00:30 **So what kind of research do you do?**

Infectious disease research. OK, you need more specific than that. Not like avian influenza, tuberculosis, foodborne pathogens.

00:56 And I work in the <redacted>, the laboratory coordinator that I am a research scientist and we focus on optimizing diagnostic tests. That's one thing that we do for infectious diseases, preventative medicine and epidemiology. Yeah.

OK, so what is the goal of your work?

01:26 The goal of our work ultimately is, I would say, to prevent disease if that's big, large scale.

Right.

So whether that's developing tools in the lab to detect disease, whether that's taking an existing diagnostic test and amending it or are optimizing it so it can detect alternative pathogens or different in a different setting, sometimes it's working with different sample types, but ultimately it's preventing detecting disease or to prevent disease.

02:07 OK, I would say that even in medicine, preventing disease in animals for the most part. But these are zoonotic, too, so they affect humans as well.

OK, so what is your position?

You started your research scientists to be faculty, staff. So faculty. But I'm a research scientist. I just finished a postdoc the last year, but I am the laboratory coordinator for the <redacted>.

OK, yeah, I ask that because I try to get a diverse group of participants.

02:39 Yeah, yeah. Probably not very many research scientists that you maybe I mean mostly staff and, or faculty and you know, it depends. It depends. I think one of the people that I interviewed is like a lab director. So we kind of fall into that. Yeah. Right. Yeah.

OK, so it is the idea seemed to me kind of like rough, right. What is the average number of researchers or people working on the projects that you've worked on?

03:12 What's the average number of people that I'm that I collaborate with per project?

Yeah.

Does it include undergraduate students as well?

Absolutely.

OK, probably the average number would be. Six,

OK,

six to eight, six to eight, yeah,

OK, what was your largest?

Largest would definitely be the <redacted> in that project.

03:41 There's I don't even know how many were on that. Yeah, I did a lot.

I get a different number every time.

Yeah.

Someone give me a guesstimate though.

Probably twenty five.

OK, what about your smallest.

Smallest would be three.

OK, are there any disadvantages or challenges associated with working on projects with the fewer smaller number of researchers.

04:12   Certainly just expertise. So you are dealing with smaller numbers. You don't have as many brains in the pot and so you might not have somebody on the team that has experience with particular assay or an area of research that they could weigh in on.

OK, and what about benefits?

Benefits? It's just easier to communicate.

How so? An obvious one?

04:40   Well, oftentimes it's somebody that is that I work directly across the hall from or is in the lab with me. And so physically, it's easier to communicate because you're able to walk next door and have a face to face conversation as opposed to having to pick up the phone or an email. Oftentimes they feel that it's maybe a more intimate group, somebody that you've already worked with.

05:06   And so you already understand what their strengths are, what you know, what you can depend on them for, or what you might have to go outside to get input from somebody else. So it's just easier to know who they are in general. Does that make sense? Yeah, so it's usually smaller groups or people that I've, you know, commonly collaborated with in the past. And it just it's a good dynamic. The chemistry flows.

Well, OK, what about working on larger projects?

05:36   **Are there any challenges associated with that, challenges associated with larger projects?**

It's always scheduling. So getting people together so that it works. So you're able to attend and participate, that's always difficult. I think that it's also difficult to use the time efficiently, the smaller group, you can use your time more efficiently because you've got smaller people that want to talk or discuss things larger.

06:04   It's just I think it's harder to stick to a timeline because everybody wants to share and has something, has input. And sometimes you can go on tangents and you're not sticking, you're not staying focused. So, yeah, just a lot of minds coming into it. And maybe you're not I say lack of focus sometimes could be difficult. Yeah.

What about benefits?

06:32   Obvious one is you just you've got a bigger pot of people with experience and somebody that's dealing with antimicrobial resistance stuff and somebody that knows how to do run real time PCR and maybe the two of them can come together and find a way to make that match. So just having that greater level of experience and expertise, I guess, in the room around the team.

06:58   **So just so I'm kind of going to ask you a couple more general questions to ask you about a more recent project.**

Yes.

So what in general, what rules, what are the roles that you and your collaborators are playing in projects?

OK. What do you mean by role? Do you mean what's our agenda? What's our aim?

07:24   Or are you saying like what is it that you individually bring to the table? I'm usually playing the role of a co investigator. I'm a recently becoming a Coke guy since I'm now able to serve that position and actually as well on several projects now, too. But the role, what that entails is usually a laboratory component. So basically developing assays for detecting something or doing some kind of an analysis or experiment.

07:57   So often it's bringing expertise on what lab techniques are going to be necessary to achieve that component of the project. Does that make sense?

