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for the Study of Bioethical Issues

TRANSCRIPT

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DR. GUTMANN: Sorry, I turned it off. We're now going to switch gears to focus on law enforcement use and access to genetic information, and to do so I first would like to welcome Melissa Mourges. Thank you very much.

Ms. Mourges is an Assistant District Attorney and the Chief of the Forensic Sciences Cold Case Unit of the New York County DA's Office.

She is also the Co-Chief of the Cold Case DNA Project, which investigates and prosecutes cold case sexual assaults, using latest DNA technology, and she trains prosecutors nationwide to use DNA evidence in cold cases, and to start cold case programs.

She is a member of the Conviction Integrity Panel and the Justice Task Force.

Prior to joining the DA's Office, she was Deputy Counsel for the New York State Police and an Assistant DA in the Kings County District Attorney's Office. She received her JD from Albany Law School.

Thank you so much for joining us, and we really look forward to your presentation of someone who has been a very thoughtful practitioner of the use of DNA. So, please begin.

MS. MOURGES: I have to say, I'm one of those people who went to law school because I was promised there would be no math. It’s way above my pay grade.

(Laughter.)

DR. WAGNER: Turn your microphone on, please.

DR. GUTMANN: Thank you.

MS. MOURGES: And the Manhattan DA's Office is the setting of the TV show 'Law and Order', so everybody thinks it's an incredibly glamorous job, but not so much.

As a rookie 30 years ago, I was often assigned to cases involving an offense called token sucking, and I was concerned this was crime that was its own punishment, practitioners would go into the subway system, jam the turn style with paper and suck out the tokens, which were then worth about a dollar and I have to say, it still makes me shudder every time I think about it.

But once I was promoted to sex crimes, I entered the wonderful world of forensic biology, only we just called it evidence.

Evidence was collected then as it is now. Doctors would use a sterile swab to collect sample from the victim's body. They would package it in envelopes and send

the rape kit to the lab for testing, and testing used to involve looking under the microscope and checking to see whether there were any sperm visible in the sample.

If we saw sperm, then I could stride confidentially into Court, knowing that I could declare we could, indeed, prove that some sort of sex happened, because semen had been found.

If it were a particularly significant case, we would do ABO blood typing and if the perpetrator was a secretor, if he was one of the approximately 80 percent of males whose blood type showed up in his semen, we would know the blood type of the rapist, and once we caught a suspect, we could rule him in or we could rule him out by blood type.

So then we would fast-forward to the mid 1990's and the advent of restriction fragment length polymorphism analysis, and with RFLP testing, if you had a saliva stain or a blood stain or a semen stain the size of a quarter, you could develop a DNA profile and compare it to your suspect.

Now, the profile looked like a fuzzy bar-code and interpretation was often one of these like squint-eyed judgment calls, and of course there was no database, so you needed a suspect to compare your RFLP test result to.

Then came the development of PCR/STR DNA testing. PCR stands for polymerase chain reaction, the molecular Xeroxing that amplifies minute pieces of DNA into amounts big enough to test.

STRs are short tandem repeats, areas of the DNA that repeat themselves different numbers of times in different people.

So instead of a stain the size of a quarter, a scientist can get a useful DNA profile from a sample one-billionth the size of a packet of Sweet & Low.

Crime labs across the country used the same 13 markers called the core loci, to upload both convicted offender and crime scene samples into CODIS.

Now, CODIS is the combined DNA index system, administered by the FBI. There are CODIS labs in all 50 states and at the FBI, and we can now compare profiles between and among them all. CODIS is what we mean when we talk about the forensic DNA database.

Now, CODIS contains of two main -- consists of two main indices. The first index contains DNA profiles of known offenders, collected by swabbing a Q-tip against the inside of the offender’s mouth. The second contains crime

scene samples, like blood from a knife at a homicide scene, or the semen in a rape kit.

They are routinely run against each other, and we can get cold hits, matching a suspect to a crime, or a case-to-case match, linking two previously unrelated cases.

We can learn, for example, that a rape in California and a rape in Oklahoma were committed by the same guy, and we can tie a North Carolina inmate to a murder in New York City.

