(Music)

Mark Masselli: This is Conversations on Health Care. I am Mark Masselli.

Margaret Flinter: And I am Margret Flinter.

Mark Masselli: Well Margaret, it's hard to turn on any new source and not be inundated with talk about the Ebola epidemic. While it has been thus far contained largely in West Africa the first case in the United States has caught a ripple effect of reaction.

Margaret Flinter: And officials at the Centers for Disease Control have been saying all along we have a much more sophisticated infrastructure in place in the United States that could deal with any such outbreak, but when the first patient in Dallas succumbed to the disease we realized our public health protocols have to be initiated across the country that's aimed at targeting, isolating and aggressively treating any infections.

Mark Masselli: Although CDC Director Tom Frieden did say recently that a rapid global response has helped to contain the spread of the disease, unchecked it could have turned into the next AIDS epidemic in his words. While that hasn't happened there have been thousands of casualties.

Margaret Flinter: There are so many health care workers that are among those who have died. That and the lack of available hospital beds as well as essential equipment has really contributed to the spread of the disease in these third world countries.

Mark Masselli: Travelers coming in from the hardest hit areas are being screened at airports for fever and other potential symptoms while we seem to have a solid handle on the situation here.

Margaret Flinter: But all frontline clinicians and providers know that while we tend to focus on a new and unknown threat like Ebola, we have the ongoing real threat to public health in this country from things like influenza every year or the proliferation of antibiotic resistant bacteria. These pathogens are here at home. They lead to the deaths of thousands in this country every year. So I guess our vigilance has to be on many levels all the time.

Mark Masselli: Margaret, you are 100% right, and it is a perfect time to remind our listeners to be vigilant when it comes to vaccinations. Flu vaccine is an easy thing to obtain. It's highly effective in staving off a bout with flu which causes billions of dollars of lost productivity and health cost as well as being lethal for certain populations. So do the right thing for you and your family and your loved ones and your community; go out there, and get a flu shot.

Margaret Flinter: Our guest today is at the helm of an organization that's dedicated to the eradication of diseases through genomic research. Dr. Eric Green is Director of the National Human Genome Research Institute, a division of the National Institutes of Health.

Mark Masselli: Dr. Green has been on board from the very beginning on the team that ultimately mapped the human genome.

Margaret Flinter: Lori Robertson will look into more false claims spoken about healthy policy in the public domain. But no matter what the topic, you can hear all of our shows by going to www.chcradio.com.

Mark Masselli: And as always, if you have comments, please e-mail us at www.chcradio.com, or find us on Facebook or CHC Radio on Twitter because we love hearing from you.

Margaret Flinter: We will get to our interview with Dr. Eric Green in just a moment.

Mark Masselli: But first, here is our producer Marianne O'Hare with this week's Headline News.

(Music)

Marianne O'Hare: I am Marianne O'Hare with these Health Care Headlines. The death of the first Ebola patient in the U.S. combined with amped up fears has sent the government and hospital administrators into action. While the federal government ordered screenings at a number of the nation's airports that receive the highest percentage of passengers from Ebola ground zero in West Africa, hospitals and health centers are readying for the worst, creating isolation areas, increasing the purchase of hazmat suits and revising protocols for infectious disease management. While Ebola continues to scare the population, Enterovirus D68 is here, first charted in a children's hospital in Kansas City, kids coming in with symptoms so severe they required ventilators and the ICU. They quickly realized it was beyond the scope of what they had seen before. Now charted across the country with hundreds of cases reported in 45 states, the virus may be responsible for an estimated five deaths so far.

Wal-Mart is taking some heat for dumping some 30,000 part-time employees off their insurance roles, those working less than 30 hours per week, claiming the Affordable Care Act has increased their own personal health care costs. While it's incurred some outrage from employee organizations and those supporting the Health Care Law, there may be an upside to the headline; those 30,000 employees will likely qualify for subsidized health coverage under Obamacare and might have gotten cheaper coverage that way.

