Chapter 44:

Interview with

Dr. Marco Ruggiero, M.D.

Ty: So, just tell us a little bit about yourself, Dr. Ruggiero. Where were you born, and what's your education?

Dr. Ruggiero: Well, I was born in Florence, in Italy, in 1956. So, I'm right at 60 years old.

Ty: Okay, 60 years old.

Dr. Ruggiero: 60 years old, yes.

Ty: Amazing.

Dr. Ruggiero: And I graduated from The School of Medicine of the University of Florence in 1980. Then I entered the military service, that in those days was compulsory, as a medical officer. And I was first exposed to the basics of biological and chemical warfare.

So, I began to learn a lot, and I began to be fascinated with the field of research, in particular in molecular biology. And because of this, in 1984, I moved to the United States. I went to Burroughs Wellcome in Research Triangle Park in North Carolina, where I had the honor and the privilege to work with a Nobel Laureate, Sir John Vane.

And even to publish a seminal paper on protease and cyclooxygenase inhibitors with Dr. John Vane, Nobel Laureate. Then I moved to the National Cancer Institute of the National Institute of Health in Bethesda, Maryland, where I worked with top scientists, like professors Stuart Aaronson and even I met one of the mentors of my life, Professor Peter Duesberg, who was visiting from Berkley.

And we shared the office for quite a few months. And I became fascinated with his theories about the genesis of cancer, and most importantly in those days, about the role of HIV in the protogenesis of AIDS that was just exploding in those days of the mid-80s.

And then after five years at the NIH, I moved back to Italy. I worked for a couple of years in the pharmaceutical industry, near Milan. Then I got my tenure at the University of Florence, where I kept on teaching, first as Associate Professor, then a full Professor, for about 20 years.

And during these years, researcher in the United States, Italy and also in England. I published about 150 peer reviewed papers that you can retrieve from PubMed, basically in the fields of oncology and neurosciences. So, I've always kept my feet in both fields, in oncology and neuroscience.

And even I've published some papers describing how the two fields may be interrelated. That's why I'm here now, for the third year in a row, at the Autism One conference, talking about autism, even though I must say I'm not an autism doctor.

But let's say I'm an autism researcher. Because autism, just like many neurological conditions, shares many things in common with cancer. Why? Simply because at the cellular and molecular level, cells have the same basic mechanisms.

So, if we can target those mechanisms, we can think that we can do something, both for cancer or for neurological conditions. About three or four years ago, I had the privilege to meet and then to work, research with Dr. Jeff Bradstreet.

We published two seminal papers, and one tragically after his death, was published at the

end of 2015. Where we put forward a hypothesis that might explain once and for all the etiology, which means the cause and the protogenesis of autism.

And at this meeting here, at AutismOne, I presented those results. And most important, how, based on this discovery of ours, we can approach this epidemic of autism, that as we know, is on the rise all over the world.

Ty: You worked for National Institutes of Health and the NCI, the National Cancer Institute?

Dr. Ruggiero: Yes. I did work at the end of the 80s, beginning of the 90s, and together with the research group over there, we published several papers in major journals, like *Science, PNS,* which is *Proceedings of the National Academy of Science of the United States*, *Journal of Biochemistry*, and also on the prestigious *Oncogene Journal*, describing these genes that are involved in the genesis of cancer.

So, it was a very fruitful period of my time. I had the opportunity to work with top scientists over there. I was kind of a junior in those days, but I did my job. I did my part. And so, this is a sizeable part of my CV.

Ty: So yeah, you have experience with some pretty reputable institutions here in the U.S. You worked with big pharma over the sea in Italy, correct?

Dr. Ruggiero: Yes.

Ty: And then one of the things you mentioned is you had the privilege of working with Dr. Peter Duesberg.

Dr. Ruggiero: Yes, I did.

Ty: And regarding the etiology of HIV and/or AIDS, right?

Dr. Ruggiero: Right.

Ty: So, answer some questions that I have about that, regarding you kind of hear HIV/AIDS used synonymously. Are they the same thing?

Dr. Ruggiero: No, they are not the same thing. And if you talk with experts all over the world, they will all agree that HIV infection is one thing, and AIDS, which is the syndrome of immune deficiency, is another thing. The two things do not necessarily coincide.

And I began to learn this in the early 80s, when I had the serendipitous privilege, because we didn't choose this, to share the office with Professor Peter Duesberg. Actually, Professor Peter Duesberg was visiting the NIH as a visiting scientist, and I happened to share the office simply because there was no other room available.