Now, CODIS is also the repository for DNA profiles from unidentified human remains, and for reference samples from family members of the missing.

Now, CODIS labs must be accredited. They are audited routinely, and if they don't follow the rules, they lose their right to participate in the databank. Now, fortunately, that has never happened.

Now, our own DNA lab in New York City at the Office of the Chief Medical Examiner, is a national leader in the development of new forensic DNA techniques, and as a practitioner, I am very lucky to be able to rely upon their excellent science when I walk into a courtroom.

Now, opponents of forensic DNA databasing claim

it will allow government agents and employers and insurers to learn whether you have a breast cancer gene or are likely to develop diabetes or have a propensity for violence, and to deny benefits based on your profile. They're just wrong.

Forensic DNA typing looks only at the areas of DNA that do not code for any known trait or characteristic, so-called junk DNA, and these areas are specifically chosen for two reasons.

The first is that they do not relate to eye color or height or any other known trait, and the second is that these regions on the DNA vary widely between people, so they are useful for telling one person from another.

Now, profiles in the database are stored by bar-code, not by name or physical description or gender or neighborhood.

When there is a databank match between a crime scene and an offender, the CODIS lab double-checks the match by retesting the offender sample. Then, and only then, is the name released to law enforcement.

It is a felony in New York for anyone at the lab to release DNA information for anything other than law enforcement purposes.

And apropos of what you were saying, Dr. Gutmann, I worked eight blocks north of Ground Zero, and after 9/11, when so many parents went to work, but didn't come home, my husband and I decided to buy more life insurance, and a medical technician came to my house, he weighed me, he took blood and urine samples, and he strapped a portable EKG monitor across my chest, and it made me realize if insurance companies want your data, they just ask for it. They don't have to rob a DNA databank to get it, and I'm going to show you what we show juries, and maybe you'll do me the favor of just holding this up?

This is an actual -- an actual chart that was moved into evidence at trial, and this is what the jury sees, and I chose this one to show you how ubiquitous DNA testing is.

We used to reserve DNA testing for rapes and homicides, and as it occurs now, over half of the 10,000 DNA tests done a year in New York City by the DNA lab are done on property crime cases.

This is a burglary where a guy used to walk into apartment lobbies. He would hold a Starbucks cup in his hand and he would stroll in like he belonged there, then he would

go up to an apartment. He would jiggle the lock with a credit card. He would go in, he's steal the electronics and the jewelry and he would leave.

And in this particular case, he left behind the Starbucks cup, and so the jury sees this. We don't catch the smart ones.

(Laughter.)

DR. GUTMANN: You're an honest woman.

MS. MOURGES: I often think that should be written on the side of the NYPD police cars.

And so we explained to the jury that these locations across the top are the locations on the DNA that we look at. These are the ones that do not code for anything, and we explain that these numbers here, what they represent are -- you get half your DNA from your mother and half from your father, and so, this person got 29 from one parent and the 30 from another.

We also explain that there is not a blessed thing you can tell about this person from his DNA profile except for, anybody who took bio, for his gender, because at the amelogenin location, he is an XY, which gets the football and the stupidity gene on the Y, and so that is all we know about

him, is we know that he is a male.

The other thing we tell the jury are the statistics for forensic DNA. The statistics on a DNA match are literally stratospheric. We can say that the likelihood of finding that same DNA profile as belongs to the suspect as was found on the evidence is one in greater than one-trillion.

Well, how big is a trillion? In New York, and you can localize this for your home team, we tell them to imaging Yankee Stadium, which holds 50,000 people, and you could fill Yankee Stadium day in and day out, every day for 54,000 years, and still not get to a trillion people.

Now, the Department of Defense collects DNA samples for every serviceman and -woman in case of a casualty and it is their solemn vow that there will be no more unknown soldiers.

Now, that databank is kept confidential, and neither military nor civilian law enforcement can access it, regardless of their need. If they want a soldier’s DNA profile, they have to get it another way.

