Prize Medal Lecture Nomination Form

Awarded annually to an outstanding microbiologist who is a global leader in their field and whose work has had a far-reaching impact beyond the discipline of microbiology

The Society Prize Medal award is a competitive process. Please complete all sections of the form below and attach a copy of the requested supporting documentation required by the rules of the award – see the Microbiology Society website for details: www.microbiologysociety.org/prizelectures

The Microbiology Society supports Equality and Diversity and asks that those making nominations consider the entire talent pool available.

We appreciate the time and effort it takes to complete a final nomination so please note that, whilst recipients of prizes cannot be nominated again for the same prize, unsuccessful nominations can be resubmitted for one more round the following year.

1. Nominee

I wish to nominate:

Name	Prof Martin Blaser
Address	[redacted]
Email	[redacted]
Subject area	Helicobacter pylori, Campylobacter jejuni, virulence factors, biology of bacterial persistence, bacteria of the human microbiome, host-microbiome interactions leading to (or protecting from) disease.

2. Nomination information

(a) Distinction of candidate's work and global contribution to microbiology. If appropriate, please suggest others who might be able to comment authoritatively.
This section should include but is not limited to significant discoveries in the candidate's field, invention or development of new tools and technologies and evidence of great originality or foresight. Max 1000 words.

Martin Blaser has studied the role of bacteria in human disease for over 30 years. He is the director of the Human Microbiome Program at NYU.

He is best known for his studies of *Helicobacter pylori* and its relationship with human diseases. His work established the major causative role of *H. pylori* in gastric cancer, the third most common cause of cancer associated death in the world. Studies of *H. pylori* isolate diversity led him to identify the most important virulence factor cytotoxin-associated gene A (CagA) in 1989, which broadened understanding of *H. pylori* interactions with humans. His team found that *cagA*+ strains induced enhanced host responses leading to the development of gastric cancer and peptic ulcer disease, compared to *cagA*− strains, and that *cagA*+ strains stimulate inflammatory signalling in human gastric cells, and differently from *cagA*− strains, markedly affecting gastric physiology.

In addition to *cagA* studies, he has published widely on other *H. pylori* virulence factors such as vacuolating cytotoxin A (VacA) and also genetics. His work has shown that disease outcomes are more common in those exposed to strains from a

mismatched ancient lineage, indicating that human physiology has locally adapted to tolerate lineages that are common in that region.

Only a minority of infected people develop disease, and Prof Blaser pioneered the hypothesis that *H. pylori* strains might actually have benefit to humans. *H. pylori* is an ancient, universal inhabitant of the human stomach that has been disappearing as a result of 20th century changes in socio-economic status, including the use of antibiotics especially in childhood. This could partially explain the greatly increased incidence of inflammatory diseases and the common requirement for gastric acid suppressant drugs. His group provided evidence that gastric colonization by this organism provided protection against the gastro-oesophageal reflux disease, Barrett's oesophagus, and oesophageal adenocarcinoma. His high profile work went on to show a benefit of *H. pylori* against such early life illnesses as childhood diarrhoea and asthma.

With Stanley Falkow, Prof Blaser hypothesized that human microecology is rapidly changing with potentially substantial consequences. He has recently studied how *H. pylori* infection impacts on the microbiome of the GI tract and subsequent effects on the immune system. He has proposed that the routine use (and overuse) of antibiotics in young children may be causing collateral damage, with extinctions of our ancient microbiota at critical stages of early life. This scenario may be contributing to the risk of epidemic metabolic, immunologic, and developmental disorders. Studies in mice have contributed strong support to these hypotheses, and on-going work in children with reference to many diseases including asthma, show the importance of early life microbiome perturbation in increasing risk.

Other microbiologists who could comment on his work include Prof John Atherton (University of Nottingham) and Dr Georgina Hold (University of Aberdeen)

(b) Describe the impact of the candidates work within, and beyond microbiology.
Please describe how the nominee's work has influenced their field and the breadth of microbiology. Please also describe how the nominee's work has influenced other disciplines and whether there has been any translational aspect to her or his work in industry, policy or in the wider society. Max 1000 words.