And so, they put us in the same room, and we became friends quite immediately, because he is a lovely person. And I became fascinated with his idea that contrary to what other scientists, mainly Dr. Robert Gallo, were saying in those days.

Please remember, we were in the first floor of building 36 at the National Cancer Institute, and Robert Gallo was at the sixth floor. So, we were in the same identical building. We went to the same cafeteria. And by the way, Gallo is of Italian origin, and there were many Italians working with Gallo in those days.

So, we went partying together. We were very close community in those days. And so, it was a kind of very fascinating debate about the role of HIV in AIDS. As you know, Gallo was the first one to propose that HIV was the cause of AIDS, and you remember the famous press conference with then Minister of Health of the United States.

And in the very same days, Peter Duesberg had begun to question such a theory. And being Peter Duesberg, one of the most renowned world virologists, he was questioning the theory that HIV was the only cause of AIDS, that was at the same time necessary and sufficient. So, he began questioning that theory about 30 years ago, and still he has not stopped questioning such a theory.

And then Montagnier came into play. And as you know, Montagnier, not Gallo, was awarded a Nobel Prize for the discovery of HIV. Maybe you remember all the controversies on who did discover HIV. In the end, Montagnier and not Gallo, got a Nobel Prize for the discovery of the HIV.

And as you know, in a sense, Montagnier has always been very doubtful about the exact role of HIV in the genesis of AIDS, and he has said repeatedly that if you have a good immune system you can get rid of the virus in a few weeks.

But if you don’t have a good immune system then the virus can stay there, cause chronic inflammation and can indeed bleed to the immune system, and it is a chronic inflammation, the chronic fight between the immune system and this virus that the immune system cannot get rid of that eventually may lead to immune deficiency.

So, Montagnier many, many times has said this, and I think that we all agree. And in the end, I think that the position by Peter Duesberg and these so-called AIDS re-thinkers, or dissidents, coincides somehow with the idea of Luke Montagnier saying that the virus, by itself, is not sufficient.

You need to have other co-causes, that could be malnutrition, mainly protein malnutrition, as you quite often observe in Africa, or other things like exposure to toxic substances from recreational drugs to other substances, and so on.

And by the way, this is common for all infectious diseases. It’s not particular of HIV. I always make the example of tuberculosis. Something that here in the United States is not so frequently understood, because fortunately, tuberculosis has never been endemic in the United States.

But in Europe, and in Southern Europe, as I told you I come from Italy, tuberculosis, before and after World War II, was absolutely endemic. Which means that everybody was exposed to the microbacteria in tuberculosis, including myself.

And because of this, like all the Italian population of those days, I have scars of tuberculosis in my upper lungs, which is absolutely normal. And my father was a radiologist. He told me “Don’t be afraid. This is absolutely nothing. Remember, you have such a scar. If in the future somebody says “Oh, what you have?” Nothing. It’s a scar because I was exposed to the tuberculosis agent.”

Because of this, I could say I am seropositive for tuberculosis, which simply means that I am defended against tuberculosis. So, I always score positive at a Tb test, like all Italians of my age, but this doesn’t mean that I have active tuberculosis.

This doesn't mean that I am coughing blood, fortunately. And most likely, as long as my immune system stays healthy, the microbacteria in tuberculosis will never bother me and I will die of some other cause. But it is very unlikely that tuberculosis will ever bother me.

Well, a similar reasoning can be applied to the HIV. We know that there are patients who are HIV positive and who, for 20 years or 30 years, do not develop AIDS. And many of them, they don't know of being HIV positive.

So, that's the reason why they don't take drugs, simply because they don't know to be HIV positive. And then they discover it, just serendipitously maybe 20 or 30 years after having been supposedly infected. And there are many, many statistics demonstrating that in certain instances, the difference in survival is the same whether you begin taking drugs early in the course of infection or late in the course of infection.

So, there are many, many controversies, many papers. The field of AIDS is one of the most prolific in terms of publications. If you go to PubMed, you'll probably find more publications about HIV and AIDS than on cancer, not to mention deadly diseases like heart conditions that kill definitely more people than cancer or AIDS and HIV.

But the field has been very prolific, very well-funded. So, there are thousands of studies. And essentially, if you pick and choose a study, you can find everything in the country of everything.

Ty: Right, you can cherry pick.

Dr. Ruggiero: Right. So, that's why it's rather difficult to orient yourself in such a complex field. You may know that in 2011, we eventually published a paper together with Peter Duesberg, Professor Henry Bower of the Polytechnic of Virginia, plus many other HIV/AIDS doctors and researchers.