The fact is, we are never moving backwards with this technology. Instead of fragile eye-witnesses or

uncorroborated confessions, we have evidence that proves who done it, not only beyond a reasonable doubt, but beyond all doubt, and importantly, we also routinely exonerate suspects through DNA, by proving that they are not the ones who left DNA at a crime scene, and the Manhattan District Attorney, Cy Vance, Jr., champions expansion of the database for this very reason.

We have almost 15 years experience with forensic DNA databases, enough to make it clear that you can ensure integrity and privacy in a robust system with millions of moving parts and thousands of users.

DR. GUTMANN: Thank you very much. Pilar Ossorio is Associate Professor of Law and Bioethics at the University of Wisconsin. Welcome. Co-Director of the Neuroscience and Law Project and the Inaugural Ethics Scholar in Residence at the Morgridge Institute for Research at the University of Wisconsin.

She received her PhD in microbiology and immunology from Stanford, completed a post-doctoral fellowship in cell biology and infectious diseases at Yale, and later earned a JD from Berkeley.

She has served in various science policy

positions with experience both in and outside the government, working on healthcare reform for the Clinton Administration, ethics issues in genomics research at the NIH and as Director of Genetics -- of the genetics section for the AMA.

She recently finished a three-year appointment at the National Advisory Council of the NIH's Human Genome Research Institute.

Welcome. We look forward to your comments.

DR. OSSORIO: Thank you, and I have to say, these days, most of my work is in research governance and not in forensic genetics, and so part of me wants to throw away all the comments I have here, and just respond to the questions from the last session, but I won't do that.

So -- but I do want to preface my comments on forensic genetics with a preface that may be a response to a question that came up earlier today. I think the problem of genetic information privacy is set in a larger context in which both government entities and private firms are surveilling, tracking and profiling us like never before.

Law enforcement conducts extensive visual surveillance, using cameras in public places and on private property, using GPS tracking in our cars, already built in,

or our telephones, using infrared cameras that can see through our walls and so forth.

Recently, commentators have been discussing whether there can be military satellites or robot drones, re-tasked and used for non-military law enforcement purposes.

So, those are ways that government is surveilling us, completely above and beyond our genomics.

In the private sector, as we've heard today, you know, Google has decided to link all of our information together, if you use Google products, to create individual profiles. Facebook's upcoming IPO was described by commentators recently as an attempt to value the millions of comprehensive, individual profiles that Facebook compiles by tracking the users' activities, online activities.

So, increasingly large collections of data about individuals, data that we can't help but give away by participating in ordinary activities of daily life, those -- we're being profiled and those data collections are occurring, and through those data collections, people can analyze our patterns of behavior, infer patterns of thought or predict behaviors and risks, and in some cases individuals don't even know these things about themselves, and this

applies across all these kinds of data collections, not just to genomic data.

So, I think in some ways, we're engaged in re-negotiating the relationship between individuals and the government, individuals and the private sector.

Genomic information collection and use is just one small piece of this, in my opinion. So, I guess I'm with Mark Rothstein, in not sort of subscribing to genetic exceptionalism there.

So, speaking explicitly about forensic genomics, my particular interest has actually been somewhat different, centered on genomic analyses that go beyond the 13-STR profile typically used by law enforcement for identification purposes.

So, in my 2006 article “About Face”, I discuss law enforcement efforts to generate phenotype profiles based on genotyping of crime scene samples.

So, the samples genotyped far beyond the 13-STR profiles, or perhaps even sequenced, and then scientists attempt to infer what somebody looks like.

So, to date, there are only a few well publicized cases of this kind of activity. We don't really know how

often it goes on because it's done typically by private sector laboratories that don't really disclose information about their activities.

But there are private companies out there that have ongoing active research programs aiming to make this kind of profiling cheaper and more accurate, sometimes called molecular photo-fitting.

The crime scene materials that have been used for this type of genomic analysis, of course, include blood and semen, so items that are found at the crime scene and have a high probability of being connected to a crime.

But also things like a hat found near a crime scene, spit on the sidewalk, cells from a fingerprint. So, some of these biological materials may have been at the crime scene for months or more, and may not actually have a connection to the crime, but there is nothing to prevent law enforcement from essentially rooting around in biological material found at or near a crime scene.