Yeah, that totally makes. And then about your collaborators, what's their role?

Yeah. I mean, obviously is going to is going to change a little. Sure. Sure. Project some of some of the same.

08:24   I've collaborated with people that have are greatly involved in the lab component, the research, the experiments, the techniques, the methods that are involved. But for the most part I would say more involved in. I don't even know how to put this into words.

08:53   I work with a lot of epidemiologists, too, so people that understand where the big picture but don't necessarily understand or see how the lab components are doing. The experience experiments, understanding the methods of how to detect something is important in this overall broad picture. So I work with a lot of faculty members that are epidemiologists understand the modeling or they want to take we can detect this this pathogen, but we want to monitor and model what are the risk factors associated with that.

09:25   So it's almost like, in a way, I'm a part of more of the basic sort of science behind it. And I'm working with people that are taking that and applying it more broadly. Broadly. That makes sense. Yeah, totally makes sense. Yeah. Yeah. Well, my background's an epidemiologist, so I understand that as well. But it's definitely microbiology and molecular genetics doing infectious disease detection and prevention, so. OK, yeah.

09:51   **So you can take a current research project and it doesn't it definitely doesn't have to be the one that you're concerned about. You know how many collaborators are on this project. Any.** Let's see. I would say I got to get straight, so.

10:26   Eight people include yourself and includes myself, yes.

And then what are the roles of you and the other people that you're working on in this project?

Sure.

10:37   My role is to basically serve as a PI, and the role is to conduct all of the in oversee and supervise all the laboratory experiments, but also to sort of be a liaison between the experiments and what those outcomes mean to make sure that we're appropriately designing those for what they're going to be utilized for downstream.

11:09   **OK, so yeah. So but how many people are doing analysis and how many people are doing that downstream?**

I would say 50 50 split four, four on one, four on the other. And then there's some overlap there or I'm involved with a lot of the setting up, the initial how we're going to go about these techniques in the lab, but then also understanding.

11:39   So it's a lot of bioinformatics.

It's OK.

We're doing some proteomics metabolomics stuff. So I need to know what we're doing up front to make sure we're getting quality data so that it can actually be used in a quality manner for the bioinformatics. So, yeah. Yeah, I know it's kind of like the like seems like kind of goofy questions. It's like person trying to figure out where your role is, what you do and how your role is in research projects. Sure. Because that affects like how you collaboration and puts all of your answers into context.

12:12   And then and I guess we kind of a general overview and then I ask you about a specific project, because it gives me like a different kind of qualitative data. Right, because people are generalizing. There's a recall bias. Just people are kind of bad at generalizing. Yeah. You know. Right. So that's why I like I basically ask you the same questions twice. No, but I could apply the same I have the same role with <redacted> and in his project too.

12:41	And they come to me because I have expertise in, for example, DNA extraction, work with different sample types and they don't have that experience. So they've sent their graduate students over to get trained. So I'll train them on how to do those analysis properly so we get quality data, because as you know, that's getting working with <redacted> and their group to do the shopping analysis, the sequencing.
13:08	If you have to have quality DNA up front, which they have expertise and help on how to generate that in order to get quality data that into their analysis. Well. And retain everyone. Yeah. So, so many people I know, several I meet and many more as it goes on. Yeah. Yeah. So I would say in general that's definitely in general that's my role.
13:34	And if I could talk about specific projects, that typically seems to be my role. There's definitely been roles where I've played pretty much wearing all these different hats and having to. That was that was with my dissertation though. OK, right. To do right.
	OK, so and then in the next few questions, you're going to be a little bit different. Roughly what percentage of your projects have involved at least one collaborator at another institution.
	OK, now can other institution include <redacted> you're talking about.
14:08	**Absolutely. Absolutely. Any really what I what I'm asking you is like any time where you are working on a research project with somebody that wasn't like I'm less than a fifteen minute travel time from where you're located,**
	OK, it makes sense.
	OK, or you what I mean.
	Yeah, well <redacted> is just right over there. OK, well yeah. Right.
	So it does count because they're like a different, they're totally different groups.
14:39	Yeah. Right, yeah.
	And have you ever worked on projects where people work.
	Well I mean in the <redacted> project you've got we've got people you see <redacted>. Right. So that's yes. I worked on projects for people are at the <redacted>. Right. Perfectly <redacted> or exactly. <redacted> and <redacted>. Yeah. Yes.
	What percent.
	Probably I would see where they're intricately involved or they're just involved if I were involved at all.
15:10	Involved at all, because I'm going to get I'm going to get down to that or that question you just asked, I would say 80 percent, OK, and then in the. Situations where you're working with collaborators who are at other institutions.
	Why did you choose to work with those collaborators?
	Oftentimes when you're seeking funding and strengthens it gives it that disciplinary component.
15:37	In addition to that, because they've got resources that we need, they've got a positive array of samples or isolates that we could use. And so we established a collaboration there. So we'd say it's a combination of strengthening the team to show that we are we've got people on board from other institutions and within industry, government, other universities that can.
16:07	It just makes it more multidisciplinary, I think I think that answers that. Yeah.
	So how do you choose which collaborators that you're going to work with?
	Often it's through connections with other people, through networking. We've worked with them in the past. And so let's contact them again and see if they're interested in this other project.
16:32	Or it could be, like I said, somebody that has a connection with them. And I know they can put me in contact. And so I've got that that contact point of contact. Or they just have something that I

