

Informed consent for: "The ethos and effects of data-sharing rules: Examining the history of the 'Bermuda principles' and their effects on 21st century science"

University of Adelaide

Duke University

Researchers at the University of Adelaide, Australia, and the IGSP Center for Genome Ethics, Law & Policy, Duke University, are engaged in research on the **Bermuda Principles** for sharing DNA sequence data from high-volume sequencing centers. You have been selected for an interview because we believe that the recollections you may have of your experiences with the International Strategy Meetings for Human Genome Sequencing (1996-1998) will be interesting and helpful for our project.

We expect that interviews will last from 30 minutes to much longer, but you may stop your interview at any time. Your participation is strictly voluntary, and you do not have to answer every question asked.

Your interview is being recorded and we may take written notes during the interview. After your interview, we may prepare a typed transcript of the interview. If we prepare a transcript, you will have an opportunity to review it and to make deletions and corrections.

Unless you indicate otherwise, the *information* that you provide in this interview will be "on the record"—that is, it can be attributed to you in the various articles and chapters that we plan to write, and thus could become public through these channels. If, however, at some point in the interview you want to provide us with information that might be useful for us to know, but which you do not want to have attributed to you, you should tell us that you wish to go "off the record" and we will stop the recording. We will, however, take notes for our own use. When you are ready to go back "on the record," we will resume recording. Anything you say while "off the record" will not be on the audio recording and therefore will not appear in the transcript.

All *materials* from your interview (audio recording; transcript; interviewer's notes) will be available only to members of the research team affiliated with this project, unless you consent to their wider use, as described in the paragraph below. The digital materials will be maintained in a secure, HIPPA-compliant drive at Duke University. The paper materials will be stored in a locked cabinet.

In addition to the scholarly articles and chapters that we plan to write, we also hope to create a resource for other scholars and members of the public. We plan to post some of our research data to online digital archives. While we will use your "on the record" comments to inform and write our articles, we will not post your interview transcript or audio recording online unless you give us permission to do so, in a separate agreement. At the time we send your transcript to you for review, we will also provide a consent form asking your permission to post your interview transcript and/or audio recording online. The form will provide you with different options for how, when, and with whom the materials may be shared. You will, of course, also have the option not to share the materials beyond the Duke and Adelaide researchers.

One risk of this study is that you may voluntarily disclose identifiable information that later could be requested for legal proceedings, or otherwise be used against you. Please take this into consideration when you are speaking. There may be other risks associated with your "on the record" views being made publicly available, such as having your views mischaracterized or misunderstood.

Sum

The main benefit of participating in this study is ensuring that your side of the story is properly portrayed in this history of the Bermuda Principles, which have become a model for open and collaborative research in genomics and other fields.

To help us protect the privacy of those parts of your interview that are not public, we have obtained a Certificate of Confidentiality from the U.S. National Institutes of Health. With this Certificate, we investigators cannot be forced to disclose information that may identify you, even by a court subpoena, in any U.S. federal, state, or local civil, criminal, administrative, legislative, or other proceedings. We researchers can use the Certificate to resist any demands for information that would identify you.

The Certificate cannot be used, however, to resist a demand for information from personnel of the United States Government that is used for auditing or evaluation of federally funded projects or for information that must be disclosed in order to meet the requirements of the federal Food and Drug Administration (FDA).

A Certificate of Confidentiality does not prevent you or a member of your family from voluntarily releasing information about yourself or your involvement in this research. If an insurer, employer, or other person or institution obtains your written consent to receive research information, the researchers may not use the Certificate to withhold that information.

Signature Eliot L Marshall
Printed Name Eliot L. Marshall
Date 2/29/2012

If you have read this form in its entirety and agree to the interview and its terms, please sign and date above.

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If you have any questions about your rights as a research subject, you may contact the Duke University Institutional Review Board at 919-684-3030 or ors-info@duke.edu.

PLEASE FILL OUT AND RETURN THIS FORM TO: Center for Public Genomics, Duke University; c/o Susan Brooks; Center for Genome Ethics, Law, and Policy; 304 Research Drive, Box 90141; Durham, NC, 27708. **OR:** You may fax it to us at (U.S.) 1-919-668-0799.

Interviewee Information. Please list an address where we can contact you.

