

WEBVTT

NOTE duration:"01:14:24"

NOTE recognizability:0.899

NOTE language:en-us

NOTE Confidence: 0.9014073

00:00:03.760 --> 00:00:05.390 OK. We're going to go ahead

NOTE Confidence: 0.9014073

00:00:05.390 --> 00:00:06.438 and get started tonight.

NOTE Confidence: 0.960637557777778

00:00:06.440 --> 00:00:08.717 Thank you so much for coming for joining us.

NOTE Confidence: 0.960637557777778

00:00:08.720 --> 00:00:11.940 And for those who are dialed in on Zoom,

NOTE Confidence: 0.960637557777778

00:00:11.940 --> 00:00:14.452 just a couple of quick housekeeping issues.

NOTE Confidence: 0.960637557777778

00:00:14.452 --> 00:00:18.445 We have a terrific schedule for 2024,

NOTE Confidence: 0.960637557777778

00:00:18.445 --> 00:00:20.155 which is available on the website.

NOTE Confidence: 0.960637557777778

00:00:20.160 --> 00:00:22.022 Just if you just go biomedical ethics

NOTE Confidence: 0.960637557777778

00:00:22.022 --> 00:00:23.400 at Yale, you'll find yourself,

NOTE Confidence: 0.960637557777778

00:00:23.400 --> 00:00:25.620 you'll find pretty easily to get to

NOTE Confidence: 0.960637557777778

00:00:25.620 --> 00:00:27.090 the program for Biomedical Ethics and

NOTE Confidence: 0.960637557777778

00:00:27.144 --> 00:00:28.915 you'll see the schedule for the spring,

NOTE Confidence: 0.960637557777778

00:00:28.920 --> 00:00:30.344 which looks very exciting.

NOTE Confidence: 0.960637557777778

00:00:30.344 --> 00:00:32.480 But we wanted to finish off
NOTE Confidence: 0.960637557777778

00:00:32.480 --> 00:00:34.280 2023 on a high note.
NOTE Confidence: 0.960637557777778

00:00:34.280 --> 00:00:35.864 And so I want to tell you a bit
NOTE Confidence: 0.960637557777778

00:00:35.864 --> 00:00:37.480 about our speaker for this evening.
NOTE Confidence: 0.960637557777778

00:00:37.480 --> 00:00:40.040 I just not too long ago met Steve
NOTE Confidence: 0.960637557777778

00:00:40.040 --> 00:00:42.203 Schiff and was so excited to be
NOTE Confidence: 0.960637557777778

00:00:42.203 --> 00:00:44.022 able to kind of bring him into our
NOTE Confidence: 0.960637557777778

00:00:44.022 --> 00:00:45.584 bioethics community because, you know,
NOTE Confidence: 0.960637557777778

00:00:45.584 --> 00:00:47.440 it's Yale's a pretty big place and there's
NOTE Confidence: 0.960637557777778

00:00:47.485 --> 00:00:49.357 people around here that if you don't know.
NOTE Confidence: 0.960637557777778

00:00:49.360 --> 00:00:51.600 And I see that, I see some student
NOTE Confidence: 0.960637557777778

00:00:51.600 --> 00:00:53.718 bioethics leaders among us as well.
NOTE Confidence: 0.960637557777778

00:00:53.720 --> 00:00:55.386 So when you're sometimes looking for members
NOTE Confidence: 0.960637557777778

00:00:55.386 --> 00:00:57.077 of the faculty to address to students,
NOTE Confidence: 0.960637557777778

00:00:57.080 --> 00:00:59.600 it's good to get to know these guys too.
NOTE Confidence: 0.960637557777778

00:00:59.600 --> 00:01:01.154 Steve Schiff is a professor and

NOTE Confidence: 0.960637557777778
00:01:01.154 --> 00:01:03.119 vice chair for Global Health in the
NOTE Confidence: 0.960637557777778
00:01:03.119 --> 00:01:04.877 Department of Neurosurgery here at Yale.
NOTE Confidence: 0.960637557777778
00:01:04.880 --> 00:01:06.196 But I should say he is professor,
NOTE Confidence: 0.960637557777778
00:01:06.200 --> 00:01:08.560 but as of relatively recently,
NOTE Confidence: 0.960637557777778
00:01:08.560 --> 00:01:11.144 he's also in fact the Harvey and Kate
NOTE Confidence: 0.960637557777778
00:01:11.144 --> 00:01:12.800 Cushing Professor of Neurosurgery,
NOTE Confidence: 0.960637557777778
00:01:12.800 --> 00:01:16.128 which is which is as they say, not nothing.
NOTE Confidence: 0.960637557777778
00:01:16.128 --> 00:01:17.592 So this is a very important
NOTE Confidence: 0.960637557777778
00:01:17.592 --> 00:01:18.080 endowed professorship.
NOTE Confidence: 0.960637557777778
00:01:18.080 --> 00:01:20.544 So congratulations for that,
NOTE Confidence: 0.960637557777778
00:01:20.544 --> 00:01:21.160 Steve.
NOTE Confidence: 0.960637557777778
00:01:21.160 --> 00:01:23.090 He's a pediatric neurosurgeon with
NOTE Confidence: 0.960637557777778
00:01:23.090 --> 00:01:24.634 interest in neural engineering,
NOTE Confidence: 0.960637557777778
00:01:24.640 --> 00:01:25.699 Sustainable health engineering
NOTE Confidence: 0.960637557777778
00:01:25.699 --> 00:01:26.758 and global health.
NOTE Confidence: 0.960637557777778

00:01:26.760 --> 00:01:28.960 He received his NIH Directors
NOTE Confidence: 0.960637557777778

00:01:28.960 --> 00:01:31.020 Pioneer and Transformative Awards
NOTE Confidence: 0.960637557777778

00:01:31.020 --> 00:01:33.620 in 2015 and 2018 respectively.
NOTE Confidence: 0.960637557777778

00:01:33.620 --> 00:01:37.093 The support enabled him to lead the
NOTE Confidence: 0.960637557777778

00:01:37.093 --> 00:01:39.481 recent discovery and characterization
NOTE Confidence: 0.960637557777778

00:01:39.481 --> 00:01:41.131 of neonatal panabesiliosis,
NOTE Confidence: 0.960637557777778

00:01:41.131 --> 00:01:44.288 a new disease syndrome that is an
NOTE Confidence: 0.960637557777778

00:01:44.288 --> 00:01:46.542 important 'cause of infant sepsis
NOTE Confidence: 0.960637557777778

00:01:46.542 --> 00:01:48.677 and hydrocephalus in East Africa.
NOTE Confidence: 0.960637557777778

00:01:48.680 --> 00:01:50.060 And that's a conversation you
NOTE Confidence: 0.960637557777778

00:01:50.060 --> 00:01:52.000 and I need to have afterwards,
NOTE Confidence: 0.960637557777778

00:01:52.000 --> 00:01:53.110 maybe at dinner because I need
NOTE Confidence: 0.960637557777778

00:01:53.110 --> 00:01:54.080 to learn more about that.
NOTE Confidence: 0.960637557777778

00:01:54.080 --> 00:01:55.240 I don't know nothing about that.
NOTE Confidence: 0.960637557777778

00:01:55.240 --> 00:01:57.260 He's taught neuro ethics at the
NOTE Confidence: 0.960637557777778

00:01:57.260 --> 00:01:58.480 undergraduate and graduate levels

NOTE Confidence: 0.960637557777778

00:01:58.480 --> 00:02:00.469 and is deeply involved in the

NOTE Confidence: 0.960637557777778

00:02:00.469 --> 00:02:02.124 ethics of ancestral genomics in

NOTE Confidence: 0.960637557777778

00:02:02.124 --> 00:02:03.879 predictive personalized public health,

NOTE Confidence: 0.960637557777778

00:02:03.880 --> 00:02:04.888 which is what we're going to

NOTE Confidence: 0.960637557777778

00:02:04.888 --> 00:02:05.392 hear about tonight,

NOTE Confidence: 0.960637557777778

00:02:05.400 --> 00:02:08.840 specifically those efforts in Africa.

NOTE Confidence: 0.960637557777778

00:02:08.840 --> 00:02:10.965 Steve is largely a product

NOTE Confidence: 0.960637557777778

00:02:10.965 --> 00:02:12.240 of Duke University.

NOTE Confidence: 0.960637557777778

00:02:12.240 --> 00:02:13.492 He received his MD,

NOTE Confidence: 0.960637557777778

00:02:13.492 --> 00:02:15.440 did his surgery residency there,

NOTE Confidence: 0.960637557777778

00:02:15.440 --> 00:02:17.200 his neurosurgery residency there,

NOTE Confidence: 0.960637557777778

00:02:17.200 --> 00:02:19.312 also received a PhD in Physiology

NOTE Confidence: 0.960637557777778

00:02:19.312 --> 00:02:22.040 and then went to CHOP to train

NOTE Confidence: 0.960637557777778

00:02:22.040 --> 00:02:23.480 in pediatric neurosurgery.

NOTE Confidence: 0.960637557777778

00:02:23.480 --> 00:02:24.792 So Professor Steve Schiff,

NOTE Confidence: 0.960637557777778

00:02:24.792 --> 00:02:26.432 we're so pleased you're here
NOTE Confidence: 0.960637557777778

00:02:26.432 --> 00:02:28.318 and please join me in welcoming
NOTE Confidence: 0.87783272

00:02:32.600 --> 00:02:34.115 most of you guys kind of know the drill.
NOTE Confidence: 0.87783272

00:02:34.120 --> 00:02:35.224 So just to remind you and
NOTE Confidence: 0.87783272

00:02:35.224 --> 00:02:36.399 those who are on the call,
NOTE Confidence: 0.87783272

00:02:36.400 --> 00:02:38.360 there'll be a talk of about 45 minutes,
NOTE Confidence: 0.87783272

00:02:38.360 --> 00:02:39.160 maybe a little bit longer,
NOTE Confidence: 0.87783272

00:02:39.160 --> 00:02:40.540 a little bit less depending
NOTE Confidence: 0.87783272

00:02:40.540 --> 00:02:41.920 on how our speakers feeling.
NOTE Confidence: 0.87783272

00:02:41.920 --> 00:02:43.278 And then I'll moderate AQ and A.
NOTE Confidence: 0.87783272

00:02:43.280 --> 00:02:45.160 So you'll have a chance after the talk.
NOTE Confidence: 0.87783272

00:02:45.160 --> 00:02:46.798 And those who are on Zoom,
NOTE Confidence: 0.87783272

00:02:46.800 --> 00:02:47.940 put your questions in through
NOTE Confidence: 0.87783272

00:02:47.940 --> 00:02:49.080 the Q&A function on Zoom,
NOTE Confidence: 0.87783272

00:02:49.080 --> 00:02:51.299 if you would, and then we'll have
NOTE Confidence: 0.87783272

00:02:51.299 --> 00:02:52.759 a conversation that'll take us.

NOTE Confidence: 0.87783272

00:02:52.760 --> 00:02:56.360 And but at at 6:30 at the latest,

NOTE Confidence: 0.87783272

00:02:56.360 --> 00:02:57.320 I will close it up.

NOTE Confidence: 0.87783272

00:02:57.320 --> 00:02:58.683 So you don't have to wonder how

NOTE Confidence: 0.87783272

00:02:58.683 --> 00:02:59.922 long you're going to be or even

NOTE Confidence: 0.87783272

00:02:59.922 --> 00:03:01.252 if the questions are really good

NOTE Confidence: 0.87783272

00:03:01.252 --> 00:03:02.344 and the conversation's great.

NOTE Confidence: 0.87783272

00:03:02.344 --> 00:03:03.280 We will stop.

NOTE Confidence: 0.87783272

00:03:03.280 --> 00:03:05.386 So we'll be done at 6:30 to set you

NOTE Confidence: 0.87783272

00:03:05.386 --> 00:03:07.346 free to go and and read, you know,

NOTE Confidence: 0.87783272

00:03:07.346 --> 00:03:08.984 some neurosurgery texts all night or

NOTE Confidence: 0.87783272

00:03:08.984 --> 00:03:11.000 whatever it is that you're inclined to do.

NOTE Confidence: 0.87783272

00:03:11.000 --> 00:03:11.651 And for now,

NOTE Confidence: 0.87783272

00:03:11.651 --> 00:03:12.953 I turn it over to Steve.

NOTE Confidence: 0.87783272

00:03:12.960 --> 00:03:13.560 Thank you,

NOTE Confidence: 0.87783272

00:03:13.560 --> 00:03:13.860 Sir.

NOTE Confidence: 0.87783272

00:03:13.860 --> 00:03:14.160 Thanks
NOTE Confidence: 0.7049948525

00:03:14.160 --> 00:03:17.370 very much, Martin. And thanks to everyone
NOTE Confidence: 0.7049948525

00:03:17.370 --> 00:03:21.040 for the invitation. Here, let me.
NOTE Confidence: 0.6551715

00:03:24.640 --> 00:03:24.840 Yeah.
NOTE Confidence: 0.9411906

00:03:42.200 --> 00:03:42.760 So
NOTE Confidence: 0.957564417777778

00:03:43.840 --> 00:03:46.837 let me tell you a bit of a story
NOTE Confidence: 0.911135655

00:03:47.960 --> 00:03:51.200 about some of the work that
NOTE Confidence: 0.911135655

00:03:51.200 --> 00:03:54.720 we've been doing and is
NOTE Confidence: 0.784633592

00:03:56.000 --> 00:03:58.280 people is this the microphone? I need?
NOTE Confidence: 0.7607138

00:04:00.480 --> 00:04:03.880 No. Do I this thing?
NOTE Confidence: 0.351140155

00:04:23.000 --> 00:04:23.360 That's right.
NOTE Confidence: 0.34064259

00:04:37.240 --> 00:04:37.480 All right,
NOTE Confidence: 0.965408213333333

00:04:40.560 --> 00:04:42.720 that should work.
NOTE Confidence: 0.965408213333333

00:04:42.720 --> 00:04:45.576 So I put an outline together of of
NOTE Confidence: 0.965408213333333

00:04:45.576 --> 00:04:48.396 what I'll talk to you about tonight
NOTE Confidence: 0.965408213333333

00:04:48.400 --> 00:04:53.172 and let's start off with the global

NOTE Confidence: 0.965408213333333

00:04:53.172 --> 00:04:57.346 code of conduct for research in

NOTE Confidence: 0.965408213333333

00:04:57.346 --> 00:05:00.954 Research resource Poor Settings.

NOTE Confidence: 0.965408213333333

00:05:00.960 --> 00:05:04.754 And this is a a consensus document

NOTE Confidence: 0.965408213333333

00:05:04.754 --> 00:05:07.976 that's been worked on for several

NOTE Confidence: 0.965408213333333

00:05:07.976 --> 00:05:10.580 years and it really highlights

NOTE Confidence: 0.965408213333333

00:05:10.580 --> 00:05:14.096 some of the differences that ought

NOTE Confidence: 0.965408213333333

00:05:14.096 --> 00:05:18.035 to be considered in working in

NOTE Confidence: 0.965408213333333

00:05:18.035 --> 00:05:20.960 countries in the developing world.

NOTE Confidence: 0.965408213333333

00:05:20.960 --> 00:05:23.300 This year they changed the title

NOTE Confidence: 0.965408213333333

00:05:23.300 --> 00:05:26.200 of this to say the Trust Code.

NOTE Confidence: 0.965408213333333

00:05:26.200 --> 00:05:29.008 I think that's an effort to

NOTE Confidence: 0.965408213333333

00:05:29.008 --> 00:05:31.640 hide what it's about.

NOTE Confidence: 0.965408213333333

00:05:31.640 --> 00:05:34.840 Perhaps the European Parliament has

NOTE Confidence: 0.965408213333333

00:05:34.840 --> 00:05:39.160 adopted this as its ethics for how

NOTE Confidence: 0.965408213333333

00:05:39.160 --> 00:05:42.206 European countries ought to conduct

NOTE Confidence: 0.965408213333333

00:05:42.206 --> 00:05:45.436 research in the developing world.
NOTE Confidence: 0.9654082133333333

00:05:45.440 --> 00:05:50.160 And there are two overarching principles.
NOTE Confidence: 0.9654082133333333

00:05:50.160 --> 00:05:54.400 The 1st is that you need to develop
NOTE Confidence: 0.9654082133333333

00:05:54.400 --> 00:05:56.920 local community partnerships.
NOTE Confidence: 0.9654082133333333

00:05:56.920 --> 00:06:00.875 There's been a long history of what
NOTE Confidence: 0.9654082133333333

00:06:00.880 --> 00:06:05.600 has been termed colonial science.
NOTE Confidence: 0.9654082133333333

00:06:05.600 --> 00:06:08.396 We sit in institutions like this,
NOTE Confidence: 0.9654082133333333

00:06:08.400 --> 00:06:10.840 dream of wonderful research projects
NOTE Confidence: 0.9654082133333333

00:06:10.840 --> 00:06:14.240 and go out and find a place where
NOTE Confidence: 0.9654082133333333

00:06:14.240 --> 00:06:16.160 we can carry those projects out,
NOTE Confidence: 0.9654082133333333

00:06:16.160 --> 00:06:18.160 publish papers and there's
NOTE Confidence: 0.9654082133333333

00:06:18.160 --> 00:06:20.160 very little benefit locally.
NOTE Confidence: 0.9654082133333333

00:06:20.160 --> 00:06:24.125 So that's the second major principle is
NOTE Confidence: 0.9654082133333333

00:06:24.125 --> 00:06:27.800 that there should be local social value.
NOTE Confidence: 0.9654082133333333

00:06:27.800 --> 00:06:33.280 So and that's a key difference to what we
NOTE Confidence: 0.9654082133333333

00:06:33.280 --> 00:06:36.236 typically do in an institution like Yale.

NOTE Confidence: 0.965408213333333

00:06:36.240 --> 00:06:39.408 We have people here with very

NOTE Confidence: 0.965408213333333

00:06:39.408 --> 00:06:40.992 successful academic careers.

NOTE Confidence: 0.965408213333333

00:06:41.000 --> 00:06:45.320 We value the creation of knowledge,

NOTE Confidence: 0.965408213333333

00:06:45.320 --> 00:06:47.920 but we have with all due respect we

NOTE Confidence: 0.965408213333333

00:06:47.920 --> 00:06:50.373 have people here who work on number

NOTE Confidence: 0.965408213333333

00:06:50.373 --> 00:06:54.220 theory that if you did that in rural

NOTE Confidence: 0.965408213333333

00:06:54.220 --> 00:06:57.360 Africa it might be very interesting,

NOTE Confidence: 0.965408213333333

00:06:57.360 --> 00:06:59.864 but it doesn't improve the lives or the

NOTE Confidence: 0.965408213333333

00:06:59.864 --> 00:07:02.798 health of the people that you've worked with.

NOTE Confidence: 0.965408213333333

00:07:02.800 --> 00:07:06.280 And so curiosity based research

NOTE Confidence: 0.965408213333333

00:07:06.280 --> 00:07:09.580 is something that these global

NOTE Confidence: 0.965408213333333

00:07:09.580 --> 00:07:12.288 codes advocate that we don't

NOTE Confidence: 0.965408213333333

00:07:12.288 --> 00:07:14.480 do in vulnerable populations.

NOTE Confidence: 0.965408213333333

00:07:14.480 --> 00:07:20.520 So you add general and local value to to

NOTE Confidence: 0.965408213333333

00:07:20.520 --> 00:07:24.946 how we value science and interesting delay.

NOTE Confidence: 0.965408213333333

00:07:24.946 --> 00:07:28.678 So I am a pediatric neurosurgeon
NOTE Confidence: 0.9654082133333333

00:07:28.680 --> 00:07:31.368 and the most common indication for
NOTE Confidence: 0.9654082133333333

00:07:31.368 --> 00:07:33.813 operating on the brain of children
NOTE Confidence: 0.9654082133333333

00:07:33.813 --> 00:07:35.878 is that they have hydrocephalus,
NOTE Confidence: 0.9654082133333333

00:07:35.880 --> 00:07:38.976 they build up fluid and we do a
NOTE Confidence: 0.9654082133333333

00:07:38.976 --> 00:07:42.239 variety of different kinds of surgery
NOTE Confidence: 0.9654082133333333

00:07:42.240 --> 00:07:45.276 to relieve pressure on the brain.
NOTE Confidence: 0.9654082133333333

00:07:45.280 --> 00:07:46.740 The vast,
NOTE Confidence: 0.9654082133333333

00:07:46.740 --> 00:07:51.120 vast majority of children with hydrocephalus
NOTE Confidence: 0.9654082133333333

00:07:51.120 --> 00:07:54.078 are in the the developing world.
NOTE Confidence: 0.9654082133333333

00:07:54.080 --> 00:07:58.182 The largest concentration of cases is in
NOTE Confidence: 0.9654082133333333

00:07:58.182 --> 00:08:01.024 sub-Saharan Africa and the most common
NOTE Confidence: 0.9654082133333333

00:08:01.024 --> 00:08:04.600 cause is infection earlier in life.
NOTE Confidence: 0.9654082133333333

00:08:04.600 --> 00:08:06.880 This is very different from what we see
NOTE Confidence: 0.9654082133333333

00:08:06.880 --> 00:08:09.319 in the US or in Europe or Australia,
NOTE Confidence: 0.9654082133333333

00:08:09.320 --> 00:08:11.264 where hydrocephalus following infections

NOTE Confidence: 0.965408213333333

00:08:11.264 --> 00:08:15.439 is not at all of that common anymore.

NOTE Confidence: 0.939958194210526

00:08:20.760 --> 00:08:24.048 I have had the privilege for the last

NOTE Confidence: 0.939958194210526

00:08:24.048 --> 00:08:27.339 16 years of collaborating with this

NOTE Confidence: 0.939958194210526

00:08:27.339 --> 00:08:30.314 small hospital in eastern Uganda.

NOTE Confidence: 0.939958194210526

00:08:30.320 --> 00:08:33.000 It's the Cure Children's Hospital.

NOTE Confidence: 0.939958194210526

00:08:33.000 --> 00:08:36.288 It specializes in neurological

NOTE Confidence: 0.939958194210526

00:08:36.288 --> 00:08:38.754 surgery of children.