This paper was published in a rather obscure journal called *The Italian Journal of Anatomy and Embryology*, that is the official organ of the Italian Society of Anatomy and Histology. And even though it was published in a rather obscure journal, it received an incredible number of hits, because now you can see everything on PubMed, and therefore, everybody who is connected to the internet can take a look. Even at obscure journals that years earlier could not have been found anywhere else, anywhere but in the local libraries.

So, in this paper, we demonstrate how actually many numbers that have been attributed to HIV and AIDS are not consistent. And I suggest you go and take a look at that paper and you will find many, many surprises. But the title in itself it's intriguing, because it questions whether there has ever been an epidemic of AIDS in Africa or elsewhere. So, I don't want to spoil the surprise. The paper is freely available on the internet.

Ty: What's the title?

Dr. Ruggiero: Well, just look for Duesberg and Ruggiero in PubMed, and you will find it.

Ty: Okay. I'm going to definitely check that out. So, what you said, Dr. Ruggiero, makes a lot of sense regarding AIDS/HIV link or cancer, or other diseases. We're here at Autism One in Chicago. And so, we've had a lot of children here that are vaccine-injured. But we see not everybody gets the disease.

You're exposed to the same vaccines, or you've been exposed to the same viruses or bacteria, and some people get sick, and some people don't. And so, the key is, really, is

you've already gone over it. It's the immune system. If the immune system's in order, then that's what separates the people that get sick from those that don't. Am I correct?

Dr. Ruggiero: You're absolutely correct. But I wish to point out another example, that it is even more poignant in this point. Let's talk, for example, about lung cancer. And if I ask you, which is the cause of lung cancer, what would you answer? Tobacco smoking, essentially.

Ty: Well, that's what we hear.

Dr. Ruggiero: That's what we hear. That's what has been demonstrating since the 40s. Just imagine this. In the middle of World War II, some German doctors, they had the time and will to discover the link between tobacco smoking and lung cancer, and they did it.

So, I think that was in 1942. But even earlier than that, scientists and doctors had postulated that there was a link between the increasing smoking of tobacco, because of the industrialization of cigarettes, and lung cancer.

Ty: And even though we did see magazine articles in the United States in the 1940s and 50s that showed that lung cancer was supposedly good for you.

Dr. Ruggiero: Yes, I remember.

Ty: We knew at that time that it wasn't.

Dr. Ruggiero: I remember. Well, that was not only United States. I think it was all over the Western World.

Ty: Okay.

Dr. Ruggiero: But let's talk about lung cancer, a topic that I've been studying in the past. I've published a number of papers on lung cancer. So, I think that the association between tobacco smoking, cigarette smoking, lung cancer, is very well-established.

Nevertheless, if we take the statistics of my country of origin, Italy, we see that every year there are about 4,000 people who die because of lung cancer, and they were non-smokers. Not even exposed to passive smoking. So, they were absolutely—they were breathing healthy air, we could say.

And nevertheless, 4,000 people. 4,000 people is a sizable number. So, what do you go and tell them, or their families, that they died and they had never smoked, and they were never exposed to smoking? So, this means that lung cancer may happen.

And tobacco smoking increases the probability, but if you don't smoke, you have no certainty that you will never develop lung cancer, and vice versa. You take heavy smokers, and out of 1,000 heavy smokers, 250, that is 25 percent, will die of lung cancer.

The other 75 percent will die of some other disease. Even in the case of lung cancer, where everybody thinks to know the cause and how to avoid the cause of lung cancer. Reality, medical science, is never black and white.

So, this means that if you smoke, you don't have the certainty of dying of lung cancer. But conversely, if you don't smoke and if you pay attention not to be exposed to any type of smoke or pollution, unfortunately, you don't have the certainty of dying of something else.

You may die of lung cancer just the same. So, this tells us. One thing is exposure to environmental factors. Then there is the individual response that is based both on genetics and epigenetics. The case of autism is the same.

You cannot find one single cause for autism. You can find a multitude of causes. And then the individual response. So, in the end, it's very difficult to identify one single cause. I would further elaborate that in medicine, there is almost never one single cause for one disease.

It's always a combination of multiple environmental factors, the individual response. And so, we may say that in the end, it is a rather serendipitous. That's why, together with Bradstreet, when we say we found a cause for autism, we are oversimplifying it. What we have found is what in medical terms we call "anthogenesis," which is how the causes help develop the disease. So, if you wish, we can elaborate on this.

Ty: Yeah, what did you and Dr. Bradstreet find when it comes to autism?

