

Laudatory speech for Martin Blaser

[Check against delivery.]

Dear Martin Blaser,

dear colleagues,

Ladies and Gentlemen,

It is my great honour and, at the same time, a great pleasure, to be permitted to hold this laudatory speech for Martin Blaser, who is today presented with the Robert Koch Gold Medal.

This medal is awarded as a way of honouring the outstanding life achievements of scientists. ----- That sounds rather as though we have decided that your work is over, dear Mr Blaser. That would be a terrible misunderstanding. ----- The scientific community needs people like you, people with a global view and with visions!

Without visions, there would surely be fewer hypotheses, and our scientific landscape would be significantly poorer. Or, as you might say, it would be less diverse. - But I'll come to that later.

First, I would like to briefly introduce you, Ladies and Gentlemen, to the scientist Martin Blaser. He is a doctor and microbiologist, and his research interest lies in better understanding the relationship between microorganisms and the humans that serve them as a permanent host.

Martin Blaser is the holder of the Henry Rutgers Chair for the human microbiome at Rutgers University in New Jersey. There, he is also Professor for Medicine and Pathology and Director of the Center for Advanced Biotechnology and Medicine. Previously, he taught at the medical faculty of the New York University School of Medicine as Professor of Microbiology. He was President of the Infectious Diseases Society of America, and is a member of the National Academy of Medicine and the American Academy of Arts and Sciences, one of the oldest Honor Societies in the US. He holds 28 US patents, is the author of over 580 journal articles, and in 2014 was presented with the Alexander Fleming Award.

Martin Blaser is best-known for his research into *helicobacter pylori* in connection with human diseases. His work has made a major contribution to determining the role played by *h. pylori* in the aetiology of stomach cancer. Studies on the diversity of *h. pylori* led him to discover the CagA protein and the corresponding gene section, which led to a considerable expansion of knowledge about interactions between *h. pylori* and humans. As a result, it was possible to derive a general model for the persistence of organisms that jointly develop on the basis of a

Nash equilibrium. Similarly, the model helped to explain the relationship between persisting microorganisms and cancer, as well as age-related mortality.

In 1996, Martin Blaser already suggested that *h. pylori* strains are also beneficial to humans as well as damaging. Ignoring persistent, significant levels of scepticism from the research community (relating to *h. pylori*), Martin Blaser and his colleagues succeeded in creating an evidence base that the presence of these microorganisms in the gastric tract offers protection against GERD (gastro-oesophageal reflux disease) in the oesophagus, the premalignant Barrett's oesophagus and oesophageal adenocarcinoma. His findings were supported by independent research.

Martin Blaser's results also led scientists to make a connection between the benefits of *h. pylori* with regard to diseases in early childhood, such as asthma or diarrhoea in infants. This assumption is consistent with the hypothesis that *h. pylori* is an ancient and universal inhabitant of the stomach, which has disappeared during the 20th century due to changes in the socio-economic status of humans, including the use of antibiotics.

In 1998, Martin Blaser coined the term "acagie". The term was designed to highlight the liability among people who did not have *cagA* plus *h. pylori* strains to develop oesophageal diseases. The use of the term "acagie" has led scientists to consider the rise in occurrence of other diseases, which could be connected to the loss of *cagA* plus *h. pylori*. Possibly, acagie will become a metaphor for the disappearance of individual types of bacteria that play a symbiotic role in the human microbiome.

In 2009, together with Stanley Falkow, Martin Blaser put forward the hypothesis that human micro-ecology is changing rapidly, possibly with significant consequences. He modelled a gradual change over generations in order to explain the epidemic increase in diseases such as asthma among children and obesity. According to his hypothesis, an increased understanding of our inborn and, in some cases, disappearing microbiome can lead to improvements in human health.

In this connection, he places great value on the informed use of antibiotics. His research results indicate that the routine use and over-use of antibiotics when treating small children lead to collateral damage: due to the abuse of antibiotics, parts of our original microbiome are wiped out during critical phases of child development.

This scenario may be one reason why the risk of metabolic, immunological and development disorders is increasing to an epidemic, if not pandemic, degree.

These hypotheses have already been supported to a high degree by studies on mice. Currently, paediatric studies are being conducted in which the significance of a damaged microbiome is being investigated as a risk factor for the development of a wide range of

diseases. According to the latest findings, the effect of damaged microbial flora can be transferred via the mother to the next generation through the use of antibiotics. There, it not only affects the intestinal micro-ecology, but also the manifestation of diseases.

Ladies and Gentlemen, we would not be honouring Martin Blaser as an outstanding scientist if he did not have qualities that make him significantly stand out from other colleagues.

Let us therefore return to the global view and the visions mentioned at the beginning, and to Martin Blaser as an individual. In this regard, I would like to emphasise three aspects that he embodies in changing ways (“recombinant”, as it were): first, the image of humanity to which Martin Blaser is committed in an ethical-humanistic sense; second, plurality and diversity; and third, communication.

In connection with the unreflected and excessive use of antibiotics that leads to resistances, which are also of great concern to me, I would like to mention an ethical aspect that sets Martin Blaser apart from us “normal scientists”.