need, something that I can't get somewhere else, and so I will go out and introduce myself or find a way somebody else that can introduce me. And that's something that I need that's going to add value to the work.

17:02   Yeah.

Are there any differences between when you're working with people that you've already you already know or catch your eye, say, friends or friends of the networks versus people that you have to kind of approach or.

My initial thought is, no, not really. I almost feel maybe that if it's a stranger or something, you don't have a contact with them.

17:34   I feel like maybe they're more likely to straley the opposite of what people would think, but more likely to respond quicker. I don't know. At least that's in my own my own experience has been that, yeah, so it's I don't know if they're looking at it as this is a new opportunity and I don't want to miss out on this. I don't know. So, yeah.

Interesting. And are there any disadvantages or challenges associated with working on projects that are distributed?

18:08   OK, yes, certainly from a financial standpoint, that's challenging for those four people that have to be involved with budgeting and how that works, that can be initially a little bit more challenging, setting that up.

Do you want to clarify?

Yeah.

18:28   So oftentimes, if you're working with somebody from <redacted>, for example, a government, you go about establishing subcontracts or it's a cooperative agreement and you have to go through the government policy the way they go about establishing these cooperative agreements, which might be different from within the university, within the house.

18:55   Oftentimes there's conflicts of interest that you have to be aware of government. People have to get special approval in order in order to collaborate. And things are a little bit more delicate there from my experiences. You're asking about difficulties or challenges.

19:23   Yeah. Sometimes it's just they might have a different agenda than you do if it's an industry partner. I've had pretty good luck working with collaborating with industry people, but they are in a different can be just a different time standard, which is different. Difficult to communicate physically, but.

19:54   They're. Looking at the purpose of a project much differently than you are, it's really hard to explain. I think it correct me if I'm wrong. Yes, kind of like how people who are working in industry tend to approach every problem from a product point of view versus people and research. Yeah, the science point of view. Yeah. Yeah.

20:19   That that could be one of the challenges is getting people on the same page to understand why we have to do this in order to get here. Or maybe it could be sort of what's in it for me if I'm going to be collaborating, why should I be giving my time over when I'm working on something else? I haven't had very many negative. I haven't gotten really any. No, no. I just I was going to you know, sometimes if I asked a question, if there are there aren't any there's no wrong answer. Sure. Say, oh, no, I haven't encountered this.

20:48   You want to make sure I'm giving you the right. That's OK.

Because I'm about to ask you about benefits, which is the opposite.

So you have benefits to working outside. And this is also like working with other like university, just industry.

Sure. Sure.

I want to take a step back to difficulties because I thought of something working with other universities.