Full name: Eliot Marshall Date of interview: 3-24-2012
Current institutional affiliation: Science magazine (AAAS)
Street Address: 1200 New York Avenue NW, Washington DC 20005
Phone: 202 326 6589 Email address: emarshall@aaas.org

Interviewer Information.

Full name(s): Robert Cook-Deegan, Kathryn Maxson
Affiliations(s): Duke University

I, the undersigned, have read the above, and I **AGREE** to release my interview materials, subject to any restrictions listed below:

(A) I place **no restrictions** on my interview materials.

OR

(B) My interview materials may be reviewed, used, and quoted by the researchers affiliated with the Center for Public Genomics, Duke University; *and in addition* (check all that apply):

Researchers unaffiliated with the Center for Public Genomics may **read** the interview transcript and any related documents only after obtaining my permission.

Researchers unaffiliated with the Center for Public Genomics may **quote** from the interview only after obtaining my permission.

Researchers unaffiliated with the Center for Public Genomics **DO NOT HAVE** my permission to **read or quote** from the interview.

Posting interview materials to public digital archives: In spite of any restrictions listed above, I give permission for my interview materials to be made publicly available on the Internet by deposit in an institutionally affiliated archive:

1 year from the date of this form

5 years from the date of this form

10 years from the date of this form

25 years from the date of this form

After my death

Other: _____ (please specify a date or condition)

NEVER: MAY NOT BE DEPOSITED IN A PUBLIC ARCHIVE

Please specify any further restrictions in the space below:

Signature: _____

Eliot Marshall

Date: July 20, 2012

Interviewee: Eliot Marshall

Date, location, method: 22 March 2012, Durham, NC, by phone

Interviewers: Kathryn Maxson, Robert Cook-Deegan

KM: So we're on the air here. I'm [KM]. I work with [BCD], and we are doing a project on the Bermuda meetings for DNA sequence data sharing that took place from '96 to '98 during the human genome project. And mostly we've been interviewing participants in these meetings but in the middle of one of our interviews about a month and a half ago I looked at [BCD] and I said, "Oh my gosh, we should talk to [EMarshall]," because you've written a lot on this, or at least you covered the meetings as they were happening.

EMarshall: I did. I wish I'd gone.

KM: Yeah, so we thought that you could provide a very valuable perspective to our project. And the purpose of this project, by the end we'll probably have interviewed about 30 folks, I would say 25 of them will have been participants in the Bermuda meetings from '96 to '98. Several of them were at all of the meetings but most of them were at some combination of them. And we are working with a colleague at the University of Adelaide who is an historian and philosopher of science. And I am between degrees. I graduated from Duke with a degree in science but I'm transitioning to more humanities and social sciences work. I'm also interested in history of science, history of technology. Then of course there's [BCD], and no one really knows what he does. But anyway, we want to write a history of these meetings and perhaps several other papers that could spawn, depending on the themes that fall out of these interviews and some of our other readings. But we want to write a scholarly history of the Bermuda meetings in their time and place during the human genome project, within the course of technology development and DNA sequencing that took place then and is still taking place today. And the real impetus for this was that we've seen the Bermuda meetings come up in the literature and in conversations amongst scientists and social scientists and even historians and philosophers who've said, "Well the Bermuda meetings are this touchstone for open science and it was this very philosophical kumbaya thing where the entire genomics community got together and held hands and said we're going to share data." And we weren't entirely sure that that was the case. And that's why we're doing all these interviews. So that's the background, and [BCD], if you want to, is there anything you want to add?

BCD: So a couple things. [EMarshall], here's the process. The audio file of this interview will go a transcriber. She'll transcribe it. We'll send that back to you and when we send it back to you it will come with a form that basically says you can share this immediately, all the way to nobody ever gets to see this, and everything in between. You can share it after one year, three years, whatever.

EMarshall: These rules are much nicer than my rules.

BCD: Well, yeah, it's under an IRB protocol. So ...

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KM: Yeah, and we have received your informed consent and archived that. Thank you.

BCD: So basically what will happen is you'll get this transcript. You can take anything out that you don't want to live forever on the Internet. And what you do want to be available more publicly there are all the check boxes, and that will be self-explanatory when you get the form from us. And then if you could send that back to us...it will probably be a couple weeks. The woman who does transcriptions is good. She deletes the file after she does it. The audio file goes onto a drive that's not on the Internet and is protected. It's the same place we store medical records and stuff like that at Duke. So it's protected, and anything not on the record is protected by a Certificate of Confidentiality. So we can't protect your identity of course if anything that you say is public, but what we can do is make sure the information and the part of the transcript that is not public, does not find its way into the public record. And we can resist a subpoena.