Dr. Ruggiero: Well, when it comes to autism, the story is rather complex, because the disease is complex. It was in 2013 and 2014 that being myself a radiologist, I developed a technique to study the brain of autistic children, older adults as well, with a common technique that is called ultrasonography.

So, the same ultrasonography that you use during pregnancy, or to find gallbladder stones, common ultrasonography. So, using a few technical tricks, I was able to adapt this common and inexpensive technique to study the brain.

And together with Dr. Bradstreet, we made a number of observations, and we found that in the brain of autistic children, there are sort of black spots, or black holes. In ultrasonography, black holes correspond to areas of accumulation of fluid.

We noticed that there was accumulation of fluid inside the brain, inside the grey matter, the cortex of the brain of autistic children. And also, we noticed that the degree of accumulation of fluid, that we called cortical dysplasia, was associated with the severity of the symptoms.

So, to make it simple, the more black holes we could identify, the more severe the symptoms were. Now we published this paper, these observations, in a prestigious journal that is called *Frontiers in Human Neuroscience*.

It is published by *Nature*. So, we're talking about the [indiscernible 0:20:09] of the scientific publishers. And this was in 2014. At that time, however, we didn't know which was the cause of the accumulation of this fluid inside the brain.

Now you can easily imagine that since the brain is inside a closed cavity, which is the skull, it cannot expand. Therefore, if there is fluid accumulating, the connections between neurons and glial cells, these are the cells of the brain, are disrupted.

And if this happens in a certain critical time of brain development, then you can easily expect that some serious, major defect in neuronal function may occur. In 2014, we didn't know, however, which was the cause of the accumulation of this fluid, and we were thinking about genetic terms like inflammation.

Inflammation may mean everything and nothing. Because if you don't know where this inflammation comes from, definitely those children had not meningitis or encephalitis, so

inflammation was rather a tame term to use to try to explain that accumulation of fluid.

Then in 2015, some researchers from the University of Virginia and from Canada, they made a seminal observation. It was unrelated to autism. They observed that in the brain there are lymphatic vessels, just like in all the other organs.

Now these lymphatic vessels, this lymphatic system, had gone unnoticed for centuries, if not millennia. And the anatomists who studied the brain and the meninges, they had never noticed such tiny lymphatic vessels. Because of this, it was thought that, in 2015, the brain was an immune-privileged organ.

It is an organ. It was sort of outside of the general immune system. We knew that it had its own immune system, but we thought the brain was separated from the rest of the body's immune system. Now with this discovery that the brain has lymphatic vessels, now the brain is part of the immune system, just like any other part of the body. Just like the liver or the spleen or the kidneys.

Now intuition by Jeff Bradstreet and myself was the following. Where does this lymph from the brain go? And we went back to the textbook of anatomy, and we knew that the lymph from the brain went into the deep cervical nodes.

So, I'm indicating my throat because the deep cervical lymph nodes are exactly located here, next to the jugular vein and the carotid artery. And what is interesting is that these deep cervical nodes, they drain the lymph also from the nose, the throat, the mouth.

Now what does this mean? That every time you have an infection or inflammation in your nose, in your mouth, in your throat, and this is extremely frequent, then these inflammatory cells, they end up in the deep cervical nodes.

That become inflamed. This means that they become clogged. And if they're clogged, they cannot drain the lymph from the brain. And the lymph accumulates inside the brain, and this explains those lesions that we had observed in the brain of autistic children one year earlier.

Now this was the turning point, because we had understood now why autism happens. If you have an ear, throat, nose, mouth infection, or inflammation, in a critical time window of brain development, such an inflammation reflects in the deep cervical nodes.

The deep cervical nodes become inflamed, become clogged. Because of this, the lymph cannot drain from the brain, accumulates. Accumulation of fluid inside a closed cavity, as the skull is, leads to disruption of neuronal connections.

And when this happens at a critical time of brain development, some significant damage may occur. Plus, there is another harmful side effect. If you block the circulation of lymph, you decrease the immunological defense of the brain.

So, the brain becomes more susceptible to all types of injuries, heavy metals, toxicants, whatever. And then there was, in the past six months, another observation of ours that truly changed our perspective of autism and many other neurological conditions as well.

Now I think that by now in 2016, everybody is aware that we are not as human as we thought we were. Because we all know now that in our body there are about 10 times more microbial cells than human cells. There are books on Amazon that are entitled *10 Percent Human*, which is true.

Because if we count our human cells, we end up with a figure. A different count of the microbial cells that are in our body, mainly in our gut, but not only there at this very moment, we end up with 10 times more microbial cells.