21:15	In my personal experience, sometimes it's hard because if you're receiving samples from them or you're receiving a protocol or they're sharing information the way they would have done it, the method or technique is much different than how you did. And there might be some disparities there, or I might have even an issue with how it was done in the quality of how it was done. I'm sure that vice versa. But where you get it, you get it. For example, you get an isolate, you get a sample and it's not pure and you have to go through and then you're saying, well, yes, it is.
21:45	And you're looking at their method and there's flaws. And so you have to go back and do it differently or you have to take it for what it is and say we've got to work with what we're able to work with because this is as good as it gets. So there's always sensitivities there, too, because you don't want to imply that the work that they do is not high quality or that there's problems there.
22:09	So that has come up on several occasions where and this is working with this is working with other universities where the quality of the work maybe is different or the way their methods are different. So I'm trying to mesh. Those can be complicated. Yeah, especially for publications Dan points to if you're having to go back and we're even from funding, if you're not anticipating that, you're anticipating you're getting one product and you get something that you have to do a whole bunch more manipulation to in order to get it to the stage you need it that so.
22:41	Right. So not only benefit benefits, certainly it's just a greater resource resources in general. The project in general that I'm thinking of is we have they have something that we don't have and that's something that is really valuable. They've got samples that we really need.
23:09	Often times these are people that work in a lab and we think like minded. We know what is it going to entail for them to have to ship up the sample, pack it up and ship it overnight? We know what that's like. So we're sensitive to those requests. And so there's kind of this mutual understanding of what's OK to ask and what's not OK or what are we able to do to accommodate if they're giving us a resource or something that we really need to continue.
23:38	Our work is just the sharing of information in general. You just always you're learning more. And even if it's up, even if it's learning how not to do something, going back to the difficulties, maybe you learn, OK, we don't want to do it that way because we can see what happens when we do apply that method or whatever. Yeah. **And then are there any disadvantages or problems or issues of working in co-located on co-located projects or everybody's at the same institution.**
24:16	I think that from a. And the quality of work, no, I don't necessarily think that really has. A very big impact, I think that sometimes it can be viewed as not having really good external validity, I guess I don't know if I think about it in terms of that.
24:42	I think that. Personally, I think that, however, when you stay within the university, you go out, you're not seeking additional input collaborations, I think you're limited in what you're able to discover and the impact that you can have. For me, research is all about having impact. And the more you can spread out, kind of connect with others that are doing the same things that might have different insight, the quality of work is going to improve.
25:15	So I would think that maybe I guess I just take back what I said. So maybe the quality work wouldn't be affected, but. I think it depends on what stage of research you're at to initially when you're starting up. I think that it's great to stay within your what did you call it? So I said colocated. Yeah. Yeah, everybody's in the same place.
25:46	But as you're taking things into the next stage and you're learning, I think that it becomes really important actually to reach out and to seek to seek input from others and then benefit the impact. **For me, I think that you might be too general the benefits to working on co-located projects.**

Oh, benefits.

26:12   Just the ease of meeting with people, setting up meetings, understanding how policy works at your university. How time commitments work and what the understandings are there. And just being like minded, oftentimes, that can definitely be a benefit, as well as having a.

26:50   This is terribly worded, but is there a way that if it's like I have to talk about, it's totally fine the way you see a pattern of how you go about things. And so you don't really have to mean that it's everybody gets that and it just makes it a little bit smoother, I guess.

Can you elaborate on what you meant by understanding time commitments? What do I mean by that?

27:17   Oftentimes, if you're on, you're in the same location or if you're if it's any, you know, people at <redacted>, I know what <redacted> is working on. I know what kind of time commitments and projects he has ongoing. So I know because I've been over in the lab, I've physically been over there. I've interacted with the students. So I know what time is a time commitment. He I can expect that he's going to be able to donate or give it somebody else that works in the lab with me.

27:43   I know exactly what else they're working on. So I know, you know, on Monday or Tuesday they're going to be available, but not on Wednesday or so. And also, depending on what their role is at the university, you know, for instance, at the vet hospital, we work with a lot of people who are on staff, that are on our faculty, that are on clinics. And when you're on clinics, that time commit to commitments are really difficult because they're round the clock doing that. Twenty four seven.

28:12   **So you understand what people are able to give because you understand their schedules more intimately. OK, yeah. OK, so what roughly what percentage of your projects involve collaborators who are in different fields. You mentioned working with my from it for. Managing for.**

I would probably say different fields.

28:48   I would say 100 percent. OK. Yeah, have you ever worked on a project where everybody was in epidemiology or. So always involve somebody. So outside of that, yeah, definitely most people outside of that. Yeah, yeah, great. You need a percent. Oh, no, I was I was trying to make sure. Yeah, yeah.

29:13   I try to troll through people's publications before I ask them to talk, but when it comes to kids, I am not a life sentence researcher yet it comes to trying to identify who is and what field we're looking at. Co-authors I simply can have. No, it's all biology to me.

Yeah, OK. But are there any disadvantages or challenges to working on projects where you have people who are not in your field?

29:46   Yeah, certainly when you were trying to explain. Something in layman's terms, sometimes it takes taking something that's complicated and making explaining in a way that's really. That's understandable. I mean, that's difficult. You have to speak in terms of their language that they understand that and that doesn't mean that they're not intelligent enough to pick up on it.

30:14   It's a totally different way of looking at it. And so that can be a challenge, actually. And yeah, I don't know if I can elaborate much on that.

That's fine. What about benefits or their benefits to working with people outside of your field of learning?

30:38   I most certainly I love learning more about how what I'm doing can be applied in a different way or how I can tweak something and it can be used for this purpose or to me, getting back to impact, it's really big to me. And so if I know I'm doing this in the lab and I am using it for X, and

then I collaborate with someone and realize I could actually be applying this to something else and learning.

