

A CORRESPONDENCE

Gregory H. Tignor

Roughly one year ago, on December 2, 2008 precisely, I received a priority mail package addressed to me from one Peter Barcus in Graham, North Carolina. I couldn't remember anyone I'd ever met who lived in Graham, North Carolina. The package was postmarked November 28, 2008 with postage paid of \$5.60.

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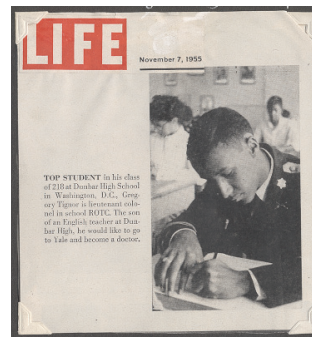
I was curious as to the contents as I opened it. Inside I found a copy of Life Magazine and the following letter reproduced here verbatim.

“Dear Dr. Tignor:

I live in Graham, North Carolina. I'm the father of six children who are all under 18, and I take an avid interest in their education and preparing them for the future.

I was recently at an auction where there was a stack of old magazines and newspapers someone was selling. I like that sort of thing, so I bid on and won them.

One particularly interested me – a Life magazine from Nov. 7, 1955. I was born that week, so I started reading the magazine. Inside was an article about the establishment of the National Merit Scholarship Corporation, and in the article was a picture of a very earnest young man wearing his Junior ROTC uniform and studiously working on some schoolwork. The caption identified Gregory Tignor as the top student in his class at Dunbar High in Washington. The young man had aspirations of going to Yale and becoming a doctor.



Something about the young man's earnestness and seriousness struck me. I wondered what happened to him. So, I googled him. It immediately became clear that the young man did just what he told the magazine – and it led to a distinguished career doing important work in studying viruses and teaching others.

What were his keys to success? All these years later, what would the man today say to the young person in the photo? There was something so special about him that he pursued and lived, maybe even exceeded his dreams. The caption mentioned a parent who taught English at Dunbar. Certainly a parent's influence must have been a significant factor. Google also revealed a father who was an early member of a fraternity established at Howard after WW1. Education must have been a family emphasis – at a time when not many young men, particularly of color, had the opportunity or zeal to pursue higher education.

My note is obviously a whim. Maybe there's something very poignant about looking at a photo from 53 years ago and seeing it come alive. At any rate, I have taken the liberty of finding your mailing address from Yale's website (online) and have mailed you the magazine. Do you remember it?

If you'd care to write back, I would be interested in hearing from you. My email is jeptslo12417@yahoo.com or 4505 Foreys Court, Graham, NC 27253.

Peter Barcus”

This is my reply to Mr. Barcus given after considerable thought.

Dear Mr. Barcus,

Thank you for your generosity and your kind words. I appreciate both more than I can properly express at this moment. I'm at a loss as to how I can repay you for your kindness. What I am going to do is to try to answer a most provocative question that you raised: "*All these years later, what would the man today say to the young person in the photo?*"

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I'm going to share with you some ideas I'd convey to the young person in the photo.

First, I'm going to talk to *Young Gregory* about some of the basics of living. You see, he was born into and grew up in an environment that told him he was intellectually inferior and generally unfit for first-class citizenship in these United States of America. There was much to overcome. Secondly, I'm going to talk to *Young Gregory* about some of the strange people and strange diseases that he's going to encounter during his intellectual trajectory.

Young Gregory, indeed you will become a doctor, but a doctor of science and not a doctor of medicine. But don't look back with regret because that was never your dream. That was your father's dream and, at that time, in the rigidly segregated society in which you lived, the options that your father saw for you were few. You could become a colored teacher, a colored preacher, a colored doctor, or a colored lawyer. Whatever you became, your being was always prefaced by being colored. Your parents never dared dream of a time and place in this country where a young Negro boy could aspire to becoming a professor at a predominately white university. It just didn't happen.

Your parents had many stern rules that were designed to insure your growth and education into a place of relative freedom among accomplished fellow Negroes. I give you three simple rules that will enable you to live productively in a world unimagined by your parents.