So, if we look at the number of cells, we are only 10 percent humans. But if we look at the number of genes, things are even worse for our human ego. Because the human genome is made by about 22, 000 genes, and the genes in the microbes that are in our body at this very moment are between 2 million and 8 million.

So, hundred, or maybe 5 or 6 hundred times more genes. And as you know, life is genetic information. Now all this is widely acknowledged. So, we know that we have this beautiful organ, it is called a microbiome, made by all these microbes that produce a number of substances that influence the health and wellness of our body, and all this is known.

What was not known until we noticed was the following. Let's go back one moment to my involvement with HIV and AIDS. I'm not working on HIV and AIDS now for several years, but still I keep an interest. So, I read the literature on HIV and AIDS.

And I was puzzled to read a paper that had gone completely unnoticed, in particular by those who are interested in neurosciences, that was published by Canadian researchers working on AIDS. Now these researchers were performing a research that, at the beginning, it doesn't sound too exciting.

They were examining the bacterial population in the brains of people who had died of AIDS. Now their goal at the beginning was rather simple. People who have AIDS have severe immune deficiency. People who die of AIDS, of course, they have a very severe immune deficiency.

Therefore, it is logical to expect to find pathogenic, opportunistic microbes in their brains. And this made full sense, and they found those microbes in the brains of people who had died of AIDS. Since this research was performed in 2012 or 2013, of course they didn't look at microbes with old microscopes trying to look at bugs.

They used molecular techniques, identifying the peculiar genes of microbes. So, they found all the microbes they were looking for in the brains of people who died of AIDS. The surprise came when they began to analyze control brains, that are brains of people who had died of other causes, but they had perfectly functioning immune systems and perfectly functioning brain.

Now they began to find microbes over there as well. And which microbes did they find? The same microbes that are in the soil and in water, and therefore, the same microbes that are in our guts. So, they found, to their great surprise, that inside the brain of healthy people, there are the same microbes that there are in the environment and that we assume, through what we eat, drink, and breathe.

And so, they were puzzled because the existence of microbes in the brain of healthy individuals had never been described. And it is interesting that this paper, even though it was published in a prestigious journal, *Plos One*, went almost unnoticed.

Now because sequences are in all of us, first of all they identified the vehicle that carries the microbes from the other parts of the body to the brain, and these are our old, good friends the macrophages. These are cells of the immune system.

And second, they identified, or they observed that the role of these microbes in the brain, in influencing the function of the brain, was their word, "immense." And this makes sense. So, now we have to deal with a completely new concept, the existence of a brain microbiome.

So, if you go back to the textbook of anatomy or histology, and you look at cells of the brain, you end up with neurons, glial cells, and then a number of subdivisions, microglia, astroglia, and so on. Well now you have to add another type of cells, microbial cells.

So, inside our heads, there are neurons and glial cells, the human part of our brain, but also microbial cells. And what do we know about these cells? Well, I would say almost nothing. This is a completely new concept. And we are still adapting to the concept that we are only 10 percent human, but we were thinking only about our gut.

Now we have to adapt to the concept that our supposed free will is maybe not so human as well. Because inside our heads, there are microbes who fight for their survival, there is a fine balance between the bacterial population inside the brain and inside the gut, and we know almost nothing about this.

We know that the brain lymphatic system is important to maintain such a microbial population in good shape, but we are just at the beginning of a new revolution in the field of neurosciences.

Ty: That's fascinating. So, these microbes that are in the brain, could that have anything to do with the corresponding infections of the ear, nose, and throat that could then stop the lymph from draining? How is all that related?

Let's say we have an infant—because I've talked to numerous parents over the last couple of days that said "Hey, my kid was vaccinated with MMR, and then within a few days, he's exhibiting autistic characteristics." How does all that work together? Could the vaccine be a trigger for an infection that stops the lymph drainage from the brain that causes the swelling? How does that work?

Dr. Ruggiero: Well, I am not an expert on vaccines. So, on this point I don't take any position. Because as you correctly pointed out, millions of children are vaccinated, and fortunately, not all of them develop autism. And it is also to the contrary that many children with autism develop the symptoms of autism independently of vaccination.

So again, it is like tobacco smoking. It's difficult to establish a cause and effect relationship. This having been said, however, the second part of your question can be easily answered. Any insult that blocks the circulation of lymph from the brain, so it could be an infection, could be an inflammation, could be an adverse reaction to something, any insult that blocks the circulation of lymph, of course impairs the brain immune system.

