Interview with …

Professor Ogobara K. Doumbo, Member of the Project Advisory Group (PAG)

Professor Doumbo is director of the Malaria Research and Training Center (MRTC) in Bamako, Mali.

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Professor Doumbo, if you had to describe yourself in a few words, what would you say?
I am Malian, I am a professor of parasitology, and my vocation and responsibility are to conduct research and training on malaria at the university level. I studied medicine in Bamako for six years (this included theoretical training and a one-year internship) and then practiced as an assistant medical doctor with a specialization in surgery in Banamba, Mali, and as head doctor at the Training and Research Center on Rural Health in the Sélingué dam area, also in Mali, from 1980 to 1984. I then left for France—first for Marseille then for Montpellier—to specialize in parasitology, epidemiology, and tropical medicine. For eight years I traveled back and forth between Mali and France and in 1992 I defended my scientific thesis in parasitology in Montpellier. In November 1992, I took and passed the competitive exam for the "Agrégation" [a diploma required for high-level teaching] in parasitology-mycology at the CAMES [African and Madagascan Council for Higher Education] in Libreville, Gabon. My university curriculum was a bit unusual, because during the years of my studies in France I regularly returned to Mali during school breaks, at least three months per year, to work in the field. This way I maintained contact with the difficult Malian national reality while living in the easy conditions of the North, in France.

Why did you turn to medicine, and why did you do all these specializations?
I did all these specializations because I loved it. I wanted to do high-level research in my country, and this could not be done without basic training that you could only get abroad at that time. I came to medicine through both love and family tradition because my grandfather and my father were both traditional practitioners in the Dogon country. I accompanied my grandfather when he practiced and I understood that many people were in need. I saw him treat people; I saw the attitude he had in doing so, the kind of satisfaction he would bring to these people, and I liked this. I felt he could truly relieve human sufferings. So, at the age of seven, I entered the "white man's school." I decided to become a doctor at the age of ten, following a visit by the head doctor of the Koro Health Center [in Mali] to our school.

When you say the "white man's school," do you mean missionaries?
No, not necessarily. In our home country, there was no school for reading and writing. It was only in the 1960s that the first schools appeared around the village. I belong to the first generation of children who went to school in my village, that's why we call it the white man's school, because the traditional school was where we learned from the village elders by observation. That school existed in the village and was organized based on age groups. The public school, where you learned to speak and write French and received diplomas, that was the white man's school [laughs].

Were you very close to your grandfather because you were a boy or because of what he was doing?
No, I was the eldest of his grandsons and I was lucky enough to know him and to earn his trust. We were very close. Since I was a bit older than his other grandsons, I could accompany him. I would stay with him during school breaks; he told me and taught me many things.

Did you stay with him during medical consultations?
Absolutely!

There was no patient-physician privilege?
That was not a problem, because I was an apprentice traditional practitioner, so he would tell me how to do things, and how to respect and love the sick. I learned a lot from him, especially about ethics and medical practice. The practice of medical ethics, ethics in research is truly like an initiation. With him I learned that the ethical behavior of the doctor is something that does not come from papers, laws, or regulations. It's something you acquire by vertical transmission. Through compassion, he would often share his meals with his patients, he would accompany them in their suffering. They would come from far away, but he would be very close to them and he would never give them a medication without tasting it himself first. I could see that he was careful, that he was attentive to the safety of his patients. This behavior inspired me a lot.

I imagine that he treated his patients with traditional medicine…
Absolutely, medicine was based on plants but also on animal sacrifice. Most of the Falaise [French for cliff] Dogons were animist at that time; we believed in gods; we would sacrifice chickens, sheep, or goats depending on the disease.

And you are able to reconcile this approach with "modern" medicine?
Yes. There is no change in the approach with the patient, be it in the diagnosis process or in the therapeutic approach. Only the technical tools change between the two types of medicine. I have been to the white man's school, I have learned other tools and paradigms from modern medicine, and that is what I apply to my patients. But the whole approach remains the same.

It's about doing good for the other person.
Exactly. It is truly a "vocation." We participate in relieving someone from his suffering, beyond our ability to cure him. This remains, it is a continuum; there is no break, no departure from it.

How long did you accompany your grandfather?
I was ten when I began accompanying him in his visits and I lived with him until his death in my first year of medical school in Bamako.

Your father was also a traditional practitioner. Did you also accompany him?
My father continued in the steps of my grandfather, so that when I returned home, I could compare and try to understand the rationale behind what he gave to his patients. I would make a distinction between the diagnosis he would make and the medications he would give and the other tools I had to help people. Being a traditional healer is not a profession one can earn a living from. My parents, my grandfather, they were herdsmen, farmers who lived from the soil. Traditional medicine was a vocation, a selfless dedication. They had this know-how,

this competence in the family, which they would apply at times when it was needed. The rest of the time, they would be working in the millet fields.