EMarshall: Very good.

BCD: So those are the ground rules. And the reason that we're talking to you is that we wanted your perspective as somebody who's been on this beat for quite some time and wrote probably the most pointed articles about the ...

EMarshall: I just looked them up because I was trying to remember some of the details. And yeah, so there were one or two that seem to be really on point. I don't remember if there were more than that but I do know ...

BCD: So to the degree that you can remember it, could you give us a little background? Why did you write those pieces? What was the context? How'd you hear about the meetings?

EMarshall: The context that came back to me was ... well, there were two things going on ... a lot of it centered on Craig Venter. One was an effort at NIH initially to patent a lot of gene fragments—ESTs—that were coming out of a rapid sequencing project that Craig Venter started there. And then Craig Venter left and went to Human Genome Sciences, along with Bill Haseltine, and that company started filing just masses of patent applications based on these gene fragments. So that is kind of the background. There were a lot of claims being made to incomplete research data and a lot of anxiety about what was going to happen. That was part of the tension and the background.

When the government became involved in funding genome sequencing on a large scale these questions became even more urgent—who was going to control and own, and who's going to have access to the data, and when? That's what I recall. And I'm trying to remember the date exactly when they made those awards for the full-scale human sequencing project. It was probably 1996, 1997, some time around there. So I believe that's why this came to a head. I don't remember a

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specific trigger for it. ...People were working on a method of sequencing of human DNA and...certainly the good question presented itself, well, what are you going to do with results? And everybody would like to have access to it ...I guess there was a consensus certainly, in the publicly funded arena, that it should not be retained initially for too long a time by the companies and the groups that were doing the sequencing. So there was a feeling that there ought to be some ground rules that everyone agreed on for how they would share data. It was clear they would have to share it.

BCD: And in your reporting are there any other situations that are kind of analogous to this that you have come across, that you can recall?

EMarshall: Well I'm sure there are others. The only one that comes to mind immediately where there was a clear public debate about this, was sharing coordinates for protein structures. Or sharing the raw data. So the scientific journals got together and agreed that once you've published a paper that says that you've solved a protein structure, you need to release, make public, the raw data that supports that finding. And that was an understanding for a while—it wasn't really enforced. The journals didn't really see to it that the labs that published the data actually released the data. I think that set a precedent for the idea that you could have an agreement in the community that had some teeth in it; the journals said that they would not publish these protein structure data without prior submission of results to a database. I think that happened first. So that's the only other one I know. There may have been others.

BCD: And how did the handoff from Leslie Roberts, who I think was covering the EST controversy initially, how did that handoff to you end up? Is it because it involved patent stuff or ...

EMarshall: I think she went on leave for a while so she was not here at *Science*.

BCD: Oh, okay.

EMarshall: And then she came back later. She went to World Resources Institute for a while.

BCD: Okay. And are there any features of writing that piece...now, one thing just to let you know is, I think you had a quote in there from Maynard Olson that then precipitated...we've interviewed him and several of the people who were at...he was not at the meetings but I think you interviewed him and quoted some of his discomfiture with how the process was working. And he has shared with us some emails about that. So none of this is out of school or anything. It's all in the open and above board. But do you remember any other...why would you have been doing a story? Was there a mini-controversy or was this purely in context of the publication? This was, I think, in the same issue of *Science* as the publication of the initial draft sequence, if I remember.

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EMarshall: Okay, yeah, that came actually later. I looked up my stories and I can send them to you. The first one I did that I thought was really relevant was in '97, I guess. In 1997 I wrote one that says, "Sequencers call for faster data release" in May of '97. Probably what prompted it was the human genome organizations got together and tried to get a consensus on this, and there was concern that Europeans were under different patent rules and some of the sequencing was being funded privately, particularly in Germany. And so not everybody was playing under the same rules. And John Sulston wanted to have as much [sequence] made public as possible, and as soon as possible. But there were different views they tried to bring all together. So that was my first piece on it. I think it was prompted by a HUGO meeting. And then there was another one in 2001, so that was ... when was the genome published?