And we are fast approaching the second round of open enrollment under the Affordable Care Act. In some ways it should be easier for folks to apply. Under the revised system, about 70% of the people who haven't bought coverage through the site before are likely to go through an identity verification portal and then complete an application that is 16 web pages long down from 76 pages last year.

I am Marianne O'Hare with these Health Care Headlines.

(Music)

Mark Masselli: We are speaking today with Dr. Eric Green, Director of the National Human Genome Research Institute at the National Institute of Health. Dr. Green has been at the institute since 1994, and has been its director since 2009. The institute is the largest organization in the world dedicated solely to genomics research. Prior to becoming director Dr. Green led a large research group involved in studying the human genome, including being a start-to-finish participant in the Human Genome Project. Prior to joining the institute, Dr. Green was Professor of Pathology, Genetics, and Internal Medicine at Washington University School of Medicine in St. Louis where he earned his PhD in cell biology as well as his MD. He is also the Founding Editor of the journal Genome Research, and Co-Editor of the Annual Review of Genomics and Human Genetics. Dr. Green, welcome to Conversations on Health Care.

Dr. Eric Green: Thank you, happy to talk with you.

Mark Masselli: You have played a major role in the Human Genome Project completed in 2003, clearly one of the great scientific achievements of the age, and as complex and groundbreaking as that task was, you say it was really just a starting point. And you have been involved in genomics since the beginning, and tell our listeners how has the Human Genome Project and subsequent genomic efforts influenced the direction of medical research, and how has the mission of your institute evolved over the years?

Dr. Eric Green: I would probably describe genomics as transformative in many ways. The genome project's goal was to create this foundational information resource about our blueprint, which then has provided since its completion 11.5 years ago really a context for being able to learn a tremendous amount about how the human body works by knowing more about our blueprint, but also knowing how our blueprint can break leading to disease. It's really finding its way across all areas of biomedical research.

Margaret Flinter: So Dr. Green, at a recent NIH gathering, you shared some pretty compelling conclusions of an external advisory group about how all components of NIH manage and use research data. How is your institute in the NIH going to approach this issue of the problem, or really the opportunity of Big

Data which really seems to be somewhat confounding people in the health and science research space?

Dr. Eric Green: Yes, I mean it's a new world. Genomics has become bit of a poster child for the biomedical Big Data challenges, and the reason for that has to do with the technological explosions that have taken place in genomics since the end of the Genome Project whereby we have these incredibly powerful methods for now reading out our DNA, not just across one human, but now have done this across tens of thousands of humans. And that creates massive digital datasets that are incredibly powerful to analyze, but that means that we have to get them in the hands of researchers around the world, and that's just genomics data.

We are seeing a shift in biomedical research where we are going from being relatively data poor to being data overwhelmed, and genomics sort of led the way, but I don't want to leave your listeners with the impression that it's just genomic. We have had similar technological innovations in imaging and then there are other 'omics' coming down the road besides just looking at DNA, but looking at our proteins and proteomics and our metabolism, metabolomics and so forth. An interesting statistic is that if you go back to 1993 for example, if you took all of the world's genomic data which is housed here in a public database called GenBank, in 1993 it would fit on one CD-Rom; you go to do that today, and it would require 400 million four-drawer file cabinets to house all that data. And that's just genomic data. The future of biomedical research is going to be heavily a data science endeavor, and the question we had to ask ourselves--

Mark Masselli: Well that alliance obviously as part of the NIH program has just launched the Big Data to Knowledge Initiative, or BD2K as it's called, and you say the BD2K Initiative is focusing on improving the biomedical research enterprises. It relates to the Big Data in the four key areas. Can you tell us what these are, and how you see this facilitating more robust data sharing and use platforms?

