

# INTERVIEW

## Dr. Elias A. ZERHOUNI

Director of the National Institutes of Health (NIH)  
United States of America

Conducted for IBS JoS by:  
**Dr. M. Tayebi**

**E**lias A. Zerhouni, M.D., is the 15<sup>th</sup> and current Director of the National Institutes of Health (NIH), leads the United States' medical research agency and oversees the NIH's 27 Institutes and Centers with a budget this year of \$28.6 billion. His accomplishments at the NIH have included: overseeing the completion of the doubling of the NIH budget; initiating the NIH Roadmap for Medical Research; establishing an NIH-wide research initiative to address the obesity epidemic; supporting the NIH Neuroscience Blueprint; Supporting the reduction of health disparities and barriers to opportunity for minority individuals; and ensuring public access to NIH-funded research results.

Prior to joining the NIH, Dr. Zerhouni served as executive vice-dean of Johns Hopkins University School of Medicine, chair of the Russell H. Morgan department of radiology and radiological science, and Martin Donner professor of radiology, and professor of biomedical engineering. Before that, he was vice dean for research at Johns Hopkins.

A resident of Baltimore, Maryland, Dr. Zerhouni is actually North African, having been born in Nedroma, Algeria. He came to the United States at age 24, having earned his medical degree at the University of Algiers



Dr. Elias A. Zerhouni, Director of the National Institutes of Health since May, 2002

School of Medicine in 1975.

After completing his residency in diagnostic radiology at Johns Hopkins in 1978 as chief resident, he served as assistant professor in 1979 and associate professor in 1985. Between 1981 and 1985 he was in the department of radiology at Eastern Virginia Medical School and its affiliated DePaul Hospital. In 1985, Dr. Zerhouni returned to Johns Hopkins where he was appointed director of the MRI division, and then was appointed full professor in 1992, becoming the chairman of the radiology department in January 1996. He has been ranked multiple times in "Best Doctors in America."

Since 2000, he has been a member of the National Academy of Sciences' Institute of Medicine. He had served on the National Cancer Institute's Board of Scientific Advisors from

1998 to 2002. He has won several awards for his research including a Gold Medal from the American Roentgen Ray Society for CT research and two Paul Lauterbur Awards for MRI research. His research in imaging led to advances in Computed tomography (CAT scanning) and Magnetic Resonance Imaging (MRI) that resulted in 157 peer reviewed publications and 8 patents.

Dr. Zerhouni received the honorary title Doctor Emeritus from the University of Algiers in 2005.

**Dr. Tayebi: Thank you for accepting this interview. It is much appreciated.**

I'm grateful for the opportunity to communicate with your readers.

**Dr. Tayebi: What attracted you to the NIH?**

Two things, really: the opportunity to determine the direction of the country's leading medical research agency and the satisfaction of working with colleagues from all over the world to improve health.

**Dr. Tayebi: You have visited Algeria on few occasions. Some of the visits were high profile. Could you provide some background for the visits?**

Naturally, I've welcomed opportunities to encourage the development of robust, evidence-based healthcare in the country of my birth. I considered it a great honour to be awarded an honorary degree from the institution where I spent the formative years of my training. I hope that, in accepting that honour, I was also able to provide some inspiration to the students who follow. When I returned almost a year later, this past January, I had two goals: The first was to witness the signing of a U.S.-Algeria Science and Technology Agreement. In addition to providing the legal framework for collaboration in all areas of science, I see this document as a milestone declaring that both governments recognize the leading role of science in societies and, most importantly, acknowledge the fact that scientific development is enhanced when countries cooperate. My second goal was to visit as many research and healthcare facilities as I could in the short amount of time available, to gain a better sense of what's happening on the ground. The better we know each other, the better we can work together. I felt strongly about this, so I took with me a group of NIH staff from a variety of institutes who had already been working to establish ties with scientists throughout North Africa.