To do so, I must take you back to antiquity for a very brief moment. For Aristotle, the philosopher and natural scientist, wisdom is only a virtue when someone not only makes observations, but also uses them to make a judgement and then to complete an activity. If only one of the three steps is omitted, then according to Aristotle, this is **not** a case of wisdom.

In line with this view of virtuous wisdom, after reaching a judgement regarding his research, Martin Blaser moved on to the third step in Aristotle’s model and in 2016 became co-founder of the microbiome start-up company Commense.

The purpose of the company is to protect babies that are born from Caesarian section. These children lack the protective contact with the microorganisms of their mother’s birth canal, as a result of which they may lack protection against a wide range of diseases during the course of their lives, including diabetes. As a member of the scientific advisory council of the company, Martin Blaser follows the development of microbial and non-microbial interventions on the basis of his university research.

When it comes to plurality and diversity, it appears to me that unlike too many other excellent scientists, Martin Blaser was never at risk of becoming a victim of the ongoing particularisation with regard to areas of specialism and scientific disciplines.

Ladies and Gentlemen, I would also like to add how I arrive at this assessment. My colleague initially asked Mr Blaser a few questions to which he gave some very interesting answers.

We asked him what inspires him to conduct his research work. And he gave us an almost metaphysical answer, namely that he has loved making connections all his life. If, for example, he notices something while walking down the street, he might think: “Oh, that reminds me of

such-and-such an event in history.” Or while reading an article, he comes up with a new idea, or he hears someone talking about something, and notices that this is related to precisely the problem on which he is currently working.

For him as a bacteriologist, he says, this way of thinking is a form of recombination. The other popular form of clonal reproduction of an idea is also possible, but that’s not his way of thinking.

We also asked Martin Blaser where he gets his energy from, and whether he actively does anything to increase his energy levels. His answer was that he loves nature (which is not really surprising for a biologist), and that he loves being active in nature, such as hiking in the mountains or walking along beaches. He likes to be actively on the move wherever he is, including in cities and museums. Experiencing architecture, art and people, while moving and getting up a bit of a sweat, and to discover the world in this way, is a great source of pleasure for him.

As President of the National Public Health Institute, I appreciate the value of this attitude, since movement is what makes us healthy and creative.

I still clearly remember how you, dear Mr Blaser, mentioned at the beginning of your lecture last year at the Robert Koch Institute that you have not only been a fan of Berlin for a long time, but that you already passed through Checkpoint Charlie in 1986 in order to visit the Pergamon Museum. I hope very much that you will find time during your visit to look at the fantastic new Chipperfield building on Museum Island. The James-Simon Gallery, the new visitor’s centre, was only recently opened in July by Angela Merkel.

Who knows what revolutionary thought associations we can hope to expect from you by visiting this museum.

Let me now turn to the third aspect that I wanted to emphasise: communication. Mr Blaser, you sacrificed your morning today in order to answer questions from young scientists at and in the RKI and give tips about your career as part of our “Science Compass” mentoring programme. This is not something that everyone would do. It not only demonstrates that you feel responsible towards young scientists, but it also reflects your passion for searching for and creating connections. When asked, you said that you are proud of the people whom you have supported during their training. And that for you, the symbiotic relationship between students and teachers is a source of great pleasure. That impressed me.

However, you not only communicate your ideas directly to specialists, but you have also written a popular science book about the subject that concerns you. The English title is “Missing Microbes - How the Overuse of Antibiotics Is Fueling Our Modern Plagues”. In German, the title is somewhat more dramatic: “Antibiotika overkill: So entsehen die modernen Seuchen.”

During the same year in which your book, which has now been translated into 20 languages, was published, another book was also published, by a young German doctor, called “Darm mit Charme”, or in English, “Gut, the inside story of our body’s most underrated organ”. Julia Enders’ book has also become a bestseller, and your two publications have helped raise public awareness of this important issue.

When it comes to **Public** health, I am deeply convinced that we as scientists must make attempts to communicate far more strongly with the public, particularly in these times of “fake news”.

Finally, I would like to repeat to the audience what you said when asked what Robert Koch means to you, in your own words:

“Of course, as a physician specializing in Infectious Diseases, and as a bacteriologist, Koch has been one of my heroes. I admire his clarity of thinking, his enormous energy and accomplishments, and his towering body of work. Koch both made great discoveries, and then developed a theoretical approach encompassing them (which we today call “Koch’s postulates”), that form a canon in our thinking about microbial pathogenesis.”

And here at the very end, I would like to quote you directly once again, since the outstanding scientist Martin Blaser clearly speaks to us all. In response to our final question, when we asked what you are proud of in your life and work, you said:

I am very proud of my three adult children - Daniel, Genia, and Simone. They have embarked on very different career pathways-building skyscrapers, defending immigrants, and medical care of the indigent - but they all have a deeply humanistic view and are making the world a better place.

I also am very proud of my wife, Maria Gloria Dominguez Bello, and all that she has accomplished in science, and feel very lucky in having her partnership in life.

Dear Martin Blaser, my heartfelt congratulations on your being awarded the Robert Koch Gold Medal.