Because the lymph is not there as a case of coincidence. The lymph has to circulate. If you stop the circulation of lymph in your leg, it becomes this swollen, this big. Women who have had their lymph nodes removed for breast cancer, they develop lymphedema, as it is called, in their arms.

They become this big, so swollen. So, lymph has to circulate if you want to maintain a good immune function. If you block such, or if you impede such circulation of lymph from the brain, you cannot expect good things to happen.

So, brain probably doesn't become as swollen as the arm of a woman whose lymph nodes

have been removed, but nevertheless, lymph accumulates inside, disrupts the connection within neurons. In addition, since you're impairing the brain immune function, you can expect maybe some overgrowth of pathogenic microbes or maybe some imbalance in the microbial population.

Please remember, microbes are friends of ours as long as they are in a certain equilibrium. But even microbes that, generally speaking, are friends of ours, if they're imbalanced, if there are too many or too little, they may not be our friends.

So, we're just at the beginning of this research, but it is very easy logic to assess that if you disrupt the circulation of lymph, you have two main effects. Accumulation of fluid that disrupts the connections between neurons and glial cells, and also, sort of immune deficiency, or alteration of the immune system inside the brain with possible overgrowth of not so friendly bacteria and unbalance in the microbial population of this newly discovered organ, which is the brain microbiome.

Ty: That's very fascinating. So, one of the things that I know that Dr. Bradstreet was looking into was treatment for autistic children called GcMAF. Could you explain what is GcMAF?

Dr. Ruggiero: Well, this is a topic that has caught my interest since the early 90s. GcMAF is an acronym for GC, globulin-derived microphage activating factor. MAF stands for macrophage activating factors. Macrophages are cells of the immune system, and I was working on these cells when I was at the NCI, National Cancer Institute, in the early 90s.

And one of my first papers on macrophages is published in PNS with many other colleagues. So, it's a topic that I have been studying for the past 26 years. And there are many proteins, or factors, that may activate macrophages.

And a Japanese researcher worked, because now he's retired, in Philadelphia, identified another protein called GCMF. Now this GCMF activates macrophages, and therefore, we can define this protein as an immune stimulant.

And I began working with this Japanese doctor, whose name is Nobuto Yamamoto, in the late 2009-2010. And we published a paper that we presented at a World AIDS conference in 2010, postulating that stimulation of the immune system would eradicate HIV infection, actually using the same words of Professor Luke Montagnier, when he says that if you have a good immune system, you can get rid of the virus in weeks.

So, we published together this paper and we kept on working on this molecule. Then I began collaborating with a biotech company in England, and at the first GcMAF conference, immunology conference I had in Frankfurt, Germany, I had the honor and privilege to meet Dr. Jeff Bradstreet.

Now Dr. Jeff Bradstreet had a good idea in those days. He knew that at least some forms of autism are associated with viral infections, mostly latent viral infections, but he knew that there was a relationship between multiple viral infections, or in general infections and autism.

So, it was known that in autism there is a dysregulation of the immune system. Not that autistic children are immune-depressed. They are not. But definitely there are several signs of dysregulation, imbalance of the immune system.

So, he thought that to try to rebalance the immune system of autistic children with GcMAF could have been a good idea. And so, this is what he did. He published his first paper on

this topic, I think in 2013, describing how treating the children with GcMAF improved some serological markers, but also, and this is most important, improved the symptoms.

So, he began his research on this protein. And we kept on doing our own research in the laboratory. And the more we studied this protein and the more we published on the effects of this protein on cancer cells, on macrophages, and so on, the more we understood that the protein in itself was not the most important, or the most active part of the molecule.

Now this becomes rather complicated because we have to enter to biochemical details. But when you stimulate a cell, let's take a macrophage, with a factor, could be CSF-1 or GcMAF, actually it is never a single event.

Usually, there are many events that are coordinated and lead to the response. So, by studying the molecular structure of GcMAF, we found out that the active sides were essentially four different things, four different molecules.

One is a molecule called alpha actin galactosamine. Now that is the molecule, by the way, removed by an enzyme that is called nagalase. And then we have vitamins of the D group, D2 and D3, a fatty acid whose healthy properties have been known for centuries, oleic acid, basic principle of olive oil.

And this was our major contribution to the field, glycosaminoglycan, that is a complex sugar called chondroitin sulfate. Now this chondroitin sulfate is the molecule which mediates the activation of macrophages. In other words, the GcMAF does not activate macrophages in and by itself.

It does so through the interposition of this sugar that is called chondroitin sulfate. At that point, we were asked by Dr. Bradstreet if we could develop a molecule that was not extracted from human blood, as the old GcMAF was, that was not a protein, because protein, they have a series of difficulties to be handled, that had the same power, the same activity of GcMAF.