31:09   And if they're coming to the table and say, hey, I really could utilize your experience in that area. So it's always about the learning curve is so steep. Always new things, new opportunities. Yeah, new ways to kind of spread out and only utilize their skills, but learn how your skills can be utilized as well. Yeah, so they hit on that.

31:39   **Absolutely. I mean, forget the question. Well, I mean, OK, so the reason why I have these questions, because I'm trying to get certain, like, kind of information out of you. Yeah, but it's this is well, this is what we referred to as a semi structured interview. I have like I have this this list, but it can I ask you follow up questions, et cetera. It's not it's not about the specific questions I'm asking so much just about the mission of trying to get in. You're giving your great information. OK, I appreciate it.**

32:10   **OK, so have you ever had a project fail because of collaboration issues?**

Having to think this long, the answer's probably no. I can't think of one.

OK, so I'm going to be moving into kind of the last bit of questions is going to go listen to me a little bit different.

32:36   **OK, so can you give me start off with a list of tasks that you do in your research that involve working with another researcher? OK, you've mentioned a few things like scheduling and sending and receiving samples, share sharing, sharing just as general, sharing information. So sure thing else going over budgets.**

33:06   That would be something. I don't know if this fits into that, but which is project updates, whether that's weekly, bi monthly or whatever. Yeah. Specific, to be specific, is fine.

33:37   I can always check it later. Sure, often scheduling meetings, getting people together, that kind of goes along, right? Yeah. Supervising ABC, supervising lab activities, managing, I would say time managing time to manage, managing other people's time and their activities.

34:10   I don't know if manuscript preparation absolutely is a part of that that involves crazy people. And then just a lot of going over new protocols, new techniques, new assays or even existing, sometimes just running through that.

34:36   Oftentimes, a lot of math calculations are in the lab and we're having to convert things from people, moles to micro moles, and in making sure that we're you know, that that's that that's accurate, that you're doing accurate calculations and science. Can you repeat the question again with lists like lists of tasks that involve other things?

Yeah, yeah.

35:06   Yeah, that's probably a pretty long list.

No, this is good, just starting from that last one and then the calculations, how is this how do I do that? Yeah. How do you do that? How is this whole process? Will you elaborate on how that process or what's going on?

Yeah.

35:29   So we have a thing in the lab where anything we're calculating something that is not exactly straightforward, whether we're making a new solution. And it's, you know. It's more complicated than it normally is. I guess we always check our math with somebody else. They always go and say, hey, let's can we run through this? And I want to make sure blinded that you end up with the same answer that I got. So we have double checking the work that we're doing things accurately.

36:00   Just the people within your own lab, or is it sometimes the people who are. It's easier to do with people in my own on. Because they already know what I'm working on, they already understand

why or what maybe they're working with me on it and it's just easier because they're closer to the right there, because it's not something that I want to take a lot of time with.

36:28 And I want to spend a lot of time explaining to somebody else all the little details about why I'm doing this or so say. So in this case, where you have people you refuse to list here, a face to face meeting or you see emails or face to face. Yes. So when it comes to doing something like this, email would be really I wouldn't prefer that way. If it's just more difficult, it's easier face to face.

36:57 **Cage. So elaborate a little bit more on what you mean by why, why, why you why you think it is or why it feels like it is more difficult over email.**

And it's just my own experience has been so I've asked for technical expertise or help with calculating something or figuring something out and. It's just easily misunderstood. To understand why, what my question is easier to freely talk about it face to face in case there's anything that's misunderstood.

37:31 **OK, yeah, sorry. What did you do in a situation where you're trying to communicate about this problem for the mail? And there was miscommunication.**

Misunderstanding, right. Ends up being way more e-mails than it needs to be. So it's more of a type thing as well. Ultimately, I ended up getting an answer, but then going to the literature and having to spend some additional time to see if I agreed with what this individual is recommending. So, OK, yeah.

38:00 **And so when you are working with people who are not that you can't meet face to face in person with, what tools do you use?**

What do you mean by tool tools like again, phone, phone, email or Skype.

Sure. Or whatever.

Yes, I, I would start out with email emails initially how I would contact somebody and then I would say if it's easy to discuss by phone, please contact and contact me.

38:28 And if I don't hear back or if I don't get the answer that I want or I should say, what if I don't get something that's clear to me, then I pick up the phone and make a phone call. And then if I'm not getting an answer over the phone, I'll set up a time for a sit down meet.

OK, so start off with why is it easier to start with email?

In general, people are to be more responsive to email so they could be anywhere. You can be in a meeting on your phone, you're able to respond. Absolutely.