BCD: That year. That was 2001. I think the 2001 paper was in the genome issue actually.

KM: The February 16 issue.

BCD: I don't know if that was the same issue or the one right after it.

KM: That's the community spirit with teeth paper. We don't have the 1997 one. Would you mind sending that along?

BCD: I'm just going to pull it up right now.

EMarshall: Sure.

KM: Yeah, thank you.

EMarshall: Yeah, it's ... let's see ... it's May 23, 1997.

KM: So just from an outsider's perspective, why did this seem important to the genomics community? Why was it newsworthy? Just because of the patenting controversy?

EMarshall: It was all entangled. As I say, it grew out of this tension between the public sequencers and the Celera, or then Human Genome Sciences group, and it centered really on the work done by Craig Venter. So it had been a long-simmering difficult issue about how should the data be released and shared? And the NIH strategy initially was to file for patents as a way of making it public, to share it. And that was controversial, that idea. Then the idea was you could share it without patenting it, but you don't want to have some people then patenting it, patenting pieces of it for their own use or sequestering data. A lot of people were arguing about how the data should be shared. And there were not just commercial concerns, but priority of publication issues. So if you were sequencing something,

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should you be able to write a paper and publish a paper on it before you shared the data, or should you make the data available and do a parallel track [release alongside] your publication effort? I don't know. ...I think I only wrote about it because everybody was talking about it. I may have gone to one of the meetings where they were discussing HUGO and Bermuda rules and I said, "What are those?" So that's probably how it began.

BCD: And do you have any comments to make about the degree to which this ... [KM] basically explained that one of the reasons we're covering this is...or trying to reconstruct this history...is because it's now being cited in retrospect as being a major turning point or a landmark in a particular way of doing open collaborative science that involves prepublication data release, which is still a hot topic of discussion in some fields. Not all but some. And does it feel to you as somebody who's followed this for quite some time and in other domains, does it feel like something that was significant and smart? I mean, I'm asking you for two different judgments. One is about the historical significance of it and the other is about whether it was good policy or not.

EMarshall: I think it was a turning point. I think it was significant in that way. It certainly was my impression. But I'd say there were some antecedents for it. But it was a much broader, bigger effort [than earlier ones]. And the fact that more researchers were involved made it prominent. And importantly I think it was supported by the leaders of the funding agencies. It was strongly supported by ...Francis Collins, Harold Varmus and ... maybe not Howard Hughes [immediately], well, it did later ... but the Wellcome Trust. So those leaders all supported it and felt that it was right for the institutions to adopt the principles. So I think that really made it significant. And from there it started out being focused just on big-volume rapid DNA sequencing, it went beyond that, partly because of Harold Varmus's key role and authority and ability to persuade people. And also Francis Collins felt that it should be applied to other areas and not just high-volume sequencing. So it became the ideal that you should apply [the principles] as much as possible. And I think it also fed into the open-access movement in scientific publications.

KM: And when you say it fed into an open-access movement about scientific publications, what do you mean? Could you give more specifics about that?

EMarshall: The spirit, the ideal that you should try to share the basic tools of science as broadly as possible, especially if they're publicly funded, and they should be treated as a public resource basically. That's the idea broadly. [It] was adopted by Harold Varmus and has been strongly backed by him ever since; I think [these leaders] applied the same general idea to the scientific publications. Not just DNA related or data related, high-volume databases, but to the sharing of research results. But I think the connection is not direct, if you understand what I'm saying. It's part of a general cultural change.

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KM: As someone who, just getting back to [BCD]'s policy question, as someone who puts a public face on science as you do, how do you see the Bermuda ... what do you see as the role of what happened in Bermuda in putting a public face on science and characterizing the public aspects of the human genome project?

EMarshall: Well I'm not sure whether people outside this field or not familiar with what was going on in biomedical research would have been aware of it. I don't know the effects on the public image of science, but it affected the common standards of the community...standards and expectations and ideals of what a scientist would be expected to do. It changed the default position from being, if you did the work you get to keep it and do what you want with the data, to the assumption that this is a shared resource and you have some individual claim on it, but much of what you do has got to be shared. I think it focused the general cultural ethos in that direction.