**Dr. Tayebi: How do you rate the outcome of the exchanges you had?**

We learned a lot, but we knew the real work would begin after the visit. And that is exactly what has happened. E-mail communications are flying back and forth; a few Algerian scientists have attended workshops, with more to come; numerous small planning groups, formal and informal, are thinking and talking about what we heard from our Algerian colleagues in terms of their training needs and how we might try helping each other meet those needs. It can appear to be a slow and cumbersome process, with each step requiring a lot of commitment and work from both sides, but we are committed to continue working at it.

**Dr. Tayebi: What are the main obstacles to achieve the agreed goals with the Algerian authorities?**

Of course there are shared challenges, but I don't think in terms of obstacles. I think in terms of opportunities. My experience out of my meetings with senior government officials is that the political will is there to confront the challenges, as best we can, as they arise. But if we're not working together to pursue the opportunities, we won't even get that far. As with any new undertaking, the challenge of communication is important to overcome. To the extent that US and Algerian colleagues can understand shared priorities, as well as

mechanisms to support cooperation, the partnerships will flourish.

**Dr. Tayebi: You have participated in the founding meeting for Arab Expatriate Scientists in Doha, Qatar. Some Arab scientists perceive this type of initiative in the Arab world as another 'white elephant'? What is your view on that? How could this initiative be expanded to other areas in the region?**

White elephants are revered in some parts of the world. I think the point is that there will be no "one size fits all" solution. A variety of approaches will be needed to meet the educational and research needs of the region. If strategies can be identified that can, in some contexts, provide high calibre training and research opportunities, while providing an opportunity to constructively address the question of the potential role of expatriate scientists, I think that's laudable. The key is to identify, recruit and retain the very best scientists and give them a very supportive environment.

**Dr. Tayebi: As far as Algeria is concerned, some suggest that we have all necessary 'ingredients' available to achieve high profile research both nationally and globally. Instead, Algerian science is not able to take-off. What is the problem?**

I'm not sure I can agree with either statement. Perhaps a cooking analogy is not the best one for thinking about the whole research enterprise. It's a pretty heady statement to suggest that any one country has everything it takes. It's a process and one which is not easily mapped, particularly in the context of a country that has endured (but overcome) a long period of internal conflict. Some patience is called for, to give time for the talented and very hard-working Algerian scientists to gain momentum. To the extent that governments support environments that support the best and the brightest in science, the enterprise will grow. Without a long term commitment and respect for science by the people and at the highest levels of government, it is difficult to become a strong Nation in science.

**Dr. Tayebi: Are NIH funds available to Algerian institutions?**

Yes, on a competitive basis. NIH accepts applications from anywhere in the world. Scientists are invited to apply either as partners with U.S. colleagues or as independent investigators. Our experience is that foreign scientists are often more successful if they have collaborators who, for reasons of language or experience in the U.S., are already familiar with the NIH funding process.

**Dr. Tayebi: Could the NIH provide any figures of Algerian institutions funded by the NIH?**

There are no grant awards at this time directly involving Algerian institutions. However, there are a small number of Algerians working and training in NIH laboratories and there are certainly Algerian scientists engaged in research that is funded by the NIH at institutions in Europe and the United States. During my trip, we used every opportunity to discuss the NIH Visiting Program as a means of matching bright young minds from Algeria to the NIH intramural program. One of the obstacles is that few Algerian scientists can communicate well enough in English, which is the international language for science and technology.

**Dr. Tayebi: Is there any barrier in transferring the funds to countries like Algeria? Could you provide an example where the NIH is actively funding projects in developing countries?**

Dr E Zerhouni: There are no barriers to transferring grant funding to countries like Algeria. The Institutes and Centers of the NIH make awards involving institutions all over the world, including Southeast Asia, Latin America and Sub-Saharan Africa. One NIH Center, the Fogarty International Center, has focused on research and research training programs in low and middle income countries.