First, always remember that you are worthy. You possess intellectual strengths and talents. You've had a first-rate education and as a result of these two factors, you deserve the academic opportunities that will present themselves. Lose all self-conscious feelings as you often sit as the only person of color in rooms filled with whites. Represent for all men of color but never limit yourself to being only a man of color. Place a steel wall about you so hurtful words never penetrate. Remember such comments are demeaning only if you allow them to be.

My second piece of advice is that you control anger within and never display it toward others. There is unexpressed anger within you that must be dissipated. Especially avoid being hostile to your fellow people of color. Once you have achieved, there will be a strong temptation to expect far more from young Black students than is reasonable. Don't demand perfection, only competence. Be aware of the horrible consequences of self-hatred that holds too many young people prisoners especially Black people. Do whatever is required to stop self-destructive behaviors when students in your grasp near the pinnacle of academic success. Make it your life's work to provide respectful support.

Finally, cling to your family. Know that you're going to get lucky one day with the help of your big brother. You will meet, engage, and marry a wonderful, highly intelligent woman who will become a professor emerita at LaGuardia Community College in the CUNY system. You two will be blessed with your very own son, a son of Harvard, who will make you happy in his own unique ways. But, in all that you do, speak words of love before anger.

And now, *Young Gregory*, here are some of the strange people and strange diseases that you will encounter.

I discarded the idea of medicine as a career for a constellation of personal reasons. Instead, I began a doctoral program in the Johns Hopkins School of Public Health with a distinguished professor of epidemiology.

It's not fair to say he was entirely strange, perhaps eccentric is a better word. He was a product of the Rockefeller University Graduate Program. He obtained significant attention because he was the first person to show that a virus could cause the common cold. The fact that several other viruses could cause the same syndrome was unexpected at that time. It was a corollary of Murphy's Law. "Every solution breeds new problems."

Dr. Price moved on to other virus diseases and this is where he attracted my interest. He had been part of the Rockefeller Institute where the study of arboviruses was of great priority. Arboviruses are not tree viruses, but they are viruses that are transmitted by blood sucking arthropods: mosquitoes, ticks and biting midges. These viruses were for the most part totally unrecognized, uncharacterized and unstudied at this time, except for yellow fever that played a significant role in race relations in America. I was immediately drawn to the study of these and ecologically related viruses.

I did my doctoral dissertation with Dr. Price by devising a system for rapid diagnosis of selected arbovirus infections. These viruses are serious plagues throughout the world but especially in tropical and sub-tropical climates. During my career, I worked with over 300 of them. Some cause encephalitis or inflammation of the brain, hemorrhagic disease or bleeding disorders, jaundice or liver problems, hepatitis or kidney disease, as well as simple fevers. Some of these viruses can cause one or all of these disease signs and symptoms. For example, yellow fever sometimes causes jaundice, sometimes encephalitis, sometimes hepatitis, and sometimes just a fever. We don't know why. But, we suspect that immunity from prior infection with related viruses plays a role in modifying disease severity. In keeping with the activism of the 60s, I fully intended to save third-world countries from these plagues. In some parts of the world, people spend a very large portion of their lives being sick from one or another arbovirus infection.

My advisor was a rather strange fellow not because he was unfriendly. To the contrary, he was friendly but in an almost reclusive way. In fact, we stayed in touch until his untimely death. On many occasions, he stayed with me in Hamden during his visits to Yale. While I was a student in Baltimore, he often invited me to visit him

and his wife, Grace Hartigan. She defined herself as an American Abstract Expressionist painter of the 50s New York School. Her friends included Jackson Pollock, Larry Rivers, the de Koonings (Willem and Elaine), Frank O'Hara, and many other painters, artists, poets, and writers. She spoke freely of them and had many tales to tell.

Dr. Price did very little talking while his wife discussed her philosophy of art with me. It was all about the relationship between the artist and the canvas. That's what I remember most from her discussions of her art. In addition to her interest in the visual arts, she had a serious commitment to social justice and donated several pieces to organizations devoted to equal rights for all. This was serious business to both of them but she was far more expressive than he. It may have been because he had a pronounced speech defect, but I don't think it was that. He seemed almost in another world at times, though I felt his commitment was very similar to hers.

