid of it.

Some say that nanobacteria may be one such infection. Yet scientists' inability to fully explain the genetics of nanobacteria is being used by high-ranking medical authorities as an excuse to ignore the pathogen and its treatment. This is especially perplexing because scientists involved in the discoveries work at some of the highest level institutions in America, including NASA, Mayo Clinic, Cleveland Clinic,

Washington Hospital Center and many others, and are not only respected in their field but are also award winners. Other centres of excellence internationally, such as University Hospital in Vienna, have also isolated the pathogen and observed it in diseases such as ovarian cancer.
For decades, scientists have shown that disease can be caused by contaminants that are not "alive" and cannot replicate on their own. Environmental toxins, many viruses and, most recently, particles known as *prions* have all been shown as players in disease processes, although they cannot self-replicate.
So it seems unusual that nanobacteria would be discounted just because no one has yet shown how they multiply. Which takes us to the question of where nanobacteria might come from.

NANOBACTERIA-CONTAMINATED VACCINES
When Dr Olavi Kajander discovered nanobacteria in 1988, he was not looking for disease at all. He was looking for what was killing the cells that are used to develop vaccines. Labs everywhere have a vexing and expensive problem with these widely used cell cultures: they stop reproducing or die after a few generations and have to be thrown out.
Kajander surmised that something invisible was killing them; and when he incubated supposedly sterile samples for more than a month under special conditions, he got a milky biofilm. That biofilm contained particles that he later named *nanobacteria*, unaware at the time that some of their characteristics made them quite distinct from bacteria.
The serum that Kajander used to grow the nanobacteria came from the blood of cow foetuses. Serum from the UK especially was full of nanobacteria, but a much later study also concluded they were present in some cow herds in the eastern US. In other words, nanobacteria are in cows, and cow blood is used to develop many vaccines. Kajander emphasises that this should not stop people from using vaccines, because the immediate risk from diseases that the vaccines are intended to prevent is relatively higher than the calcification risk in the short term. Nonetheless, the potentially explosive implications of contaminated vaccines and cow by-products would be clear to everyone at government agencies who has examined the issue.
In that context, a series of hotly disputed discussions went back and forth between Kajander and Ciftcioglu and disease prevention agencies. And it certainly wasn't a secret because the *Medical Letter on the CDC & FDA* (10 June 2001) published an article entitled "Nanobacteria Are Present In Vaccines; But Any Health Risks Remain Unknown", explaining that nanobacteria had been discovered in some polio vaccines.

The minutes of a subsequent meeting of the FDA Center for Biologics Evaluation and Research (CBER) advisory committee in November 2002 reveal an extraordinary decision by the committee members: they elected *not* to investigate the potential contamination. According to the minutes they based their decision on a lone experiment, suggesting that what Kajander had found was a contaminant often found in lab experiments and nothing new. In other words, they maintained that Kajander had made a mistake.
But one of the glaring problems with the NIH-funded experiment performed around late 1999 or early 2000, as shown in the published paper about the results,6 is that it did not use a control sample that could have been provided by Kajander. In other words, the experiment never examined the particle that Kajander had discovered, but instead relied on growing the particle independently without knowing if it was the same one Kajander was referring to. Moreover, the experiment was never repeated

after the preliminary finding. On that very slim basis, according to the CBER committee minutes, the whole issue of nanobacteria was dismissed as a potential contamination issue for the time being. Since then, papers have been published showing that nanobacteria have been grown in labs around the world and that patients began to improve when the pathogen was targeted in disease. Nonetheless, neither the FDA nor NIH has indicated much readiness to re-investigate the vaccine contamination issue or the nanobacteria treatment.

What might be the price for this delay in researching nanobacteria? Annually, millions of heart disease patients go through agony or die because drugs and surgery prescribed for them haven't worked. For this last-ditch group, the choices are simple: try something new or die.

The question that the NIH and FDA may one day face is: when such promising early evidence was being reported and so many patients had exhausted their other options, why were doctors not advised of this new possibility so that they could at least tell patients and make some informed decisions?