**Dr. Tayebi: Can Algerian scientists from private institutions apply for such funds?**

In general, yes. If an application is submitted in response to a call for proposals, the question of institutional eligibility is addressed in detail in the announcement.

**Dr. Tayebi: Can Algerian Scientists and students attend US laboratories and institutions through an NIH initiative?**

The NIH Visiting Program is an important element in our strategy to train the next generation of health researchers. Each year, the Visiting Program hosts about 2700 foreign scientists on the NIH campus in Bethesda, Maryland or at other NIH intramural laboratories with the U.S. Participation in the Visiting Program is based on the scientific match and interest between the prospective participants – primarily post-doctoral fellows - and the laboratory chiefs. It's up to the scientists involved to find that match. There are a few other programs through which foreign scientists receive training as part of specific NIH training and research grants at U.S. universities. The NIH website is the tool to begin exploring funding opportunities.

**Dr. Tayebi: How has science changed over your career? How much further is there to go?**

I feel privileged to have witnessed during my career what I consider to be the landmark for medical research: the completion of the human genome project in 2003. With that and our understanding of the molecular basis of disease, we can move from curing to pre-empting disease. Some say the 20th century belonged to physics, the 21st to biology. That's true in a certain sense, but I think the most exciting challenge will be to link knowledge about genes, behaviour, nutrition, infectious agents, environment and social and cultural factors to better pre-empt, prevent and treat disease. We'll need to find new ways to build relationships, together with the social scientists, mathematicians and physicists. The road ahead is boundless.

**Dr. Tayebi: How did your publications contribute to your achievements? In your experience, how could publication contribute to science development in developing and developed countries?**

Publications can be many things: an achievement, a starting point or an end point. They can signify how far we've come or how far we have to go. They are tools, not only to disseminate information or provide answers, but to stimulate questions. The best publications make their greatest contribution by inviting, sometimes provoking, further discourse, investigation and exchange of ideas.

**Dr. Tayebi: Some would argue that we first promote research then publication, or should the two be promoted equally?**

I think if one logically follows through what I've already said, there is no "first this, then that." The key is motivation and a supporting environment that respects and encourages high-quality science with no compromises on excellence and proven merit.

**Dr. Tayebi: Giving the situation of publishing in Algeria, How do you think we should promote the importance of publishing among Algerian scientists? How do we engage with the wider population?**

Again, this question cannot be separated from the issue of high calibre research. *Lancet* recently published a Brief on medical journals in the Middle East [vol. 367, March 25, 2006]. It suggests that the journals in the region receive very few submissions from other parts of the world or even from neighbouring countries. And the journals have to compete for manuscripts among the limited number available from the region that deal with clinical research, for example. Other challenges exist, as well, I know, but recognition of the importance of publishing and the quality of research will go hand-in-hand. Given the calibre of the human resources and the political will I've seen in the region, I'm convinced both will advance.

**Dr. Tayebi: How would you describe the importance of collaboration in research?**

Vital. Without collaboration we can't even begin to think about the multi-disciplinary research teams we know will drive future advances in health research. And the critical role of international collaborations cannot be overstated. New knowledge about diabetes, depression and AIDS are just a few among the many advances made in the past two years through international collaborations. This is reflected in journals: By 2001, almost one quarter of all U.S. scientific articles had at least one non-U.S. co-author, compared to 10% in 1988. [Science and Engineering indicators, 2004, National Science Foundation]

**Dr. Tayebi: What kind of collaboration will be most beneficial to science in Algeria: training, peer-to-peer or materials based?**

Having had the privilege of knowing very distinguished, seasoned Algerian scientists as well as individuals just beginning their careers, I would say we are all in need of all kinds of collaborations. However, my NIH colleagues who accompanied me on my January trip to Algiers - and spent an additional day there - tell me, unsurprisingly, that the Algerians brought up the need for training repeatedly. Interestingly, training opportunities in Algeria was the preference. Also, Algerian scientists have to become proficient in English, which can open many doors beyond the French-speaking world.