38:56 **OK, and then what is it about talking on the phone that helps clarify issues over.**

Right. If you just I don't even know how to put them together, it's just it's faster, I guess it feels faster, it feels more efficient or is email at first is more efficient. It just feels like, hey, this is too complicated something. It's too complicated. A phone conversation is much easier.

39:24 **OK, and then what is the benefit of meeting face to face in person? Over and over and over the phone?**

It feels like your. It feels like checkboxes are getting marked off easier. It feels good, it feels like you're actually accomplishing a goal in an even more efficient manner. That makes sense. You've got somebody right there. You're both have dedicated this time you're sitting down and we're going to hash this out right now and we're going to walk out with a solution.

39:55 So to me, it feels like it's finding an answer.

OK, great.

So what about there's one more aspect to email sometimes for me, if it's somebody that I don't have a really I don't communicate regularly, regularly with email is a less intimidating way to go about communicating than a phone call.

40:19	And I don't know how many people feel that same way, but I tend to even though I'm fairly outgoing person, I feel intimidated with a phone call at first hearing somebody voice over the phone as opposed to just being able to freely write and edit and think about what you want to write. Whereas if you're talking and you're asked a question or you're interacting, there's no back erase back there. So to me, it's just it's less formal.
40:47	It's more informal, but it allows me to make sure that I'm getting my message clearly. So it's clearly received. Yes, it does. It just feels like I'm going to do this. You first and then you get a kick, get an email back. You think of where, you know, there's good chemistry. I feel like we're communicating well here and then it's OK. We can pick up the phone and talk.

So, yeah, the great thing about preparing manuscripts, how does that help with that process look like?

41:19	It can be messy. So I'm the one that is involved. If I'm like and senior author, for example, the way I like to go about it is. I think an order and how I want to send it out, so rather than sending it out to everybody all at once and then getting a whole bunch of responses back and then having to merge all of those together, I will say I will let the group know, hey, I've got a mini ship that's coming out, but I'm going to let so-and-so look at it first.
41:48	I've even done he wants to look at it second and he wants to look at third. And I've also gone to people's their outlook, their calendars that have been shared with me. Or you can look at any calendar and see what their availability is and they know, OK, maybe you can work on it for these days and so on. So I like to do it as a process as opposed to just mass email out and then just get it back and deal with it. Same with doing proposals and being groups together.
42:16	OK, so why it's less work on my end. I'm not going to have to get five different manuscript edits drafts back and then I have to merge all those and decide if I want to accept or reject something. It's easier for me to see one person's comments and discuss that with them, get that resolved and then have a, you know, an updated version and then send them off to the next person.

42:46	**Yeah, OK. And then what are you using to send an email via email me email always via e-mail. OK, so just like why, why email as opposed to a hard copy or something like Dropbox or any other kind of file sharing system.**

And just because it's more widely used, I mean I would do Dropbox, but not everybody is familiar with that.

43:16	We did we did do cloud one point with a proposal draft and where everyone was giving different edits and it was complicated. It got complicated for a little bit because not everybody was familiar with how to do it. And then we got into ran into a problem where one person would take it offline and work on it while somebody else is working on it online. And then we had two different versions and then somebody had to go emerges together.

43:41	**So it's easier if everybody's familiar with the process and there's no unknowns, I guess. OK, and then what are you using to write your documents? Word and why?**

Word. And that's what I'm familiar with. Yeah, I think it just as well. I can't say it's more user friendly because I haven't used anything else. OK, yeah.

44:10	**OK, so how were tools, methods used to use, do scheduling and scheduling meetings, write scheduling lab activities.**

Right. I never use doodle student. Right. Yeah I never use doodle but that seems to work really well. Somebody else has always set that up and I've been a part of it.

44:37	And for me personally, I'll go to somebodies outlook and look at what their availability is and I'll schedule it. I'll say here are some proposed times that could work well if it's more than one individual. Yeah.

So why that method over doodle?

Because I'm not familiar. I guess it would be the only reason why is.

45:07   And. I guess because I have I'm curious to know I want to know if there could be some symptoms that everybody is great at keeping their calendars up to date, but just helps me anticipate what could what could work but couldn't. It just seems to be more efficient for me to get a date or a time figure out, OK.

Have you ever had any problems using this tool?

45:36   Method. Yeah, certainly there's some times where you just can't figure out a time that's going to work. I mean, technically, have I ever had a problem with it? No, but trying to get everybody together, that's definitely that's an issue or. Yeah, and oftentimes the solution is you pick the best, the best time for the majority of people, and if you can make it, you can if you can.