Now, attempts to predict visible human traits from genotypes may not appear to raise any privacy issues, so how could learning about a person's visible traits or attempting to predict them be a privacy invasion?

But some of the same genetic information that gives rise to visible traits can also disclose other non-public information, for instance, genetic information about skin pigmentation is also often genetic information that helps scientists to infer ancestry, and not everybody discloses her ancestry, not everybody knows a lot about her ancestry, and not everybody's ancestry is discernible through public information or through her appearance.

So, just for instance, people are not really great at inferring my personal ancestry, both -- either from what I look like or from knowing my name or where I was born.

So, ancestry is only one type of information that can be discovered in this way, and medical information may also be genetically linked to the kinds of genetic traits that the forensic genomics people are looking at, and there is nothing actually to prevent law enforcement from explicitly attempting to find medical information in genetic material left at a crime scene.

Such information could be helpful in limiting the pool of candidates among whom police would seek their suspect, or in providing clues for where to search.

So, for instance, knowing that a person is likely

to have a particular disease and would need a particular medication might lead law enforcement to seek a suspect among people who visit pharmacies to buy that medication, or knowing that a person has sickle cell disease might lead law enforcement to look for the person at pain clinics or emergency rooms in certain neighborhoods.

You could ask, well, wouldn't helping police catch suspects provide such benefit to society that that might outweigh any genetic information privacy risk? After all, when there is eye-witness description, those descriptions are notoriously inexact and unreliable and isn't it better to have genomic predictions of a suspect’s features or even genomic predictions of their medical condition?

Even if genomic predictions are vague and fairly generic, with respect to physiognomy, wouldn't that be better, than relying on perhaps society's prevailing prejudices of who is likely to be a criminal and where we ought to search for them, right?

So, I think it's possible that in weighing the relevant values and social goods, we might collectively come to a determination that law enforcement should be able to root though any DNA found at a crime scene in any way they

want.

But I don't think we've actually had that conversation. To the extent it's being done, it's just being done, and when we do have that conversation, I think it's worth keeping in mind that biological materials found at the crime scene didn't necessarily derive from persons connected to the crime, and that the types of information generated will be most useful when they point towards somebody who is in the minority, in that neighborhood or community or whatever, because the information -- this sort of information, which is not about matching an identifying profile to a particular known individual, but about trying to generate some image that helps us look for a particular individual, that information is most useful when it limits the pool of suspects as much as possible, which will be when -- often when it points towards people from minority communities, which isn't a privacy issue. It's a civil rights issue, but perhaps, gives minority communities a greater stake in these questions of forensic genetics.

Now, most cases about forensic genetics have been litigated primarily as Fourth Amendment cases, and in the context that people who have been arrested or convicted of

crimes. This kind of profiling that I'm talking about hasn't been looked at by the courts at all.

I think there is -- for a long time, some people have been saying that our Fourth Amendment has gotten to the point where it allows a lot of different kinds of searches.

So, searching through people's DNA is one kind of potential search. Courts looking at 13-STR profiles have uniformly said that it's not a Fourth Amendment violation to search through an arrestee's or a convict's DNA to generate the 13-STR profile.

I think there is some indication that, with this recent case in particular, that we heard a tiny bit about this morning, that perhaps some of our justices are becoming uncomfortable with the kind of detailed profiles that new technologies are allowing people to create.

So, I know there was some mention this morning of United States against Jones. This was the Supreme Court case, just decided last month, in which the justices held that police actions were unconstitutional -- were an unconstitutional search, when the police affixed a GPS tracking device to Mr. Jones' vehicle without a warrant and tracked him for 28 days.

So, this search generated over 2,000 pages of very precise positional information about him, or at least about his vehicle, and what I found fascinating about this case is that I think it raises an analytical problem in our Fourth Amendment and our privacy law generally, a problem that will become more important going forward.

So, neither our privacy jurisprudence nor our bioethics scholarship, I think, adequately addresses the distinction between privacy and anonymity, and it's been kind of floating around here today.

So, these are related and overlapping, but not identical concepts, and both can be at stake, I think, and I'm just about done -- so, privacy rules, I think we were talking about this a little bit earlier. Privacy rules are about limiting access to somebody in some way. Anonymity is a little bit different, and privacy rules, of course, have instrumental purposes in preventing people from being harmed because of information disclosures. That is not their only value to people, necessarily, but it's an important one that people pay attention to in bioethics.