NOTE Confidence: 0.939958194210526

00:08:38.760 --> 00:08:41.160 Forty of their hydrocephalus cases,

NOTE Confidence: 0.939958194210526

00:08:41.160 --> 00:08:45.160 which are their most common need for surgery,

NOTE Confidence: 0.939958194210526

00:08:45.160 --> 00:08:48.104 40% are post infectious,

NOTE Confidence: 0.939958194210526

00:08:48.104 --> 00:08:51.558 30% are children born with spina bifida,

NOTE Confidence: 0.939958194210526

00:08:51.560 --> 00:08:52.919 an open spine.

NOTE Confidence: 0.939958194210526

00:08:52.919 --> 00:08:55.637 They're also called neural tube defects,

NOTE Confidence: 0.939958194210526

00:08:55.640 --> 00:08:58.840 so we have to surgically close their back.

NOTE Confidence: 0.939958194210526

00:08:58.840 --> 00:09:00.920 Once their back is closed,

NOTE Confidence: 0.939958194210526

00:09:00.920 --> 00:09:03.685 2/3 or more of those children will

NOTE Confidence: 0.939958194210526

00:09:03.685 --> 00:09:08.040 need to be treated for hydrocephalus.

NOTE Confidence: 0.939958194210526

00:09:08.040 --> 00:09:11.560 And this delay here,

NOTE Confidence: 0.939958194210526

00:09:11.560 --> 00:09:15.272 malnutrition is a pervasive

NOTE Confidence: 0.939958194210526

00:09:15.272 --> 00:09:18.400 comorbidity for all of these patients.

NOTE Confidence: 0.939958194210526

00:09:18.400 --> 00:09:21.172 And I'll get back to that a

NOTE Confidence: 0.939958194210526

00:09:21.172 --> 00:09:22.600 little later on in the talk.

NOTE Confidence: 0.83255039

00:09:27.440 --> 00:09:29.444 Most infectious hydrocephalus,

NOTE Confidence: 0.83255039

00:09:29.444 --> 00:09:32.116 as I'm describing here,

NOTE Confidence: 0.83255039

00:09:32.120 --> 00:09:35.440 if you were to look inside the brain,

NOTE Confidence: 0.83255039

00:09:35.440 --> 00:09:37.800 you'd see with a scope,

NOTE Confidence: 0.83255039

00:09:37.800 --> 00:09:40.760 very small pustules lining what

NOTE Confidence: 0.83255039

00:09:40.760 --> 00:09:43.720 is called the appendimal surface

NOTE Confidence: 0.83255039

00:09:43.720 --> 00:09:46.756 of the ventricles in the brain.

NOTE Confidence: 0.83255039

00:09:46.760 --> 00:09:48.268 These are small postules

NOTE Confidence: 0.83255039

00:09:48.268 --> 00:09:50.153 with space in between them.

NOTE Confidence: 0.83255039

00:09:50.160 --> 00:09:52.758 They don't tend to become confluent.

NOTE Confidence: 0.83255039

00:09:52.760 --> 00:09:55.826 There's a variety of things that that

NOTE Confidence: 0.83255039

00:09:55.826 --> 00:09:58.439 we could discuss regarding that,

NOTE Confidence: 0.83255039

00:09:58.440 --> 00:10:00.895 but we see this throughout

NOTE Confidence: 0.83255039

00:10:00.895 --> 00:10:01.877 sub-Saharan Africa.

NOTE Confidence: 0.83255039

00:10:01.880 --> 00:10:04.400 The sites that are able to

NOTE Confidence: 0.83255039

00:10:04.400 --> 00:10:06.080 operate on these children.

NOTE Confidence: 0.83255039

00:10:06.080 --> 00:10:08.006 The first thing I saw walking

NOTE Confidence: 0.83255039

00:10:08.006 --> 00:10:10.039 into an operating room in Vietnam,

NOTE Confidence: 0.83255039

00:10:10.040 --> 00:10:13.400 it's exactly the same phenomenon.

NOTE Confidence: 0.83255039

00:10:13.400 --> 00:10:15.200 We're not in Haiti right now,

NOTE Confidence: 0.83255039

00:10:15.200 --> 00:10:17.530 but my colleagues who've operated

NOTE Confidence: 0.83255039

00:10:17.530 --> 00:10:20.366 in Haiti have seen again the

NOTE Confidence: 0.83255039

00:10:20.366 --> 00:10:22.038 same type of syndrome.

NOTE Confidence: 0.83255039

00:10:22.040 --> 00:10:24.020 It's completely uncharacterized.

NOTE Confidence: 0.83255039

00:10:24.020 --> 00:10:28.640 And so much of the work that
NOTE Confidence: 0.83255039

00:10:28.640 --> 00:10:32.476 I'll show you today is an effort
NOTE Confidence: 0.83255039

00:10:32.480 --> 00:10:35.000 to learn more about this.
NOTE Confidence: 0.83255039

00:10:35.000 --> 00:10:38.840 So I visit this site in 2007 and
NOTE Confidence: 0.944101188

00:10:42.160 --> 00:10:44.880 in discussing with their physicians,
NOTE Confidence: 0.944101188

00:10:44.880 --> 00:10:48.183 I I was very impressed with just how hard
NOTE Confidence: 0.944101188

00:10:48.183 --> 00:10:51.797 it is to do technical neurosurgery in a
NOTE Confidence: 0.944101188

00:10:51.797 --> 00:10:55.239 setting where the resources are not ample.
NOTE Confidence: 0.944101188

00:10:55.240 --> 00:11:00.077 And I actually asked the medical director,
NOTE Confidence: 0.944101188

00:11:00.080 --> 00:11:03.400 all right, what's the most
NOTE Confidence: 0.944101188

00:11:03.400 --> 00:11:06.720 important problem you can't solve?
NOTE Confidence: 0.944101188

00:11:06.720 --> 00:11:08.060 And he answered nicely.
NOTE Confidence: 0.944101188

00:11:08.060 --> 00:11:09.400 It was Ben Wharf,
NOTE Confidence: 0.944101188

00:11:09.400 --> 00:11:11.920 who's now on faculty at Harvard.
NOTE Confidence: 0.944101188

00:11:11.920 --> 00:11:14.632 And Ben said, well, why don't you
NOTE Confidence: 0.944101188

00:11:14.632 --> 00:11:16.480 figure out what makes these kids sick?

NOTE Confidence: 0.944101188

00:11:16.480 --> 00:11:19.240 And I thought, how hard can that be?

NOTE Confidence: 0.93491203

00:11:21.880 --> 00:11:24.064 2023 was really the year that

NOTE Confidence: 0.93491203

00:11:24.064 --> 00:11:26.377 we finished up with the first

NOTE Confidence: 0.93491203

00:11:26.377 --> 00:11:28.717 set of answers to that question.

NOTE Confidence: 0.93491203

00:11:28.720 --> 00:11:31.120 So it's been a long journey

NOTE Confidence: 0.93491203

00:11:31.120 --> 00:11:35.904 here and we finally needed the

NOTE Confidence: 0.93491203

00:11:35.904 --> 00:11:39.840 resources of some major NIH support.

NOTE Confidence: 0.93491203

00:11:39.840 --> 00:11:41.500 It's interesting to me,

NOTE Confidence: 0.93491203

00:11:41.500 --> 00:11:44.889 it was a struggle to get NIH to

NOTE Confidence: 0.93491203

00:11:44.889 --> 00:11:47.325 support this because it was felt

NOTE Confidence: 0.93491203

00:11:47.325 --> 00:11:50.160 to have no feedback and impact on

NOTE Confidence: 0.93491203

00:11:50.160 --> 00:11:52.800 the health of the United States.

NOTE Confidence: 0.93491203

00:11:52.800 --> 00:11:54.120 Excuse me, Steve.

NOTE Confidence: 0.62180591875

00:11:55.640 --> 00:11:57.240 Yeah, definitely the weak link of the crowd.

NOTE Confidence: 0.62180591875

00:11:57.240 --> 00:11:59.112 So forgive you that I would move that and

NOTE Confidence: 0.49159659

00:11:59.560 --> 00:12:02.000 I have to phone up.
NOTE Confidence: 0.49159659
00:12:02.000 --> 00:12:06.440 Yeah, I can also just talk into this thing.
NOTE Confidence: 0.49159659
00:12:06.440 --> 00:12:09.320 I just hate standing.
NOTE Confidence: 0.49159659
00:12:09.320 --> 00:12:12.198 Is that any better? It is.
NOTE Confidence: 0.49159659
00:12:12.198 --> 00:12:14.851 All right, So we got enough resources
NOTE Confidence: 0.49159659
00:12:14.851 --> 00:12:17.539 from NIH to put together the kind
NOTE Confidence: 0.49159659
00:12:17.539 --> 00:12:19.960 of study you'd want to do here.
NOTE Confidence: 0.49159659
00:12:19.960 --> 00:12:22.160 Get very high quality samples,
NOTE Confidence: 0.49159659
00:12:22.160 --> 00:12:24.520 put together a cryogenic
NOTE Confidence: 0.49159659
00:12:24.520 --> 00:12:26.880 infrastructure that didn't exist.
NOTE Confidence: 0.49159659
00:12:26.880 --> 00:12:30.240 Get thousands of samples safely shipped,
NOTE Confidence: 0.49159659
00:12:30.240 --> 00:12:36.052 frozen to the US And in recent
NOTE Confidence: 0.49159659
00:12:36.052 --> 00:12:38.480 years I'll describe what we found.
NOTE Confidence: 0.49159659
00:12:38.480 --> 00:12:40.904 But in the last several years
NOTE Confidence: 0.49159659
00:12:40.904 --> 00:12:42.929 there've been multiple cases that
NOTE Confidence: 0.49159659
00:12:42.929 --> 00:12:44.957 are identical seen in the US.

NOTE Confidence: 0.968520058
00:12:49.120 --> 00:12:51.232 What do you do when you
NOTE Confidence: 0.968520058
00:12:51.232 --> 00:12:52.640 can't grow an Organism?
NOTE Confidence: 0.968520058
00:12:52.640 --> 00:12:57.396 This is a brutally difficult set of strains
NOTE Confidence: 0.968520058
00:12:57.396 --> 00:13:02.040 to get to grow in culture it turned out.
NOTE Confidence: 0.968520058
00:13:02.040 --> 00:13:04.560 And so if you don't know what causes
NOTE Confidence: 0.968520058
00:13:04.560 --> 00:13:06.600 infection, you can do several things.
NOTE Confidence: 0.968520058
00:13:06.600 --> 00:13:08.820 All bacteria have genes that
NOTE Confidence: 0.968520058
00:13:08.820 --> 00:13:11.040 are only present in bacteria,
NOTE Confidence: 0.968520058
00:13:11.040 --> 00:13:14.080 so you can amplify them and sequence them.
NOTE Confidence: 0.968520058
00:13:14.080 --> 00:13:16.593 And we have large databases so you
NOTE Confidence: 0.968520058
00:13:16.593 --> 00:13:19.397 can tell what at least the genus is,
NOTE Confidence: 0.968520058
00:13:19.400 --> 00:13:22.622 if not the species of of
NOTE Confidence: 0.968520058
00:13:22.622 --> 00:13:24.233 an uncultured bacteria.
NOTE Confidence: 0.968520058
00:13:24.240 --> 00:13:27.515 We confirm this with things
NOTE Confidence: 0.968520058
00:13:27.515 --> 00:13:31.344 like RNA seq or PCR targeted to
NOTE Confidence: 0.968520058

00:13:31.344 --> 00:13:33.674 what we think we've found.
NOTE Confidence: 0.968520058

00:13:33.680 --> 00:13:35.392 RNAC is also critical.
NOTE Confidence: 0.968520058

00:13:35.392 --> 00:13:37.960 There's no one gene in viruses,
NOTE Confidence: 0.968520058

00:13:37.960 --> 00:13:40.590 so if you want to look for an
NOTE Confidence: 0.968520058

00:13:40.590 --> 00:13:42.740 unbiased survey for what viruses
NOTE Confidence: 0.968520058

00:13:42.740 --> 00:13:44.935 might be infecting someone or
NOTE Confidence: 0.968520058

00:13:44.935 --> 00:13:46.955 what parasites might be present,
NOTE Confidence: 0.968520058

00:13:46.960 --> 00:13:49.880 then you're dealing with RNAC.
NOTE Confidence: 0.812244546666667

00:13:54.720 --> 00:13:59.662 By 2020, we'd teamed up with people
NOTE Confidence: 0.812244546666667

00:13:59.662 --> 00:14:03.736 both from Penn State and from Columbia
NOTE Confidence: 0.812244546666667

00:14:03.736 --> 00:14:07.379 University and found that there was only one
NOTE Confidence: 0.812244546666667

00:14:07.379 --> 00:14:10.080 Organism that dominated these infections.
NOTE Confidence: 0.812244546666667

00:14:10.080 --> 00:14:11.484 It's an unusual one.
NOTE Confidence: 0.812244546666667

00:14:11.484 --> 00:14:14.430 It was a painy bacillus, which is
NOTE Confidence: 0.812244546666667

00:14:14.430 --> 00:14:18.595 Greek or Latin for almost a bacillus.
NOTE Confidence: 0.812244546666667

00:14:18.600 --> 00:14:22.220 It formed a highly neurotropic and

NOTE Confidence: 0.812244546666667
00:14:22.220 --> 00:14:24.120 destructive infection of the brain.
NOTE Confidence: 0.812244546666667
00:14:24.120 --> 00:14:27.480 You can see one of the images of one of the
NOTE Confidence: 0.812244546666667
00:14:27.480 --> 00:14:31.236 infant brains here with calcified abscesses.
NOTE Confidence: 0.812244546666667
00:14:31.240 --> 00:14:34.280 We did manage to get some
NOTE Confidence: 0.812244546666667
00:14:34.280 --> 00:14:37.280 of these strains to grow,
NOTE Confidence: 0.812244546666667
00:14:37.280 --> 00:14:40.568 figuring out when these children got
NOTE Confidence: 0.812244546666667
00:14:40.568 --> 00:14:44.490 sick and how this apparent infection
NOTE Confidence: 0.812244546666667
00:14:44.490 --> 00:14:48.840 might have related to previous disease.
NOTE Confidence: 0.812244546666667
00:14:48.840 --> 00:14:54.356 We just finally put together and reported
NOTE Confidence: 0.812244546666667
00:14:54.356 --> 00:14:58.472 3 simultaneous linked case control trials.
NOTE Confidence: 0.812244546666667
00:14:58.472 --> 00:15:01.016 This is 1400 patients,
NOTE Confidence: 0.812244546666667
00:15:01.016 --> 00:15:03.080 thousands of samples,
NOTE Confidence: 0.812244546666667
00:15:03.080 --> 00:15:10.272 over 2500 qPCR reactions to confirm what we
NOTE Confidence: 0.812244546666667
00:15:10.272 --> 00:15:14.840 had found and this involved a maternal trial.
NOTE Confidence: 0.812244546666667
00:15:14.840 --> 00:15:17.790 Many infants catch infections during
NOTE Confidence: 0.812244546666667

00:15:17.790 --> 00:15:21.568 the process of birth or there
NOTE Confidence: 0.812244546666667

00:15:21.568 --> 00:15:24.480 are also congenital infections.
NOTE Confidence: 0.812244546666667

00:15:24.480 --> 00:15:27.518 In the US we screened all mothers
NOTE Confidence: 0.812244546666667

00:15:27.518 --> 00:15:30.792 before at the time of delivery for
NOTE Confidence: 0.812244546666667

00:15:30.792 --> 00:15:33.536 one Organism which used to cause the
NOTE Confidence: 0.812244546666667

00:15:33.536 --> 00:15:35.959 most trouble in the United States.
NOTE Confidence: 0.812244546666667

00:15:35.960 --> 00:15:38.753 We found no evidence of this Organism
NOTE Confidence: 0.812244546666667

00:15:38.753 --> 00:15:41.999 in any of the maternal specimens.
NOTE Confidence: 0.812244546666667

00:15:42.000 --> 00:15:44.933 Vaginal, placental,
NOTE Confidence: 0.812244546666667

00:15:44.933 --> 00:15:47.598 maternal blood or cord blood.
NOTE Confidence: 0.812244546666667

00:15:47.600 --> 00:15:50.757 Not likely it's coming from the mothers.
NOTE Confidence: 0.812244546666667

00:15:50.760 --> 00:15:54.630 We looked at 800 neonatal sepsis
NOTE Confidence: 0.812244546666667

00:15:54.630 --> 00:15:57.998 cases in several sites in the country
NOTE Confidence: 0.812244546666667

00:15:58.000 --> 00:16:00.640 and 400 cases of hydrocephalus,
NOTE Confidence: 0.812244546666667

00:16:00.640 --> 00:16:05.720 half of whom had a history of infection.
NOTE Confidence: 0.812244546666667

00:16:05.720 --> 00:16:08.940 Almost half of the infants under three

NOTE Confidence: 0.812244546666667

00:16:08.940 --> 00:16:13.200 months of age that came to us were still

NOTE Confidence: 0.812244546666667

00:16:13.200 --> 00:16:16.560 PCR positive to this one Organism,

NOTE Confidence: 0.812244546666667

00:16:16.560 --> 00:16:20.515 and 6% of the neonates with sepsis.

NOTE Confidence: 0.812244546666667

00:16:20.520 --> 00:16:23.621 And we actually were able to capture

NOTE Confidence: 0.812244546666667

00:16:23.621 --> 00:16:26.475 some true linkage cases where we

NOTE Confidence: 0.812244546666667

00:16:26.475 --> 00:16:29.600 could capture the Organism within a

NOTE Confidence: 0.812244546666667

00:16:29.600 --> 00:16:33.380 week of birth with clinical sepsis,

NOTE Confidence: 0.812244546666667

00:16:33.380 --> 00:16:35.360 treat the sepsis,

NOTE Confidence: 0.812244546666667

00:16:35.360 --> 00:16:38.832 appear to clear it from the periphery

NOTE Confidence: 0.812244546666667

00:16:38.832 --> 00:16:40.320 of the infant.

NOTE Confidence: 0.812244546666667

00:16:40.320 --> 00:16:42.480 Child's not febrile feeding well,

NOTE Confidence: 0.812244546666667

00:16:42.480 --> 00:16:45.040 no longer lethargic, goes home,

NOTE Confidence: 0.812244546666667

00:16:45.040 --> 00:16:48.767 but comes back a month or two later with

NOTE Confidence: 0.812244546666667

00:16:48.767 --> 00:16:51.449 continued infection in the brain and

NOTE Confidence: 0.812244546666667

00:16:51.449 --> 00:16:55.240 with the head enlarging from hydrocephalus.

NOTE Confidence: 0.812244546666667

00:16:55.240 --> 00:17:00.224 So what did we just do over 20 years ago,

NOTE Confidence: 0.812244546666667

00:17:00.224 --> 00:17:02.528 Frederickson Relman talked about

NOTE Confidence: 0.812244546666667

00:17:02.528 --> 00:17:06.880 the possibility of doing a sequence

NOTE Confidence: 0.812244546666667

00:17:06.880 --> 00:17:10.656 based identification of pathogens and

NOTE Confidence: 0.812244546666667

00:17:10.656 --> 00:17:14.200 proof that these molecules showed

NOTE Confidence: 0.812244546666667

00:17:14.200 --> 00:17:18.400 that an Organism caused an infection.

NOTE Confidence: 0.812244546666667

00:17:18.400 --> 00:17:19.852 Robert Koch,

NOTE Confidence: 0.812244546666667

00:17:19.852 --> 00:17:23.602 about 150 years ago had postulates

NOTE Confidence: 0.812244546666667

00:17:23.602 --> 00:17:26.549 that said to prove an infection you've

NOTE Confidence: 0.812244546666667

00:17:26.549 --> 00:17:29.134 also got the culture and Organism you

NOTE Confidence: 0.812244546666667

00:17:29.134 --> 00:17:32.640 have to be able to infect an animal with it.

NOTE Confidence: 0.812244546666667

00:17:32.640 --> 00:17:35.640 We've just violated all of those

NOTE Confidence: 0.948201688181818

00:17:38.680 --> 00:17:40.468 those strictures. Now here,

NOTE Confidence: 0.948201688181818

00:17:40.468 --> 00:17:43.560 if I'm standing in front of you,

NOTE Confidence: 0.948201688181818

00:17:43.560 --> 00:17:46.025 you all will think that's

NOTE Confidence: 0.948201688181818

00:17:46.025 --> 00:17:47.997 cutting edge and clever.