46:05   So and then usually somebody takes notes and sends out an update of what occurred. So once you figure out, like, say, when we're a range of land, how do you communicate about how do you let those other people know that I'd like to have a meeting at that time. I think I follow what you're saying. You're asking me about just the process of how I got doing it. Yeah, well, I mean, because and I have to use Outlook and like.

46:35   Ten years, so I don't know if there's some way to, like, use that to change, right, to propose it, to propose a meeting, emailing people or it's just an email where I've looked at I can look at their calendars and see so-and-so has a block of time on Wednesday between three and five. And I can say, OK, I'm going to make that a possibility because I can see that the other person seems to have that blocked out as well as available. And I know that I'm available.

47:03   So without telling them, hey, I know that you've got this available, I'll just say Wednesday between three and five. Who can make that? Oftentimes what I will say up front is, please only let me know if you are unable to make it this time. So, OK, that makes it easier to eliminate times that don't work in order to find a time that will work. OK, so what do you take that approach of asking people to let you know if they can't make it as opposed to if they can? It's just more efficient. It just seems to be faster at.

47:34   Solidifying a time.

OK, so you talked about this a bit about passing and receiving and sending samples from other institutions. Sure. What's what tools do you use to accomplish that task with technology to use?

I don't know what technology would.

48:02   I don't know what this would classify as initially just getting an email through email, contacting them and getting a shipping address, for example. And then. We do ship, so we all do. This is answering your question, but we'll do it electronically. We'll figure out packaging and then. Physically walk over and deliver, it should have the answers that, you know, why email to contact for sharing information.

48:38   Yeah, for getting that information faster. And it's just easier to copy and paste it directly into the <redacted> ship I ship is the university does a nice thing where you can just go in and generate it generates a bar code for you. You can put the address and zip code. It will automatically say how much it's going to cost, what your estimated package meant for your estimated package dimensions. And we are if you're driss, if you have other biologics or whatever. So it's just easier way to go about it, OK.

49:05   **And so when developing new protocols or discussing reviewing existing protocols with other people in your group, what tools to use to accomplish that task or how to share?**

Certainly face to face is the easiest, and that's what I prefer. It's basically the same answer as when you're doing calculations or you're trying to yeah.

49:36	It's just much more direct, we've done it through email and we're currently doing protocols back and forth with the proteomics group, and it's difficult because you feel like not all your questions get answered and then you're left with lingering questions and then you have to send in another, you know, follow up email.
	OK, that's great. Thanks for that answer. Can you address this?
49:57	So it feels like you have a limited opportunity to get all the information that you need, or is if you can sit down and schedule a meeting or sit down with somebody you against checking off those boxes and getting making sure everything all of your questions are answered before you leave the room. OK. And so troubleshooting is easier to face to face and oftentimes updating protocols or writing protocols. There's a lot of just out troubleshooting. What if this occurs? Maybe we should do it this way.
50:26	**OK, that's a good point.**
	From my own experience, sometimes this is an issue if you aren't subjecting the sample to this type of whatever you want to get to do, but it's just easier to troubleshoot face to face. OK, and then when you're say doing updating, everybody's updating each other on how the project is going, how what tools, what methods are used for that. It's usually sitting down and schedule meetings.
50:58	However, in the past we've also done where we do our own minutes and we just recap and update scheduling by project a couple of bullets on where we're at and then we share that with everyone. And then somebody usually will take that and compile it into one and then it just gets basically saved away in case we ever need to go back and look at where we were at. OK, so we creating those.
51:22	So within minute creating the minutes method and how is it shared to everyone's like each person sending one copy to everyone else in the group. And what tool is used for that. No, it was usually would be one person was designated to receive all the attention and then they can compare it to one and then set it off to everyone in the group. OK, I'm always by email. Always by email. Getting into word.
51:50	**Are there any issues now? OK, what about with the images? Sit down meetings. So are this face to face or conference?**
	They have one phone conference. Yeah, but usually they're face to face. If they're if it's within the university, it's always face to face.
52:16	I've never really had a phone conference for a colocation otherwise. It's what is that I never had a schedule of, but where you can schedule the conference, the conference calls.
52:36	I can't think of with that huge but bludging, I don't know, the university has stuff where you just described it, where it's so you get an email message, so you figure out the time that everyone's going to have a phone conference and you're invited, you click accept and then you get a personal invitation with a code, a number to dial on, a code to dial in. And so you dial at two o'clock and pick up the phone and there's seven other people on this.
53:04	**OK, yeah, that's cool. OK, are there any issues or difficulties with that method?**
	Hearing people last, I had a hard time hearing with seven people on the phone and yeah, sometimes it sounds like you're talking down the tunnel and it's hard to hear.
	OK, what do you do when that happens?
	I usually just do my best to try. And here I don't feel it in a big group like that. I want to stop and interrupt something else and repeat for me.
53:34	So I like this and stuff. And yeah, they're like differences between meeting in person versus having it.