I left the Johns Hopkins School of Public Health and came to Yale where I joined the Yale Arbovirus Research Unit called YARU. It was well known all over the world for the "cutting edge" research developments and epidemic investigations that were conducted there. The public health building designed by Philip Johnson was in part financed by a gift from the Rockefeller Foundation. There was also a large monetary investment by the Rockefeller Foundation to support the researchers working at Yale. Working in this place was an absolute crown jewel for a young investigator such as me.

After arrival at Yale, I was unable to find Dr. Jordi Casals with whom I was going to start a research project. He was one of the giants in the field and I was anxious to work with him. Still, I couldn't find him nor could I find word of him. Finally, Dr. Wilbur Downs, the director of YARU, called me into his office and told me that Jordi was dying, perhaps of Lassa fever in a New York City hospital.

Lassa fever was a newly discovered disease virus that affected a large number of people in Nigeria including two nurses who were evacuated to New York City. One nurse died; one nurse survived. Blood from the nurses was sent to Jordi Casals for diagnosis. He isolated a virus in laboratory mice and called it Lassa fever, based on the place where it occurred. We now know that it's not an arbovirus. It's a zoonotic disease. Its primary animal host is one specific species of mouse, the Multimammate Mouse (*Mastomys*), an animal indigenous to vast parts of Sub-Saharan Africa. Although this rodent is a source of protein for peoples of these areas, the virus is probably transmitted by contact with the feces and urine of animals accessing grain stores in residences. It is also spread in hospitals by contact with bodily fluids.

Outbreaks of virus diseases are often cyclic. In this case, the disease follows good times with plentiful rainfall and abundant grain. The greater the supply of grain, the greater the numbers of *Mastomys*. About 80% of cases are not serious. Approximately 20% are serious with a number of fatalities.

Dr. Downs presented me with a stark picture. Dr. Casals was fading rapidly and was close to death. Nurse Penny Pinneo who had recovered was flying back to New

York to donate her blood that presumably contained antibodies. There was to be a meeting at 12 noon on a Wednesday where various opinions could be voiced regarding the wisdom of transfusion.

Downs had invited Drs. Robert Shope, Sonya Buckley, Dr. Robert McCollum, Chairman of the Department of Epidemiology, Drs. Dorothy Horstmann and me.

There were four concerns in advocating the transfusion.

We didn't know for sure that Casals had Lassa fever.

We knew that Penny Pinneo had had Lassa fever.

We knew that the virus from Lassa fever could circulate in the blood for a long time. Just how long was uncertain.

If Casals did not have Lassa, there was a possibility that we might give it to him by injecting serum.

Despite these concerns, the vote was unanimous to give the serum.

The transfusion was done and Casals immediately began recovery. This episode and the full story of the discovery of Lassa fever is recorded in a best-selling book by John Fuller entitled, *Fever! The Hunt for a New Killer Virus*.

Dr. Casals returned to work and he and I made plans to begin our collaboration. About a week after he returned, he came to me and asked me for a favor. His laboratory technician was ill in York, PA with what he thought sounded like Rocky Mountain Spotted Fever. He asked if I would immediately drive down to the hospital there to see about the man, Juan Roman. I remember the man slightly because he often came to me to ask me questions about what he should be doing. I remembered mostly that he always had a cigar in his mouth or hand. That was not terribly unusual around YARU because Max Theiler, the Nobel Laureate, chain-smoked around the laboratory. Theiler would often engage me for hours in his office, filled with cigarette smoke, while he speculated on ways that he could get his family's gold out of South Africa. I gave a eulogy at his memorial service after he died of lung cancer. Anyway, I agreed to go to York, PA for Jordi Casals.

When I arrived, a woman came to me crying hysterically and telling me that I killed Roman. I didn't recognize the woman. I learned later that she washed glassware in YARU and worked for Dr. Casals as did her husband. I tried to comfort her in what was a very bad situation. Juan Roman wasn't the first technician to die from a laboratory infection at Yale. It happened during Polio research. But, as far as anyone knew, he had absolutely no contact with the virus or any virus infected animal. His death alarmed students, faculty, and staff in the building because the reason for his becoming infected was unknown.