NOTE Confidence: 0.948201688181818
00:17:48.000 --> 00:17:50.472 But I didn't quite see covenants
NOTE Confidence: 0.948201688181818
00:17:50.472 --> 00:17:52.120 that in other settings.
NOTE Confidence: 0.948201688181818
00:17:52.120 --> 00:17:55.402 I just violated all the fundamental
NOTE Confidence: 0.948201688181818
00:17:55.402 --> 00:17:58.216 principles that good physicians were
NOTE Confidence: 0.948201688181818
00:17:58.216 --> 00:18:01.438 taught by their highly respected mentors.
NOTE Confidence: 0.948201688181818
00:18:01.440 --> 00:18:04.650 Working in other societies and in
NOTE Confidence: 0.948201688181818
00:18:04.650 --> 00:18:07.238 other settings is often challenging
NOTE Confidence: 0.948201688181818
00:18:07.238 --> 00:18:11.256 in ways that I can never predict.
NOTE Confidence: 0.948201688181818
00:18:11.256 --> 00:18:13.680 Well, now the So what question.
NOTE Confidence: 0.948201688181818
00:18:13.680 --> 00:18:15.786 I just spent millions of dollars
NOTE Confidence: 0.948201688181818
00:18:15.786 --> 00:18:18.440 of our tax good taxpayers money.
NOTE Confidence: 0.948201688181818
00:18:18.440 --> 00:18:22.355 It took years to finish all of this analysis.
NOTE Confidence: 0.948201688181818
00:18:22.360 --> 00:18:25.120 We're still working on some pieces
NOTE Confidence: 0.948201688181818
00:18:25.120 --> 00:18:29.352 of it and microbial genomic testing
NOTE Confidence: 0.948201688181818
00:18:29.352 --> 00:18:34.600 is very expensive and it's slow and
NOTE Confidence: 0.948201688181818

00:18:34.600 --> 00:18:38.638 none of the scales very readily.
NOTE Confidence: 0.948201688181818

00:18:38.640 --> 00:18:40.960 And these are medical emergencies.
NOTE Confidence: 0.948201688181818

00:18:40.960 --> 00:18:43.528 These children come in and they
NOTE Confidence: 0.948201688181818

00:18:43.528 --> 00:18:46.462 are at serious risk of dying and
NOTE Confidence: 0.948201688181818

00:18:46.462 --> 00:18:49.234 we need to make decisions quickly.
NOTE Confidence: 0.948201688181818

00:18:49.240 --> 00:18:51.292 So I'll walk you through what
NOTE Confidence: 0.948201688181818

00:18:51.292 --> 00:18:53.600 I like to call predictive,
NOTE Confidence: 0.948201688181818

00:18:53.600 --> 00:18:57.158 personalized public health.
NOTE Confidence: 0.948201688181818

00:18:57.160 --> 00:18:59.728 So what does that mean?
NOTE Confidence: 0.948201688181818

00:18:59.728 --> 00:19:02.200 We've done a lot of observation.
NOTE Confidence: 0.948201688181818

00:19:02.200 --> 00:19:05.932 We've done a lot of surveillance
NOTE Confidence: 0.948201688181818

00:19:05.932 --> 00:19:07.798 of these infections.
NOTE Confidence: 0.948201688181818

00:19:07.800 --> 00:19:09.960 And I'd like to be able to ask
NOTE Confidence: 0.948201688181818

00:19:09.960 --> 00:19:11.757 a mother two questions which
NOTE Confidence: 0.948201688181818

00:19:11.757 --> 00:19:14.115 they always know the answer to.
NOTE Confidence: 0.948201688181818

00:19:14.120 --> 00:19:15.876 Where are you from?

NOTE Confidence: 0.948201688181818

00:19:15.876 --> 00:19:19.080 And when did the infant get sick?

NOTE Confidence: 0.948201688181818

00:19:19.080 --> 00:19:22.592 I'd like to use our prior knowledge

NOTE Confidence: 0.948201688181818

00:19:22.592 --> 00:19:25.754 and experience then to say,

NOTE Confidence: 0.948201688181818

00:19:25.754 --> 00:19:26.171 well,

NOTE Confidence: 0.948201688181818

00:19:26.171 --> 00:19:28.673 what are the most likely organisms

NOTE Confidence: 0.948201688181818

00:19:28.680 --> 00:19:31.848 and most important point of care

NOTE Confidence: 0.948201688181818

00:19:31.848 --> 00:19:33.960 of the available antibiotics,

NOTE Confidence: 0.948201688181818

00:19:33.960 --> 00:19:36.795 what are the best ones to pick?

NOTE Confidence: 0.948201688181818

00:19:36.800 --> 00:19:39.380 Now if we're looking at post

NOTE Confidence: 0.948201688181818

00:19:39.380 --> 00:19:40.240 infectious hydrocephalus,

NOTE Confidence: 0.948201688181818

00:19:40.240 --> 00:19:42.634 which is how I backed into this,

NOTE Confidence: 0.948201688181818

00:19:42.640 --> 00:19:43.996 that's not the problem.

NOTE Confidence: 0.948201688181818

00:19:43.996 --> 00:19:46.400 If you want to cut this off,

NOTE Confidence: 0.948201688181818

00:19:46.400 --> 00:19:49.364 you have to address the much

NOTE Confidence: 0.948201688181818

00:19:49.364 --> 00:19:52.080 broader issue of neonatal sepsis.

NOTE Confidence: 0.948201688181818

00:19:52.080 --> 00:19:55.630 And neonatal sepsis is probably
NOTE Confidence: 0.948201688181818

00:19:55.630 --> 00:19:59.180 still responsible worldwide for well
NOTE Confidence: 0.948201688181818

00:19:59.288 --> 00:20:02.837 over half a million deaths a year.
NOTE Confidence: 0.948201688181818

00:20:02.840 --> 00:20:05.240 It's probably closer to 3/4
NOTE Confidence: 0.948201688181818

00:20:05.240 --> 00:20:07.160 of a million deaths.
NOTE Confidence: 0.948201688181818

00:20:07.160 --> 00:20:09.092 That's triple, I think,
NOTE Confidence: 0.948201688181818

00:20:09.092 --> 00:20:13.600 the number of deaths of any age for malaria.
NOTE Confidence: 0.948201688181818

00:20:13.600 --> 00:20:17.254 It's comparable to the number of global
NOTE Confidence: 0.948201688181818

00:20:17.254 --> 00:20:19.800 deaths from tuberculosis of any age.
NOTE Confidence: 0.948201688181818

00:20:19.800 --> 00:20:23.985 And I actually had the privilege
NOTE Confidence: 0.948201688181818

00:20:23.985 --> 00:20:26.920 of testifying to Congress on this.
NOTE Confidence: 0.948201688181818

00:20:26.920 --> 00:20:30.630 And the congressmen and women on that
NOTE Confidence: 0.948201688181818

00:20:30.630 --> 00:20:32.728 committee are really rather surprised
NOTE Confidence: 0.948201688181818

00:20:32.728 --> 00:20:35.080 because they haven't heard about this.
NOTE Confidence: 0.948201688181818

00:20:35.080 --> 00:20:37.280 And in my testimony,
NOTE Confidence: 0.948201688181818

00:20:37.280 --> 00:20:41.444 I suggested to them that the reason is

NOTE Confidence: 0.948201688181818

00:20:41.444 --> 00:20:44.390 that newborn infants dying in developing

NOTE Confidence: 0.948201688181818

00:20:44.476 --> 00:20:47.638 countries have had no political voice.

NOTE Confidence: 0.948201688181818

00:20:47.640 --> 00:20:49.464 If you look at the most

NOTE Confidence: 0.948201688181818

00:20:49.464 --> 00:20:50.680 recent studies I listed,

NOTE Confidence: 0.948201688181818

00:20:50.680 --> 00:20:52.075 a Cambodian study,

NOTE Confidence: 0.948201688181818

00:20:52.075 --> 00:20:56.000 and Nisa is a huge South Asian study.

NOTE Confidence: 0.948201688181818

00:20:56.000 --> 00:20:58.600 These are beautifully done studies

NOTE Confidence: 0.948201688181818

00:20:58.600 --> 00:21:01.420 on neonatal sepsis and they're

NOTE Confidence: 0.948201688181818

00:21:01.420 --> 00:21:04.570 able to recover an apparent

NOTE Confidence: 0.948201688181818

00:21:04.570 --> 00:21:08.360 pathogen in 2% of their cases,

NOTE Confidence: 0.948201688181818

00:21:08.360 --> 00:21:14.625 2% why test at some point it's the

NOTE Confidence: 0.948201688181818

00:21:14.625 --> 00:21:17.920 traditional way we have gone about.

NOTE Confidence: 0.948201688181818

00:21:17.920 --> 00:21:21.105 Identifying pathogens is an abysmal

NOTE Confidence: 0.948201688181818

00:21:21.105 --> 00:21:24.930 failure in newborn infants for reasons

NOTE Confidence: 0.948201688181818

00:21:24.930 --> 00:21:28.158 that I'm also happy to discuss.

NOTE Confidence: 0.948201688181818

00:21:28.160 --> 00:21:30.696 But the loss of life here really demands
NOTE Confidence: 0.948201688181818

00:21:30.696 --> 00:21:33.024 that we do something very different
NOTE Confidence: 0.948201688181818

00:21:33.024 --> 00:21:35.480 from what we've done for many years.
NOTE Confidence: 0.93314224

00:21:37.680 --> 00:21:41.660 So to try to conceptualize of
NOTE Confidence: 0.93314224

00:21:41.660 --> 00:21:43.800 what would be an improvement,
NOTE Confidence: 0.952033792

00:21:46.640 --> 00:21:52.700 we've put all 60,000 villages in Uganda and
NOTE Confidence: 0.952033792

00:21:52.700 --> 00:21:56.760 fuse them onto the satellite climate grids.
NOTE Confidence: 0.952033792

00:21:56.760 --> 00:21:58.476 That's useful for a number of
NOTE Confidence: 0.952033792

00:21:58.476 --> 00:21:59.960 reasons that I'll get into,
NOTE Confidence: 0.952033792

00:21:59.960 --> 00:22:03.960 but it's also especially useful if we
NOTE Confidence: 0.952033792

00:22:03.960 --> 00:22:06.960 want to look at environmental effects.
NOTE Confidence: 0.952033792

00:22:06.960 --> 00:22:08.490 This particular disease
NOTE Confidence: 0.952033792

00:22:08.490 --> 00:22:11.040 has a huge rainfall effect.
NOTE Confidence: 0.952033792

00:22:11.040 --> 00:22:13.880 In terms of when these infants get sick,
NOTE Confidence: 0.952033792

00:22:13.880 --> 00:22:16.792 the neonatal warts fill up as the rains
NOTE Confidence: 0.952033792

00:22:16.792 --> 00:22:20.399 come in and empty out during the dry season.

NOTE Confidence: 0.952033792

00:22:20.400 --> 00:22:23.280 Here are 4000 mapped cases.

NOTE Confidence: 0.952033792

00:22:23.280 --> 00:22:25.160 Now, I don't have microbiology

NOTE Confidence: 0.952033792

00:22:25.160 --> 00:22:27.040 on 20 years of cases,

NOTE Confidence: 0.952033792

00:22:27.040 --> 00:22:29.680 but these are 4000 mapped cases.

NOTE Confidence: 0.952033792

00:22:29.680 --> 00:22:31.690 See my mouse?

NOTE Confidence: 0.952033792

00:22:31.690 --> 00:22:34.175 Yeah, of these infections

NOTE Confidence: 0.952033792

00:22:34.175 --> 00:22:37.200 and look at the clustering.

NOTE Confidence: 0.952033792

00:22:37.200 --> 00:22:40.333 So here's Lake Victoria and

NOTE Confidence: 0.952033792

00:22:40.333 --> 00:22:42.598 there are huge enormous swamps,

NOTE Confidence: 0.952033792

00:22:42.600 --> 00:22:45.918 papyrus swamps along the northern bank.

NOTE Confidence: 0.952033792

00:22:45.920 --> 00:22:48.896 The Nile starts here in the middle of

NOTE Confidence: 0.952033792

00:22:48.896 --> 00:22:52.676 this cluster and goes N to Lake Choga.

NOTE Confidence: 0.952033792

00:22:52.680 --> 00:22:53.970 Again, large swampy,

NOTE Confidence: 0.952033792

00:22:53.970 --> 00:22:56.550 wet areas on the southern and

NOTE Confidence: 0.952033792

00:22:56.550 --> 00:22:59.313 northern banks of Choga and here in

NOTE Confidence: 0.952033792

00:22:59.313 --> 00:23:01.800 this North Central region of Uganda.

NOTE Confidence: 0.631109588571429

00:23:11.240 --> 00:23:13.676 Let's see if it's unhappy with me.

NOTE Confidence: 0.631109588571429

00:23:13.680 --> 00:23:17.160 I'm very unhappy with me.

NOTE Confidence: 0.88708675

00:23:25.720 --> 00:23:26.200 Well,

NOTE Confidence: 0.8638652125

00:23:29.280 --> 00:23:30.920 yeah, it's happy again.

NOTE Confidence: 0.928121042272727

00:23:33.200 --> 00:23:34.439 What about genomics?

NOTE Confidence: 0.928121042272727

00:23:34.439 --> 00:23:37.330 So do I need to know something

NOTE Confidence: 0.928121042272727

00:23:37.413 --> 00:23:40.472 about the hosts as I'm mapping the

NOTE Confidence: 0.928121042272727

00:23:40.472 --> 00:23:42.759 location and timing of disease?

NOTE Confidence: 0.950907988

00:23:44.920 --> 00:23:46.120 In case you missed it,

NOTE Confidence: 0.950907988

00:23:46.120 --> 00:23:48.040 the answer has to be yes.

NOTE Confidence: 0.950907988

00:23:48.040 --> 00:23:51.590 Every infectious disease that we

NOTE Confidence: 0.950907988

00:23:51.590 --> 00:23:54.791 contract as humans is actually a

NOTE Confidence: 0.950907988

00:23:54.791 --> 00:23:57.290 product of both the genomics of the

NOTE Confidence: 0.950907988

00:23:57.364 --> 00:24:00.544 Organism that give the Organism its

NOTE Confidence: 0.950907988

00:24:00.544 --> 00:24:03.117 characteristics and your genetic

NOTE Confidence: 0.950907988

00:24:03.117 --> 00:24:05.833 differences that both determine

NOTE Confidence: 0.950907988

00:24:05.833 --> 00:24:09.160 whether you contract an infection

NOTE Confidence: 0.950907988

00:24:09.160 --> 00:24:11.078 and how you do from an infection.

NOTE Confidence: 0.950907988

00:24:11.080 --> 00:24:12.940 Just think of COVID,

NOTE Confidence: 0.950907988

00:24:12.940 --> 00:24:15.712 there were many people who appeared

NOTE Confidence: 0.950907988

00:24:15.712 --> 00:24:18.448 to be asymptomatic or perhaps never

NOTE Confidence: 0.950907988

00:24:18.448 --> 00:24:21.532 got sick and I have two friends of

NOTE Confidence: 0.950907988

00:24:21.532 --> 00:24:24.810 mine who died within two days or so

NOTE Confidence: 0.950907988

00:24:24.810 --> 00:24:26.995 of contracting the viral infection.

NOTE Confidence: 0.950907988

00:24:27.000 --> 00:24:30.504 So the the current thinking is

NOTE Confidence: 0.950907988

00:24:30.504 --> 00:24:35.400 that we need to dual sequence

NOTE Confidence: 0.950907988

00:24:35.400 --> 00:24:39.200 the the genetics of bacteria or

NOTE Confidence: 0.950907988

00:24:39.200 --> 00:24:43.031 viruses as well as host to try to

NOTE Confidence: 0.950907988

00:24:43.031 --> 00:24:45.689 get a comprehensive picture of how

NOTE Confidence: 0.950907988

00:24:45.689 --> 00:24:48.958 to deal with infectious disease.

NOTE Confidence: 0.908760840526316

00:24:53.080 --> 00:24:56.417 So what to do? I I show up with all of our

NOTE Confidence: 0.908760840526316

00:24:56.417 --> 00:24:59.000 colleagues that we work with in Ambala,

NOTE Confidence: 0.908760840526316

00:24:59.000 --> 00:25:01.680 Uganda, and I propose this.

NOTE Confidence: 0.908760840526316

00:25:01.680 --> 00:25:05.040 And there is an awful lot of pushback.

NOTE Confidence: 0.908760840526316

00:25:05.040 --> 00:25:07.440 What are the concerns? First, privacy.

NOTE Confidence: 0.908760840526316

00:25:07.440 --> 00:25:11.742 How are we going to do genomic sequencing

NOTE Confidence: 0.908760840526316

00:25:11.742 --> 00:25:15.714 of hosts and protect the individuals?

NOTE Confidence: 0.908760840526316

00:25:15.720 --> 00:25:18.600 Second, Yeah, I get this one a lot.

NOTE Confidence: 0.908760840526316

00:25:18.600 --> 00:25:20.520 What about paternity testing?

NOTE Confidence: 0.850425306

00:25:22.640 --> 00:25:25.920 We could, if we wished, of course,

NOTE Confidence: 0.850425306

00:25:25.920 --> 00:25:27.720 determine who the parents are,

NOTE Confidence: 0.850425306

00:25:27.720 --> 00:25:30.240 if we had three samples.

NOTE Confidence: 0.850425306

00:25:30.240 --> 00:25:33.312 And lastly, in a society that's

NOTE Confidence: 0.850425306

00:25:33.312 --> 00:25:35.360 dealt with authoritarian regimes

NOTE Confidence: 0.850425306

00:25:35.440 --> 00:25:37.516 in the past like Idi Amin,

NOTE Confidence: 0.850425306

00:25:37.520 --> 00:25:40.262 there's concern for safety if the

NOTE Confidence: 0.850425306

00:25:40.262 --> 00:25:43.184 government has access or the public

NOTE Confidence: 0.850425306

00:25:43.184 --> 00:25:45.714 has access to genetic information.

NOTE Confidence: 0.850425306

00:25:45.720 --> 00:25:49.080 So we wrote a very comprehensive document.

NOTE Confidence: 0.850425306

00:25:49.080 --> 00:25:51.485 It's eight single space pages

NOTE Confidence: 0.850425306

00:25:51.485 --> 00:25:54.857 of text going through all of the

NOTE Confidence: 0.850425306

00:25:54.857 --> 00:25:57.042 issues we thought were important

NOTE Confidence: 0.850425306

00:25:57.042 --> 00:26:00.198 and how we might approach them.

NOTE Confidence: 0.850425306

00:26:00.200 --> 00:26:02.620 We would obviously not publish

NOTE Confidence: 0.850425306

00:26:02.620 --> 00:26:04.556 any names of patients.

NOTE Confidence: 0.850425306

00:26:04.560 --> 00:26:06.360 We'd use the birth dates

NOTE Confidence: 0.850425306

00:26:06.360 --> 00:26:07.800 but not publish them.

NOTE Confidence: 0.850425306

00:26:07.800 --> 00:26:10.626 We would use the village precise

NOTE Confidence: 0.850425306

00:26:10.626 --> 00:26:13.000 locations but not publish that.

NOTE Confidence: 0.850425306

00:26:13.000 --> 00:26:15.534 And I'll show you how we will

NOTE Confidence: 0.850425306

00:26:15.534 --> 00:26:17.856 go about Geo masking and the

NOTE Confidence: 0.850425306

00:26:17.856 --> 00:26:19.196 care that we offered that.
NOTE Confidence: 0.850425306

00:26:19.200 --> 00:26:22.146 So you can't re identify by
NOTE Confidence: 0.850425306

00:26:22.146 --> 00:26:25.476 knowing where someone came from.
NOTE Confidence: 0.850425306

00:26:25.480 --> 00:26:28.564 The genomes would not be individually
NOTE Confidence: 0.850425306

00:26:28.564 --> 00:26:30.172 sequenced and deposited.
NOTE Confidence: 0.850425306

00:26:30.172 --> 00:26:32.356 And then I thought,
NOTE Confidence: 0.767402838

00:26:34.480 --> 00:26:36.120 I'm an amateur at this,
NOTE Confidence: 0.767402838

00:26:36.120 --> 00:26:38.600 I need to run this by a pro.
NOTE Confidence: 0.767402838

00:26:38.600 --> 00:26:41.000 So I had come to meet Judy Illis,
NOTE Confidence: 0.767402838

00:26:41.000 --> 00:26:42.880 a very well known ethicist.
NOTE Confidence: 0.767402838

00:26:42.880 --> 00:26:44.764 She is in Canada.
NOTE Confidence: 0.767402838

00:26:44.764 --> 00:26:47.590 She has an extensive experience working
NOTE Confidence: 0.767402838

00:26:47.675 --> 00:26:50.320 with the Canadian First Peoples,
NOTE Confidence: 0.767402838

00:26:50.320 --> 00:26:53.320 the native population in Northern Canada.
NOTE Confidence: 0.767402838

00:26:53.320 --> 00:26:54.916 So I forwarded this to Judy.
NOTE Confidence: 0.767402838

00:26:54.920 --> 00:26:55.919 She was great.

NOTE Confidence: 0.767402838

00:26:55.919 --> 00:26:57.584 She went through every paragraph

NOTE Confidence: 0.767402838

00:26:57.584 --> 00:27:00.020 and she comes back and says you

NOTE Confidence: 0.767402838

00:27:00.020 --> 00:27:01.720 may be working with populations,

NOTE Confidence: 0.767402838

00:27:01.720 --> 00:27:03.850 but you have to figure out

NOTE Confidence: 0.767402838

00:27:03.850 --> 00:27:06.040 a way to return results.

NOTE Confidence: 0.767402838

00:27:06.040 --> 00:27:06.750 All right.

NOTE Confidence: 0.767402838

00:27:06.750 --> 00:27:08.880 So I approached colleagues in the

NOTE Confidence: 0.767402838

00:27:08.880 --> 00:27:11.502 government and we worked out that if

NOTE Confidence: 0.767402838

00:27:11.502 --> 00:27:14.240 we had findings that were important

NOTE Confidence: 0.767402838

00:27:14.240 --> 00:27:17.960 for various peoples within the country,

NOTE Confidence: 0.767402838

00:27:17.960 --> 00:27:21.200 that we'd work with government agencies

NOTE Confidence: 0.767402838

00:27:21.200 --> 00:27:24.720 to return those results properly.

NOTE Confidence: 0.767402838

00:27:24.720 --> 00:27:26.296 And then of course,

NOTE Confidence: 0.767402838

00:27:26.296 --> 00:27:28.660 we went to all the institutions

NOTE Confidence: 0.767402838

00:27:28.739 --> 00:27:30.439 to get their approval.

NOTE Confidence: 0.767402838

00:27:30.440 --> 00:27:32.760 The local IRB ethics boards,
NOTE Confidence: 0.767402838

00:27:32.760 --> 00:27:34.820 the US Ethics board,
NOTE Confidence: 0.767402838

00:27:34.820 --> 00:27:36.880 the government oversight board
NOTE Confidence: 0.767402838

00:27:36.880 --> 00:27:39.598 in Uganda for human research.
NOTE Confidence: 0.767402838

00:27:39.600 --> 00:27:42.390 And I floated it by NIH as well to
NOTE Confidence: 0.767402838

00:27:42.390 --> 00:27:45.465 make sure that all of the stakeholders
NOTE Confidence: 0.767402838

00:27:45.465 --> 00:27:48.479 on the compliance side had a chance
NOTE Confidence: 0.767402838

00:27:48.479 --> 00:27:51.153 to give us feedback and prove this.
NOTE Confidence: 0.767402838

00:27:51.160 --> 00:27:55.800 And if you look at those little grid squares,
NOTE Confidence: 0.767402838

00:27:55.800 --> 00:27:58.272 I looked for the ones that
NOTE Confidence: 0.767402838

00:27:58.272 --> 00:28:00.280 didn't have much population in
NOTE Confidence: 0.767402838

00:28:00.280 --> 00:28:01.720 the country of Uganda,
NOTE Confidence: 0.879926412222222

00:28:05.520 --> 00:28:07.158 country of Uganda,
NOTE Confidence: 0.879926412222222

00:28:07.158 --> 00:28:10.434 you see these sparsely populated areas.
NOTE Confidence: 0.879926412222222

00:28:10.440 --> 00:28:13.436 So some of these are game parks.
NOTE Confidence: 0.879926412222222

00:28:13.440 --> 00:28:16.458 More elephants and lions live there

NOTE Confidence: 0.879926412222222

00:28:16.458 --> 00:28:19.240 than humans for obvious reasons.