Dr. Eric Green: You know, the overarching aspect of this program is, as much as anything, to begin a cultural shift in science, in biomedical science in particular, whereby we value the production of data and the sharing of data in a fashion that allows and empowers other scientists to use all the data in very creative ways. And there are a lot of barriers to that. Some are cultural, and some of them are mechanical, and we are trying to fix all of those things. So among the components of BD2K is developing better ways of sharing data and finding data. Another component is building better software tools. We need to empower all scientists to be able to analyze the data being generated, including data outside of your immediate field. So if I have a genomic researcher, I want them to be able to analyze imaging data and see how it aligns with some other genomic data, and if it's so specialized and they can't access that software to get the kind of results they need, that's a problem. So we need to enhance that capability.

And then we need to setup a series of sort of centers of excellence as we call them where we have major groups whose focus is how to get broader use of these incredibly large datasets, and we have lots and lots of scientists really around the world analyzing all the world's biomedical research data in creative ways that really wasn't possible before. So we are funding groups to help really come up with those solutions.

Margaret Flinter: You know Dr. Green, so often on our show and in Conversations we come back to the issue, at one level you can call it workforce. You have addressed the fact that there is something of a scarcity of data scientists in the marketplace who are equipped to handle this volume of Big Data out there, and the challenges and the opportunities that it poses. I have a feeling that BD2K is also thinking about training, both training people in the field now, training people who are going to come through the field in the future. Maybe you can tell us a little more about how do we really create this next generation of data scientists for this work.

Dr. Eric Green: That's a great question. When I give talks I sometimes show a slide from an article that was featuring the new opportunities in data science, and I call the data scientist the sexist job of the 21st Century, and I show this article to my teenage children to remind them of that because indeed they are the generation that are going to see this thing be reality. So we are thinking about that at NIH for biomedicine, and we are thinking about how do you train the next generation, and that's part of the BD2K Initiative is to develop new curriculum and develop new approaches to make a graduate student, or a medical student, or a pharmacy student, and all the health professions very facile with analyzing, manipulating Big Data because that's the world we are going to live in.

But let's not forget about the current generation. I think about my medical school classmates, my graduate school classmates, and we all have another couple decades ahead of us in our profession, and the fact is the world of Big Data and data science has come on fast and furious, and we were not trained for any of this in graduate school or medical school. So what are the things that we could put into place to help mid-career individuals climb that competency ladder if you will, all these things are important, and all these things we are looking at, and in fact, are funding programs to address both of these areas.

Mark Masselli: We are speaking today with Dr. Eric Green, Director of the National Human Genome Research Institute at NIH where he previously served as scientific director at the institute, and director of the genome technology branch. We are seeing the world respond to global epidemics from Hep C to Ebola and the scientific communities amped up their efforts to create effective treatments. While these epidemics are certainly frightening truth is far more common deadly pathogens that probably you will encounter including antibiotic resistant bacteria that are having devastating effects on human health. How

does genomics play a role in this dash to find treatments or cures for emerging diseases like Ebola and morphing pathogens like antibiotic resistant bacteria?

Dr. Eric Green: This really represents one of the very beneficial outcomes of the Human Genome Project and subsequent programs. The Human Genome Project mostly focused on human and another small set of organisms and their genomes, but the immediate programs that followed the Genome Project involved developing new powerful technologies for sequencing DNA, and those can be used to sequence a bacteria or virus's DNA just as easily, in fact, much easier than sequencing a human genome because the human genome is much, much bigger than a microbe genome. And so what we are finding is that the cost and also the speed at which you can sequence a microbe is really remarkable now such that in the case of the recent story with Ebola, we are able to sequence, and one of our investigators, a good colleague of ours, did just the study, got some of the early isolates from Ebola outbreak and quickly sequenced the genomes of those isolates and with that gave immediate information about sort of the origins of it and some of the patterns of transmission that otherwise might have taken months if not years to figure out.

So we can get real time read out of what's going out in an infectious outbreak like Ebola. Now what's happening with antibiotic resistant bacteria where we think we know what the routes of transmission are, now you can do detective work by sequencing the isolates as they appear in different patients, and as we have seen story after story, surprises come about where you figure out that what you thought was happening is not really what's happening, and that teaches us immediately how to better contain some of these outbreaks even within a hospital.