I came back to Connecticut determined to enforce more stringent rules for biologic safety. I recommended anti-smoking rules. I brought in various devices that could be used to avoid mouth-pipetting that was all too common. I asked that the maintenance department insure the laboratories operated under negative pressure. That is, when doors were opened, air must flow in. No air was to flow out. Labora-

tory doors were to be kept closed. I bought one of the first biological safety hoods ever made. Ultimately, a high security virus facility with restricted access was built on an upper floor of the building. This was not a perfect facility by any means but it was a start.

Everyone who worked in my lab had to wear a special suit with a respirator. That was sponsored by research grants from the NIH. All of us took specialized vaccines including yellow fever, rabies, vaccinia, and a couple of experimental vaccines. After visiting our labs, people all over the country began to follow our lead. In fact, I traveled to several different places to help plan for high security virus laboratories including among others Ibadan in Nigeria, Ribeirao Preto in Brazil, and Nairobi in Kenya.

I was elected a councilor of the American Society of Tropical Medicine and Hygiene. As such, I was appointed to a committee that was making recommendations to CDC as to the risk to laboratory workers from each known arbovirus. They were classified, p1 to p4. However, the greater question was how to classify unknown tissue samples that were being tested for infectious agents. The administration at Yale, following Juan Roman's death, ruled that unknown virus samples could no longer be accepted.

The World Health Organization (WHO) counted on YARU as their reference center for disease investigation. Hence, when a disease outbreak occurred, investigators at YARU were notified and samples were sent. This decree from the University spelled the end of this function at YARU. Some senior faculty members were disappointed but I was not because I had other interests. There were many interesting discoveries to be made using well-known viruses.

Casals and I began a study of hemorrhagic disease in Africa. We focused on a virulent outbreak in the Congo. We did antibody studies with a virus strain that caused serious hemorrhagic disease there and, to our surprise, found identity to a virus from the Crimean region of Russia. After World War 2, an outbreak of hemorrhagic disease occurred among Russian soldiers clearing fields that had grown fallow in the Crimean Region. It was a tick borne disease. A Russian investigator named Drosdov brought the virus to Casals at Yale. Most viruses are transmitted by a single vector meaning one specific tick species. This virus was transmitted by many different tick species. The Russians never preserved the original virus isolate but Casals did. Working with the original, Casals and I found that identical strains of the virus were prevalent in Pakistan, Egypt, the Congo, and Senegal. The fact that the individual various strains from diverse zoogeographic regions were identical suggested that the virus was moving about the world perhaps in birds or in ticks on birds. This was a scary observation because this disease was associated with a very high rate of nosocomial or hospital acquired infection. Hospital personnel from nurses to orderlies to janitors often died after treating or handling waste from one infected patient.

I should mention that the Rockefeller Foundation had established regional arbovirus laboratories in many tropical and subtropical countries. Some of the faculty

members at Yale had directed various ones of these labs. Down directed one in Trinidad. Shope directed one in Brazil. By and large, the various countries assumed support as the Rockefeller Foundation withdrew.

Our discovery with this group of viruses immediately embroiled us in a bit of old-fashioned cold war controversy with the military at an international meeting. Investigators from the military wanted the name of the virus to be Congo-Crimean Hemorrhagic Fever because the Russians had lost the original isolate. Russian scientists felt the virus should be named Crimean-Congo Hemorrhagic Fever. In our publication, we named the virus CCHF and it is so called today. It was recently isolated from an outbreak of fatal disease in Afghanistan. Unfortunately, the virus killed an American soldier. It is a very real threat to troops in various parts of the world.

The Department of Defense considered this agent to be a potential weapon in biological warfare. I had tested one open market antiviral drug, Ribavirin, against CCHF virus. The military wanted me to test other drugs against CCHF virus because we had the only existing facility capable of using this virus. I was invited to speak on CCHF at Fort Detrick where methods were being tested for defense against biologic warfare. That was as close as I came to the concept.