NOTE Confidence: 0.879926412222222

00:28:19.240 --> 00:28:22.565 There's also a large arid region in

NOTE Confidence: 0.879926412222222

00:28:22.565 --> 00:28:26.095 the northeast that has a a sparsely

NOTE Confidence: 0.879926412222222

00:28:26.095 --> 00:28:27.640 populated nomadic population,

NOTE Confidence: 0.879926412222222

00:28:27.640 --> 00:28:28.830 and we're going to come

NOTE Confidence: 0.879926412222222

00:28:28.830 --> 00:28:30.320 back to that in a bit.

NOTE Confidence: 0.879926412222222

00:28:30.320 --> 00:28:34.378 And we we in part of our proposal

NOTE Confidence: 0.879926412222222

00:28:34.378 --> 00:28:37.044 is that we would not map any points

NOTE Confidence: 0.879926412222222

00:28:37.044 --> 00:28:39.951 on any of the maps we're doing from

NOTE Confidence: 0.879926412222222

00:28:39.951 --> 00:28:43.528 any place with less than 1000 people

NOTE Confidence: 0.879926412222222

00:28:43.528 --> 00:28:47.360 in 120 square kilometer grid space.

NOTE Confidence: 0.949514086666667

00:28:49.680 --> 00:28:54.968 In the US, we don't map zip codes

NOTE Confidence: 0.949514086666667

00:28:54.968 --> 00:28:58.216 with less than 20,000 people for the

NOTE Confidence: 0.949514086666667

00:28:58.216 --> 00:29:02.440 same reason in Uganda we picked 1000,

NOTE Confidence: 0.949514086666667

00:29:02.440 --> 00:29:07.392 we picked a larger square mile area and

NOTE Confidence: 0.949514086666667

00:29:07.392 --> 00:29:10.920 then we actually jitter the points.
NOTE Confidence: 0.949514086666667

00:29:10.920 --> 00:29:14.430 So the points I just showed you on that
NOTE Confidence: 0.949514086666667

00:29:14.430 --> 00:29:18.005 map aren't actually the exact location
NOTE Confidence: 0.949514086666667

00:29:18.005 --> 00:29:20.880 where those villages are located.
NOTE Confidence: 0.949514086666667

00:29:20.880 --> 00:29:23.421 Here's a little picture of a colleague
NOTE Confidence: 0.949514086666667

00:29:23.421 --> 00:29:26.103 of mine and and a local resident
NOTE Confidence: 0.949514086666667

00:29:26.103 --> 00:29:28.371 hiking on a footpath over hills
NOTE Confidence: 0.949514086666667

00:29:28.449 --> 00:29:30.675 trying to find a village cluster
NOTE Confidence: 0.949514086666667

00:29:30.675 --> 00:29:33.447 where one of these infants is located.
NOTE Confidence: 0.949514086666667

00:29:33.447 --> 00:29:37.634 We think and all the people we've had review
NOTE Confidence: 0.949514086666667

00:29:37.634 --> 00:29:40.916 this think that that's adequate protection,
NOTE Confidence: 0.949514086666667

00:29:40.920 --> 00:29:42.760 the way we design this,
NOTE Confidence: 0.949514086666667

00:29:42.760 --> 00:29:44.434 so that we can publish maps
NOTE Confidence: 0.949514086666667

00:29:44.434 --> 00:29:46.320 and show you the clustering.
NOTE Confidence: 0.9596710725

00:29:52.720 --> 00:29:56.640 We know a lot about ancient migrations in
NOTE Confidence: 0.9596710725

00:29:56.640 --> 00:29:59.034 many parts of the world and of of course,

NOTE Confidence: 0.9596710725

00:29:59.040 --> 00:30:01.864 in Africa. This is an old map of

NOTE Confidence: 0.9596710725

00:30:01.864 --> 00:30:03.800 Jared Diamond who wrote Guns,

NOTE Confidence: 0.9596710725

00:30:03.800 --> 00:30:08.160 Germs and Steel in Science 20 years ago.

NOTE Confidence: 0.9596710725

00:30:08.160 --> 00:30:11.989 And Uganda is right sitting wrapped around

NOTE Confidence: 0.9596710725

00:30:11.989 --> 00:30:15.279 the northern part of Lake Victoria.

NOTE Confidence: 0.9596710725

00:30:15.280 --> 00:30:19.052 Here and in that part of Central

NOTE Confidence: 0.9596710725

00:30:19.052 --> 00:30:21.479 Africa there are two main migrations.

NOTE Confidence: 0.9596710725

00:30:21.480 --> 00:30:23.840 The Bantu expansion started

NOTE Confidence: 0.9596710725

00:30:23.840 --> 00:30:26.904 around 5000 years ago, we think,

NOTE Confidence: 0.9596710725

00:30:26.904 --> 00:30:29.016 and these people came up from

NOTE Confidence: 0.9596710725

00:30:29.016 --> 00:30:30.878 the southern parts of Uganda,

NOTE Confidence: 0.9596710725

00:30:30.880 --> 00:30:32.772 of of sub-Saharan Africa,

NOTE Confidence: 0.9596710725

00:30:32.772 --> 00:30:36.640 and also came in from the southwest.

NOTE Confidence: 0.9596710725

00:30:36.640 --> 00:30:38.472 Several thousand years later,

NOTE Confidence: 0.9596710725

00:30:38.472 --> 00:30:40.762 there's a migration of Nilo

NOTE Confidence: 0.9596710725

00:30:40.762 --> 00:30:42.838 Saharan people from the north.
NOTE Confidence: 0.9596710725

00:30:42.840 --> 00:30:45.080 They come down, they literally
NOTE Confidence: 0.9596710725

00:30:45.080 --> 00:30:48.400 seem to meet at the Nile River,
NOTE Confidence: 0.9596710725

00:30:48.400 --> 00:30:52.720 which is a natural barrier.
NOTE Confidence: 0.9596710725

00:30:52.720 --> 00:30:54.958 If you look at the clustering,
NOTE Confidence: 0.9596710725

00:30:54.960 --> 00:30:58.800 the simplest way of clustering genomes,
NOTE Confidence: 0.9596710725

00:30:58.800 --> 00:31:02.790 each of us has millions of differences
NOTE Confidence: 0.9596710725

00:31:02.790 --> 00:31:06.473 at the single base pair level
NOTE Confidence: 0.9596710725

00:31:06.473 --> 00:31:10.199 between our genomes if we sequenced
NOTE Confidence: 0.9596710725

00:31:10.200 --> 00:31:12.600 up all of us sitting in the room.
NOTE Confidence: 0.9596710725

00:31:12.600 --> 00:31:14.910 But if you look at the simplest
NOTE Confidence: 0.9596710725

00:31:14.910 --> 00:31:16.360 way of doing that,
NOTE Confidence: 0.9596710725

00:31:16.360 --> 00:31:20.080 just using a cluster technique,
NOTE Confidence: 0.9596710725

00:31:20.080 --> 00:31:22.480 principal components to look at,
NOTE Confidence: 0.9596710725

00:31:22.480 --> 00:31:26.020 how many groups could you
NOTE Confidence: 0.9596710725

00:31:26.020 --> 00:31:29.560 statistically have in your data.

NOTE Confidence: 0.9596710725
00:31:29.560 --> 00:31:32.240 This data gives you 4.
NOTE Confidence: 0.9596710725
00:31:32.240 --> 00:31:35.396 There's a northern group in blue,
NOTE Confidence: 0.9596710725
00:31:35.400 --> 00:31:37.840 There's a southern and
NOTE Confidence: 0.9596710725
00:31:37.840 --> 00:31:40.280 southwestern group in red.
NOTE Confidence: 0.9596710725
00:31:40.280 --> 00:31:42.842 There's a little bit of complexity
NOTE Confidence: 0.9596710725
00:31:42.842 --> 00:31:45.160 here along the Kenyan border.
NOTE Confidence: 0.9596710725
00:31:45.160 --> 00:31:47.680 We know that there's a Western
NOTE Confidence: 0.9596710725
00:31:47.680 --> 00:31:50.388 migration from the Swahili coast that's
NOTE Confidence: 0.9596710725
00:31:50.388 --> 00:31:52.758 been identified in recent years,
NOTE Confidence: 0.9596710725
00:31:52.760 --> 00:31:56.276 but basically we pull out the
NOTE Confidence: 0.9596710725
00:31:56.276 --> 00:31:58.613 ancient migration patterns trivially
NOTE Confidence: 0.9596710725
00:31:58.613 --> 00:32:01.478 from doing the simplest version.
NOTE Confidence: 0.9596710725
00:32:01.480 --> 00:32:04.920 This isn't even admixture analysis.
NOTE Confidence: 0.9596710725
00:32:04.920 --> 00:32:08.470 The simplest version of clustering
NOTE Confidence: 0.9596710725
00:32:08.470 --> 00:32:10.600 changes between chinos.
NOTE Confidence: 0.9596710725

00:32:10.600 --> 00:32:13.384 So we've done a little more
NOTE Confidence: 0.9596710725

00:32:13.384 --> 00:32:15.240 sophisticated effort at this.
NOTE Confidence: 0.9596710725

00:32:15.240 --> 00:32:19.360 We've fit these points to a smooth model,
NOTE Confidence: 0.9596710725

00:32:19.360 --> 00:32:20.360 but importantly,
NOTE Confidence: 0.9596710725

00:32:20.360 --> 00:32:22.860 we're looking at the proportion
NOTE Confidence: 0.9596710725

00:32:22.860 --> 00:32:24.360 of those groups.
NOTE Confidence: 0.9596710725

00:32:24.360 --> 00:32:28.035 Because none of us are pure mixtures,
NOTE Confidence: 0.9596710725

00:32:28.040 --> 00:32:31.215 we vary in our proportions
NOTE Confidence: 0.9596710725

00:32:31.215 --> 00:32:33.120 between our ancestries,
NOTE Confidence: 0.9596710725

00:32:33.120 --> 00:32:35.973 and what we find is that there are two
NOTE Confidence: 0.9596710725

00:32:35.973 --> 00:32:38.479 groups that are very closely related.
NOTE Confidence: 0.9596710725

00:32:38.480 --> 00:32:41.360 Those are Bantu,
NOTE Confidence: 0.9596710725

00:32:41.360 --> 00:32:43.677 and then there's one Nilo Saharan group.
NOTE Confidence: 0.9596710725

00:32:43.680 --> 00:32:47.600 The Nilo Saharan group is the largest
NOTE Confidence: 0.9596710725

00:32:47.600 --> 00:32:50.148 distance difference distance between
NOTE Confidence: 0.9596710725

00:32:50.148 --> 00:32:53.718 those two Bantu groups present.

NOTE Confidence: 0.9596710725

00:32:53.720 --> 00:32:56.920 This all makes an awful lot of sense.

NOTE Confidence: 0.9596710725

00:32:56.920 --> 00:32:59.535 Jared Diamond was reasonably correct

NOTE Confidence: 0.9596710725

00:32:59.535 --> 00:33:02.680 in his estimates at the time.

NOTE Confidence: 0.9596710725

00:33:02.680 --> 00:33:06.160 Without the genomic information.

NOTE Confidence: 0.9596710725

00:33:06.160 --> 00:33:09.064 I'm also going to briefly introduce

NOTE Confidence: 0.9596710725

00:33:09.064 --> 00:33:12.320 the second group of hydrocephalus.

NOTE Confidence: 0.9596710725

00:33:12.320 --> 00:33:14.918 These are children with spina bifida.

NOTE Confidence: 0.9596710725

00:33:14.920 --> 00:33:17.140 They're born with what looks

NOTE Confidence: 0.9596710725

00:33:17.140 --> 00:33:18.916 like an open spine.

NOTE Confidence: 0.9596710725

00:33:18.920 --> 00:33:22.120 This is a strongly genetically

NOTE Confidence: 0.9596710725

00:33:22.120 --> 00:33:23.400 influenced malformation,

NOTE Confidence: 0.9596710725

00:33:23.400 --> 00:33:26.914 but it's a gene by environment disease.

NOTE Confidence: 0.9596710725

00:33:26.920 --> 00:33:29.824 We know that we can prevent most of

NOTE Confidence: 0.9596710725

00:33:29.824 --> 00:33:32.568 this with adequate folate fortification

NOTE Confidence: 0.9596710725

00:33:32.568 --> 00:33:35.793 of food or preconception vitamins.

NOTE Confidence: 0.9596710725

00:33:35.800 --> 00:33:39.274 The rates in the US and in most countries
NOTE Confidence: 0.9596710725

00:33:39.274 --> 00:33:42.065 that fortify food is quite low,
NOTE Confidence: 0.9596710725

00:33:42.065 --> 00:33:44.675 about one per 2000 live births.
NOTE Confidence: 0.9596710725

00:33:44.680 --> 00:33:47.476 The rate in Uganda is many,
NOTE Confidence: 0.9596710725

00:33:47.480 --> 00:33:48.984 many multiples of that.
NOTE Confidence: 0.9596710725

00:33:48.984 --> 00:33:52.154 I hope within the year we start to
NOTE Confidence: 0.9596710725

00:33:52.154 --> 00:33:54.465 actually nail down the true incidence
NOTE Confidence: 0.9596710725

00:33:54.465 --> 00:33:56.899 'cause we have to know that if
NOTE Confidence: 0.9596710725

00:33:56.899 --> 00:33:58.693 we're going to be more effective
NOTE Confidence: 0.9596710725

00:33:58.693 --> 00:34:00.120 about controlling the disorder.
NOTE Confidence: 0.824183065

00:34:03.680 --> 00:34:08.616 If we take that ancestral map and we look
NOTE Confidence: 0.824183065

00:34:08.616 --> 00:34:11.920 at other covariants such as poverty index,
NOTE Confidence: 0.824183065

00:34:11.920 --> 00:34:14.865 the two covariants that most
NOTE Confidence: 0.824183065

00:34:14.865 --> 00:34:17.810 associate with our mapping of
NOTE Confidence: 0.824183065

00:34:17.913 --> 00:34:21.953 spina bifida risk our poverty and,
NOTE Confidence: 0.824183065

00:34:21.953 --> 00:34:25.037 independently, nilo Saharan ancestry.

NOTE Confidence: 0.965469042

00:34:27.080 --> 00:34:29.160 As I tell my colleagues,

NOTE Confidence: 0.965469042

00:34:29.160 --> 00:34:32.002 this may not be true, but it's such

NOTE Confidence: 0.965469042

00:34:32.002 --> 00:34:34.966 an important finding to perhaps have

NOTE Confidence: 0.965469042

00:34:34.966 --> 00:34:37.640 stumbled into that if it's not true,

NOTE Confidence: 0.965469042

00:34:37.640 --> 00:34:40.680 we need to demonstrate that it's not true.

NOTE Confidence: 0.965469042

00:34:40.680 --> 00:34:44.620 If it is true, you all need to be asking

NOTE Confidence: 0.965469042

00:34:44.723 --> 00:34:48.556 us what are the specific pathways and,

NOTE Confidence: 0.965469042

00:34:48.560 --> 00:34:51.790 for instance, the metabolism of

NOTE Confidence: 0.965469042

00:34:51.790 --> 00:34:55.160 folate or insert another gene products

NOTE Confidence: 0.965469042

00:34:55.160 --> 00:34:57.880 that actually help tissues close,

NOTE Confidence: 0.965469042

00:34:57.880 --> 00:35:00.200 like the neural tube,

NOTE Confidence: 0.965469042

00:35:00.200 --> 00:35:03.399 and how might they be differently varied?

NOTE Confidence: 0.965469042

00:35:03.400 --> 00:35:06.310 In people who migrated from

NOTE Confidence: 0.965469042

00:35:06.310 --> 00:35:08.638 northern parts of Africa,

NOTE Confidence: 0.965469042

00:35:08.640 --> 00:35:11.415 the World Health Organization a

NOTE Confidence: 0.965469042

00:35:11.415 --> 00:35:14.445 few months ago passed a resolution
NOTE Confidence: 0.965469042

00:35:14.445 --> 00:35:17.175 that all member states needed to
NOTE Confidence: 0.965469042

00:35:17.175 --> 00:35:19.670 fortify or supplement folate to
NOTE Confidence: 0.965469042

00:35:19.670 --> 00:35:22.115 prevent these neural tube defects.
NOTE Confidence: 0.965469042

00:35:22.120 --> 00:35:22.559 Unfortunately,
NOTE Confidence: 0.965469042

00:35:22.559 --> 00:35:25.632 they left it up to each member
NOTE Confidence: 0.965469042

00:35:25.632 --> 00:35:28.843 state to figure out how to do it
NOTE Confidence: 0.965469042

00:35:28.843 --> 00:35:31.199 because the context is extremely
NOTE Confidence: 0.965469042

00:35:31.199 --> 00:35:33.518 different between societies.
NOTE Confidence: 0.965469042

00:35:33.520 --> 00:35:36.824 If I fortify wheat in a country
NOTE Confidence: 0.965469042

00:35:36.824 --> 00:35:39.280 where people don't eat wheat,
NOTE Confidence: 0.965469042

00:35:39.280 --> 00:35:42.305 I'm not doing anything that's
NOTE Confidence: 0.965469042

00:35:42.305 --> 00:35:44.120 that's helpful here.
NOTE Confidence: 0.965469042

00:35:44.120 --> 00:35:48.760 So how do you do community engagement and
NOTE Confidence: 0.965469042

00:35:48.760 --> 00:35:52.477 how do you handle the politics involved?
NOTE Confidence: 0.965469042

00:35:52.480 --> 00:35:55.222 I usually didn't think I needed

NOTE Confidence: 0.965469042

00:35:55.222 --> 00:35:56.593 to touch politics.

NOTE Confidence: 0.965469042

00:35:56.600 --> 00:35:58.476 I mean, I know something about medicine.

NOTE Confidence: 0.965469042

00:35:58.480 --> 00:36:01.360 I'm a pretty good amateur scientist.

NOTE Confidence: 0.965469042

00:36:01.360 --> 00:36:06.440 I just went to a talk by John and Kangasong.

NOTE Confidence: 0.965469042

00:36:06.440 --> 00:36:09.422 John was the former head of the

NOTE Confidence: 0.965469042

00:36:09.422 --> 00:36:12.533 African CDC until we made him AUS

NOTE Confidence: 0.965469042

00:36:12.533 --> 00:36:15.752 Ambassador at large from the US State

NOTE Confidence: 0.965469042

00:36:15.752 --> 00:36:18.620 Department to deal with global health

NOTE Confidence: 0.965469042

00:36:18.714 --> 00:36:21.759 security and diplomacy over health.

NOTE Confidence: 0.965469042

00:36:21.760 --> 00:36:24.497 And one of the things he emphasized

NOTE Confidence: 0.965469042

00:36:24.497 --> 00:36:27.440 to us is that if you can't manage

NOTE Confidence: 0.965469042

00:36:27.440 --> 00:36:30.462 to bring the decision makers and the

NOTE Confidence: 0.965469042

00:36:30.462 --> 00:36:32.474 political infrastructure to bear,

NOTE Confidence: 0.965469042

00:36:32.480 --> 00:36:35.567 you can't affect the impact that you

NOTE Confidence: 0.965469042

00:36:35.567 --> 00:36:38.960 need for any public health problem.