Did they have many patients?
Oh yes! People would come from practically the whole Dogon country, tens of kilometers around. They specialized in certain areas, like breast swelling, inflammatory and tumorous problems, throat aches.

Is this "healing gift" traditionally transmitted from father to son?
Not all children are interested, but if a child expresses interest and approaches his father or grandfather, we check to see if he is credible, curious, and ethically correct. If he can be trusted, we give him a number of secrets, the knowledge, and the know-how. The adults don't get to choose to whom they transmit their secrets. It is the child who makes the first step. I ended up at the white man's school because it was mandatory during the socialist regime in Mali—the government requested that each family send one child to school—and it happened to be me. When I began to learn French, to write … I liked it. So I continued until I finished high school in Bamako, and then I studied medicine at the National School of Medicine and Pharmacy of Mali.

How did your family react when you told them you wanted to keep going to school?
Once I obtained my high school diploma, my parents said, "Alright, that's enough; you must start to work now, take care of the sheep, the goats, the cows, and the soil." So I told them, "Me, I'd like to finish what I started at the white man's school." There was no major opposition. I was very lucky, because I had good grades in high school and I could study medicine. It was like a rural exodus for me, because it is a Dogon tradition for the young to leave the village at the age of 15–18 to explore other worlds, work elsewhere, learn another language. I went to Bamako. But I returned to the village each time I was on school break. When I set up my medical practice in Sélingué, Mali, my father came to visit me, and I showed him my practice. In addition to what he was doing, I had a surgery specialty by training and I was operating a lot. I showed him that I could open the belly and take the disease out, which was an advantage over traditional medicine.

And he accepted. How did your father react to the fact that you turned toward modern medicine—the medicine of the "white man"? Wouldn't he have preferred you to practice traditional medicine?
He accepted it because he saw many people testify to the benefits of the treatment that his son provided. I was doing a lot of surgery, and that was considered good for a rural doctor; it was a novelty. Put people to sleep, open their belly, it was very new.

You are a member of the MVP Project Advisory Group (PAG) since December 2004. Did you expect to be nominated?
Not at all. I was doing my job. I do a lot of research because I work in an international reference center on malaria, and we conduct many clinical trials for the development of new medications, new tools to fight the disease, such as anti-malaria vaccines with the NIAID/NIH [National Institute of Allergy and Infectious Disease at the National Institutes of Health], the Center for Vaccine Development at the University of Maryland and the WRAIR [Walter Reed Army Institute of Research] of the U.S. army. We have a big team for clinical and epidemiological research, and I think that when the PAG team came to Bamako, they discovered our center by accident. They didn't know that this kind of center existed in sub-

Saharan Africa. It was a surprise for them to see that all the international procedures for clinical trials were already in place. We follow the norms and regulations established by the Food and Drug Administration and the International Conference on Harmonization; I have a certificate in good clinical practice that I obtained in Dallas, a certificate in bioethics from Harvard. The whole team follows good clinical practices and good laboratory practices. We are monitored at least three times a year by USSAMDA—the U.S. army department for human protection—by monitors from NIAID/NIH, Glaxo SmithKline and the WHO when we do clinical trials. PAG members thought that our documented experience on malaria could be useful to PAG and MVP. This is a credit to our team from the Malaria Research and Training Center/Department of Epidemiology and Parasitic Diseases (MRTC/DEAP).

Why did you agree to take on this additional load of work?
When they contacted me, I asked for the scope of work to see what was expected of me and whether or not it was interesting. They provided evidence that they were developing a vaccine that could be effectively used against meningitis epidemics affecting infant and young adult populations in Africa. This is something that justifies my existence and my return to my home country, because I could have remained in the United States or France after my studies. I thought that the experience I would get from this collaboration could be useful to the development of a vaccine against malaria. Then I evaluated how much time it would take. Currently, 80 percent of my time is devoted to the development of anti-malaria vaccines. I therefore set aside 20 percent of my time to do other things. I thought that reading documents and attending PAG meetings would take between 5 and 10 percent of my time. It was feasible, and I could see this would be an enriching experience, so I accepted.

Was it an easy decision to make?
No, it wasn't easy, because I am a very focused person. When I am doing something, I don't like to waste my time elsewhere. I had decided to dedicate the maximum of my time to malaria and I wasn't too sure whether I could be effective. It took me about three months to decide.