**Dr. Tayebi: What are the best ways of promoting collaboration with Algeria? How can we attract and convince scientists from developed world to work/collaborate with Algerian institutions?**

The emphasis need not be on attracting or convincing scientists to collaborate with Algerian institutions or scientists. Productive collaborations will not come about because it's Algeria or Sweden or

Japan or any other particular country. Good science (good scientists) and new or unique opportunities for research will be the attraction. But it is also the responsibility of Algerian scientists to make their work known and to remain as informed as possible about the most recent advances related to their field, in order to be in a position to really engage their international colleagues. If Algerian scientists can bring unique contributions, collaborations will grow!

**Dr. Tayebi: Publishing is meant to be the main driver for attracting international collaborators. Any thoughts?**

Yes, we have made that point here a number of times – it certainly is one of the drivers for developing research collaborations.

**Dr. Tayebi: Should Algeria promote basic over applied research?**

There is no stock answer for this question. At the NIH, the balance has remained fairly constant over the last decade, with a range between 10-15% more basic research than applied. When the priority-setting is driven primarily by the scientific community, a balance will be established that is likely to reflect Algerian needs. The key is first to promote science and scientists. The rest will follow because there is a pool of untapped potential and talent in Algeria.

**Dr. Tayebi: Some suggest that Algeria should concentrate only on research that is needed locally. Opponents suggest instead that R&D should have no frontiers. What is your view?**

Specific to health-related research, in a recent publication on global health, my colleagues suggested that “all health care is national, and all health research is global.” [Disease Control Priorities in Developing Countries, 2nd edition, p 104] Think about the fact that, in all fields R&D is, after all, one of the drivers of globalisation. Nonetheless, it is important for scientists to address locally important problems if they are to be supported by their society.

**Dr. Tayebi: How can we convince the political establishment about the importance of promoting innovation/entrepreneurship as an engine for economical development?**

The political establishment is convinced. As in everything, it's a matter of establishing priorities to find a workable balance for what can appear to be competing interests, find the right leaders and define operating principles that drive towards excellence and merit, without convenient compromises. Clearly, this means being open to advice, constructive criticism, good collaborations between Algerian scien-

tists and internationally.

**Dr. Tayebi: The International Brain Research Organization (IBRO) has recently organised the first international neuroscience conference in Algiers, Algeria. Its regional director, Professor Raj N. Kalaria put emphasize on using the English language as medium for promoting and communicating research in Algeria. He also mentioned that it was of paramount importance to equip Algerian scientists with an acceptable level of English to stand a better chance of access to international funds and collaborations. Do you share his view?**

Absolutely. And I have never met an Algerian scientist who disagreed.

**Dr. Tayebi: As an American-Algerian, and having achieved so much, what is your message to the Algerian youth and to the Algerian scientific community worldwide?**

It's important to reflect on what we have, collectively, to be thankful for – Algeria is a country at the crossroads of the Middle East, Europe and Africa. Ideally, our own cultural environment could encourage us to be curious about other peoples and other cultures. We've also had the opportunity to learn to overcome adversity, with tenacity and energy. Curiosity, tenacity, energy – all attributes required by any decent scientist.

**Dr. Tayebi: Finally, what do you think about Zizou? Some say that his 'head-butting' was typically Algerian. Was it?**

He is a star. I watched all his games. His response to insults is typical of the way we grew up but I think he should have controlled himself and kept his majesty.

**Dr. Tayebi: I read that you are still a great fan of Algerian cuisine. Are you a 'chorba' or a 'couscous' type of person?**

Both. And 'mechoui' too!

**Dr. Tayebi: Dr Zerhouni; on behalf of IBScientific board I would like to extend my warmest thanks to you and also for giving me this great opportunity to communicate your thoughts and experience to IBScientific audience. Thank You!**

Thank you.!