Can you outline your work in the development of ‘antipoverty vaccines’?

One of the problems with neglected tropical diseases (NTDs) is that, because they occur in populations living in extreme poverty, it’s not easy for pharmaceutical companies to invest in developing vaccines for them, so for now, they have to be developed in the non-profit sector. The Sabin Vaccine Institute – named after Dr Albert B Sabin, developer of the oral live virus polio vaccine – established the non-profit Sabin Product Development Partnership (Sabin PDP) to use industry practices to develop vaccines for NTDs. The Sabin PDP and the product development laboratories are based at the Sabin Vaccine Institute and Texas Children’s Hospital Center for Vaccine Development at Baylor College of Medicine in Houston, Texas.

We now have a portfolio of these so-called ‘antipoverty vaccines’ and a pipeline of them in different stages of development. We call them antipoverty vaccines because NTDs have been demonstrated to actually cause poverty, owing to their impact on worker productivity; child growth and development; nutrition; and women’s health.

How are these vaccines progressing in the clinical trial stages?

Our vaccines include the hookworm vaccine which is undergoing phase I clinical trials in Brazil, and – through the newly formed HOOKVAC consortium – soon in Gabon. We have just finished manufacturing our schistosomiasis vaccine, and we anticipate beginning Phase I trials in Houston, Texas, within a few weeks. We also have vaccines in earlier stages of development, including ones for Chagas disease, leishmaniasis and various intestinal worm and viral infections.

Do you think that there is a newly emerging ‘hidden epidemic of tropical diseases’ in the US, or have these diseases long been present in more developed parts of the world?

Taking Chagas disease as an example – the US Centers for Disease Control and Prevention (CDC) estimates that there are 300,000 cases of this disease in the US. In fact, it could be substantially higher and the key point is that while some of those cases are imported from Latin America, there is a great deal of evidence for widespread transmission within Texas. We think that these diseases have been here for a long time, but nobody noticed because they only affect the poor – if these were diseases of wealthy suburbs we would never hear the end of it.

When we first created the conceptual framework for NTDs it was mainly built around sub-Saharan Africa and parts of Asia, but now we find that these diseases occur wherever you find extreme poverty and it doesn’t matter whether that poverty is in Lagos, Delhi or Houston, Texas.

Will a raised awareness of the prevalence of NTDs in wealthier, Western countries, such as the US, help to promote a more widespread understanding of the impact these diseases have on a more global scale?

We are finding that up to two-thirds of the world’s tropical diseases are occurring in the G20 countries, and we want to make people aware of this paradigm shift. We’ve come up with the concept of Blue Marble Health, which emphasises the need to develop a new way to conceptualise these diseases. This is a hard message to get across; people in the US don’t like to admit that they have extreme poverty and diseases on their doorstep, and while we’ve had some success raising awareness of NTDs in Africa and South Asia, paradoxically it has been much harder to convey this message in the US.

Can you explain the concept of ‘vaccine diplomacy’?

Looking at the Sabin Vaccine Institute’s namesake, many people don’t realise that the polio vaccine was not developed by Sabin in isolation – it was actually a joint collaboration with the Soviets at the height of the Cold War.

The point is that countries can set aside their ideologies to collaborate and save lives. Our vaccines will have an impact in many countries around the world that also have the ability to make vaccines, so why aren’t we collaborating more widely? This idea has been slow to catch on because it can be challenging. People understand the idea of collaborating with some countries, but when you start getting into nations where the US has no diplomatic relations, that is a tougher nut to crack.

We feel that the US Government has a tremendous opportunity to use science for diplomatic purposes. Our country is admired for its scientific prowess; we should utilise this to build relationships and strengthen diplomacy.