And [BCD] had asked whether it was beneficial. I think it was good. I think it was, but I think there also were specific ways in which...there may have been some penalties. There are some fields where it turned out you couldn't expect people to immediately share the raw data that they produced, even where there were large volumes of data being generated, because of the nature of the work they did. [These are fields where it takes] a long time to analyze data...and didn't involve human health. For example, in planetary science...

KM: So when you say everyone was talking about it, in what ways were they talking about it? Because we've heard several different interpretations of why the Bermuda meetings were important amongst the genome scientists themselves. And one of the things was, oh well, it was good policy and this was a good way to make good with the folks who were actually paying for this science, because it was a public works project interested in generating data that would later be used for other things. And another interpretation, which has definitely been the most prevailing one was that, well this was really a scientific meeting and we were there to organize the project and divvy up the labor and grab different chromosomes and different areas. Another interpretation is that this was a way for the smaller labs to get more involved in the project and also international labs to get a stake in what was an international project that was very prestigious. And so I'm interested in when you say, oh well, this is newsworthy, people were talking about it, how were they talking about it?

EMarshall: Yeah, I think all those things are true. It was a way to share, to involve smaller labs and get others interested. I'm trying to remember the details of how I got interested, but it seemed like it was being debated quite a bit. So it got a lot of...some heated debate about how these rules should work and that's what draws reporters to it. Something like this.

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I'm trying to remember those meetings. ... People had different perspectives on it. And there was a concern that everybody [should get] their fair chance to interpret the data. Sometimes for the sequencing centers, it was really a logistical problem, that's all. Centers that were creating the data were not necessarily the ones that would be best at interpreting it. At the same time, you didn't want to release data without any ground rules at all. So I think it was just a matter of trying to get an understanding on how we would go forward.

There was also a belief at the time that these were hugely valuable and that there were all kinds of patentable things being released that would be the basis for drugs and tests and treatments. So it was a feeling that it ought to be, everyone ought to agree on how to proceed with this valuable material, how to make it public and not have it sequestered.

KM: And in your 2001 paper, *Bermuda Rules: Community Spirit, With Teeth*, you indicate that controversy and discussion and debate about the Bermuda Principles increased when Celera came on line and started igniting this race between the public and private efforts. How did that feel? Did it feel like ... what was your perspective on that period, from 1998 to 2001?

EMarshall: Well there was tremendous tension. I think this was just one of the areas where there were real concerns, perhaps contention. There were some people who were absolutely determined that something should be done to make the DNA data public and not subject to private patenting. [Including Alan Williamson and John Sulston.] And I think Williamson was one who was talking about patenting genes and then giving away the patents. There was great concern that a company like Human Genome Sciences or Celera or some other would try to come in and, in effect, just grab the property. So, there was a lot of tension...this was only one minor aspect. There was a huge tension and bad feelings between the groups over this.

KM: [BCD], do you want to jump in?

BCD: So [EMarshall], this whole time I've been searching through the hundreds...I mean, it's so impressive...hundreds of articles that you've written. And I'm on the third page of 100 articles. And I was trying to find the one you were alluding to that was the first one. I haven't still gotten there because the only way I could find them was to go search for your name.

EMarshall: Oh, you can limit it. If you put in Bermuda ...

BCD: Oh, I didn't even think about Bermuda. Okay, I was doing DNA and sequence and...okay, Bermuda. There we go.

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KM: So I'm interested in what your background is. Do you have a background in science?

EMarshall: I'm an English major. No, I don't.

KM: Okay. And so what is it like covering a science beat as someone ... how have you gotten up to speed on the material?

EMarshall: It's always over my head. I'm always trying to catch up. There are people here who are...nowadays all of our interns have PhDs. So I'm way behind in that respect. So ... it's a struggle. What can I say?

KM: Yeah, well just it's interesting, and your job is to translate the science into something that folks who are reading your articles can understand. And I guess the question I have from this perspective is, what unique insights do you think that you might have about the Bermuda meetings coming from a more journalistic perspective, rather than an academic one? Just kind of removed from the science?

EMarshall: I don't know if I had any unique perspective. I think that it was just fascinating as an institutional [turning point]...it looked like to me sort of a cultural change as I've said, where this community was trying to establish some broad principles of conduct that represented a change for some members of the community. And it was one that shifted from a principle of data you produce are entirely yours, to one where some of that has got to be shared and it's got to be shared under these guidelines. It's not all yours, it's shared, it's public. And there are certain principles for that. I just thought that was an interesting institutional change. That's what got my attention, you know, a very, it seemed like an altruistic move, a good move.