To your knowledge, are there many projects like MVP—pharmaceutical companies or other groups—that seek the advice of African experts in the field?
No, it doesn't happen very often, and this is something I'd like to emphasize. Because, in general, we don't make much noise. We are 30 Malians at the Malaria Research and Training Center (MRTC) and we are doing "state of the art" research on malaria. We work essentially on malaria. To come and look for us, to find us on the hill at "Point G," you have to put a lot into it! Taking the initiative to reach us was something that triggered my interest. In fact, the MRTC was created in the same way. When the Laboratory of Parasitic Disease at NIH was trying to work in Africa with a highly qualified research team on the development of a vaccine, Dr. Louis H. Miller traveled around Africa, and he came to Bamako. We looked at the project together, I found it interesting, and that is how we created the center in 1992. It sprang up from the same kind of initiative: people came to Africa thinking that maybe they could find people in the field who would help them do better. Our role is to connect your project to the realities and the field experience in Africa. I found this approach truly original.

What can you bring to the project?
First, I can analyze the clinical development plan; see if it is consistent, and if it is feasible. Next, I can contribute to the evaluation of the quality of the tested product because I have learned to evaluate ideas and investigator brochures. During the preclinical phase, I can

determine the toxicity of the product before it reaches children. I can evaluate the quality of GMP [good manufacturing practices] material because I learned to do it with the U.S. army and NIAID/NIH. I can give enlightened advice on these kinds of documents—ensure that the product we are going to test on African children follows international standards of clinical testing. Thirdly, I have experience in clinical development, I have developed protocols for Phase I, II, and III and so I can evaluate the quality of a clinical protocol. Finally, because I've been studying ethics since my young age, I can determine the ethical *value* [emphasis added] of a protocol for a project like yours. Those are the small contributions I can make.

According to you, what should MVP be careful about? What should we focus on once Phase I clinical trials are completed in India and we begin Phase II and III clinical trials in Africa?
Once the primary and secondary criteria of tolerance and immunogenicity are demonstrated and we are convinced that this is a good product, developing good clinical trial capacities will become a priority because this is a research element that remains underdeveloped in Africa. If we don't develop the African sites to enable them to perform clinical trials according to European or American standards, I think that we will do a very poor job because the quality of the product depends on those who handle it in the field. Once the teams are trained at the right level, they will be qualified, they will pay attention to what they do and ensure good practice. At the end, the quality of the final product will be reinforced. Teams will be more involved and they will better ensure the safety of the children participating in the clinical trials. This capacity-building is essential.
The ethical aspect is the second thing that is extremely important. Organizations like yours, researchers like us, we are all convinced that we are bringing benefits to the African population because, if all goes well, we will bring a product that can resolve the problem caused by meningitis epidemics. We have the will to do it well, but often, we don't pay enough attention to the consequences. And this is where the role of the PAG is essential—an independent group that can not only bring a rigorous ethical perspective but also evaluate risks and benefits, as well as give clinical and ethical advice.
The last aspect of utmost importance is monitoring. Sites where clinical trials take place need to be monitored. Standard operating procedures need to be developed, and if a site does not work well, using total objectivity and rigor to evaluate this, the trial must be stopped. This is why it is necessary to put safety monitoring committees in place with Africans and experienced people who can look at the description of secondary effects and make an informed decision. When we move to Phase II and III, we need to put in place a Data Safety Monitoring Board with African membership including scientists and other partners, who can act independently and advise MVP. I believe that the implementation of these measures is essential to ensuring that we do a good job and is something that will bring benefit to the profession. A prolific partnership would be created between actors and the population (or its representatives).

Is a project like MVP necessary? During the 1990s, conjugate vaccine trials were set up in Gambia, and for reason X or Y, this did not go further. Do you think MVP has a better chance? And if so, what makes us different from other projects?
As far as I can see, MVP is different from other research structures, be they traditional structures, institutions, or universities, because it is an international consortium that not only gave itself an objective, but that also gave itself the means to reach this objective with a number of partners, including an advisory group of scientific experts. This approach is essential. Secondly, MVP is neutral and is not profit-oriented. You only look at the epidemic, the population. There is no other motivation. This is healthy, and it works. The fact that

WHO is with you reassures us, because when WHO is involved, we, at the ministry of health, are reassured. Then I also looked at the background of the MVP scientific leaders such as Dr. LaForce; I discussed with my American colleagues, and I know he is competent, someone who is appreciated, someone who has a scientific sincerity, so he is reassuring. One must not forget that my future has two slopes. I'm a young researcher and if I make a mistake and get dragged down by someone who has no credibility… I'm ruined, so I need to be careful too. This collaborative initiative—useful, without prejudice, and with no other motive than to render service to the population—is specific to MVP. You expect to have a vaccine available in 2008–2009 but you agree to take into account the protection of human subjects and not to jump over stages in the process. The fact that you listen to us shows that you are not only interested in speed, but also in quality. That is also something I appreciate. And I can see MVP has the will to follow PAG recommendations. Yesterday, during the Vaccine Introduction Workshop, I saw the engagement of the WHO African Regional Office (WHO/AFRO) for this project and this is reassuring. I think we can't do anything without the engagement of WHO/AFRO, the director for the Division of Communicable Disease Prevention and Control, and all AFRO staff. There is also this strategy that you are currently building and that goes beyond a research project and the development of a product: you are planning for vaccine introduction. Having all these partners gives me the assurance that you are on the right track.