Researchers like Ciftcioglu and Kajander, along with cardiologists like Benedict Maniscalco plus experienced general practitioners such as Douglas Hopper, profess frustration that so many patients and their doctors are not being given the information that could help them, especially in last-ditch situations. Meanwhile, calcification continues its relentless march in millions, and the human and financial costs are mounting.

POSTSCRIPT

In May 2005, Dr Olavi Kajander delivered a sobering message to a joint meeting of the US FDA and the European Medicines Agency on viral safety when he presented new evidence to support something first published in 1997: that vaccines are contaminated with nanobacteria.

Since 1999, government agencies have done virtually nothing to investigate the claim, due largely to that NIH experiment which failed to use particles discovered by Kajander as control samples; so now that the vaccine contamination has been officially reported to authorities, the question is: what will be done?

Then on 24 June 2005, a "smoking gun" was announced about calcium deposits in heart disease. British researchers published proof in the leading medical journal *Circulation Research*7 that calcium phosphate crystals cause inflammation in the arteries. Inflammation is a leading cause of heart attacks, but until now most cardiologists have believed calcification to be an innocent bystander in the inflammatory process. Because of that, calcium deposits were never targeted with treatment. If true, the British discovery would force a re-evaluation of the whole medical approach, not only to inflammation but also to the foundations of heart disease, looking at calcification as a prime culprit.

About the Author:

Douglas Mulhall is a leading nanotechnology journalist who appears often on nationally syndicated talk shows in the US. As managing director of the Hamburg Environmental Institute, he co-developed methods now used by government agencies to measure environmental impacts. His book *Our Molecular Future* (Prometheus Books, 2002) describes how to use nanotechnology as a defence against tsunamis and other natural disaster risks. His disease prevention experience comes from pioneering water purification technologies in China and South America. Mr Mulhall's communications background began with a Bachelor of Journalism (Hons.), progressed to (award-winning) documentary film making, then diversified

into management when he co-founded the first commercial TV network in the Republic of Ukraine. He has written articles for US media such as *News Day*, *The Futurist* and *The National Post* as well as for publications in Germany and Brazil. He contributed to the first *Financial Times* (UK) book on green business opportunities and has also written and edited a range of technology training books. Douglas Mulhall sits on the advisory boards of the Center for Responsible Nanotechnology and the Acceleration Studies Foundation. He has given invited lectures to organisations such as the National Research Council, the US EPA and the Institute of Medicine.

Editor's Note:
This article is based on material in the book *The Calcium Bomb: The Nanobacteria Link to Heart Disease & Cancer*, by Douglas Mulhall and Katja Hansen (The Writers' Collective, 2005; see review this issue), which was selected as a Finalist for the 2004 Book of the Year Award for Health by Foreword Magazine. For more information, visit **http://www.calcify.com**.

Endnotes:
1. Maniscalco et al., "Calcification in Coronary Artery Disease can be Reversed by EDTA–Tetracycline Long-term Chemotherapy", *Pathophysiology*, July 28, 2004.
2. Shoskes, Daniel A., Kim D. Thomas and Eyda Gomez, "Anti-nanobacterial therapy for men with chronic prostatitis/chronic pelvic pain syndrome and prostatic stones: Preliminary Experience", *J. Urology*, February 2005.
3. The ingredients are described in *The Calcium Bomb*, p. 94; they are: (1) nutraceutical powder (vitamins C and B6, niacin, folic acid, selenium, EDTA, L-arginine, L-lysine, L-ornithine, bromelain, trypsin, CoQ10, grapeseed extract, hawthorn berry, papain), 5 cm3 taken orally every evening; (2) tetracycline HCl, 500 mg taken orally every evening; (3) EDTA, 1500 mg taken in a rectal suppository base every evening. According to the representatives of the company that sells the nutraceutical/EDTA combo, the treatment works this way: the nutraceuticals boost the immune system, accelerate EDTA action and reduce inflammation; the EDTA strips off the calcium phosphate shell; and the tetracycline eradicates the nanobacteria. The tetracycline is also a chelator on its own and helps remove the calcium phosphate.
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