



## **2015 Colloquium Traditional Chinese Medicine & the Microbiome: A Modern Context for an Ancient Practice**

### **Summary of the Panel Discussion**

On Saturday afternoon, September 26, 2015, the fifth Dr. Rogers Prize Colloquium was held in Vancouver, British Columbia. The Colloquium brought together experts and innovators in the microbiome who are particularly interested in integrating Western and Traditional Chinese Medicine.

Three panelists began by summarizing their findings. Dr. Robert Rountree, Chief Medical Officer at Thorne Research, spoke on the human microbiome and its impact on health. Dr. Jeffrey Bland, the “father of functional medicine,” shared his thoughts on how functional medicine is connecting Eastern and Western medicine, and Dr. Joseph Sung, President and Vice-Chancellor of the Chinese University of Hong Kong, spoke about “measuring an eastern distance with a western ruler.” The individual panelists are experts in their respective fields and gave participants a stimulating and thought-provoking afternoon as they discussed the enormous role the microbiome plays in all aspects of human health and the benefits and challenges of integrating Western with traditional Chinese medicine (TCM).

### ***The Human Microbiome and its Impact on Your Health***

**Dr. Robert Rountree** began the panel presentations with a discussion of the role of microbes. He pointed out that not long ago we used to be concerned about pathogens because they could kill us. But recently DNA sequencing has shown that microbes are everywhere. Human beings are like a coral reef. There are 10 trillion cells in the body. But there are 100 trillion microbiota on and in us. That is a 10:1 ratio of microbes to human cells. What is critical is that we keep the microbe populations healthy.

The microbiome influences *everything* about our health system. The microbes that colonize us at birth affect our health throughout our lives, which is why it can be problematic if mothers are given microbe-killing antibiotics during pregnancy. The richness and diversity of our microbiome is what keeps us healthy. However, that diversity is under threat due to our excessively sterile environments, diets low in plant fibre, and repeated exposure to antibiotics. On the other hand, it can be enhanced by spending time outdoors. Kids who grow up on farms have fewer health issues than those who don't. And living near blue space (water) or green space (farms) has been shown to be good for human health.

People with a low bacterial richness (23% of the population) are fatter and more likely to be insulin resistant than those with high bacterial richness. Overuse of antibiotics could be fueling the dramatic increase in conditions such as obesity, type 1 diabetes, inflammatory bowel disease, allergies and asthma, which have more than doubled in many populations.

Our diet determines which bacterial species live in our system. We humans need dirt — we need contamination. Most of our interactions with bacteria are mutually beneficial. Just a simple walk in the woods gives us a chance to breathe in beneficial microbes.

Dr. Rountree's key takeaways: Alteration of the microbiome by our modern lifestyle (diet, stress, excessive hygiene and antibiotics) may be responsible for many chronic diseases. To combat the problem, eat a rich, diverse diet high in fibre. Try to spend time outdoors, particularly in the garden.

### ***Functional Medicine: Connecting East to West***

**Dr. Jeffrey Bland**, the second panelist, explained that our planet is undergoing a cultural transformation. In the past, aggregating, or “massification,” was a huge theme, including in health care where “blockbuster” drugs were developed to treat vast numbers of people. Recently things have begun to change. We've had a genomic revolution. In this age of genomic plasticity, there is a movement toward treating people as individuals rather than as part of “the average.”

Jeremy N. Smith's *Epic Measures: One Doctor. Seven Billion Patients* examines how people lose productive years of life and explains that infectious disease in developing countries is no longer the biggest health problem these countries face. In fact, chronic, age-related, non-infectious diseases are the biggest health problem right across the globe. These diseases are what are reducing useful life years. The drugs we have available to us now, and the surgeries we have at our disposal, are failing to manage these diseases.

Functional medicine connects patients and their stories to their health, which is also the TCM construct. Connecting this approach to Western medicine's science-based approach of microbiology, etc. is the tough part. That is where functional medicine tries to fit in. Specifically, it looks at the interaction between our genes, our environment, and our lifestyle. It looks at the interplay between the information that we have inherited in our genes, and how is it being expressed.

TCM is empirical and built upon centuries of observation. It offers not a diagnosis, but a diathesis (i.e., it points out a patient's predisposition toward a particular medical condition). TCM practitioners learn how to decipher the patient's story, which is also what functional medicine does. TCM relates to nodes (meridians) and the treatments involve acupuncture and physical medicines. Functional medicine does much the same. Both TCM and functional medicine are trying to achieve balance.

Dr. Bland's takeaways: Built upon more than 2,500 years of observation, the philosophy of Traditional Chinese Medicine is that health derives from balance with the environment. That compares with Western medicine which is derived from the principle of "winning the battle with disease". Functional Medicine provides an operating system consistent with Western science that connects Eastern and Western medicine.

### ***Research and Clinical Practice of Integrative Medicine***

**Dr. Joseph Sung's** presentation drew together conventional biomedicine and TCM, clearly explained that their activities cannot be measured by unilaterally applied conventional metrics of biomedicine, and neatly drew attention to the need for a sympathetic and realistic interpretation of the complementarity of different paradigms of healing.

Dr. Sung emphasized that the two systems of Western medicine and TCM are complementary, not competing. Western medicine focuses on disease entities, anatomical injury, pathophysiology, etc. TCM takes a holistic approach and focuses on the loss of harmony. A big challenge in comparing the two approaches is that Western medicine relies on the double-blind placebo study, but this doesn't work for TCM where everyone is an individual.

There are other challenges in searching for the best of TCM. Specifically, there is a lack of high quality evidence, the literature is often not in English, and the treatments are individualized so are not standard.