So, we began researching, we began studying, we began doing experiments in the laboratory, and we ended up with a new molecule that actually is not new at all. It is what happens in nature. And because of this, we gave a Latin name that means about nature, Rerum.

In Latin, Rerum means "of things." And it refers to the essay by the Roman philosopher of 2,000 years ago, Titus Lucretius, who wrote an essay entitled "De Rerum Natura," which means about the nature of things. And also, it refers to an encyclical letter of Pope Leo the 13th in 1891, who wrote "Rerum Navarum," which means "revolutionary changes," describing the new social doctrine of the church.

So, we thought that Rerum, which means about the nature of things, or something like this, was an apt name for something that we had not invented, we simply copied from nature. So, copying the working of nature, we developed this molecule that actually is a supra-molecular complex.

Usually people get confused. Supra-molecular doesn't mean super molecule, like Superman No, supra-molecular simply means many molecules bonded together that accept one single function. So, this Rerum is nothing else than the active parts of the old GcMAF without the GcMAF in itself.

Ty: So, Rerum, R-E-R-U-M?

Dr. Ruggiero: Exactly.

Ty: And it's the active parts of GcMAF?

Dr. Ruggiero: Exactly.

Ty: Okay.

Dr. Ruggiero: It is, let's assume you have your nice car that you use every day to commute to work. Now you want to go and race on the race track. What do you do? First of all, you remove from the car all the parts that are unnecessary, the upholstery, the cup holder, many other things, the cigarette lighter, that you don't need to race on the race track.

So, you make the car much lighter. And because of this, even if you don't work on the engine, it goes faster because it is lighter, it is more versatile, more apt to run on a circuit. This is what we did. We studied the GcMAF. We knew that vitamin D, oleic acid, and chondroitin sulfate were bound to GcMAF.

And then we began to remove one molecule at a time and observe the effect. If we removed the chondroitin sulfate, the effect was lost. But if we removed the protein and we kept the chondroitin sulfate and all the rest, the effect not only was maintained, it was more.

Because just like a race car that is lighter, then you have more effect. So, this is what we did. We worked like mechanics. But instead of playing with brakes, engines, and transmission, we played with molecules and we removed what was not necessary.

So, we were left only with the very active parts of the molecule, and this is how we developed the Rerum. We simply looked at the work of nature, and based on this, we developed this new concept. As you have heard at this conference, as you will hear this afternoon, many doctors and scientists are beginning to report incredible results by the use of Rerum.

Ty: Yeah. I've seen a couple of the interviews that you've done online about the Rerum. Is this available for people to purchase?

Dr. Ruggiero: Well, the Rerum is registered in the European Union and Switzerland as a supplement because it is a supplement and it is made by components that have been used in human medicine for years and years, for 30-some years, chondroitin sulfate, oleic acid, and vitamin D.

And it is available from Germany. Don't ask me for state-by-state regulations, because I don't know them. All I know is that it is manufactured in a state-of-the-art GMP. GMP stands for Good Manufacturing Practice, that is a worldwide rule in Northern Germany.

So, it is a highly controlled, all registered. And then don't ask me about the state-by-state regulations, because I don't know. Simply I don't know them. I suggest that you check with your local health authorities about how to purchase and so on. What I'm saying is that it is on free sale all over Europe and Switzerland. Therefore, I guess that it could be freely acquired from other parts of the world as well.

Ty: Yeah, I bet you could get it. So, people have had—I know that I've seen good success with kids with autism using GcMAF. Now you're saying Rerum is like a race car of GcMAF.

Dr. Ruggiero: Yeah, it's like a race car. The comparison that I like to do is let's assume you have a propeller plane. Propeller planes, they're very good. They fly. They bring you from one place to another place. But let's assume that at some point in time, somebody has prohibited the use of piston engines, or has prohibited the use of propellers, for whatever reason.

Then you end up with a jet plane. A jet plane definitely uses a completely different concept. It doesn't have pistons. It doesn't have propellers. And it goes faster and higher. Both planes fly, which means I am the first one to testimony that GcMAF was extremely effective, both in vitro and in vivo.

However, like everything else, it had its own fair share of problems. Now the Rerum is more effective in vitro and in vivo, and it doesn't have the same problems of the old GcMAF that was derived from human blood. That was its original sin.

A protein that is extracted from human blood has a number of regulatory and also biochemical problems. Rerum is not. So, you can make the comparison between a jet plane and a propeller plane. They both fly, but if you have the opportunity to choose, maybe a jet plane is better.