Anonymity does something similar, and we use it in bioethics to prevent informational harms to people, but

the interesting thing about anonymity is rather than creating some kind of lack of access, where somebody is blocked off from the public in some way, or their information is blocked off, the value of anonymity is that it lets people participate in the public sphere, whether that is through their political speech or whether that is through giving biological materials to researchers.

Anonymity allows people to participate and interact in the public, without experiencing informational harms, because the information doesn't get linked back to the person, and I think that is what these surveillance technologies, as much as they are undermining privacy, even more so they are getting rid of our opportunities for anonymity in any place outside of our homes, so that you know, as one interacts in public, one leaves behind various kinds of biological materials.

So, courts have held that, you know, looking at someone's biological material is like looking at something discarded, that the person has no privacy interest and no Fourth Amendment interest in that biological material once it is outside of your body and outside of your private property, like your home or your deck on the back of your house.

So, with that, I will stop.

DR. GUTMANN: Thank you very much. I'll just lead with a question and then open it up for other Commission Members.

Melissa, as somebody who not only has watched 'Law and Order', but Dick Wolf is an alum of the University of Pennsylvania, I just saw him recently in Los Angeles, I think it would surprise a lot of viewers of 'Law and Order', and other similar programs, to learn from you that there is a lot of information that the police could use, could potentially, that is, could in the sense that if they try to, but don't use, because of what their restrictions are.

So, could you say something on the -- just specify, on the genetic level, what you -- you know, if you had the legal authority to use, you might want to use, or do you think the constraints are the right constraints that you operate under?

MS. MOURGES: It's the -- when the DNA database was created, I think there was a tremendous amount of concern in Congress about the privacy issues, and the FBI has set up an extremely stringent set of rules and regulations about the DNA database, and as I said, the forensic markers are ones

that don't give you any kind of information, other than gender, and it makes sense if you look at it like this.

I guess we could look at a marker for blue eyes or a marker for skin color, but would that really be as discriminating or as informative as we want, because it would help me, I guess, a little bit to know that the perpetrator is a white male or has brown hair, but so do millions and millions of other people.

And so, what the -- the CODIS loci really do is, they're highly discriminating, highly informative because they vary hugely between people, and so you do get a statistic like one in greater than a trillion, whereas, if we were looking at the blue eye gene, we would get a statistic, you know, maybe one in four.

So, I think that it was set up that way on purpose. Something interesting about the --

DR. GUTMANN: So, I'm asking you, is it -- from a law enforcement -- if you weren't concerned about discrimination and issues of privacy and anonymity, all those ethical issues, and you were just concerned about getting even the smart guys, not just the dumb ones, but you know, getting them all, would you want -- is this an optimal system

for you, or is it only the optimal system because it takes into account all of these other ethical concerns?

MS. MOURGES: I think I would --

DR. GUTMANN: From a sheer "we want to get them."

MS. MOURGES: From a real practical point of view, I think it's much more burdensome that I can't get a defendant's hospital records, is a much bigger problem, that you know, if somebody is -- I mean, this is something that happens all the time.

DR. GUTMANN: Yes, good, this is just what we wanted. So, you would much rather get their hospital records?

MS. MOURGES: It would be more useful on a day to day basis, because the genetic information, you know, as I said -- and you know, going to what you spoke to, knowing that they have some, you know, eye color, something that is visible, that would help me maybe pare down the universe of suspects, I can't think of anything that would help me pare down the universe of suspects a lot.

Maybe, you know, gender and race would sort of maybe cut the pool in half or something like that. But I think it's working.

DR. GUTMANN: Yes. Nita?

DR. FARAHANY: Thank you for both of these perspectives, which were incredibly interesting and enlightening.

Pilar, I have been looking into the phenotypic sketches and think that it's fascinating what some of the emerging technologies are, of being able to build not just eye color and skin pigmentation, but theoretically, building actual, like a sketch, and then being able to run that through facial recognition software on Google or Facebook or anywhere else that has picture identification.