You have been through meningitis epidemics, what do you remember from them?
I was in sixth grade in Koro when I witnessed my first meningitis epidemics. I was struck by the number of pupils who became affected. Some of them had sequelae. The first month of my medical appointment in Sélingué, the first epidemic I had to deal with was meningitis. I remember going to the village and finding people in a coma. I performed lumbar punctures, diagnosed cases, and injected chloramphenicol (oil solution). It was a miracle for the village. I was introduced, and the people accepted me.

Can you describe what meningitis epidemics look like in a village with difficult access to treatment?
Today in Mali, when there are one or two cases in a village, people know straight away what it is. The health service is informed and the information is transmitted. A meningitis epidemic is a panic situation; everyone panics in the village because people know that it is serious and that everyone can catch it. It is more frightening than other diseases. When you have two or three meningitis cases, everyone knows about it, and people don't go to the market anymore. People from other villages don't come to your house, there is a quarantine situation that arises spontaneously to protect your camp.

Sometimes local beliefs are associated with meningitis, like for example in Burkina, where people believe that meningitis comes from eating mangoes that haven't been washed by the first rain of the season. Are there similar beliefs in Mali?
In our village many people don't eat mangoes before the first rains (the mango rains). But this is not associated with meningitis epidemics. Because epidemics follow cycles, there is a whole system of protection in Malian villages: each year, we make animal sacrifices to protect the village. It can be an ox. Depending on predictions, we protect a village by killing an ox to chase away the bad air that brings meningitis.

An ox is a big sacrifice for a village!
That shows you how important this is to us. It's a regular practice in my village. Other family practices come from the colonial period: we know now that when the Sahel winds begin to blow, we should put shea oil, shea butter, or gomenol oil in the children's nostrils. It protects the mucous membrane, and that's how it became a sanitary measure.

How are these predictions made?
There are observers, wise men who say, "This year, let's be careful, there is this or this kind of bad air which will bring a measles epidemic, a meningitis epidemic." They make predictions based on temperature, sand winds, etc. and they start to make sacrifices. The "marabouts" get mobilized, and often we start preparing amulets for children to wear. Then the population knows that this bad air circulates in a cyclic manner and that it can hit the village at any time. We make sacrifices in February–March to protect against the bad air that can bring epidemics.

On what basis are these observations made?
There are "geomagicians" who trace things on the ground; they ask questions to the pale fox. The pale fox is a mythical animal, it's a small animal that lives in the Sahel and comes out of his hole at night. Around 6:00 p.m., the village elders trace rectangles on the ground and ask questions. They put peanut seeds because the pale fox likes them; the fox comes out in the evening and leaves footprints. Early the next day, around 6:00 a.m., the old geomagician looks at the footprints left by the fox and reads in them the future of the village. When he senses that a big misfortune could happen, like epidemics, he prescribes a sacrifice. It's like a medical prescription. It can be from a sheep up to an ox, depending on the size of the misfortune. And that's how villages are protected.

Were there big sacrifices in 1996 (the year of the largest meningitis epidemic in Africa)?
Absolutely, there were more sacrifices than usual. But there are other things too. For example, families can be asked to cook beans on Wednesdays, share them and eat them. Then the family needs to make blessings to dispel the misfortune of the village. The village is not left on its own. We try to imagine all possible epidemics; we have a preventive attitude. That's why vaccines are easily accepted. It is part of the preventive attitude. People don't run away when vaccine campaigns take place in the villages. Everyone comes out with the children, because someone says, "There is going to be misfortune, and the misfortune that brings epidemics to the children is meningitis, or measles, and all children must be vaccinated." That's why the vaccination rate is so high. No one in the village avoids a vaccination campaign against meningitis.

Do people think that the vaccine prevents the disease from developing?
No. For them, it's not the vaccine preventing the disease. For them there is a curse on the village, and when the health service comes and says, "We are here for meningitis or measles," it is part of responding to it. It's the response people were expecting. Mobilization is total. Nobody stays inside the village. When you see people crowding, shoving each other, when we come to vaccinate against meningitis, it's incredible. We are responding to a need.

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