Dr. Sung used the example of inflammatory bowel syndrome (IBS) to illustrate his point. In Western medicine, the scoring system that determines if you have the disease (called Rome II) involves data—an examination of gastroenterological cells, functional MRIs, etc. In TCM, practitioners talk to the patient, look at the patient's tongue, take his pulse, find out about his bowel movements, etc. to decide if he has IBS.

A major stumbling block in comparing Western and TCM practitioners' approaches is that there is no common language to use when discussing the disease. For instance, the terms "spleen" and "liver" are purely anatomical parts in Western medicine. In TCM, they mean something *entirely* different. So before we combine the two approaches, we need to develop a commonly agreed-upon language. We can likely merge Eastern and Western approaches to treating disease, but we have to agree upon a terminology.

One TCM "combination therapy" (a mixture of two herbs) alters the microbiota, which might explain why the combination works for some diseases. The modulation of microflora may offer therapy for IBD.

Dr. Sung's key takeaways: In the integration of TCM and Western medicine, there must be good clinical governance. It must be low risk and deal appropriately with liability. We need new tools to identify the best of TCM. But patients are pushing for integration; they

are seeking the combination of Western and TCM, particularly elderly people with muscular-skeletal disease or dementia, and cancer patients.

## Question and Answer session – Summary

**Question:** *What is the influence of diet and herbal medicine on weight?*

**Joseph Sung:** Obese people have a less diverse microbiome. More vegetables and less meat in the diet can create a more diverse microbiome. On the other hand, a carbohydrate-free diet alters the microbiome which then enhances the inflammation in the gut, making the problem worse.

**Q:** *Will the integrity of TCM be compromised when blended with Western medicine? Are the traditional TCM formulas being tweaked and thus altered?*

**JS:** When we set up the Integrated Clinic, we had resistance. But we don't try to extract one compound to use in Western medicine. It is okay to keep modifying the formula. I emphasize the non-medicine part—the care of the whole person as a human being. There is too much emphasis on technology in medical training now, too much looking at the computer; not enough looking at the patient. The patient should not be ignored. The patient should come before the disease.

**Q:** *Dr. Rountree, should one give oneself a cleanse?*

**Robert Rountree:** There is a sense that a cleanse will get rid of bugs. That is a worry. We don't want the bowel *disinfected*. We want a bowel *rest*. A pure fast is not good for people, but resting the system is good. But “getting rid of parasites” is not usually necessary.

**Q:** *Does pharmacogenomics help you deal with your patients?*

**RR:** It is a starting point. But microbiota metabolize the drugs. So the microbiota are key.

**Jeffrey Bland:** One frequently used but complex drug for dealing with Type II diabetes is entirely affected by gut bacteria.

**JS:** What we know about pharmacogenetics won't yet tell us all we need to know. Hence, monitoring patients is key, so in TCM, patients are seen once every day or two.

**Q:** *Dr. Sung, antibiotics can cure helicobacter pylori. Are they still appropriate, given the integration of TCM?*

**JS:** Treatment of *h. pylori* is a two-edged sword. For patients with severe infection, antibiotics will kill bacteria and relieve symptoms. But *h. pylori* has been around for years and years. It must have some symbiotic relationship, so you don't want to kill all the *h. pylori* bacteria for everyone—just those who are in severe distress—not healthy people.

**Q:** *How can we move forward?*

**JS:** We still need to find ways to come up with evidence to show that what we are doing is efficacious. On the other hand, not everything can go under a double-blind study to be called efficacious. Some TCM falls into this camp. Even placebo effects can have “evidence.” So are placebos effective or not?

**RR:** “Lack of evidence is not evidence of lack.” There are ways to address interventions without going into the double-blind study. There are ways to design a study but they are very difficult.

**JB:** The Cleveland Clinic is doing pattern recognition. Like a Big Data analytic. “Dendrograms” show how things associate with each other; where the closest relatives reside. Like a family tree, different cohorts respond in different ways. Data tell you what to focus on, rather than you using the data to find out if your hypothesis is correct.

**JS:** The “pragmatic trial” is in between the two. It is a process in which you compare “A” with “B.”

**RR:** Accumulate case studies. Gather lots of n=1 and find out what all those case studies tell us.

**Q:** *Dr. Sung, how can TCM strategies support post-transplant suppression?*

**JS:** This is an area that still relies on Western medicine. TCM might help moderate the symptoms, but not replace the drugs.

**JB:** This is a case of the right tool for the right application. The pharmacopeia can be life-saving. This is just such a case. You want hard-hitting drugs for immune suppression.

**Q:** *What are the most exciting gut studies going on now?*

**RR:** The Human Gut Project, which does daily gut sampling of hunter-gatherers from Tanzania. This is the data we’ve been wanting to have.

**JS:** I have to say that my own experiment is the most exciting—how does microbiota lead to inflammation which in the end leads to cancer? Microbiota changes, if we can map them out, might lead to us stopping cancer from developing.

**JB:** In *Science Magazine* there is an article noting that positive gut immune function needs a bit of inflammation. But too much gut inflammation can lead to allergies. This modulation is controlled by microbiota. It will be a breakthrough if we can intervene individually for each patient.

**Q:** *What are the better food choices we can make?*

**JS:** Vegetarian. More vegetables will help restore our healthy diet and bring divergent microbiota back to the gut.

**JB:** It is not so much about diet specifics as about our relationship to nutrition and food. There is no perfect diet. What is our attitudinal relationship with the planet?

**RR:** Eat mostly plants; try not to eat anything you can’t pronounce.

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