So, I think you could actually narrow it down quite a bit, as we get better at it, and then I think of something like `Criminal Minds', where you know, they do like the behavioral analysis, you know, and you could start to build a behavioral analysis of the person, as well, and you could start to have a phenotypic sketch, a behavioral analysis, so that you could then have a pretty good idea of what the person is that you're looking for, in addition to their identification. And I think, wow, that is scary, but then what is it that I'm scared of? And so to your point about anonymity, and you mentioned a good bit about how

it's non-coding areas, that they don't really tell us anything, but why shouldn't we use that information?

So, what -- why should I have a right to anonymity, if at all? Why shouldn't we embrace and move toward a society of greater transparency, where we're able to do things like build phenotypic sketches or criminal -- you know, behavioral profiles, and what is it that we're scared of?

Are we scared people won't participate in society? That they're all going to move into the woods and hide, but then of course, the satellites will find them? I mean, you know, what is the fear that we're trying to guard against, that makes us say things like, this is non-coding areas, or what will happen once we can actually build this complete profile?

DR. OSSORIO: I think there are two different things, right? I think one is the relationship of individuals to the government, and that government will use these technologies, or could use these kinds of technologies to really impede political opposition, to impede kinds of ideas that they don't like, and we've seen a little bit of this going on with the use of the internet in the Arab

Spring, right, where it's been used by people planning various uprisings, but also being used by governments, to -- apparently, to trick people into showing up places and the arresting them all, right?

So, I think one of the genuine concerns, one of the reasons we have a Fourth Amendment and one of the reasons we have the idea that government shouldn't be able to just, you know, put a police officer in your house anytime they choose, or put a soldier in your house anytime they choose, is because of concerns about government control of political opposition, political ideas, and I think it goes beyond that, and this is where I get to -- I also personally don't have a Facebook page either, and in part because I think that there are ways that these technologies, by doing so much profiling, actually, they're also -- they don't just profile you for the fun of profiling you, right?

And in the law enforcement context, we may think it's great for police to be able to find their suspect. In the commercial context, you know, one might worry that they're actually shaping behaviors in ways that narrow our choices inappropriately or something like that.

DR. FARAHANY: Well, just to ask, just to push a

little --

DR. GUTMANN: We're under big time constraints. So, I want to ask Nelson -- have Nelson's question and we're going to have to segue to the roundtable.

So, you may still have the opportunity, okay. Nelson, thanks.

COLONEL MICHAEL: I'll be quick. It's for Pilar. Could you just talk us through a little bit more about what sort of genetic evidence is collected in this phenotypic sketching that you just described, because I was -- when you described it, it sounded a little bit conflated with other evidence that would not be genetic, and Melissa has told us that they're concentrating strictly on the 13-STR. So, I'm just not sure how that --

DR. OSSORIO: No, so, there are two different things. One is the kind of standard traditional genetic testing and the kind of information that goes into CODIS and is specifically used for identifying people, and that is the 13-STR.

This is something different that is done when you have crime scene material, you have no eye-witness, you have no suspect, and so -- and usually, a really horrific crime

where the police have authority to spend a bit more money, right, and then they could look for anything, and what they have looked for in the past has been information about skin pigmentation and eye color and the kind of things that go to physical features.

So, now, what the work is, is much more about looking at whole genome genotypes and doing things like helping to understand what genetic markers are related to the relationship of the width of cheekbone versus chin, kind of thing. So, actually trying to develop a real kind of -- almost like a sketch of a person's face.

DR. GUTMANN: I want to thank you all and we're going to ask you to stay up here and bring our other presenters up for a roundtable. Are we taking a break first? Sorry, okay. Mine says 3:15 p.m. Do we have until 3:30 p.m.?

We have a break until 3:15 p.m., okay, I have it right here. We are taking -- okay, well, instead, I'm going to use my Chairman's privilege, and thank these presenters. Let's thank them all.

(Applause.)

We're going to take a break until 3:15 p.m. and

reconvene and then we'll have more questions, okay?

(Whereupon, the above-entitled matter went off the record at 3:03 p.m. and resumed at 3:24 p.m.)