NOTE Confidence: 0.965469042

00:36:38.960 --> 00:36:41.620 Just look at the disaster that we
NOTE Confidence: 0.965469042

00:36:41.620 --> 00:36:44.212 created in our own society over
NOTE Confidence: 0.965469042

00:36:44.212 --> 00:36:46.954 our public health efforts for COVID
NOTE Confidence: 0.965469042

00:36:46.960 --> 00:36:52.184 vaccination masking. What a mess.
NOTE Confidence: 0.965469042

00:36:52.184 --> 00:36:53.400 During COVID,
NOTE Confidence: 0.965469042

00:36:53.400 --> 00:36:57.453 my colleagues and I created a very
NOTE Confidence: 0.965469042

00:36:57.453 --> 00:37:01.184 detailed model to try to predict
NOTE Confidence: 0.965469042

00:37:01.184 --> 00:37:04.314 within the continent of Africa
NOTE Confidence: 0.965469042

00:37:04.320 --> 00:37:06.976 and track COVID cases.
NOTE Confidence: 0.965469042

00:37:06.976 --> 00:37:08.952 Actually, it worked pretty well.
NOTE Confidence: 0.965469042

00:37:08.952 --> 00:37:09.280 Yeah,
NOTE Confidence: 0.965469042

00:37:09.280 --> 00:37:13.170 we could get pretty good estimates one
NOTE Confidence: 0.965469042

00:37:13.170 --> 00:37:16.680 week and actually two weeks ahead.
NOTE Confidence: 0.965469042

00:37:16.680 --> 00:37:20.404 And we work with what is the
NOTE Confidence: 0.965469042

00:37:20.404 --> 00:37:22.000 national planning authority.
NOTE Confidence: 0.965469042

00:37:22.000 --> 00:37:25.000 These are the folks that do the financial,

NOTE Confidence: 0.965469042
00:37:25.000 --> 00:37:27.008 agricultural and health planning
NOTE Confidence: 0.965469042
00:37:27.008 --> 00:37:29.518 for the country of Uganda.
NOTE Confidence: 0.965469042
00:37:29.520 --> 00:37:33.576 And we trained with one of their
NOTE Confidence: 0.965469042
00:37:33.576 --> 00:37:35.760 data scientists to do an excellent
NOTE Confidence: 0.965469042
00:37:35.830 --> 00:37:40.005 job of of of working with this
NOTE Confidence: 0.965469042
00:37:40.005 --> 00:37:41.353 model and doing predictions,
NOTE Confidence: 0.965469042
00:37:41.360 --> 00:37:43.828 scenario predictions of how
NOTE Confidence: 0.965469042
00:37:43.828 --> 00:37:46.913 policy change would affect COVID.
NOTE Confidence: 0.965469042
00:37:46.920 --> 00:37:47.830 Abraham Mullen.
NOTE Confidence: 0.965469042
00:37:47.830 --> 00:37:51.015 Guzi is a manager of technology and
NOTE Confidence: 0.965469042
00:37:51.015 --> 00:37:54.040 innovation for the country at two ministries.
NOTE Confidence: 0.965469042
00:37:54.040 --> 00:37:56.265 Joseph Muvwala is one of
NOTE Confidence: 0.965469042
00:37:56.265 --> 00:37:57.600 their lead economists.
NOTE Confidence: 0.965469042
00:37:57.600 --> 00:38:00.824 And they're actually here,
NOTE Confidence: 0.965469042
00:38:00.824 --> 00:38:03.264 these are screenshots on national
NOTE Confidence: 0.965469042

00:38:03.264 --> 00:38:05.293 television as they're explaining
NOTE Confidence: 0.965469042

00:38:05.293 --> 00:38:08.952 to their society why this is a
NOTE Confidence: 0.965469042

00:38:08.952 --> 00:38:12.240 way they can manage the pandemic.
NOTE Confidence: 0.965469042

00:38:12.240 --> 00:38:15.900 At a cabinet meeting their president thought,
NOTE Confidence: 0.965469042

00:38:15.900 --> 00:38:18.900 yeah that's exactly what we ought
NOTE Confidence: 0.965469042

00:38:18.900 --> 00:38:22.548 to be doing and they ran with
NOTE Confidence: 0.965469042

00:38:22.548 --> 00:38:25.233 this model 3 scenarios 1.
NOTE Confidence: 0.965469042

00:38:25.240 --> 00:38:27.571 Continued lockdown 1.
NOTE Confidence: 0.965469042

00:38:27.571 --> 00:38:31.584 Taking all restrictions away and
NOTE Confidence: 0.965469042

00:38:31.584 --> 00:38:35.200 one the intermediate course.
NOTE Confidence: 0.965469042

00:38:35.200 --> 00:38:37.520 And I I was there at the time.
NOTE Confidence: 0.965469042

00:38:37.520 --> 00:38:37.880 And
NOTE Confidence: 0.859965036666667

00:38:39.520 --> 00:38:41.960 predictions on the potential effects
NOTE Confidence: 0.859965036666667

00:38:41.960 --> 00:38:43.912 of the different interventions
NOTE Confidence: 0.859965036666667

00:38:43.920 --> 00:38:46.920 on the likely outcomes.
NOTE Confidence: 0.859965036666667

00:38:46.920 --> 00:38:48.890 The model analyzes a number

NOTE Confidence: 0.859965036666667
00:38:48.890 --> 00:38:50.200 of factors, including
NOTE Confidence: 0.883947941428571
00:38:52.400 --> 00:38:55.718 I don't think I'll ever see a
NOTE Confidence: 0.883947941428571
00:38:55.720 --> 00:38:58.606 a head of state explaining our
NOTE Confidence: 0.883947941428571
00:38:58.606 --> 00:39:00.902 computational modeling that we do
NOTE Confidence: 0.883947941428571
00:39:00.902 --> 00:39:04.220 here in the lab to an entire nation.
NOTE Confidence: 0.883947941428571
00:39:04.220 --> 00:39:08.296 But he uses this to justify changing
NOTE Confidence: 0.883947941428571
00:39:08.296 --> 00:39:11.126 his mind because partially restrict,
NOTE Confidence: 0.883947941428571
00:39:11.126 --> 00:39:13.736 partially coming out of lockdown
NOTE Confidence: 0.883947941428571
00:39:13.736 --> 00:39:16.697 appeared to be safe and fortunately
NOTE Confidence: 0.883947941428571
00:39:16.697 --> 00:39:18.992 the predictions were pretty good.
NOTE Confidence: 0.96012634631579
00:39:21.080 --> 00:39:23.740 So we had a fair amount of
NOTE Confidence: 0.96012634631579
00:39:23.740 --> 00:39:26.197 credibility after that with some of
NOTE Confidence: 0.96012634631579
00:39:26.197 --> 00:39:28.675 the decision makers in the country.
NOTE Confidence: 0.96012634631579
00:39:28.680 --> 00:39:30.972 And we've been talking with them
NOTE Confidence: 0.96012634631579
00:39:30.972 --> 00:39:33.680 and they've asked how can we partner
NOTE Confidence: 0.96012634631579

00:39:33.680 --> 00:39:36.689 with them to address a very high
NOTE Confidence: 0.96012634631579

00:39:36.689 --> 00:39:39.460 and stubbornly resistant rate of
NOTE Confidence: 0.96012634631579

00:39:39.460 --> 00:39:41.760 neonatal mortality in the country.
NOTE Confidence: 0.920701307857143

00:39:43.920 --> 00:39:47.021 We began weekly meetings by Zoom here
NOTE Confidence: 0.920701307857143

00:39:47.021 --> 00:39:50.590 from Yale and then several trips over
NOTE Confidence: 0.920701307857143

00:39:50.590 --> 00:39:53.818 to gather the stakeholders together in
NOTE Confidence: 0.920701307857143

00:39:53.912 --> 00:39:57.040 person and go over what we could do.
NOTE Confidence: 0.920701307857143

00:39:57.040 --> 00:40:00.918 And I wanted to focus on Preventable.
NOTE Confidence: 0.920701307857143

00:40:00.920 --> 00:40:02.800 Causes of neonatal death
NOTE Confidence: 0.850572239

00:40:05.400 --> 00:40:09.036 what we just closed the deal on two weeks
NOTE Confidence: 0.850572239

00:40:09.036 --> 00:40:11.477 ago is the agreement to do the following.
NOTE Confidence: 0.850572239

00:40:11.480 --> 00:40:13.680 It'll be led by the
NOTE Confidence: 0.850572239

00:40:13.680 --> 00:40:15.000 National Planning Authority.
NOTE Confidence: 0.850572239

00:40:15.000 --> 00:40:17.394 The Ministry of Health is on board.
NOTE Confidence: 0.850572239

00:40:17.400 --> 00:40:19.375 Their Ministry of Science and
NOTE Confidence: 0.850572239

00:40:19.375 --> 00:40:20.955 Technology is on board.

NOTE Confidence: 0.850572239
00:40:20.960 --> 00:40:23.340 The Kingdom of Usoga,
NOTE Confidence: 0.850572239
00:40:23.340 --> 00:40:25.720 which is shown here,
NOTE Confidence: 0.850572239
00:40:25.720 --> 00:40:28.678 which may have the highest rates
NOTE Confidence: 0.850572239
00:40:28.680 --> 00:40:31.560 of both neural tube defects and
NOTE Confidence: 0.850572239
00:40:31.560 --> 00:40:34.280 neonatal sepsis in the country,
NOTE Confidence: 0.850572239
00:40:34.280 --> 00:40:36.800 is on board.
NOTE Confidence: 0.850572239
00:40:36.800 --> 00:40:39.692 We're going to keep the specimens
NOTE Confidence: 0.850572239
00:40:39.692 --> 00:40:41.620 in the Ugandan biorepository
NOTE Confidence: 0.850572239
00:40:41.700 --> 00:40:43.890 that NIH had originally built as
NOTE Confidence: 0.850572239
00:40:43.890 --> 00:40:46.599 part of the H3 Africa program,
NOTE Confidence: 0.850572239
00:40:46.600 --> 00:40:49.160 and we're going to try to do as
NOTE Confidence: 0.850572239
00:40:49.160 --> 00:40:52.140 much of the sequencing as possible
NOTE Confidence: 0.850572239
00:40:52.140 --> 00:40:54.396 using in country scientists.
NOTE Confidence: 0.850572239
00:40:54.400 --> 00:40:56.080 What's the community here?
NOTE Confidence: 0.722394726666667
00:41:01.120 --> 00:41:03.358 It's a question.
NOTE Confidence: 0.722394726666667

00:41:03.360 --> 00:41:06.340 It's a complex question.
NOTE Confidence: 0.722394726666667

00:41:06.340 --> 00:41:09.320 Here's what the community
NOTE Confidence: 0.722394726666667

00:41:09.320 --> 00:41:12.080 partnership probably looks like.
NOTE Confidence: 0.722394726666667

00:41:12.080 --> 00:41:16.040 It involves midwives and nurses.
NOTE Confidence: 0.722394726666667

00:41:16.040 --> 00:41:18.854 It involves mothers who are advocates
NOTE Confidence: 0.722394726666667

00:41:18.854 --> 00:41:21.440 for children with this disease.
NOTE Confidence: 0.722394726666667

00:41:21.440 --> 00:41:25.118 Ruth here is a national organizer
NOTE Confidence: 0.722394726666667

00:41:25.120 --> 00:41:28.560 for advocacy for spina bifida.
NOTE Confidence: 0.722394726666667

00:41:28.560 --> 00:41:31.698 Lydia is on the National Nursing
NOTE Confidence: 0.722394726666667

00:41:31.698 --> 00:41:34.277 Council helping direct policy for
NOTE Confidence: 0.722394726666667

00:41:34.277 --> 00:41:38.000 nursing and mid midwives in the country.
NOTE Confidence: 0.722394726666667

00:41:38.000 --> 00:41:41.764 This man is one of the lead faculty members
NOTE Confidence: 0.722394726666667

00:41:41.764 --> 00:41:46.678 at the National University for Public Health.
NOTE Confidence: 0.722394726666667

00:41:46.680 --> 00:41:51.240 This individual is in charge of
NOTE Confidence: 0.722394726666667

00:41:51.240 --> 00:41:53.840 health policy for their planning.
NOTE Confidence: 0.722394726666667

00:41:53.840 --> 00:41:56.534 Abraham I showed you this individual

NOTE Confidence: 0.722394726666667

00:41:56.534 --> 00:42:00.360 is both one of their lead economists.

NOTE Confidence: 0.722394726666667

00:42:00.360 --> 00:42:04.560 He's also the Prime Minister of Musoga.

NOTE Confidence: 0.722394726666667

00:42:04.560 --> 00:42:07.444 I had a delightful couple of hours

NOTE Confidence: 0.722394726666667

00:42:07.444 --> 00:42:10.584 with their Minister of Science.

NOTE Confidence: 0.722394726666667

00:42:10.584 --> 00:42:14.304 Monica Musonero is a brilliant

NOTE Confidence: 0.722394726666667

00:42:14.304 --> 00:42:14.736 microbiologist.

NOTE Confidence: 0.722394726666667

00:42:14.736 --> 00:42:16.896 She's fascinated by all the

NOTE Confidence: 0.722394726666667

00:42:16.896 --> 00:42:18.919 things that we've been doing.

NOTE Confidence: 0.857277130909091

00:42:20.960 --> 00:42:23.900 This is the Minister of Health for

NOTE Confidence: 0.857277130909091

00:42:23.900 --> 00:42:26.915 the Kingdom of Busoga and on board

NOTE Confidence: 0.857277130909091

00:42:26.915 --> 00:42:29.225 as well is the Commissioner for

NOTE Confidence: 0.857277130909091

00:42:29.225 --> 00:42:31.660 Child Health throughout Uganda,

NOTE Confidence: 0.857277130909091

00:42:31.660 --> 00:42:34.960 the nation state of Uganda.

NOTE Confidence: 0.857277130909091

00:42:34.960 --> 00:42:38.362 Pamela and Babassi is a protege

NOTE Confidence: 0.857277130909091

00:42:38.362 --> 00:42:41.050 of Frances Fukuyama and she

NOTE Confidence: 0.857277130909091

00:42:41.050 --> 00:42:43.200 is a renowned urban planner.
NOTE Confidence: 0.857277130909091

00:42:43.200 --> 00:42:46.741 She is the chairwoman of their national
NOTE Confidence: 0.857277130909091

00:42:46.741 --> 00:42:50.532 planning and on February 11th,
NOTE Confidence: 0.857277130909091

00:42:50.532 --> 00:42:53.252 the Chaya Bazinga Day,
NOTE Confidence: 0.857277130909091

00:42:53.252 --> 00:42:57.354 the King of Busoga will be rolling
NOTE Confidence: 0.857277130909091

00:42:57.354 --> 00:43:01.240 out this project for neural tube
NOTE Confidence: 0.857277130909091

00:43:01.240 --> 00:43:04.240 defects and neonatal sepsis to
NOTE Confidence: 0.857277130909091

00:43:04.240 --> 00:43:07.678 the Kingdom Takes a Village.
NOTE Confidence: 0.857277130909091

00:43:07.680 --> 00:43:12.200 Malnutrition effects absolutely
NOTE Confidence: 0.857277130909091

00:43:12.200 --> 00:43:15.160 everything I just discussed,
NOTE Confidence: 0.857277130909091

00:43:15.160 --> 00:43:19.437 and stunting is the most obvious physical
NOTE Confidence: 0.857277130909091

00:43:19.440 --> 00:43:21.872 manifestation of severe malnutrition
NOTE Confidence: 0.857277130909091

00:43:21.872 --> 00:43:24.912 and undernutrition in early childhood.
NOTE Confidence: 0.857277130909091

00:43:24.920 --> 00:43:25.431 Worldwide,
NOTE Confidence: 0.857277130909091

00:43:25.431 --> 00:43:29.008 there are about 1/4 of a billion
NOTE Confidence: 0.857277130909091

00:43:29.008 --> 00:43:31.668 children who are malnourished to

NOTE Confidence: 0.857277130909091

00:43:31.668 --> 00:43:34.353 the point that they're stunted.

NOTE Confidence: 0.857277130909091

00:43:34.360 --> 00:43:36.244 And across Uganda,

NOTE Confidence: 0.857277130909091

00:43:36.244 --> 00:43:40.640 the current estimated stunting rate is 30%.

NOTE Confidence: 0.857277130909091

00:43:40.640 --> 00:43:43.015 That's not the worst society

NOTE Confidence: 0.857277130909091

00:43:43.015 --> 00:43:44.440 in sub-Saharan Africa,

NOTE Confidence: 0.857277130909091

00:43:44.440 --> 00:43:47.716 but these are pretty shocking numbers.

NOTE Confidence: 0.857277130909091

00:43:47.720 --> 00:43:48.956 And take a look at this.

NOTE Confidence: 0.857277130909091

00:43:48.960 --> 00:43:52.266 So this is probably the currently

NOTE Confidence: 0.857277130909091

00:43:52.266 --> 00:43:56.620 best stunt study I know of on the

NOTE Confidence: 0.857277130909091

00:43:56.620 --> 00:44:00.520 genetics of infant and child growth.

NOTE Confidence: 0.857277130909091

00:44:00.520 --> 00:44:04.594 Look where they pull their populations from.

NOTE Confidence: 0.857277130909091

00:44:04.600 --> 00:44:07.400 Yeah, it's from Western Europe,

NOTE Confidence: 0.857277130909091

00:44:07.400 --> 00:44:09.880 the United States, and Australia.

NOTE Confidence: 0.857277130909091

00:44:09.880 --> 00:44:12.918 I show this to my African colleagues,

NOTE Confidence: 0.857277130909091

00:44:12.920 --> 00:44:14.600 and they're appalled.

NOTE Confidence: 0.857277130909091

00:44:14.600 --> 00:44:18.434 But there's a serious lack of diversity
NOTE Confidence: 0.857277130909091

00:44:18.434 --> 00:44:21.536 in our analysis of even fundamental
NOTE Confidence: 0.857277130909091

00:44:21.536 --> 00:44:24.040 features of human existence,
NOTE Confidence: 0.857277130909091

00:44:24.040 --> 00:44:27.415 like growth from diverse people
NOTE Confidence: 0.857277130909091

00:44:27.415 --> 00:44:29.440 around the world.
NOTE Confidence: 0.857277130909091

00:44:29.440 --> 00:44:34.160 Here's 6000 children surveyed in Uganda.
NOTE Confidence: 0.857277130909091

00:44:34.160 --> 00:44:36.736 They start off around the median for
NOTE Confidence: 0.857277130909091

00:44:36.736 --> 00:44:40.368 size at birth, and within 24 months,
NOTE Confidence: 0.857277130909091

00:44:40.368 --> 00:44:44.156 30% of them are stunted in height.
NOTE Confidence: 0.857277130909091

00:44:44.160 --> 00:44:48.240 Look at the fallacy that this
NOTE Confidence: 0.857277130909091

00:44:48.240 --> 00:44:49.500 this brings you.
NOTE Confidence: 0.857277130909091

00:44:49.500 --> 00:44:52.020 So I'm going to circle that
NOTE Confidence: 0.857277130909091

00:44:52.020 --> 00:44:54.240 NE province in Uganda.
NOTE Confidence: 0.857277130909091

00:44:54.240 --> 00:44:56.228 The Karamajung lived there.
NOTE Confidence: 0.857277130909091

00:44:56.228 --> 00:44:57.719 These are tall,
NOTE Confidence: 0.857277130909091

00:44:57.720 --> 00:44:58.806 melodic people.

NOTE Confidence: 0.857277130909091
00:44:58.806 --> 00:45:01.521 They're related closely to the
NOTE Confidence: 0.857277130909091
00:45:01.521 --> 00:45:04.600 Maasai across the border in Kenya.
NOTE Confidence: 0.857277130909091
00:45:04.600 --> 00:45:07.440 If you look at height,
NOTE Confidence: 0.857277130909091
00:45:07.440 --> 00:45:10.080 there's a little area that they look stunted.
NOTE Confidence: 0.857277130909091
00:45:10.080 --> 00:45:12.240 But for the most part,
NOTE Confidence: 0.857277130909091
00:45:12.240 --> 00:45:15.750 they're stunting free and it's
NOTE Confidence: 0.857277130909091
00:45:15.750 --> 00:45:17.154 totally misleading.
NOTE Confidence: 0.857277130909091
00:45:17.160 --> 00:45:19.155 If you look at weight for height,
NOTE Confidence: 0.857277130909091
00:45:19.160 --> 00:45:21.920 they're starving.
NOTE Confidence: 0.857277130909091
00:45:21.920 --> 00:45:25.252 Fallacy is that if you use the
NOTE Confidence: 0.857277130909091
00:45:25.252 --> 00:45:26.680 wrong growth curves,
NOTE Confidence: 0.857277130909091
00:45:26.680 --> 00:45:30.915 very tall people will look average in
NOTE Confidence: 0.857277130909091
00:45:30.915 --> 00:45:34.144 height if they're seriously malnourished.
NOTE Confidence: 0.857277130909091
00:45:34.144 --> 00:45:34.800 Now,
NOTE Confidence: 0.857277130909091
00:45:34.800 --> 00:45:38.112 the African peoples are the most
NOTE Confidence: 0.857277130909091

00:45:38.112 --> 00:45:40.320 diverse genetically on earth,
NOTE Confidence: 0.857277130909091

00:45:40.320 --> 00:45:42.679 and if you look at recent studies,
NOTE Confidence: 0.857277130909091

00:45:42.680 --> 00:45:46.000 this is a gorgeous set of papers that
NOTE Confidence: 0.857277130909091

00:45:46.000 --> 00:45:49.275 Gurdasani has done over the last few years.
NOTE Confidence: 0.857277130909091

00:45:49.280 --> 00:45:52.086 Take a look at the following These
NOTE Confidence: 0.857277130909091

00:45:52.086 --> 00:45:54.116 are people from West Africa,
NOTE Confidence: 0.857277130909091

00:45:54.120 --> 00:45:57.220 Yoruba and Igbo peoples from
NOTE Confidence: 0.857277130909091

00:45:57.220 --> 00:45:59.080 Ghana from Nigeria.
NOTE Confidence: 0.857277130909091

00:45:59.080 --> 00:46:01.866 Take a look at this simple plot
NOTE Confidence: 0.857277130909091

00:46:01.866 --> 00:46:04.410 of admixture based off of the
NOTE Confidence: 0.857277130909091

00:46:04.410 --> 00:46:06.098 single nucleotide changes that
NOTE Confidence: 0.857277130909091

00:46:06.098 --> 00:46:09.039 we all have between our genomes.
NOTE Confidence: 0.857277130909091

00:46:09.040 --> 00:46:12.267 Now look at the East African peoples
NOTE Confidence: 0.857277130909091

00:46:12.267 --> 00:46:14.884 and the South African peoples
NOTE Confidence: 0.857277130909091

00:46:14.884 --> 00:46:17.647 like the Khosan or the Zulu.
NOTE Confidence: 0.857277130909091

00:46:17.647 --> 00:46:19.741 They have nothing at all like

NOTE Confidence: 0.857277130909091
00:46:19.741 --> 00:46:21.837 the West African group do.
NOTE Confidence: 0.857277130909091
00:46:21.840 --> 00:46:23.544 They They're very different
NOTE Confidence: 0.857277130909091
00:46:23.544 --> 00:46:25.674 and they've had many thousands
NOTE Confidence: 0.857277130909091
00:46:25.674 --> 00:46:27.919 of years of differentiation.
NOTE Confidence: 0.857277130909091
00:46:27.920 --> 00:46:30.782 Now look with how the World
NOTE Confidence: 0.857277130909091
00:46:30.782 --> 00:46:32.213 Health Organization provides
NOTE Confidence: 0.857277130909091
00:46:32.213 --> 00:46:34.679 the worldwide growth curves.
NOTE Confidence: 0.857277130909091
00:46:34.680 --> 00:46:37.710 They took a survey of wealthy
NOTE Confidence: 0.857277130909091
00:46:37.710 --> 00:46:40.386 children in the capital of
NOTE Confidence: 0.857277130909091
00:46:40.386 --> 00:46:42.598 Ghana in one neighborhood,
NOTE Confidence: 0.857277130909091
00:46:42.600 --> 00:46:45.720 measured their heights and weights.
NOTE Confidence: 0.966056454285714
00:46:45.720 --> 00:46:48.492 Then they took children from other
NOTE Confidence: 0.966056454285714
00:46:48.492 --> 00:46:50.490 continents, Brazil, India, Norway,
NOTE Confidence: 0.966056454285714
00:46:50.490 --> 00:46:54.884 Oman, the US and they created the World
NOTE Confidence: 0.966056454285714
00:46:54.884 --> 00:46:57.800 Health Organization growth curves,
NOTE Confidence: 0.966056454285714

00:46:57.800 --> 00:46:58.940 They don't actually apply
NOTE Confidence: 0.966056454285714

00:46:58.940 --> 00:47:01.920 to any child on Earth.
NOTE Confidence: 0.966056454285714

00:47:01.920 --> 00:47:06.240 So there's a really amazing malnutrition
NOTE Confidence: 0.966056454285714

00:47:06.240 --> 00:47:10.172 unit at the Jinja Children's Hospital.
NOTE Confidence: 0.966056454285714

00:47:10.172 --> 00:47:12.276 This is Harriet Nembuya.
NOTE Confidence: 0.966056454285714

00:47:12.280 --> 00:47:14.140 I've been to this unit several
NOTE Confidence: 0.966056454285714

00:47:14.140 --> 00:47:15.760 times and I haven't found
NOTE Confidence: 0.94744253

00:47:17.800 --> 00:47:23.596 a better malnutrition unit in my travels.
NOTE Confidence: 0.94744253

00:47:23.600 --> 00:47:26.120 Which brings us to a brief
NOTE Confidence: 0.94744253

00:47:26.120 --> 00:47:28.640 discussion of on growth and form.
NOTE Confidence: 0.94744253

00:47:28.640 --> 00:47:32.434 Now they teach this in that school.
NOTE Confidence: 0.94744253

00:47:32.440 --> 00:47:34.715 Well, they didn't do my day either,
NOTE Confidence: 0.94744253

00:47:34.720 --> 00:47:36.274 but if you're bored one night
NOTE Confidence: 0.94744253

00:47:36.274 --> 00:47:37.720 wandering around the medical library,
NOTE Confidence: 0.94744253

00:47:37.720 --> 00:47:38.988 you might find this.
NOTE Confidence: 0.94744253

00:47:38.988 --> 00:47:41.737 It probably hasn't been checked out a lot CRC

NOTE Confidence: 0.94744253

00:47:41.737 --> 00:47:44.988 Wentworth Thompson wrote this book in 1917.