Margaret Flinter: Dr. Green, I would like to take a look at what I think if we look back over the arc of time since 2003 and the conclusion of the Human Genome Project, one of the real promises seem to be the concept of personalized medicine or precision medicine as some people call it where each of our unique genomes would be the guide for the treatment protocols tailored to fit us specifically. And while the cost of sequencing one's own genome has come down significantly it seems as though this reality is still a long way off or at least it's not spoken about as part of our current practice pattern, what is the state of the science about personalized medicine?

Dr. Eric Green: Yeah. I actually might slightly disagree with you in that I actually think it is starting to be here and now, and I might just point to the Angelina Jolie's story as an example where there is a situation when she was very public about this, and it illustrated a situation where she has a change in her genome that makes her, and a well-known gene, that makes her susceptible to breast and ovarian cancer. I would actually say go look on the newsstands, and you will see, it just came out a couple of weeks ago, a big thick special issue of Time Magazine, all about DNA and genomics and how DNA shapes our life. I see

routinely, at least in the Washington D.C. area now, cancer treatment centers and health care networks, and they are using the word ‘genomics’ in their advertisements that are streamed into your living room. Those examples are some of the low hanging fruit, and I would immediately tell you that we are maybe 1% of the way towards implementing personalized medicine, genomic medicine, precision medicine, whichever word you want to use, the best is yet to come. But in areas like cancer, let’s say it's here and now for some kinds of cancer.

Another example is pharmacogenomics, big word, pharmacology and genomics. The reason we all respond to medications differently is because of differences in our genomes that influence how we metabolize drugs, and for more and more drugs we are figuring out who are the good responders versus the bad responders by reading out specific parts of the genome. And I think the other area that’s here and now for precision medicine has to do with these rare cases of diseases that sort of stump clinicians, these diagnostic odysseys that are often about children but sometimes adults. Now for a few thousand dollars you can read out their genome sequence, and in a fair percentage of the cases, you can figure out what’s wrong with them.

Mark Masselli: Dr. Green, we had your colleague NIH Dr. Francis Collins on the show a while back. He expressed some grave concerns about the cuts to funding for NIH research and the impact it would have on future research. It’s always had a history of being supported across the board, and that seems to have changed. And you and Margaret were talking earlier about the sort of group of young people that we want to come into this field, and they don’t do it for the money for the most part, but money does help. So give our listeners assessment of what’s happening in the state of scientific research funding including genomics and the impact these budget cuts are having on the present and future research protocols at NIH.

Dr. Eric Green: It's not a good situation. I mean as an American, America led in genomics during the Human Genome Project, some of these spectacular technological advances I have talked about that have come about in the last 11.5 years since the Genome Project, and they have been brought about by generous support of investigators in the private sector which was also met by a granting program we had here that’s led to that. And yet if we look around where the countries are really increasing their commitment to research and genomics research in particular, it's not the United States, and we risk ceding [ph] our lead in this area if we are not careful. If you actually look at what’s happened to our budget over the last decade, our purchasing power has basically dropped by 25%. So overall, we have 25% less dollars to do our science with than we did a decade ago, and this is at a time where we should be filling up our fuel tanks, and not starving it.

It is really not a good situation. The first outcome is we are just not making advances as quick as we could, but the second consequence is that we are scaring off the next generation because we are not convincing them that this is a value in the United States, and that there is going to be opportunities for them to run their laboratories or to conduct the kinds of clinical studies that are going to be needed in the future. And so it's hard to give encouraging signals to the next generation when they look at these curves, and they see these trends and they say this is not going to be supported well in the United States.

Mark Masselli: We have been speaking today with Dr. Eric Green, Director of the National Human Genome Research Institute at the NIH. You can learn more about their work by going to www.genome.gov. Dr. Green, thank you so much for joining us on Conversations on Healthcare today.