KM: As a taxpayer, how do you feel about sharing the data from publicly funded research? Do you think that is something that's good?

EMarshall: I think it's good. I do also accept the argument that the biotech companies make--that they need to have property ...exclusively for a while to attract investors. And so I think you need to balance that commercial need with the other one, which is the public sharing of the resource. But how it's done is pretty tricky. Generally things have moved in the right direction.

KM: Do you remember who you talked to specifically? I know there was Alan Williamson and also there is a paper you wrote in 1995, actually before Bermuda called, *A Strategy for Sequencing the Genome Five Years Early*, where you talk to John Sulston and Bob Waterston. We've actually ... what?

BCD: I finally found it.

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KM: Oh, [BCD] finally found the paper that ... he was making strange gestures over here and I was unsure what he was up to. So who else were you able to speak to?

EMarshall: There were actually lots of people in that time who were leading all those centers. Gosh ... Waterston, Sulston, Ari Patrinos ... I spoke to just about everyone.

KM: What about international folks?

EMarshall: Yes, and I didn't always get in touch with them, but you mean like in Japan?

KM: Right.

EMarshall: Occasionally I did.

KM: Was it Yoshi Sakaki?

EMarshall: Yeah, I spoke to him at one time.

KM: I don't mean to interrupt you. What did it seem that their perspectives were on this as largely Anglo-American effort to gather scientists?

EMarshall: I'm not sure I asked them at the time, I think they were sort of outnumbered. There was so much funding being poured in by the U.S. and the Brits and by people with strong views about how it should be done. I think that the Japanese and Germans, others, were coming along but this is kind of a new way of doing things. So that would have been an interesting thing to look into but I didn't.

KM: [BCD], you do you want to ...

BCD: So you know what? [EMarshall], I think we are beginning to just circle back and repeat stuff. So why don't we just finish up this part of the interview and I'll make myself available to reverse roles here ...

KM: That's fine.

BCD: ... on *Prometheus* if you're...

EMarshall: I don't recollect a lot of the details of these stories. I think when I looked it up I only saw these couple of ones. I remember this subject kept coming up. But I may have written one more that I didn't find on specifically these agreements. I think there was one more, but it wasn't about Bermuda rules, it was about applying this principle to another area, which was sequencing of microorganisms.

KM: The microbiome?

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EMarshall: No, it was much earlier.

KM: If you could find that, that would be wonderful. I don't know why we don't have it here. But that would be great.

EMarshall: He was a researcher, Paul Sogin, who felt that the Bermuda rules wouldn't apply to him. Shouldn't apply for specific reasons.

KM: Was it, *DNA Sequencer Protests Being Scooped With His Own Data*? I think it might be.

EMarshall: Yeah, maybe.

KM: Yeah, okay. If you wouldn't mind sending that along, and thank you. We were just interested in seeing what it was like covering this beat and talking to the scientists and seeing what their attitudes were about this. So thank you.

EMarshall: You should call Leslie [Roberts] too. She's away at the moment but ...

BCD: Is she still there at *Science*? I haven't ...

EMarshall: In fact, at the moment she's in Pakistan. She's writing about polio.

BCD: Oh really? Oh, the eradication effort?

EMarshall: Yes.

BCD: She's going to India and Pakistan. Is she going to Nigeria?

EMarshall: I think she may be.

BCD: Wow, what an exciting life.

EMarshall: She did all that early reporting on the genome project. Like I said, I remember what I first started doing, one of my first memories of doing this was going to a conference here in Washington. It was at maybe the Convention Center and trying to learn about this very quickly, and there were two guys who were speaking at this...I think it was an [Inaudible]-sponsored event. And one was speaking and one was sitting in the hall fuming at the other one. And it was Craig Venter and Bill Haseltine. And that was my introduction to it.

BCD: Were they in the same space and you were trying to talk to both of them?

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EMarshall: Right. But one of them, well I think Bill was actually on the platform speaking at the time and Venter was sitting in the hall just fuming. He not long afterwards left, took his share out of HGS.

KM: Well thank you so much. I imagine you guys want to talk about *Prometheus*.

EMarshall: Oh, if you have a second.

KM: Yeah, I think [BCD] does. So I'm going to turn off the recorder here.

END OF RECORDING