NOTE Confidence: 0.94744253

00:47:44.988 --> 00:47:47.132 It's a little hard to read 'cause he

NOTE Confidence: 0.94744253

00:47:47.132 --> 00:47:49.238 knew of several different languages,

NOTE Confidence: 0.94744253

00:47:49.240 --> 00:47:52.632 and he sprinkled them in like just

NOTE Confidence: 0.94744253

00:47:52.632 --> 00:47:54.616 'cause he could, as he wrote it.

NOTE Confidence: 0.94744253

00:47:54.616 --> 00:47:57.088 But he looked at the growth and form

NOTE Confidence: 0.94744253

00:47:57.088 --> 00:47:58.998 of many different animal species,

NOTE Confidence: 0.94744253

00:47:59.000 --> 00:48:00.408 including humans.

NOTE Confidence: 0.94744253

00:48:00.408 --> 00:48:05.024 Take a look at what brains do.

NOTE Confidence: 0.94744253

00:48:05.024 --> 00:48:07.810 Your brains do most of their growth

NOTE Confidence: 0.94744253

00:48:07.810 --> 00:48:09.919 in the first three years of life,

NOTE Confidence: 0.94744253

00:48:09.920 --> 00:48:11.640 but your body keeps growing.

NOTE Confidence: 0.94744253

00:48:11.640 --> 00:48:15.696 So allometry is the study of

NOTE Confidence: 0.94744253

00:48:15.696 --> 00:48:17.724 these proportional differences

NOTE Confidence: 0.94744253

00:48:17.724 --> 00:48:19.920 between organ systems,

NOTE Confidence: 0.94744253

00:48:19.920 --> 00:48:22.916 and it has a really bad history
NOTE Confidence: 0.94744253

00:48:22.916 --> 00:48:26.682 associated with it in terms of what's
NOTE Confidence: 0.94744253

00:48:26.682 --> 00:48:28.479 called biological determinism.
NOTE Confidence: 0.94744253

00:48:28.480 --> 00:48:30.046 I used to think this was
NOTE Confidence: 0.94744253

00:48:30.046 --> 00:48:31.520 one of my favorite books.
NOTE Confidence: 0.94744253

00:48:31.520 --> 00:48:33.512 Stephen J Gould,
NOTE Confidence: 0.94744253

00:48:33.512 --> 00:48:35.754 the Harvard biologist's book
NOTE Confidence: 0.94744253

00:48:35.754 --> 00:48:38.039 on the Mismeasure of Man,
NOTE Confidence: 0.94744253

00:48:38.040 --> 00:48:39.560 and I used to it,
NOTE Confidence: 0.94744253

00:48:39.560 --> 00:48:43.440 used to be required reading in my laboratory.
NOTE Confidence: 0.94744253

00:48:43.440 --> 00:48:45.960 He looks at what Paul Broca,
NOTE Confidence: 0.94744253

00:48:45.960 --> 00:48:49.376 the neurologist in 150 years ago who
NOTE Confidence: 0.94744253

00:48:49.376 --> 00:48:52.600 named the speech area of the brain.
NOTE Confidence: 0.94744253

00:48:52.600 --> 00:48:55.360 And Broca said that there's a
NOTE Confidence: 0.94744253

00:48:55.360 --> 00:48:56.740 remarkable relationship between
NOTE Confidence: 0.94744253

00:48:56.740 --> 00:48:58.594 the development of intelligence

NOTE Confidence: 0.94744253

00:48:58.594 --> 00:49:01.234 and the volume of the brain.

NOTE Confidence: 0.94744253

00:49:01.240 --> 00:49:04.756 Broca had some axes to grind,

NOTE Confidence: 0.94744253

00:49:04.760 --> 00:49:06.326 In addition to wanting to prove

NOTE Confidence: 0.94744253

00:49:06.326 --> 00:49:07.948 that the French brain is better

NOTE Confidence: 0.94744253

00:49:07.948 --> 00:49:09.000 than the German brain.

NOTE Confidence: 0.928998988

00:49:11.600 --> 00:49:14.824 He was pretty hell bent on showing that

NOTE Confidence: 0.928998988

00:49:14.824 --> 00:49:18.160 male brains were better than female brains.

NOTE Confidence: 0.928998988

00:49:18.160 --> 00:49:20.360 So he did a fair amount of study,

NOTE Confidence: 0.928998988

00:49:20.360 --> 00:49:23.540 carefully done. Taking brains out at

NOTE Confidence: 0.928998988

00:49:23.540 --> 00:49:26.600 autopsy and weighing them carefully,

NOTE Confidence: 0.928998988

00:49:26.600 --> 00:49:30.107 he finds that male and female brains

NOTE Confidence: 0.928998988

00:49:30.107 --> 00:49:33.286 differ by about 200 grams. Now,

NOTE Confidence: 0.928998988

00:49:33.286 --> 00:49:37.622 Gould knew about Thompson's work and Gould.

NOTE Confidence: 0.928998988

00:49:37.622 --> 00:49:40.877 If my slide will advance,

NOTE Confidence: 0.928998988

00:49:40.880 --> 00:49:46.680 Gould corrects for height and age and weight,

NOTE Confidence: 0.928998988

00:49:46.680 --> 00:49:49.692 and he finds that there's he
NOTE Confidence: 0.928998988

00:49:49.692 --> 00:49:52.280 cuts that difference in half.
NOTE Confidence: 0.928998988

00:49:52.280 --> 00:49:54.177 When I read this as a grad
NOTE Confidence: 0.928998988

00:49:54.177 --> 00:49:55.360 student the first time,
NOTE Confidence: 0.928998988

00:49:55.360 --> 00:49:57.660 I remembered that the figure
NOTE Confidence: 0.928998988

00:49:57.660 --> 00:49:59.960 was probably close to 0.
NOTE Confidence: 0.928998988

00:49:59.960 --> 00:50:02.480 When I reread this many years later,
NOTE Confidence: 0.928998988

00:50:02.480 --> 00:50:05.138 I realized that Gould couldn't accept
NOTE Confidence: 0.928998988

00:50:05.138 --> 00:50:08.198 either his own or broke his data,
NOTE Confidence: 0.928998988

00:50:08.200 --> 00:50:10.648 so he just wrote that the
NOTE Confidence: 0.928998988

00:50:10.648 --> 00:50:11.872 difference wasn't there.
NOTE Confidence: 0.928998988

00:50:11.880 --> 00:50:13.512 I no longer recommend
NOTE Confidence: 0.928998988

00:50:13.512 --> 00:50:15.552 the book to my students.
NOTE Confidence: 0.928998988

00:50:15.560 --> 00:50:19.690 We looked at over 1000 scans of
NOTE Confidence: 0.928998988

00:50:19.690 --> 00:50:23.118 normal North American children,
NOTE Confidence: 0.928998988

00:50:23.120 --> 00:50:26.151 and indeed there is a difference in

NOTE Confidence: 0.928998988

00:50:26.151 --> 00:50:29.006 size between male and female brands

NOTE Confidence: 0.928998988

00:50:29.006 --> 00:50:31.462 of normal children proportioned by

NOTE Confidence: 0.928998988

00:50:31.462 --> 00:50:33.917 the demographics of North America.

NOTE Confidence: 0.928998988

00:50:33.920 --> 00:50:36.920 Indeed, Roca's difference is right there,

NOTE Confidence: 0.928998988

00:50:36.920 --> 00:50:40.080 and if you correct for height and weight,

NOTE Confidence: 0.928998988

00:50:40.080 --> 00:50:41.740 you get ghoul's difference.

NOTE Confidence: 0.928998988

00:50:41.740 --> 00:50:43.400 They were both right.

NOTE Confidence: 0.928998988

00:50:43.400 --> 00:50:45.458 What they didn't have a chance

NOTE Confidence: 0.928998988

00:50:45.458 --> 00:50:47.767 to do without imaging is look at

NOTE Confidence: 0.928998988

00:50:47.767 --> 00:50:49.797 the ratio of brain size to fluid.

NOTE Confidence: 0.928998988

00:50:49.800 --> 00:50:50.920 So you're all sitting here,

NOTE Confidence: 0.928998988

00:50:50.920 --> 00:50:53.344 it's about 6:00 and you're you

NOTE Confidence: 0.928998988

00:50:53.344 --> 00:50:54.960 have a good brain.

NOTE Confidence: 0.928998988

00:50:54.960 --> 00:50:57.390 So your brains are all at

NOTE Confidence: 0.928998988

00:50:57.390 --> 00:50:59.656 least 1400 grams or so,

NOTE Confidence: 0.928998988

00:50:59.656 --> 00:51:02.440 and they're floating in a couple
NOTE Confidence: 0.928998988

00:51:02.542 --> 00:51:05.417 of 100 CCS of spinal fluid and
NOTE Confidence: 0.928998988

00:51:05.417 --> 00:51:08.159 suspended in their little yellow sea.
NOTE Confidence: 0.928998988

00:51:08.160 --> 00:51:10.638 Your brains are weighing about 50 grams.
NOTE Confidence: 0.928998988

00:51:10.640 --> 00:51:12.560 And that's why you're kind of happy now,
NOTE Confidence: 0.928998988

00:51:12.560 --> 00:51:16.079 ready to have a meal and go to sleep.
NOTE Confidence: 0.928998988

00:51:16.080 --> 00:51:18.438 Don't bang your head is another
NOTE Confidence: 0.928998988

00:51:18.438 --> 00:51:20.855 lesson because it's kind of a
NOTE Confidence: 0.928998988

00:51:20.855 --> 00:51:22.399 delicate situation up there.
NOTE Confidence: 0.928998988

00:51:22.400 --> 00:51:24.725 But the universal featured that
NOTE Confidence: 0.928998988

00:51:24.725 --> 00:51:27.440 they were all perhaps looking for.
NOTE Confidence: 0.928998988

00:51:27.440 --> 00:51:30.800 Is that this ratio, a brain to fluid,
NOTE Confidence: 0.928998988

00:51:30.800 --> 00:51:32.324 is very tightly controlled,
NOTE Confidence: 0.928998988

00:51:32.324 --> 00:51:35.080 doesn't matter whether you're male or female,
NOTE Confidence: 0.928998988

00:51:35.080 --> 00:51:36.480 and it doesn't matter whether
NOTE Confidence: 0.928998988

00:51:36.480 --> 00:51:37.600 you're big or small.

NOTE Confidence: 0.928998988
00:51:37.600 --> 00:51:40.480 We don't understand it yet,
NOTE Confidence: 0.928998988
00:51:40.480 --> 00:51:43.660 but we then created childhood growth
NOTE Confidence: 0.928998988
00:51:43.660 --> 00:51:46.692 curves for normal childhood growth and
NOTE Confidence: 0.928998988
00:51:46.692 --> 00:51:49.680 we use it in our studies in North America,
NOTE Confidence: 0.928998988
00:51:49.680 --> 00:51:52.767 and we use it in our randomized
NOTE Confidence: 0.928998988
00:51:52.767 --> 00:51:54.800 clinical trials in Africa.
NOTE Confidence: 0.928998988
00:51:54.800 --> 00:51:55.880 Does it apply?
NOTE Confidence: 0.926268193333333
00:51:58.240 --> 00:52:00.522 So what about the rest of the
NOTE Confidence: 0.926268193333333
00:52:00.522 --> 00:52:02.800 world and its various peoples?
NOTE Confidence: 0.926268193333333
00:52:02.800 --> 00:52:04.910 Do we need different growth
NOTE Confidence: 0.926268193333333
00:52:04.910 --> 00:52:06.598 curves for their children?
NOTE Confidence: 0.905337325555556
00:52:08.720 --> 00:52:12.077 And I will wrap up in a few minutes,
NOTE Confidence: 0.905337325555556
00:52:12.080 --> 00:52:15.152 but most brains don't have access to imaging
NOTE Confidence: 0.905337325555556
00:52:15.152 --> 00:52:18.196 that we'd need to do brain growth curves.
NOTE Confidence: 0.905337325555556
00:52:18.200 --> 00:52:23.024 MRI is about the lowest risk and most
NOTE Confidence: 0.905337325555556

00:52:23.024 --> 00:52:26.319 expensive technology we've ever created,
NOTE Confidence: 0.905337325555556

00:52:26.320 --> 00:52:29.020 and the costs are around
NOTE Confidence: 0.905337325555556

00:52:29.020 --> 00:52:30.640 generating big fields.
NOTE Confidence: 0.905337325555556

00:52:30.640 --> 00:52:33.195 So they made the mistake of inviting
NOTE Confidence: 0.905337325555556

00:52:33.195 --> 00:52:36.392 me to give a plenary talk at the
NOTE Confidence: 0.905337325555556

00:52:36.392 --> 00:52:38.960 large worldwide meeting of MRI people
NOTE Confidence: 0.905337325555556

00:52:38.960 --> 00:52:42.439 and I just told them my thoughts.
NOTE Confidence: 0.905337325555556

00:52:42.440 --> 00:52:45.464 I said well, we haven't developed an
NOTE Confidence: 0.905337325555556

00:52:45.464 --> 00:52:48.013 approach to technology with a cost
NOTE Confidence: 0.905337325555556

00:52:48.013 --> 00:52:50.359 to benefit guides our image quality.
NOTE Confidence: 0.905337325555556

00:52:50.360 --> 00:52:53.545 We failed in major ways in developing
NOTE Confidence: 0.905337325555556

00:52:53.545 --> 00:52:56.840 imaging and we oversell to ourselves
NOTE Confidence: 0.905337325555556

00:52:56.840 --> 00:53:00.278 beautiful images that have no correlation
NOTE Confidence: 0.905337325555556

00:53:00.278 --> 00:53:03.444 with patient outcome and we failed to
NOTE Confidence: 0.905337325555556

00:53:03.444 --> 00:53:06.280 show the value of less expensive imagery.
NOTE Confidence: 0.905337325555556

00:53:06.280 --> 00:53:08.324 I've actually got a lot of positive

NOTE Confidence: 0.905337325555556
00:53:08.324 --> 00:53:10.560 feedback from this talk in the years since,
NOTE Confidence: 0.905337325555556
00:53:10.560 --> 00:53:14.599 which I was quite pleased to see
NOTE Confidence: 0.905337325555556
00:53:14.600 --> 00:53:16.637 this is an image from the 70s.
NOTE Confidence: 0.905337325555556
00:53:16.640 --> 00:53:19.790 My looked like it wasn't actually
NOTE Confidence: 0.905337325555556
00:53:19.790 --> 00:53:22.335 the 1st hemorrhage in the brain that
NOTE Confidence: 0.905337325555556
00:53:22.335 --> 00:53:25.157 I saw on ACT but it looked like this
NOTE Confidence: 0.905337325555556
00:53:25.160 --> 00:53:27.560 and it's a low resolution image.
NOTE Confidence: 0.905337325555556
00:53:27.560 --> 00:53:29.762 Here's a modern day high resolution
NOTE Confidence: 0.905337325555556
00:53:29.762 --> 00:53:32.678 MRI of the same kind of hemorrhage.
NOTE Confidence: 0.905337325555556
00:53:32.680 --> 00:53:35.458 Patient outcome won't be determined by
NOTE Confidence: 0.905337325555556
00:53:35.458 --> 00:53:38.360 how beautiful all those features are.
NOTE Confidence: 0.905337325555556
00:53:38.360 --> 00:53:40.733 We need to know where the hemorrhage
NOTE Confidence: 0.905337325555556
00:53:40.733 --> 00:53:43.302 is and know where to do the surgery
NOTE Confidence: 0.905337325555556
00:53:43.302 --> 00:53:45.759 that we do to get it out.
NOTE Confidence: 0.905337325555556
00:53:45.760 --> 00:53:49.332 So in in recent years we've during the
NOTE Confidence: 0.905337325555556

00:53:49.332 --> 00:53:52.162 pandemic we got one of the first of
NOTE Confidence: 0.905337325555556

00:53:52.162 --> 00:53:54.574 these portable low field units into
NOTE Confidence: 0.905337325555556

00:53:54.574 --> 00:53:57.120 that same hospital in Eastern Uganda.
NOTE Confidence: 0.905337325555556

00:53:57.120 --> 00:53:59.997 We're all wearing masks there that day.
NOTE Confidence: 0.905337325555556

00:54:00.000 --> 00:54:03.390 And most recently this year we assembled
NOTE Confidence: 0.905337325555556

00:54:03.390 --> 00:54:06.240 an entirely new type of device.
NOTE Confidence: 0.905337325555556

00:54:06.240 --> 00:54:09.216 This is an MRI that can give very
NOTE Confidence: 0.905337325555556

00:54:09.216 --> 00:54:09.960 high quality.
NOTE Confidence: 0.905337325555556

00:54:09.960 --> 00:54:13.720 So you can see in the image here on top,
NOTE Confidence: 0.905337325555556

00:54:13.720 --> 00:54:15.958 but it can be fully assembled,
NOTE Confidence: 0.905337325555556

00:54:15.960 --> 00:54:16.630 operated,
NOTE Confidence: 0.905337325555556

00:54:16.630 --> 00:54:19.980 maintained by the African engineers
NOTE Confidence: 0.905337325555556

00:54:19.980 --> 00:54:21.320 pictured here.
NOTE Confidence: 0.905337325555556

00:54:21.320 --> 00:54:23.156 The Dean of Engineering at Emberara,
NOTE Confidence: 0.905337325555556

00:54:23.160 --> 00:54:24.270 Jonas Abungalach,
NOTE Confidence: 0.905337325555556

00:54:24.270 --> 00:54:28.728 got his PhD in my lap and this

NOTE Confidence: 0.905337325555556

00:54:28.728 --> 00:54:31.568 assembly was covered by articles

NOTE Confidence: 0.905337325555556

00:54:31.568 --> 00:54:33.840 and Science and Nature.

NOTE Confidence: 0.905337325555556

00:54:33.840 --> 00:54:36.885 Francis Shen has a very nice article

NOTE Confidence: 0.905337325555556

00:54:36.885 --> 00:54:39.944 out on the ethics of this kind of

NOTE Confidence: 0.905337325555556

00:54:39.944 --> 00:54:42.152 low field MRI as it gets distributed

NOTE Confidence: 0.905337325555556

00:54:42.152 --> 00:54:44.996 around the world and his principles.

NOTE Confidence: 0.905337325555556

00:54:45.000 --> 00:54:48.280 Of the ones I started the talk with,

NOTE Confidence: 0.905337325555556

00:54:48.280 --> 00:54:51.456 Local Community Partnerships and

NOTE Confidence: 0.905337325555556

00:54:51.456 --> 00:54:53.838 Local Society Value,

NOTE Confidence: 0.905337325555556

00:54:53.840 --> 00:54:57.360 let me end with one set of thoughts

NOTE Confidence: 0.905337325555556

00:54:57.360 --> 00:54:58.240 for discussion.

NOTE Confidence: 0.905337325555556

00:54:58.240 --> 00:54:58.756 First,

NOTE Confidence: 0.905337325555556

00:54:58.756 --> 00:55:02.368 does Uganda now need a Bantu and

NOTE Confidence: 0.905337325555556

00:55:02.368 --> 00:55:04.880 an Elotic growth curve?

NOTE Confidence: 0.905337325555556

00:55:04.880 --> 00:55:07.160 My colleagues in the country very

NOTE Confidence: 0.905337325555556

00:55:07.160 --> 00:55:09.600 much want to see us do that.

NOTE Confidence: 0.905337325555556

00:55:09.600 --> 00:55:11.892 Would monitoring brain growth

NOTE Confidence: 0.905337325555556

00:55:11.892 --> 00:55:14.502 during renourishment help optimize

NOTE Confidence: 0.905337325555556

00:55:14.502 --> 00:55:18.157 the recovery of these children?