Dr. Eric Green: Great. Nice talking to you.

(Music)

Mark Masselli: At Conversations on Health Care, we want our audience to be truly in the know when it comes to the facts about health care reform and policy. Lori Robertson is an award-winning journalist and managing editor of FactCheck.org, a non-partisan, non-profit consumer advocate for voters that aim to reduce the level of deception in U.S. politics. Lori, what have you got for us this week?

Lori Robertson: Well, birth control has become an issue in few senate races across the country, and some Republican candidates are proposing the sale of oral contraceptives or the pill over-the-counter without a prescription. The idea isn't new. Reproductive health organizations formed a working group to explore the issue a decade ago. They support over-the-counter birth control pills as a way to increase access for women, but Congress can't make this happen. Instead it's up to a drug manufacturer to submit an application to the Food & Drug Administration, and the FDA to then review and approve it, and when it comes to the pill, there are many different brands and formulations that would have to go through the same process.

In Colorado, Republican Cory Gardner has been pushing the idea and says over-the-counter sales would make the pill cheaper, but it's not clear whether that would be the case. The available research is mixed, and it doesn't specifically address the pill. Research from 2005 found out-of-pocket cost decreased for antihistamines, but a 2002 study found consumers cost went up for certain drugs that moved from prescription to over-the-counter status. Emergency contraception or morning-after pill went up a bit in price when it became available without a prescription. Under the Affordable Care Act, most private insurance plans are required to cover the full cost of female contraception including the pill, sterilization, IUDs, and more with no cost sharing. What would happen if the pills

were sold over-the-counter? Gardner's campaign says he wants women to be able to be reimbursed through their insurance, but that didn't stop Planned Parenthood votes from saying in the TV ad that he wants women to "pay for all of it." That's not what Gardner has proposed. And that's my fact check for this week. I am Lori Robertson, Managing Editor of FactCheck.org.

Margaret Flinter: FactCheck.org is committed to factual accuracy from the country's major political players, and is a project of the Annenberg Public Policy Center at the University of Pennsylvania. If you have a fact that you would like checked, e-mail us at www.chcradio.com. We will have FactCheck.org's Lori Robertson check it out for you here on Conversations on Health Care.

(Music)

Margaret Flinter: Each week, Conversations highlights a bright idea about how to make wellness a part of our communities and everyday lives. Health care providers are forever on the lookout for that magic elixir that can cure a host of chronic ills in one step. And in the case of obesity, depression, anxiety and stress, that elixir could be turns out a number of steps as in taking a hike. A large study conducted by several institutions including the University of Michigan and Edge Hill University in the U.K. looked at the medicinal benefits derived from regular group hikes conducted in nature. Researchers, evaluators, some 2,000 participants in a program called Walking for Health, in England which sponsored some 3,000 walks per week across the country.

Dr. Sara Warber: There was investment in these walking groups, training leaders to take people on walks, finding trails that were good for people to do even if they had health problems.

Margaret Flinter: Dr. Sara Warber, Professor of Family Medicine at the University of Michigan School of Medicine said this study showed a dramatic improvement in the mental wellbeing of participants.

Dr. Sara Warber: Depression was reduced, perceived stress was reduced, and people, they experienced more positive feelings or positive emotions.

Margaret Flinter: Other studies have shown a link between mood and exercise, but Dr. Warber says this is the first study that revealed the added benefits of group hikes in nature and significant mitigation of depression. Walk for Health, a simple guided group nature hike program which incentivizes folks suffering from depression and anxiety to step into the fresh air with others, improving their mood, reducing their depression, increasing their overall health at the same time, now that's a bright idea.

(Music)

Margaret Flinter: This is Conversations on Health Care. I am Margaret Flinter.

Mark Masselli: And I am Mark Masselli, peace and health.

Conversations on Health Care, broadcast from the campus of WESU at Wesleyan University, streaming live at www.wesufm.org and brought to you by the Community Health Center.