Much more of my time and effort was spent trying to diagnose and stop the spread of arbovirus disease. I traveled to many parts of the world that I never dreamed I'd see, either speaking or working as part of a team during an epidemic investigation. I was considered a valuable team member because I had invented spotted slides that could be used in the field for rapid diagnosis using only small drops of serum. I'd like to talk about just two trips.

While working with others studying yellow fever in Ethiopia, I found the origin of the Blue Nile at Lake Tana. The Blue Nile falls and gorge were a spectacular sight. Incidentally, there's nothing blue about the Blue Nile and all that water does absolutely nothing for Ethiopia. The Ethiopians have a saying that goes like this: "The daughter of the Blue Nile is very thirsty." By this, they refer to Egypt because it benefits greatly from the Nile. We found yellow fever in Ethiopia along with some unidentified illness, that decades later, Casals, Bob Shope, and I attributed to Ebola virus suggesting that it had been in Ethiopia long before it was recognized in Sudan.

We isolated O'Nong-nong virus in Uganda and determined that the spread of the disease was caused by mosquito breeding in a secret dam on the White Nile, which was built by the Ugandan government to generate electricity in violation of international agreements. We didn't find out about the dam from governmental officials. A local medicine man had figured out that the mosquito population had dramatically increased since the building of the dam. He showed us where to look. The name, O'Nong-nong comes from the Nilotic language of Uganda and Sudan and means "weakening of the joints." I learned a lot from this experience about vector biology, that is how and where mosquitoes breed. I also learned a lot about human politics.

I have been repeatedly impressed by the enterprise of American students. Apparently, some at Stanford University found our paper in *Tropical Medicine and Hygiene*.

They created a board game based on O’Nong-nong fever. I believe the game is still available. This is how it works. The point of the game is to stay away from the “onion-head monster.” If you get the “O’nyong-nyong” virus card, all other players must take a bite of a raw onion!

I was frequently off on various foreign trips. I owe serious gratitude to my wife and son who stayed at home for variable periods without any communication from me, with canceled flights that often altered the travel plans that I left with them. There was often no way for me to phone home. And, of course, occasional disasters occurred while I was away. They were remarkably brave while I was learning about disease and foreign politics.

The intersection between U.S. politics and science soon became manifest. One day, a group of congressional aides visited me in my laboratories. They requested records from all experiments conducted over the past ten years. They wanted a list of all visitors, employees, and students. I even had to show dates of visits from the CIA & FBI persons who always came after every foreign visitor from Russia. Our administrative assistant, Betty Young, kept accurate records for which I’m very grateful.

While I thought their interest was in biological safety, there may have been additional motives. In the 80s, when Yale’s clerical workers first unionized, there was a ten week strike that became very bitter. The New York Times wrote:

“It’s a sad commentary that Yale has the worst labor relations so far as I know of any employer in America other than Major League Baseball,” said John Wilhelm, a Yale graduate who is president of the Hotel Employees and Restaurant Employees Union, the parent of three of the four union locals on strike.

Professors, students, strikers and administrators gave various theories to explain Yale’s extraordinary string of strikes, including longstanding distrust between Yale’s administration and the unions, militant labor leadership, a long line of university administrators who looked down on the workers and bitter town-gown relations that have taught workers to resent Yale, the biggest employer in town.”

Shortly after this article appeared in the New York Times, I received a subpoena from Senator Carl Levin, the chairman of the Subcommittee on Governmental Oversight of Governmental Management. I was told that I was to discuss biological safety at Yale. Dorothy Robinson, the University Counsel and Edward Adelberg, the deputy provost for the sciences and the chairman of the biological safety committee at Yale, accompanied me.

The three of us boned up on all the improvements that had been made at Yale. We knew that the senior minority representative on the committee was Senator Cohen from Maine, a Yale graduate. We felt he might be sympathetic.

When I arrived, I was informed that I was not allowed counsel at the hearing. Then, I discovered that Mr. Thomas Gaudio and Ms. Lee Lucas Berman who was the former chair of the Local 34 Human and Safety Committee were to address the committee before I did. There was a long litany of accusations, not aimed at me per-

sonally, but expressing significant anger and contempt for the competence and concern of faculty around the medical school and the university in general. To his credit, Senator Levin attempted to keep the focus on biohazards. Senator Cohen, in his introductory remarks, emphasized that biologic warfare was not an issue in the hearing.