NOTE Confidence: 0.905337325555556

00:55:18.160 --> 00:55:21.120 I think that's a good thing to pursue.

NOTE Confidence: 0.905337325555556

00:55:21.120 --> 00:55:24.000 But I'm going to leave you all with

NOTE Confidence: 0.905337325555556

00:55:24.000 --> 00:55:27.120 a question. What shouldn't we do?

NOTE Confidence: 0.905337325555556

00:55:27.120 --> 00:55:31.390 And I'd like to hear your thoughts

NOTE Confidence: 0.905337325555556

00:55:31.390 --> 00:55:33.066 on that in discussion.

NOTE Confidence: 0.905337325555556

00:55:33.066 --> 00:55:35.304 Nobody does what I just showed

NOTE Confidence: 0.905337325555556

00:55:35.304 --> 00:55:36.839 you on their own.

NOTE Confidence: 0.905337325555556

00:55:36.840 --> 00:55:38.992 An awful lot of people in an awful

NOTE Confidence: 0.905337325555556

00:55:38.992 --> 00:55:41.498 lot of places have really poured their

NOTE Confidence: 0.905337325555556

00:55:41.498 --> 00:55:43.800 hearts and souls into this work,

NOTE Confidence: 0.905337325555556

00:55:43.800 --> 00:55:46.422 and really what I'm telling you

NOTE Confidence: 0.905337325555556

00:55:46.422 --> 00:55:48.170 today is representing all

NOTE Confidence: 0.947961916923077
00:55:48.254 --> 00:55:50.736 of their efforts. So thanks,
NOTE Confidence: 0.947961916923077
00:55:50.736 --> 00:55:53.676 everybody, and love to discuss.
NOTE Confidence: 0.707907766
00:55:59.680 --> 00:56:00.840 Would you like a chair? You've
NOTE Confidence: 0.673345088571429
00:56:00.840 --> 00:56:01.876 been standing up here for an hour.
NOTE Confidence: 0.673345088571429
00:56:01.880 --> 00:56:04.342 You good? I'm good. OK, so I'm gonna.
NOTE Confidence: 0.673345088571429
00:56:04.342 --> 00:56:05.797 I think Karen's gonna bring
NOTE Confidence: 0.673345088571429
00:56:05.797 --> 00:56:07.597 me up in a in a minute.
NOTE Confidence: 0.673345088571429
00:56:07.600 --> 00:56:09.026 Some of the questions from Zoom.
NOTE Confidence: 0.673345088571429
00:56:09.026 --> 00:56:10.689 In the meantime, we'll take
NOTE Confidence: 0.673345088571429
00:56:10.689 --> 00:56:11.981 questions for Doctor Schiff
NOTE Confidence: 0.673345088571429
00:56:11.981 --> 00:56:13.639 from the audience on this talk.
NOTE Confidence: 0.90500035
00:56:15.400 --> 00:56:19.199 Yes, Sir. Wait one second. Actually.
NOTE Confidence: 0.90500035
00:56:19.200 --> 00:56:20.559 So let's focus on Zoom. If you hear
NOTE Confidence: 0.665931597142857
00:56:21.840 --> 00:56:22.960 you just wait. If you wait until
NOTE Confidence: 0.76277219
00:56:23.400 --> 00:56:24.080 we get a microphone,
NOTE Confidence: 0.833801730909091

00:56:28.840 --> 00:56:30.220 hold it up close,
NOTE Confidence: 0.833801730909091

00:56:30.220 --> 00:56:32.760 Thank you for your for the talk.
NOTE Confidence: 0.833801730909091

00:56:32.760 --> 00:56:34.640 You spoke earlier in your talk
NOTE Confidence: 0.833801730909091

00:56:34.640 --> 00:56:38.040 about sort of the challenges of
NOTE Confidence: 0.956776894

00:56:38.640 --> 00:56:41.160 getting funding for your research.
NOTE Confidence: 0.956776894

00:56:41.160 --> 00:56:43.120 Could you give us a little more insight
NOTE Confidence: 0.956776894

00:56:43.120 --> 00:56:47.780 into that justifying taking U.S.
NOTE Confidence: 0.956776894

00:56:47.780 --> 00:56:53.168 tax dollars to fund research in in Africa and
NOTE Confidence: 0.956776894

00:56:53.168 --> 00:56:59.598 and you know how you justify that and so on.
NOTE Confidence: 0.956776894

00:56:59.600 --> 00:57:02.995 So there's two parts to that answer.
NOTE Confidence: 0.956776894

00:57:03.000 --> 00:57:07.074 First, to quote one of my colleagues here,
NOTE Confidence: 0.956776894

00:57:07.080 --> 00:57:10.090 if you can do something that's really
NOTE Confidence: 0.956776894

00:57:10.090 --> 00:57:11.960 worthwhile, just be relentless.
NOTE Confidence: 0.956776894

00:57:11.960 --> 00:57:15.345 I mean, I've had reject many more
NOTE Confidence: 0.956776894

00:57:15.345 --> 00:57:18.640 grants rejected than I've ever received.
NOTE Confidence: 0.956776894

00:57:18.640 --> 00:57:22.360 But you know, learning how to

NOTE Confidence: 0.956776894

00:57:22.360 --> 00:57:24.652 be compelling is important.

NOTE Confidence: 0.956776894

00:57:24.652 --> 00:57:26.756 Building a track record,

NOTE Confidence: 0.956776894

00:57:26.760 --> 00:57:29.160 starting with some small pilots,

NOTE Confidence: 0.956776894

00:57:29.160 --> 00:57:32.436 None of us ever got major funding

NOTE Confidence: 0.956776894

00:57:32.440 --> 00:57:36.838 without starting off with small steps.

NOTE Confidence: 0.956776894

00:57:36.840 --> 00:57:41.005 The value of doing work on important

NOTE Confidence: 0.956776894

00:57:41.005 --> 00:57:45.590 problems is that all of it benefits

NOTE Confidence: 0.956776894

00:57:45.590 --> 00:57:46.920 healthcare everywhere.

NOTE Confidence: 0.956776894

00:57:46.920 --> 00:57:49.720 Learning to diagnose an infection

NOTE Confidence: 0.956776894

00:57:49.720 --> 00:57:51.840 you can't grow in.

NOTE Confidence: 0.956776894

00:57:51.840 --> 00:57:55.782 Let's say a part of rural Africa is critical

NOTE Confidence: 0.956776894

00:57:55.782 --> 00:57:58.799 for the infections we can't diagnose here.

NOTE Confidence: 0.956776894

00:57:58.800 --> 00:58:02.000 Walk on to our neonatal intensive care unit,

NOTE Confidence: 0.956776894

00:58:02.000 --> 00:58:04.080 make friends with your favorite

NOTE Confidence: 0.956776894

00:58:04.080 --> 00:58:06.160 neonatologist and in a quiet

NOTE Confidence: 0.956776894

00:58:06.231 --> 00:58:08.520 moment it might take half a meal.
NOTE Confidence: 0.956776894

00:58:08.520 --> 00:58:10.720 In a quiet moment, say,
NOTE Confidence: 0.956776894

00:58:10.720 --> 00:58:12.976 how many septic infants do you
NOTE Confidence: 0.956776894

00:58:12.976 --> 00:58:15.691 never get a diagnosis on and you'll
NOTE Confidence: 0.956776894

00:58:15.691 --> 00:58:17.959 be pretty shocked at that number.
NOTE Confidence: 0.956776894

00:58:17.960 --> 00:58:19.552 It's well over 50%,
NOTE Confidence: 0.956776894

00:58:19.552 --> 00:58:22.400 and there's some good reasons for that,
NOTE Confidence: 0.956776894

00:58:22.400 --> 00:58:25.400 but you can apply that to adult sepsis.
NOTE Confidence: 0.956776894

00:58:25.400 --> 00:58:29.024 You can apply that to many cases of
NOTE Confidence: 0.956776894

00:58:29.024 --> 00:58:31.498 syndromic disease where it's not
NOTE Confidence: 0.956776894

00:58:31.498 --> 00:58:33.958 obvious what causes a syndrome.
NOTE Confidence: 0.956776894

00:58:33.960 --> 00:58:37.760 Sepsis, Meningitis, fever with rash,
NOTE Confidence: 0.956776894

00:58:37.760 --> 00:58:40.439 flu like illness.
NOTE Confidence: 0.956776894

00:58:40.440 --> 00:58:43.215 So these techniques are broadly
NOTE Confidence: 0.956776894

00:58:43.215 --> 00:58:46.212 needed in many, many settings,
NOTE Confidence: 0.956776894

00:58:46.212 --> 00:58:47.544 including here.

NOTE Confidence: 0.956776894

00:58:47.544 --> 00:58:51.524 We had to use them overseas,

NOTE Confidence: 0.956776894

00:58:51.524 --> 00:58:56.032 but you could have developed all of

NOTE Confidence: 0.956776894

00:58:56.032 --> 00:58:59.278 this with US based problems as well.

NOTE Confidence: 0.956776894

00:58:59.280 --> 00:59:02.610 It turns out since we published

NOTE Confidence: 0.956776894

00:59:02.610 --> 00:59:05.617 the Penny Bacillus finding in 2020,

NOTE Confidence: 0.956776894

00:59:05.617 --> 00:59:08.992 the 1st paper that we did that

NOTE Confidence: 0.956776894

00:59:08.992 --> 00:59:11.344 there have been six more recent

NOTE Confidence: 0.956776894

00:59:11.344 --> 00:59:14.520 reports of US cases same highly

NOTE Confidence: 0.956776894

00:59:14.520 --> 00:59:16.800 destructive Panibacillus infection.

NOTE Confidence: 0.956776894

00:59:16.800 --> 00:59:19.956 Most of those children have died.

NOTE Confidence: 0.956776894

00:59:19.960 --> 00:59:24.160 One or two went on to get hydrocephalus.

NOTE Confidence: 0.956776894

00:59:24.160 --> 00:59:27.913 We have no idea what the total number is,

NOTE Confidence: 0.956776894

00:59:27.920 --> 00:59:30.916 but I just presented this to NIH

NOTE Confidence: 0.956776894

00:59:30.920 --> 00:59:34.798 and they were sort of amazed that

NOTE Confidence: 0.956776894

00:59:34.800 --> 00:59:37.635 as we studied this disease that we

NOTE Confidence: 0.956776894

00:59:37.635 --> 00:59:40.040 didn't know anything about far away,
NOTE Confidence: 0.956776894

00:59:40.040 --> 00:59:41.160 that it's also here.
NOTE Confidence: 0.956776894

00:59:41.160 --> 00:59:42.840 Now that we know about it.
NOTE Confidence: 0.956776894

00:59:42.840 --> 00:59:45.480 I hope that answers your question.
NOTE Confidence: 0.956776894

00:59:45.480 --> 00:59:46.252 Was it?
NOTE Confidence: 0.956776894

00:59:46.252 --> 00:59:47.998 I think it answers a number of questions
NOTE Confidence: 0.956776894

00:59:48.000 --> 00:59:50.638 because what was, was it here?
NOTE Confidence: 0.956776894

00:59:50.640 --> 00:59:53.720 Was it identified by by DNA sequencing?
NOTE Confidence: 0.956776894

00:59:53.720 --> 00:59:54.840 Was it identified by
NOTE Confidence: 0.641186624

00:59:55.000 --> 00:59:57.000 by actually growth and culture? So
NOTE Confidence: 0.973836291428572

00:59:57.000 --> 00:59:59.996 most of the ones here grew out,
NOTE Confidence: 0.973836291428572

01:00:00.000 --> 01:00:03.120 we don't know the differences in the strains.
NOTE Confidence: 0.973836291428572

01:00:03.120 --> 01:00:06.025 And there's a number of things that
NOTE Confidence: 0.973836291428572

01:00:06.025 --> 01:00:09.400 I'd like to implement very quickly.
NOTE Confidence: 0.973836291428572

01:00:09.400 --> 01:00:13.556 In our in our African work,
NOTE Confidence: 0.973836291428572

01:00:13.556 --> 01:00:17.480 I think we may be able to get an

NOTE Confidence: 0.973836291428572
01:00:17.480 --> 01:00:21.000 echo and mute that. There you go.
NOTE Confidence: 0.973836291428572
01:00:21.000 --> 01:00:23.040 Got some technology going on here.
NOTE Confidence: 0.973836291428572
01:00:23.040 --> 01:00:26.240 All right. Did I do something wrong?
NOTE Confidence: 0.973836291428572
01:00:26.240 --> 01:00:29.092 No, it's OK. I was just something wrong.
NOTE Confidence: 0.973836291428572
01:00:29.092 --> 01:00:31.640 All right, All right. Very good.
NOTE Confidence: 0.973836291428572
01:00:31.640 --> 01:00:34.399 Next question, please. Yes, Sir.
NOTE Confidence: 0.90662433
01:00:39.680 --> 01:00:40.640 Hi, Dad. So,
NOTE Confidence: 0.7063495
01:00:42.720 --> 01:00:44.318 OK, so I'll let him have it,
NOTE Confidence: 0.72684672
01:00:44.320 --> 01:00:46.080 let him have it, Robert. Got it.
NOTE Confidence: 0.72684672
01:00:46.080 --> 01:00:47.160 So this is a genuine question.
NOTE Confidence: 0.90156045
01:00:47.160 --> 01:00:49.080 I actually haven't asked this before. So
NOTE Confidence: 0.95436144
01:00:51.360 --> 01:00:56.986 you mentioned Stephen Gould and the
NOTE Confidence: 0.95436144
01:00:56.986 --> 01:01:01.400 kind of the issues with results
NOTE Confidence: 0.965611975
01:01:01.400 --> 01:01:03.278 that you don't like and and
NOTE Confidence: 0.904454544
01:01:04.320 --> 01:01:06.520 discounting those do you worry
NOTE Confidence: 0.904454544

01:01:06.520 --> 01:01:08.800 about the potential ramifications
NOTE Confidence: 0.904454544

01:01:08.800 --> 01:01:15.000 of like you mentioned the Nilus
NOTE Confidence: 0.904454544

01:01:15.000 --> 01:01:18.760 Saharan people had a potential
NOTE Confidence: 0.904454544

01:01:18.760 --> 01:01:21.560 vulnerability to to his Penny Bacillus.
NOTE Confidence: 0.904454544

01:01:21.560 --> 01:01:23.520 Do you do you worry about the ramifications
NOTE Confidence: 0.799353055

01:01:23.920 --> 01:01:25.996 of finding out that that is
NOTE Confidence: 0.799353055

01:01:26.000 --> 01:01:27.920 indeed true or if you indeed
NOTE Confidence: 0.89928259125

01:01:27.920 --> 01:01:30.545 need to use different growth curves for
NOTE Confidence: 0.89928259125

01:01:30.545 --> 01:01:33.400 the not the Sahara and and Ponto people?
NOTE Confidence: 0.89928259125

01:01:33.400 --> 01:01:35.292 Like especially in an area where
NOTE Confidence: 0.89928259125

01:01:35.292 --> 01:01:38.240 there's it's very ethnically diverse
NOTE Confidence: 0.89928259125

01:01:38.240 --> 01:01:40.484 and genetically diverse as you said.
NOTE Confidence: 0.89928259125

01:01:40.484 --> 01:01:42.200 Do you worry about those kind
NOTE Confidence: 0.89928259125

01:01:42.200 --> 01:01:44.210 of differences especially in a,
NOTE Confidence: 0.89928259125

01:01:44.210 --> 01:01:47.640 as you mentioned a colonial science context.
NOTE Confidence: 0.89928259125

01:01:47.640 --> 01:01:50.280 Good question.

NOTE Confidence: 0.89928259125

01:01:50.280 --> 01:01:51.760 Sometimes you raise these kids.

NOTE Confidence: 0.89928259125

01:01:51.760 --> 01:01:52.519 They do. OK,

NOTE Confidence: 0.864369516

01:01:54.760 --> 01:01:59.040 I think that it's important to be

NOTE Confidence: 0.864369516

01:01:59.040 --> 01:02:01.560 able to personalize our public health,

NOTE Confidence: 0.864369516

01:02:01.560 --> 01:02:04.760 But is everyone here recalls

NOTE Confidence: 0.864369516

01:02:04.760 --> 01:02:06.680 recently. How we do that

NOTE Confidence: 0.839963366428571

01:02:08.960 --> 01:02:10.493 critically determines whether

NOTE Confidence: 0.839963366428571

01:02:10.493 --> 01:02:13.559 we're effective or we just turned

NOTE Confidence: 0.839963366428571

01:02:13.559 --> 01:02:16.237 it into a political nightmare.

NOTE Confidence: 0.839963366428571

01:02:16.240 --> 01:02:20.314 In societies where the level of education

NOTE Confidence: 0.839963366428571

01:02:20.320 --> 01:02:24.520 is not what you would hope to have,

NOTE Confidence: 0.839963366428571

01:02:24.520 --> 01:02:27.240 the messaging becomes critical

NOTE Confidence: 0.839963366428571

01:02:27.240 --> 01:02:30.700 because people with can easily

NOTE Confidence: 0.839963366428571

01:02:30.700 --> 01:02:33.102 perceive this as something's

NOTE Confidence: 0.839963366428571

01:02:33.102 --> 01:02:34.914 wrong with them or create stigma.

NOTE Confidence: 0.956332386363636

01:02:37.200 --> 01:02:39.505 I can't create that messaging
NOTE Confidence: 0.956332386363636

01:02:39.505 --> 01:02:42.160 as some person from the US,
NOTE Confidence: 0.956332386363636

01:02:42.160 --> 01:02:46.587 but my colleagues are going to
NOTE Confidence: 0.956332386363636

01:02:46.587 --> 01:02:48.561 have that burden who live there
NOTE Confidence: 0.956332386363636

01:02:48.561 --> 01:02:50.880 and understand the culture well.
NOTE Confidence: 0.956332386363636

01:02:50.880 --> 01:02:55.395 And my physician colleagues really want to
NOTE Confidence: 0.956332386363636

01:02:55.395 --> 01:02:59.000 improve the medicine that they deliver.
NOTE Confidence: 0.956332386363636

01:02:59.000 --> 01:03:02.112 But I did offer a teaser to everyone
NOTE Confidence: 0.956332386363636

01:03:02.112 --> 01:03:04.959 about what we would not want to do.
NOTE Confidence: 0.969330145833333

01:03:07.240 --> 01:03:09.851 I'm negotiating right now to get a
NOTE Confidence: 0.969330145833333

01:03:09.851 --> 01:03:12.359 scanner for that malnutrition unit.
NOTE Confidence: 0.969330145833333

01:03:12.360 --> 01:03:16.200 I think we'll probably show that
NOTE Confidence: 0.969330145833333

01:03:16.200 --> 01:03:19.505 with renourishment we can get brains
NOTE Confidence: 0.969330145833333

01:03:19.505 --> 01:03:22.920 of these children to grow better.
NOTE Confidence: 0.969330145833333

01:03:22.920 --> 01:03:25.560 Do I want to personalize that?
NOTE Confidence: 0.927866932307693

01:03:28.600 --> 01:03:31.834 There's several questions I don't think

NOTE Confidence: 0.927866932307693
01:03:31.834 --> 01:03:35.479 I'll ever explore that I could explore.
NOTE Confidence: 0.927866932307693
01:03:35.480 --> 01:03:38.238 One is, is there a difference in
NOTE Confidence: 0.927866932307693
01:03:38.238 --> 01:03:41.336 brain size and brain growth between
NOTE Confidence: 0.927866932307693
01:03:41.336 --> 01:03:44.600 Nilotic versus Bantu peoples?
NOTE Confidence: 0.912823294285714
01:03:46.720 --> 01:03:49.716 It's a nil hypothesis to say no,
NOTE Confidence: 0.912823294285714
01:03:49.720 --> 01:03:54.760 every nothing's identical and
NOTE Confidence: 0.912823294285714
01:03:54.760 --> 01:03:56.660 somebody's going to have bigger
NOTE Confidence: 0.912823294285714
01:03:56.660 --> 01:04:00.360 brains than the other person. And it
NOTE Confidence: 0.9720585325
01:04:02.400 --> 01:04:04.725 whatever medical benefit you might
NOTE Confidence: 0.9720585325
01:04:04.725 --> 01:04:07.664 have from that, I think would be
NOTE Confidence: 0.9720585325
01:04:07.664 --> 01:04:10.275 far outweighed by the harms that
NOTE Confidence: 0.9720585325
01:04:10.275 --> 01:04:13.650 you potentially would create by
NOTE Confidence: 0.9720585325
01:04:13.650 --> 01:04:17.280 stigmatizing a society with no,
NOTE Confidence: 0.9720585325
01:04:17.280 --> 01:04:20.240 no realistic benefits. So
NOTE Confidence: 0.804416898888889
01:04:22.480 --> 01:04:25.999 it's a fine line and it's the judgement call.
NOTE Confidence: 0.804416898888889

01:04:26.000 --> 01:04:29.068 I have kids dying of infection and
NOTE Confidence: 0.804416898888889

01:04:29.068 --> 01:04:31.876 I could improve that death rate.
NOTE Confidence: 0.804416898888889

01:04:31.880 --> 01:04:34.799 Then it's worth stepping into the arena,
NOTE Confidence: 0.804416898888889

01:04:34.800 --> 01:04:37.568 especially if we can figure out, I mean,
NOTE Confidence: 0.804416898888889

01:04:37.568 --> 01:04:39.556 what gives you a predilection from disease.
NOTE Confidence: 0.804416898888889

01:04:39.560 --> 01:04:41.877 Go look at Casanova. Love that name.
NOTE Confidence: 0.804416898888889

01:04:41.880 --> 01:04:44.477 Look at Casanova's papers and his work.
NOTE Confidence: 0.804416898888889

01:04:44.480 --> 01:04:46.420 He summarizes it in those
NOTE Confidence: 0.804416898888889

01:04:46.420 --> 01:04:48.720 two papers in PNAS in 2015.
NOTE Confidence: 0.804416898888889

01:04:48.720 --> 01:04:51.960 What he finds is that you can have very
NOTE Confidence: 0.804416898888889

01:04:52.040 --> 01:04:55.640 specific predilections to certain infections,
NOTE Confidence: 0.804416898888889

01:04:55.640 --> 01:04:57.482 like staph aureus,
NOTE Confidence: 0.804416898888889

01:04:57.482 --> 01:05:00.552 because you have an interleukin
NOTE Confidence: 0.804416898888889

01:05:00.552 --> 01:05:04.680 or a cytokine protein that helps
NOTE Confidence: 0.804416898888889

01:05:04.680 --> 01:05:06.680 you defend against infection.
NOTE Confidence: 0.804416898888889

01:05:06.680 --> 01:05:08.320 And it's not quite right,

NOTE Confidence: 0.804416898888889

01:05:08.320 --> 01:05:11.204 the same way that sicklers get into

NOTE Confidence: 0.804416898888889

01:05:11.204 --> 01:05:13.413 trouble from sickle cell disease

NOTE Confidence: 0.804416898888889

01:05:13.413 --> 01:05:16.107 because they have one base pair

NOTE Confidence: 0.804416898888889

01:05:16.107 --> 01:05:19.408 different in their hemoglobin molecule.