His work was key in understanding how a common bacterial infection leads to gastric cancer. His work led to models for the persistence of organisms that have co-evolved with humans throughout history, and also for the relationship of persisting microbes to cancer.

He envisioned a step-wise (generational) change to explain the epidemic rise of such diseases as childhood-onset asthma and obesity. He has proposed that greater understanding of our indigenous (and sometimes disappearing) microbiota can lead to improvements in human health. In his book "Missing Microbes" he explains his hypothesis that the overuse of antibiotics, caesarean births, and antiseptics has permanently changed our microbiome and this is causing an increase in modern diseases such as obesity, juvenile diabetes, and asthma. More information about this can be found here http://martinblaser.com/

He founded the Bellevue Literary Review and has been written about in newspapers including The New Yorker, Nature, The New York Times, The Washington Post, and The Wall Street Journal. His more than 100 media appearances include The Today Show, GMA, NPR, the BBC, The O'Reilly Factor, and CNN.

(c) Any other comments or information you feel relevant to the nomination.
Examples might be a contribution to the Society, in public engagement or education. Max 1000 words.

Prof Blaser obtained his undergraduate education from the University of Pennsylvania in 1969, graduated from the New York University School of Medicine in 1973, and did his post-graduate training at the University of Colorado School of Medicine from 1973 to 1979.

He was an Epidemic Intelligence Service Officer at the Centers for Disease Control and Prevention from 1979 to 1981.

In 1998, he established the Foundation for Bacteria, which started the Virtual Museum of Bacteria.

In 2005, he was elected the President of the Infectious Diseases Society of America. He has served the National Institutes of Health on the Board of Scientific Counselors of the National Cancer Institute (2005–2010; Chair 2009–2010), and on the Advisory Board for Clinical Research (2009–2013; Chair 2012-2013). In 2011, he was elected into the National Academy of Medicine (formerly Institute of Medicine), in recognition of professional achievement and commitment to service in medicine and health.

In 2014, he was the Kinyoun Lecturer at the National Institute for Allergy and Infectious Diseases (NIAID) at NIH, and received the Alexander Fleming Award for lifetime achievement from the Infectious Diseases Society of America.

In 2015, he was selected to be in the TIME 100 Most Influential People in the world. He serves on the Advisory Council of the National Center for Complementary and Integrative Health (NCCIH) of the National Institutes of Health. He was appointed as the Chair of the President's Advisory Council on Combating Antibiotic-Resistant Bacteria (CARB) for a term from 2015-2019.

In 2016, he co-founded Commense, a microbiome start-up company where he serves as a Scientific Advisory Board member. In October 2016, he became Scientific Advisor at PureTech Health, plc. He has been a Member of the Scientific Advisory Board of Second Genome since 2012 and sits on the Advisory Board of the AvidBiotics Corporation as well.

Bibliography – please supply the following data from ISI web of knowledge http://wok.mimas.ac.uk.

Number of papers (results found)	1241
Sum of the times cited	92625
Average citation per item	74.6
h-index	148

3. Statement

Full rules of Society awards can be found on our website: www.microbiologysociety.org/prizelectures.
Please read them carefully before confirming that by submitting a nomination you agree to abide by the rules of the scheme.

[x] I confirm that I have read, understood and agree to abide by the rules of the award scheme. *(please put 'X' in box to confirm).*

4. Nominator(s)

[x] I confirm that I am a Member of the Microbiology Society (*please put 'X' in box to confirm*).

[ ] I confirm that the nominee is aware of the nomination and accepts all the terms and conditions of the prizes as set out on the website: www.microbiologysociety.org/prizelectures (*please put 'X' in box to confirm*).

Nominated by:

Name Karen Robinson Email [redacted]

Date 19th June 2017

Seconded by:

Name Dr Georgina Hold Email [redacted]

Date