The discipline of gastroenterology and hepatology is the most exciting of all medical disciplines! The gastrointestinal tract and its affiliated organs, such as pancreas and hepatobiliary system, comprise the largest immune, endocrine and metabolic organ, and apart from the brain, also the largest nervous organ. If one also considers the fascinating microbiology that is harboured within the gastrointestinal organs, then no other entity rivals the digestive system in its complexity, sophistication and relevance to human health. It is no wonder that Hippocrates, father of medicine, decreed that ‘all disease begins in the gut’! While my sentiments may sound biased, coming from a lifelong avowed gastroenterologist, and the editor in chief of the journal *GUT*, they are nonetheless reflective of the tremendous explosion in scientific knowledge and translational advances in our field. It is truly a privilege to work in this field and to nurture the next generation of researchers and clinicians, who will answer many critical questions and lessen the burden of digestive disease globally.

To maximise the impact and speed up the acquisition and dissemination of knowledge, we must invest in high-quality publications that allow this fascinating science and clinical progress to be communicated freely. This is why I am delighted to welcome the latest journal to join our fraternity, *eGastroenterology* has joined our stable and will be published by *GUT*’s publisher, the BMJ. *eGastroenterology* will publish clinical and basic research with a particular focus on translational gastroenterology and hepatology. The goal is to benefit patients globally through communicating the best science and best clinical practice. The journal intends to focus on the application of real-world data to provide high-level evidence and guide clinical practice in the research areas covered by the journal. Of particular interest, *eGastroenterology* welcomes observational studies, randomised controlled trials, genetic association studies, systematic reviews and meta-analyses. I think the focus on emerging and multidisciplinary research is particularly attractive.

Scientific publishing is a great privilege and a major responsibility. Journals and their editorial teams must ensure that they publish work of the highest scientific integrity and quality. To produce such high-quality work, the underpinning principles must include the triad of expertise, collaboration and adequate research funding. The COVID-19 pandemic has taught us that it is indeed possible to achieve very rapid progress in a field, in this case development of an effective vaccine, if this triad is followed closely. We should apply the same principles for all humanity’s challenges such as cures for cancer, antimicrobial resistance, obesity and metabolic disease pandemics, etc. The status quo is simply not acceptable!

In this short editorial, I have picked what I personally think is the most exciting and promising story in gastroenterology and hepatology, one that is most likely to deliver significant translational benefit to patients the world over. I am referring to the field of the microbiome. I truly believe that the microbiome field offers huge opportunities for making a difference to the health of the world. My belief is not theological! Rather it is based on the scientific advances that are being unravelled almost on a daily basis. The microbiome (ie, microbiology) is the missing ingredient that links genetic, immune, neuroendocrine, inflammatory, metabolic, dietary and psychosocial pathways. The reason why it is a game changer is because it is eminently manipulable, unlike our genome. The sooner we invest in this fast-developing frontier, the quicker we would achieve all our visions and aspirations for making a real difference.

So, what do we need to achieve progress in the microbiome field? For a start, we need a better understanding of what is normal, optimal or desirable. This has hitherto not been delivered satisfactorily. We have a rough
idea what it should look like, for example, certain indices of diversity in composition and functionality, but there are so many confounders. What is needed is a definition that starts with the human phenotype, namely, who are the optimally healthy in our community, across the lifespan? Are they competitive athletes whose health and nutrition are controlled meticulously to produce peak physical and mental performance? Are they healthy individuals who are disease free, exercise regularly, eat a healthy diet and lead a relaxed chilled life? Is the healthy signature relevant across the life span? Are there sex differences? Is the healthy signature applicable to different human diseases, for example, is the one needed to improve response to cancer immunotherapy the same for prevention of obesity or dementia? Many questions remain to be answered but I believe this is achievable within a relatively short period of time, if we approach it intelligently and collaboratively.

To avoid the inevitable variations in ‘healthy signatures’ based solely on taxonomy, we need to employ a standardised multiomic approach that also includes transcriptomics, metabolomics and host genetics, among others. Detailed assessment of nutrition and other environmental exposures would be essential. We are desperately in need of large international longitudinal studies that offer opportunities to capture disease ‘in evolution’. The objective is to understand what came first, disease or dysbiosis. This is an important problem to crack because it lies at the heart of disease prevention. The effort should be global, collaborative and well funded. While this may appear as a pipe dream, I truly believe it is well within the capability of our global scientific community.

In the early years of microbiome research, most of the published work was descriptive and inevitably associative. However, there has been a significant shift recently towards mechanistic studies that highlight fundamental and fascinating principles of disease. This has already accelerated the drive towards translation, particularly with approaches such as faecal microbiota transplantation (FMT), next-generation probiotics, synbiotics and genetically engineered microbiota that deliver essential immune-modulating metabolites. Naturally, such products require credible, robust and international clinical trials to truly test their relevance to human health. This is a prerequisite to their adoption by the healthcare profession. We have a great responsibility to ensure that the translational benefit from the microbiome revolution is not hijacked prematurely by industry and dissipated in the morasses of poorly designed and underpowered clinical trials.

One of the fastest means of altering the gut microbiome is through FMT. The advances in FMT have shed considerable light on what it takes to restore a dysbiotic microbiome towards health. What is needed now is an intelligent approach to treatment. We need to replace the transplantation of a random sample from a random ‘healthy donor’ to a random recipient. This is an inefficient strategy with an inevitably ‘random’ success rate. Let us coin a new term and describe a novel strategy to deal with this problem, namely, ‘intelligent FMT’. In this strategy, we start with a validated microbiome signature of a disease, personalised to an individual patient based on her/his multiomic profile (including host genetics), and transplant the best matched donor to correct the dysbiosis. This is like matching for a blood transfusion, or a more sophisticated scenario, matching for a kidney or liver transplant. While this appears futuristic and unattainable, it is actually eminently achievable, if the collaborative will and funding are made available.

While healthy eating and exercise are two of the most powerful means of steering the microbiome towards sustainable healthy diversity and resilience, sadly, most humans are reluctant to adopt such measures! The solution is intelligent politics. This requires prioritising preventative health as a strategic objective of a nation and its politicians. In most countries, the overwhelming proportion of the healthcare budget is spent on the last 6 months of life, with a tiny fraction spent on disease prevention. This is dumb politics! Governments should prioritise healthy diet and lifestyles as the bedrock of a strong and healthy society. Healthy foods are expensive, but they need not be if it is a political priority. Equally, exercise requires an infrastructure, motivation and time, all could and should be made fundamentally available to the majority of the population. They should be incorporated into everyday activities, whether at work or home. Incentivisation of the population through effective public health campaigns that educate and reward, offer tax breaks and health insurance incentives, etc are all measures that could be adopted, as a strategic priority for the country.

With the advent of artificial intelligence and machine learning into every aspect of our lives, including gastroenterology and hepatology, it is self-evident that the translational pathway for the microbiome is very exciting indeed. Our field will benefit the most from this revolution, and I look forward to seeing many of these advances reported in the latest journal of our fraternity, eGastroenterology.