NOTE Confidence: 0.804416898888889

01:05:19.408 --> 01:05:22.682 So what that means is we ought

NOTE Confidence: 0.804416898888889

01:05:22.682 --> 01:05:25.439 to be able to treat it.

NOTE Confidence: 0.804416898888889

01:05:25.440 --> 01:05:31.878 We replace protein compounds in hemophilias.

NOTE Confidence: 0.804416898888889

01:05:31.880 --> 01:05:35.513 Would we treat someday a person with

NOTE Confidence: 0.804416898888889

01:05:35.513 --> 01:05:39.560 an infection from staph aureus with a

NOTE Confidence: 0.804416898888889

01:05:39.560 --> 01:05:43.280 commonly defective protein by giving them

NOTE Confidence: 0.804416898888889

01:05:43.280 --> 01:05:48.474 a replacement protein as well as antibiotics?

NOTE Confidence: 0.804416898888889

01:05:48.480 --> 01:05:50.160 We don't do that today,

NOTE Confidence: 0.804416898888889

01:05:50.160 --> 01:05:51.800 but we're probably pretty

NOTE Confidence: 0.804416898888889

01:05:51.800 --> 01:05:54.931 close to being able to do that.

NOTE Confidence: 0.804416898888889

01:05:54.931 --> 01:05:58.260 So it's judgment call, Robert.

NOTE Confidence: 0.804416898888889

01:05:58.260 --> 01:05:59.936 And eventually,
NOTE Confidence: 0.804416898888889

01:05:59.936 --> 01:06:02.520 it all comes down, I think,
NOTE Confidence: 0.804416898888889

01:06:02.520 --> 01:06:05.000 to benefits and risks.
NOTE Confidence: 0.804416898888889

01:06:05.000 --> 01:06:07.730 And I do think as we get
NOTE Confidence: 0.804416898888889

01:06:07.730 --> 01:06:10.239 deeper into a genomic age,
NOTE Confidence: 0.804416898888889

01:06:10.240 --> 01:06:11.626 that we have to think pretty
NOTE Confidence: 0.804416898888889

01:06:11.626 --> 01:06:12.319 carefully about that.
NOTE Confidence: 0.95312815625

01:06:15.720 --> 01:06:18.080 Could you, Steve, go back a little bit
NOTE Confidence: 0.95312815625

01:06:18.080 --> 01:06:20.255 and and talk or mention you when you
NOTE Confidence: 0.95312815625

01:06:20.255 --> 01:06:22.264 talked about Gould's comments on Broca?
NOTE Confidence: 0.95312815625

01:06:22.264 --> 01:06:24.073 Sort of like, I remember like
NOTE Confidence: 0.95312815625

01:06:24.073 --> 01:06:25.600 7 things from medical school,
NOTE Confidence: 0.95312815625

01:06:25.600 --> 01:06:27.440 but one of them was new problems
NOTE Confidence: 0.95312815625

01:06:27.440 --> 01:06:31.360 of Eclomisphere, Ghosh Broca.
NOTE Confidence: 0.95312815625

01:06:31.360 --> 01:06:33.344 And I'm fascinated by Google saying,
NOTE Confidence: 0.95312815625

01:06:33.344 --> 01:06:34.320 no, I don't accept that.

NOTE Confidence: 0.95312815625

01:06:34.320 --> 01:06:35.160 So he just said, no,

NOTE Confidence: 0.95312815625

01:06:35.160 --> 01:06:36.840 I don't even accept my own data.

NOTE Confidence: 0.95312815625

01:06:36.840 --> 01:06:40.500 This is in in terms of where

NOTE Confidence: 0.95312815625

01:06:40.500 --> 01:06:42.276 science and bioethics meet.

NOTE Confidence: 0.95312815625

01:06:42.280 --> 01:06:42.892 I've encountered this

NOTE Confidence: 0.95312815625

01:06:42.892 --> 01:06:44.116 from time to time as well.

NOTE Confidence: 0.95312815625

01:06:44.120 --> 01:06:45.944 And I've I've coined the phrase as we

NOTE Confidence: 0.95312815625

01:06:45.944 --> 01:06:48.063 do this when I teach us don't fear the

NOTE Confidence: 0.95312815625

01:06:48.063 --> 01:06:49.917 data because I have heard people say,

NOTE Confidence: 0.95312815625

01:06:49.920 --> 01:06:50.680 well here is the data,

NOTE Confidence: 0.95312815625

01:06:50.680 --> 01:06:52.280 but we're not going to talk about

NOTE Confidence: 0.95312815625

01:06:52.280 --> 01:06:54.864 it because it doesn't bring us

NOTE Confidence: 0.95312815625

01:06:54.864 --> 01:06:56.880 to the conclusion we want, right.

NOTE Confidence: 0.95312815625

01:06:56.880 --> 01:06:58.428 Do you think some of that has gone

NOTE Confidence: 0.95312815625

01:06:58.428 --> 01:07:00.230 on in terms of brain size and brain

NOTE Confidence: 0.95312815625

01:07:00.230 --> 01:07:01.902 growth and is that could that possibly
NOTE Confidence: 0.95312815625

01:07:01.902 --> 01:07:03.596 could the fear of the data direct
NOTE Confidence: 0.95312815625

01:07:03.596 --> 01:07:05.316 how we move forward with the science?
NOTE Confidence: 0.95312815625

01:07:05.320 --> 01:07:07.400 Of course.
NOTE Confidence: 0.95312815625

01:07:07.400 --> 01:07:09.360 Should it?
NOTE Confidence: 0.95312815625

01:07:09.360 --> 01:07:10.840 No.
NOTE Confidence: 0.95312815625

01:07:10.840 --> 01:07:12.320 But
NOTE Confidence: 0.831724311666667

01:07:12.320 --> 01:07:14.318 I'm torn with these things like
NOTE Confidence: 0.68721961

01:07:14.480 --> 01:07:15.716 some of your fan clubs going
NOTE Confidence: 0.874064342857143

01:07:16.440 --> 01:07:18.918 he's got a test to take tonight.
NOTE Confidence: 0.874064342857143

01:07:18.920 --> 01:07:25.272 But I I I worry a great deal the power of
NOTE Confidence: 0.874064342857143

01:07:25.272 --> 01:07:29.480 these technologies to uncover facts which
NOTE Confidence: 0.874064342857143

01:07:29.480 --> 01:07:35.608 we may not be able to handle. I mean,
NOTE Confidence: 0.874064342857143

01:07:35.608 --> 01:07:37.316 look at the conflicts around the world.
NOTE Confidence: 0.874064342857143

01:07:37.320 --> 01:07:39.200 It doesn't take much.
NOTE Confidence: 0.874064342857143

01:07:39.200 --> 01:07:42.626 I think of Rwanda, in particular

NOTE Confidence: 0.874064342857143
01:07:42.626 --> 01:07:46.632 the Tutsis and the the Hutu.
NOTE Confidence: 0.874064342857143
01:07:46.632 --> 01:07:49.368 We're not even sure they were
NOTE Confidence: 0.874064342857143
01:07:49.368 --> 01:07:51.839 actually both ancestral people,
NOTE Confidence: 0.874064342857143
01:07:51.840 --> 01:07:56.406 but politically they were set up in a
NOTE Confidence: 0.874064342857143
01:07:56.406 --> 01:07:59.227 way that led to an enormous genocide
NOTE Confidence: 0.874064342857143
01:07:59.227 --> 01:08:02.838 of a population within about 90 days.
NOTE Confidence: 0.901302932777778
01:08:05.520 --> 01:08:08.512 I think we need to be very careful
NOTE Confidence: 0.901302932777778
01:08:08.512 --> 01:08:11.553 because we have tools which can
NOTE Confidence: 0.901302932777778
01:08:11.553 --> 01:08:13.757 literally weaponize our science.
NOTE Confidence: 0.901302932777778
01:08:13.760 --> 01:08:18.615 And this wasn't obvious to me when I
NOTE Confidence: 0.901302932777778
01:08:18.615 --> 01:08:20.936 started looking at things like the
NOTE Confidence: 0.901302932777778
01:08:20.936 --> 01:08:23.384 genomics of these children in Africa.
NOTE Confidence: 0.901302932777778
01:08:23.384 --> 01:08:26.680 But gradually I would sit with my colleagues,
NOTE Confidence: 0.901302932777778
01:08:26.680 --> 01:08:28.703 helps to spend a lot of time
NOTE Confidence: 0.901302932777778
01:08:28.703 --> 01:08:30.160 with your colleagues overseas.
NOTE Confidence: 0.901302932777778

01:08:30.160 --> 01:08:32.113 And I sort of looked at them and said
NOTE Confidence: 0.9016074383333333

01:08:34.200 --> 01:08:35.778 we can cause an awful lot
NOTE Confidence: 0.9016074383333333

01:08:35.778 --> 01:08:37.400 of trouble if we do this.
NOTE Confidence: 0.9016074383333333

01:08:37.400 --> 01:08:38.912 And we all sort of looked
NOTE Confidence: 0.9016074383333333

01:08:38.912 --> 01:08:40.280 at each other and said,
NOTE Confidence: 0.9016074383333333

01:08:40.280 --> 01:08:42.240 yeah, let's not do that.
NOTE Confidence: 0.92587452

01:08:44.400 --> 01:08:46.884 I wish there was like the adult in the
NOTE Confidence: 0.92587452

01:08:46.884 --> 01:08:49.477 room who would have said long ago to us,
NOTE Confidence: 0.92587452

01:08:49.480 --> 01:08:50.993 do this, but don't do that.
NOTE Confidence: 0.92587452

01:08:50.993 --> 01:08:52.758 But there isn't. It's us.
NOTE Confidence: 0.92587452

01:08:52.760 --> 01:08:55.880 And I think these are burdens.
NOTE Confidence: 0.92587452

01:08:55.880 --> 01:08:59.640 Gould really disappointed me.
NOTE Confidence: 0.92587452

01:08:59.640 --> 01:09:01.800 I've read so much of his work.
NOTE Confidence: 0.92587452

01:09:01.800 --> 01:09:05.238 It's He's such a brilliant scientist.
NOTE Confidence: 0.92587452

01:09:05.240 --> 01:09:08.756 If you read Edward O Wilson's
NOTE Confidence: 0.92587452

01:09:08.760 --> 01:09:10.443 autobiography called Naturalist,

NOTE Confidence: 0.92587452
01:09:10.443 --> 01:09:13.248 you might worry a little
NOTE Confidence: 0.92587452
01:09:13.248 --> 01:09:15.799 about how difficult Gould,
NOTE Confidence: 0.92587452
01:09:15.800 --> 01:09:17.600 in a professional environment,
NOTE Confidence: 0.92587452
01:09:17.600 --> 01:09:21.199 might have been to the people around him.
NOTE Confidence: 0.92587452
01:09:21.200 --> 01:09:24.518 But many of us are not easy.
NOTE Confidence: 0.92587452
01:09:24.520 --> 01:09:27.826 And yeah, we do good work, I hope.
NOTE Confidence: 0.92587452
01:09:27.826 --> 01:09:30.198 But it's a trap.
NOTE Confidence: 0.92587452
01:09:30.200 --> 01:09:33.035 It's a trap that Ghoul felled into.
NOTE Confidence: 0.92587452
01:09:33.040 --> 01:09:37.996 He was a very politically active person,
NOTE Confidence: 0.92587452
01:09:38.000 --> 01:09:40.208 and he wasn't going to accept
NOTE Confidence: 0.92587452
01:09:40.208 --> 01:09:41.680 that result for anything.
NOTE Confidence: 0.92587452
01:09:41.680 --> 01:09:44.604 When I read it with, I think,
NOTE Confidence: 0.92587452
01:09:44.604 --> 01:09:46.314 a fair amount of care,
NOTE Confidence: 0.92587452
01:09:46.320 --> 01:09:48.357 I didn't appreciate it as a student.
NOTE Confidence: 0.73443223
01:09:49.520 --> 01:09:50.440 You'd appreciate what? I
NOTE Confidence: 0.949355624285714

01:09:50.440 --> 01:09:53.436 didn't appreciate his bias as a student.
NOTE Confidence: 0.949355624285714

01:09:53.440 --> 01:09:56.200 It took took losing hair and being
NOTE Confidence: 0.949355624285714

01:09:56.200 --> 01:09:58.720 in the business for a long time
NOTE Confidence: 0.949355624285714

01:09:58.804 --> 01:10:01.526 and to look at that and go, Oh no,
NOTE Confidence: 0.949355624285714

01:10:01.526 --> 01:10:03.647 look what he did and then he
NOTE Confidence: 0.949355624285714

01:10:03.647 --> 01:10:06.564 wrote it all down. But you know,
NOTE Confidence: 0.949355624285714

01:10:06.564 --> 01:10:09.627 we read these things for the message.
NOTE Confidence: 0.949355624285714

01:10:09.627 --> 01:10:12.569 How many of us look at a scientific paper
NOTE Confidence: 0.949355624285714

01:10:12.569 --> 01:10:15.620 and you know, you read the abstract,
NOTE Confidence: 0.949355624285714

01:10:15.620 --> 01:10:18.163 the first paragraph, the last paragraph.
NOTE Confidence: 0.949355624285714

01:10:18.163 --> 01:10:20.569 Is there anything in between that's
NOTE Confidence: 0.949355624285714

01:10:20.569 --> 01:10:22.525 worth your time before you move
NOTE Confidence: 0.949355624285714

01:10:22.525 --> 01:10:24.798 on to the next task of the day?
NOTE Confidence: 0.949355624285714

01:10:24.800 --> 01:10:29.424 But if I leave you any of you with a caution,
NOTE Confidence: 0.949355624285714

01:10:29.424 --> 01:10:32.226 it's be careful, and be careful
NOTE Confidence: 0.949355624285714

01:10:32.226 --> 01:10:33.798 what even the experts tell you.

NOTE Confidence: 0.8947362

01:10:37.760 --> 01:10:40.478 Other questions, things I can try to answer,

NOTE Confidence: 0.30875492

01:10:42.920 --> 01:10:43.320 Sir.

NOTE Confidence: 0.800594686666667

01:10:46.800 --> 01:10:49.840 Thanks, Doctor Schiff. I'm curious, I

NOTE Confidence: 0.924004428333333

01:10:50.680 --> 01:10:52.000 mean, you work with so many

NOTE Confidence: 0.973770735

01:10:54.560 --> 01:10:56.600 people from Uganda. Do you find like

NOTE Confidence: 0.81314307375

01:10:56.600 --> 01:10:57.980 when when you're working

NOTE Confidence: 0.81314307375

01:10:57.980 --> 01:10:59.360 with your African colleagues,

NOTE Confidence: 0.81314307375

01:10:59.360 --> 01:11:02.865 you you have any like favorite

NOTE Confidence: 0.81314307375

01:11:02.865 --> 01:11:04.568 examples of ethical disagreement

NOTE Confidence: 0.81314307375

01:11:04.568 --> 01:11:07.472 where you just that are particularly

NOTE Confidence: 0.81314307375

01:11:07.472 --> 01:11:09.355 intractable maybe that are grounded

NOTE Confidence: 0.81314307375

01:11:09.355 --> 01:11:10.880 in cultural differences or different

NOTE Confidence: 0.848425395

01:11:13.200 --> 01:11:15.400 just, you know, starting from

NOTE Confidence: 0.848425395

01:11:15.400 --> 01:11:16.720 different ethical premises?

NOTE Confidence: 0.848425395

01:11:16.720 --> 01:11:18.960 Does that make sense? Yeah,

NOTE Confidence: 0.425294

01:11:21.880 --> 01:11:22.320 I
NOTE Confidence: 0.81720996875

01:11:25.760 --> 01:11:28.140 I'm a short white guy from the
NOTE Confidence: 0.81720996875

01:11:28.140 --> 01:11:33.920 US and I didn't grow up overseas.
NOTE Confidence: 0.81720996875

01:11:33.920 --> 01:11:38.120 And over the years I've worked very
NOTE Confidence: 0.81720996875

01:11:38.120 --> 01:11:43.656 closely with a lot of both physicians
NOTE Confidence: 0.81720996875

01:11:43.656 --> 01:11:49.200 and also with patients, families.
NOTE Confidence: 0.81720996875

01:11:49.200 --> 01:11:52.320 And I think the one thing I
NOTE Confidence: 0.81720996875

01:11:52.320 --> 01:11:56.406 come away with is there's a
NOTE Confidence: 0.81720996875

01:11:56.406 --> 01:11:59.774 real universe have universality
NOTE Confidence: 0.81720996875

01:11:59.774 --> 01:12:03.560 between doing medicine anywhere,
NOTE Confidence: 0.81720996875

01:12:03.560 --> 01:12:09.970 and I find very much a lack of
NOTE Confidence: 0.81720996875

01:12:09.970 --> 01:12:11.450 disagreement between myself
NOTE Confidence: 0.81720996875

01:12:11.450 --> 01:12:14.120 and the colleagues I work with.
NOTE Confidence: 0.904281210666667

01:12:16.600 --> 01:12:21.176 Whereas we all sort of agree that certain
NOTE Confidence: 0.904281210666667

01:12:21.176 --> 01:12:24.639 science studies are way out of bounds.
NOTE Confidence: 0.904281210666667

01:12:24.640 --> 01:12:29.694 And the other thing I noticed is that

NOTE Confidence: 0.904281210666667

01:12:29.694 --> 01:12:33.359 mothers of sick infants are the same

NOTE Confidence: 0.904281210666667

01:12:33.359 --> 01:12:35.120 everywhere they care deeply for.

NOTE Confidence: 0.7141379

01:12:37.280 --> 01:12:37.840 And

NOTE Confidence: 0.841698894

01:12:40.520 --> 01:12:43.625 I I look at the women who bring their

NOTE Confidence: 0.841698894

01:12:43.625 --> 01:12:46.119 infants in and their willingness to

NOTE Confidence: 0.841698894

01:12:46.120 --> 01:12:50.280 let us try to enroll them in studies

NOTE Confidence: 0.841698894

01:12:50.280 --> 01:12:54.200 of their children's illnesses.

NOTE Confidence: 0.841698894

01:12:54.200 --> 01:12:59.840 And I think most of the cultural differences

NOTE Confidence: 0.841698894

01:12:59.840 --> 01:13:03.440 just melt away over young infants.

NOTE Confidence: 0.841698894

01:13:03.440 --> 01:13:09.032 It's probably why I can show you those

NOTE Confidence: 0.841698894

01:13:09.032 --> 01:13:12.319 examples of like government leadership,

NOTE Confidence: 0.947479154285714

01:13:14.360 --> 01:13:17.168 nursing leadership, child advocates,

NOTE Confidence: 0.947479154285714

01:13:17.168 --> 01:13:19.873 all in total agreement

NOTE Confidence: 0.947479154285714

01:13:19.873 --> 01:13:22.838 over certain things we do.

NOTE Confidence: 0.947479154285714

01:13:22.840 --> 01:13:24.808 And it's probably why that list

NOTE Confidence: 0.947479154285714

01:13:24.808 --> 01:13:26.480 of collaborators was so long.
NOTE Confidence: 0.653048154

01:13:29.400 --> 01:13:33.040 Infants or a universal currency.
NOTE Confidence: 0.653048154

01:13:33.040 --> 01:13:36.626 And if I were studying, I don't know,
NOTE Confidence: 0.653048154

01:13:36.626 --> 01:13:39.956 sexually transmitted disease of teenagers,
NOTE Confidence: 0.921894444444444

01:13:42.120 --> 01:13:45.102 I think it would be a much
NOTE Confidence: 0.921894444444444

01:13:45.102 --> 01:13:46.998 more difficult path to follow.
NOTE Confidence: 0.959824315

01:13:52.040 --> 01:13:54.600 Thank you. Other questions,
NOTE Confidence: 0.815241396

01:13:57.200 --> 01:13:59.232 they look tired and hungry. Say again,
NOTE Confidence: 0.815241396

01:13:59.232 --> 01:14:00.800 They look tired and hungry. They look
NOTE Confidence: 0.751079058

01:14:00.800 --> 01:14:01.920 tired and hungry. All right.
NOTE Confidence: 0.751079058

01:14:01.920 --> 01:14:03.752 Well, we gave them a little some of
NOTE Confidence: 0.751079058

01:14:03.752 --> 01:14:05.871 that just wet their appetite both for
NOTE Confidence: 0.751079058

01:14:05.871 --> 01:14:07.476 more sandwiches and more knowledge.
NOTE Confidence: 0.751079058

01:14:07.480 --> 01:14:09.040 This was a wonderful presentation.
NOTE Confidence: 0.751079058

01:14:09.040 --> 01:14:10.685 Doctor Schiff, thank you so much.
NOTE Confidence: 0.751079058

01:14:10.685 --> 01:14:12.360 Thank you all for coming. Thanks

NOTE Confidence: 0.512166913333333

01:14:15.640 --> 01:14:16.240 everybody. What's the

NOTE Confidence: 0.669822918333333

01:14:16.240 --> 01:14:17.638 talk about? What's the talk about?

NOTE Confidence: 0.30211407

01:14:19.760 --> 01:14:21.440 All right, we'll see you all in January. Have

NOTE Confidence: 0.532537425

01:14:22.880 --> 01:14:23.999 a good holidays.