I felt the committee hearing left Yale looking more lax in its concern for biological safety than was true in reality. Labor problems at Yale now had even greater national recognition because a number of media outlets were represented. I recognized also that the Lassa fever episode would never entirely die because Jordi Casal's illness and Juan Roman's death came up. I felt sorry for both.

Not only did Jordi and I work together, but also we formed a friendship that lasted beyond his death. I delivered his eulogy, attended his wife's funeral, and I remain a lasting friend and support for their daughter. However, I collaborated with many others in YARU and from around the world. My laboratory often resembled the UN because it was home to many foreign students and post-doctoral fellows. At one point, I had an Ibo and a Yoruba working in my lab when a war was going on in Nigeria between their two tribes. I had a more difficult time managing the relations between an MPH student from Taiwan and a postdoctoral fellow, the daughter of an original revolutionary, from Mainland China. But, ultimately peace prevailed. I don't want to leave you with the impression that my laboratory was biased toward Blacks. My first two PhD students were white Americans.

Over the years, my greatest friendship and professional relationship was with Bob Shope. He became Director of YARU following Wil Downs' retirement and I was his Deputy Director.

We worked together on a variety of projects. He knew more about arboviruses than anyone else in the world and I learned from him. It was a two way street. I helped him with projects he was interested in because I had an electron microscope and other sophisticated equipment that I made available to him. Together we found rabies-related viruses from Nigeria and South Africa. The common presumption was all rabies-like viruses from all over the world were antigenically identical. We demonstrated that is not so. Observations by others in recent years have confirmed our initial findings.

However, the most exciting work was characterizing a unit of the acetylcholine receptor as a receptor for rabies virus. That was the first time that a host cell receptor had been defined as a virus receptor. I like to think it was our work that encouraged investigators to look for a host receptor for HIV on the target cell, the T-cell. Researchers in France and India are continuing our work on an anti-rabies therapy.

I haven't discussed every aspect of my educational training or my military service because I consider them irrelevant to what I know to be my intellectual trajectory.

I don't want to leave the impression that my professional pursuits have been perfectly seamless. For the record, on more than one occasion, race was an overt distraction. However, I was blessed with a friend in the late Bob Shope who more than once

provided valuable confidential insight that enabled me to avoid significant pitfalls. I've subsequently formed very valuable friendships within this center that I cherish for the advice and concern that is often expressed.

I'm going to talk about just one episode because I believe that it will make for a better balance in the picture of my intellectual trajectory.

A senior Yale colleague who knew that I had sufficient grant funds to support a senior research associate asked me to employ the Brazilian wife of a Brazilian investigator that he wished to hire. He sent her copies of my publications and she enthusiastically accepted a position in my laboratory. She arrived and was introduced to my lab. I didn't see her again.

Several days later, a senior faculty member told me that she had reported to him that she couldn't work for a colored person.

For me, the way this episode developed has remained in my memory bank perhaps because I never felt anyone at Yale took interest in my wife despite her PhD. There was never a concern in the Yale community for her welfare similar to that expressed for this Brazilian woman.

I don't think of the Yale community as an employment agency. Rather, I'm referring to the fact that we faced almost total isolation resulting from a lack of either social or professional networking. I can't know whether this condition is unique to Blacks but that doesn't make it any less painful. It has come late but we've found within this center many social and professional interactions that we lacked over so many years.

I began my intellectual trajectory by attempting to answer the question posed to me by Mr. Peter Barcus: "*All these years later, what would the man today say to the young person in the photo?*"

I would tell *Young Gregory* that unimaginable changes would occur in his lifetime. I could talk about the President but I'm going to make it more personal. On the morning after I moved onto Blake Road in Hamden, I found a swastika painted on a tree beside my driveway. The citizens of Hamden have just elected and inaugurated the first African-American mayor of any suburban town in Connecticut. I'm speaking as an African-American colleague to some of the most distinguished faculty of Yale University. Neither *Young Gregory* nor his family could have foreseen these developments.