Do you teleconference.

It's more convenient to do it in the conference, but it's so much more efficient, I feel. To meet face to face. That's a great question and.

54:08 Sometimes it does involve like if we have our meetings, we use the whiteboard, for example, so it's easy to kind of draw out what we're talking about. OK, that can be helpful. Maybe you're less distracted, too, if you're in a phone conference, there's things you know, you can be on the phone and e-mail can pop up and you can look at that and you're distracted for a minute while you're looking at that and then you're back to the conversation or students outside your office waiting there.

54:34 So sometimes it can be, you know, that that's happened or easily distracted. Whereas if you're face to face meeting, we're here. We're going to get this worked out right here. So, yeah, we use any other tools or technology to meet with people who are not co-located, Skype or Skype for Skype.

Yeah, how is that?

Um, that's OK. Usually that connection isn't always the greatest.

55:02 There's some kind of technical difficulty or something or you can't always hear them as well. Yeah, I think I'd rather do phone over the phone than Skype and why. I don't know. There's something, something intimidating for the first time staring at somebody that you're very discrete. I don't know. Yeah, that's sort of a silly answer. No, it's absolutely not.

55:31 Think that might if it's somebody that I'm not familiar with, I would not want to do Skype. Skype would be my last option. And I'd rather do a phone conference and then it would be email if I was an initial contact email being preferred preferred method. First, if you were to see you were meeting someone who was close enough that you could, like, drive out to their office for whatever reason, you know, maybe you don't want to do that or not.

56:01 **Would you rather it's a stranger, <redacted>? Rather talk to them face to face first or use Skype, or are they both equally intimidating?**

I would rather do face to face. OK, yeah. Yeah. Y yeah. I mean. Gosh, I don't really know why I feel that I can be more personable with a conversation face to face.

56:32 It just feels warm and fuzzy and doing it, you know, through a video camera. Yeah, less awkward, I guess. Yeah, that's fine. It's a good answer. Most people would say maybe. I don't know now. I totally feel the same way actually.

So is there do you think there's a difference in the frequency of your meetings when you're working with a group on a project where the group is only co-located versus when you're working on projects where it's distributed?

57:07 Certainly you probably have meetings while. Let me give you a free hand when you're fully located. OK, wife. Yeah, just the convenience of getting everybody together and sort of this out of sight, out of mind, sometimes you get going on doing something, you realize, hey, we haven't really communicated with you in a while, so maybe we need to get together and talk about that.

57:40 We haven't communicated with her friends or see the national level of research. Our we need to we need to see where they're at with their budget and our budget because we're sharing a budget that is just easier to do it. When you're in the same area physically, when you're in the same area, it's easier. So I have a couple of questions for you. If you could create a hypothetical future technology and, you know, kind of treat it like magic, you don't have to limit to what you think we can or cannot do.

58:13 **This technology will help you collaborate with when doing when doing research. What would it be? What kind of features would it have? It would it do is the question.**

Let's see. To me, it seems like it would be pretty cool if you had a technology kind of like LinkedIn where you can be connected with these different people and you can see what their level, what their expertise are, what they're what they know about.

58:49	But you could also know who they know. And so it creates this opportunity for you to connect with somebody through a. Sorry, the probably through a I didn't even know I had reception here because I threw like a neutral individual, but you could do that, but you could also be able to type in a search item.
59:18	So I want to know about doing RNA interference, for example. And this was something during my dissertation I had to learn about. I had no experience with this particular part of. I could take that in cancer research box, but I could also I could look more globally, but I could look also within if I wanted to make it more convenient to be well, I want to like it just within <redacted> or beyond include <redacted>. And I want to include you see, <redacted>, I could type in a search and.
59:47	It would give me like a drop down box of what do you want to know about this? Do you want to know about how to do this in the lab or are you doing this in cell culture? You doing this in lab animals? And you could take that. And.
01:00:04	From that search, she would be able to connect with somebody that has that level of experience and is willing so people are like minded that want to collaborate in a very collegial or just very deliberate in general and have a protocol that they're willing to share or they have, um, know they're willing to set up a time to email and talk about giving you some help on setting up an assay or you don't know how to analyze this.
01:00:30	How do we do this to six on this particular data set somebody that that is. Excited and willing, does it look at as a burden, because it seems like it has to be like minded people. But that would be pretty cool and. Then you don't feel like you're having to reinvent the wheel to. **Yeah, OK, that's great. OK, great**.