And also, what I would like to say, that here at this conference, we are observing that both in vitro and in vivo in patients, with Rerum they are not only reproducing the effects that had been observed with the old GcMAF, they are seeing more effects.

Just let me give you an example. Autistic children, they have low level of expression of a factor that is called TGF beta. Don't be scared by its name. TGF stands for Transforming Growth Factor beta. It doesn't transform cells.

That was a misnomer of 30 years ago. Actually, it is an essential hormone, or interleukin if you prefer, for the functioning of the brain and the immune system. Now it had been demonstrated that autistic children have a very, very low level of TGF beta.

Whatever it means, it is not a good thing because control children, they had normal level, and autistic children had much lower level of TGF beta. If you treat those children with GcMAF, you do not raise the level of TGF beta.

It remains the same. You have a number of good effects, no doubt about this, in particular, on the endocannabinoid system, but not on TGF beta. With Rerum, TGF beta goes up to normal levels after only five weeks of treatment.

That's why doctors all over the world, to name one, Dr. Nicola Antonucci, who will speak tonight, this afternoon, are reporting results of children who already had had benefits from GcMAF, but not yet 100 percent. Let's say with GcMAF, they had gone from 20 to 60 percent. Now they add Rerum, now they use Rerum, because GcMAF is no longer available, and they are completely in a good shape.

Ty: Wow.

Dr. Ruggiero: So, this means that it does what all the old GcMAF did plus more, just like a jet plane. It flies like the old propeller planes did, but more.

Ty: But better.

Dr. Ruggiero: Even more.

Ty: That's why we're taking jet planes back to wherever we're going today, or tomorrow, instead of the propeller planes.

Dr. Ruggiero: Exactly.

Ty: That's fascinating. That's a great option for people that have children that already are autistic, is to find a doctor that they can be under the care of that will be able to use Rerum.

Dr. Ruggiero: Alright, yes. This is a very important statement of yours. Being a medical doctor, I always advise against do it yourself in the field of medicine. This could be extremely detrimental. Let me use just a couple of minutes to tell you, however, that even though we are very proud of the Rerum, nevertheless, don't think that Rerum is the miracle pill.

Rerum has to be integrated into a protocol that is a protocol that takes into account, first and foremost, nutrition. If you eat junk food, don't expect the Rerum to do miracles. It won't do them. So, first of all, control the nutrition.

And the best nutrition approach for autism is a so-called ketogenic diet, a diet very, very low in carbohydrates and very high in healthy anti-inflammatory fats, like olive oil or coconut oil and amino acids, crystallized amino acids that do not overload the kidneys or the liver.

So, the ketogenic diet has to be the best. On top of that, you can reconstitute the microbiome with probiotics. We developed one that is called Bravo Probiotics, for example. And on top of that, you can add the Rerum to rebalance the immune system and to rebalance also the immune system inside the brain and protect the neurons.

What I'm saying is that do not look for the magic pill. It doesn't exist. If you don't fix nutrition first, if you don't fix your gut, your microbiome, then the Rerum or anything else will do poorly. But if you do this under the supervision of a good and competent doctor, and there are very many, let me tell you. There are very many good doctors, both in the United States and elsewhere. Then you can expect very good results.

Ty: That's great advice, Dr. Ruggiero. Much the same with cancer patients, you know? A lot of the research that I've done is in cancer. If you have a patient that's eating the old crap that might have gotten them sick, and their treatment's not working and they wonder why.

Well, it's because nutrition is foremost. And so, what you just shared when it comes to autism, vaccine injury, whatever it is, nutrition, you've got to make that primary. And the ketogenic diet is very important for kids with autism, right?

Dr. Ruggiero: Right.

Ty: High quality fats, low on the carbs. And then once that is in order, when you've got your diet regulated properly, the Rerum is a good addition to it. But there's no magic bullet.

Dr. Ruggiero: Exactly so. Not yet. We are looking for the magic bullet, and we have come rather close. But not yet so magic.

Ty: Okay. Well, I think that what you said earlier, that you were like a mechanic, I think you're like the molecular mechanic.

Dr. Ruggiero: Yes.

Ty: That's what you do is you're a mechanic on molecules.

Dr. Ruggiero: Right.

Ty: So, keep on doing your mechanic work, Doc, and I'm sure that if there is a silver bullet that's found, you're going to be part of it. Thank you so much for sharing.

Dr. Ruggiero: Yeah, thank you so much.

Ty: I really appreciate it.

Dr. Ruggiero: Thank you.

[End of transcript]