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Note: Text has been edited for clarity.

Resources for the 3Rs

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Broadcast Date: September 24, 2015.

View Recording: <https://www.youtube.com/watch?t=6&v=gI-pKb7zraU>

[View the recording to see Dr. Haugen's demonstration of RePORT and RePORTER]

Slides 1-2 (Resources for the 3Rs)

>>*Brown:* Hello, everyone. Today is September 24, 2015. I am Dr. Patricia Brown, OLAW Director, and it is my pleasure to welcome Drs. Brian Haugen and Alissa Resch to OLAW Online Seminars to present **Resources for the 3Rs**. Brian Haugen is a Health Science Policy Analyst at the National Institutes of Health, where he supports the NIH RePORT and RePORTER projects in the Office of Extramural Research. Previously, he was a Senior Scientist for Analysis and Evaluation at the NIH National Institute for Child Health and Human Development, where he co-lead data management and data analytic projects for the National Children's Study. He received his PhD in microbiology from the University of Wisconsin, Madison and his undergraduate degree from Bemidji State University in far northern Minnesota.

Alissa Resch, PhD, is the principal investigator of the National Human Genome Research Institute Sample Repository at Coriell Institute, a diverse collection of DNA samples and cell lines that has contributed to several landmark initiatives, including the International HapMap and 1000 Genomes Projects. Prior to joining Coriell, Alissa was an assistant professor of genetics and developmental biology at the University of Connecticut Health Center. Alissa earned her doctorate in biochemistry at the University of California, Los Angeles. Upon completion of her graduate degree, she was awarded a National Institutes of Health postdoctoral fellowship at the National Center for Biotechnology Information.

Our webinar today is intended to inform IACUCs about resources their investigators may use to implement the 3Rs. Before we hear from Brian and Alissa, I would like to speak for a moment about the 3Rs.

Slide 3 (3Rs)

The 3Rs are a strategy that was developed and published by Drs. Russell and Burch in 1959. Investigators are directed by the *Guide for the Care and Use of Laboratory Animals* [[Guide](#)] to apply the 3Rs when designing their experiments. The strategy of the 3Rs is to replace animals with alternatives, when possible, refine experiments to enhance animal well-being, and to reduce the number of animals needed.

Slide 4 (Replacement)

Let's discuss the 3Rs in more detail. Replacement means to find and use methods that eliminate the use of animals entirely and also to use less sentient animals when animals cannot be eliminated.

Slide 5 (Refinement)

Refinement refers to methods that increase animal well-being. This includes modifications to husbandry as well as experimental procedures. Measures that minimize animal pain and distress without compromising scientific research must be implemented. However, the *Guide* acknowledges that in some types of studies there may be unforeseen or even intended experimental outcomes that do produce pain and/or distress. The investigator and the IACUC must carefully consider ways to eliminate pain and distress, while understanding that this may not always be possible.

Slide 6 (Reduction)

Reduction is the process of obtaining comparable information while using fewer animals and maximizing the data obtained from the animals used. This will, of course, minimize the number of animals used in the experiment.

Slide 7 (IACUC Review and the 3Rs)

OLAW expects IACUCs to consider the 3Rs in their review of protocols. While the [PHS Policy](#) [Public Health Service Policy on Humane Care and Use of Laboratory Animals] and the [U.S. Government Principles](#) [U.S. Government Principles for the Utilization and Care of Vertebrate Animals Used in Testing, Research, and Training] don't mention the 3Rs by name, the concepts are conveyed in both of these guidance documents. The Policy, in Section IV.C.1., expects IACUCs to confirm that research with animals is consistent with the *Guide* and the *Guide's* endorsement of the 3Rs. U.S. Government Principle III is about reduction and replacement of animals and Principle IV describes refinements to minimize pain and distress.

So now let's consider some examples of resources NIH supports that are available to assist investigators in applying the 3Rs as they plan their research. Now it is my pleasure to turn the podium over to Brian Haugen.

Slide 8 (NIH Research Portfolio Online Reporting Tools)

>>Haugen: Thank you for that introduction, Pat. I am happy to be here to demonstrate a powerful set of tools offered by the National Institutes of Health called the Research

Portfolio Online Reporting Tools or [RePORT](#). I'm going to show you today how you can use these tools to find researchers, projects, and publications that may help you apply the three Rs.

Slide 9 (Goals of RePORT Program)

The primary reason for creating RePORT was to centralize reporting and create a one-stop shop for the public with consistent and reliable information on NIH programs. The NIH Reform Act of 2006 reinforced the importance of having this central resource and providing the public with the ability to search NIH-funded projects and retrieve information on publications and patents that have acknowledged that support. We are always exploring new ways to improve and streamline our reporting to communicate more effectively with the public.

Slide 10 (RePORT Home Page)

You can find RePORT by visiting <http://RePORT.nih.gov> as seen on the upper right of the screen. Once here, you will find a variety of reports and tools available. Today, I will focus most of our time on [RePORTER](#), which is available under the QuickLinks tab on the left side of the screen.

Slide 11 (RePORT Tutorials)

Before going any further, I want to highlight that we have tutorials for the various parts of RePORT and RePORTER, which you can find by clicking [About RePORT](#), and following the links down to the tutorials section.

Slide 12 (Information in RePORTER)

Now, I'd like to take you through a quick tour of RePORTER. RePORTER stands for Research Portfolio Online Tool for Expenditures and Results. This tool provides information on NIH's supported research projects, whether that research is happening in NIH facilities, or in institutions across the U.S. and world. Also included is information on projects supported by other organizations within the Department of Health and Human Services and the VA.

Slide 13

When you arrive at RePORTER, you'll see we have a comprehensive search form, and I'd like to orient you to the key features. First, by default, RePORTER only searches for Active Projects, but you can adjust this by clicking the select button, and choose any or all of the last 25 years.

The next section is the Researcher and Organization section where you can search the name of a person, the name of an organization, as well as other details like the state or congressional district where the grants were awarded. Below that we have our Text Search area, where you can search the titles and abstracts of the grant awards, as well as the text of the resulting publications.

Next, we have the Project Details section which focuses on the more administrative details. The most common searches here are to search for a specific project number you are working with, or searching for projects that are associated with a certain program officer or review panel at NIH. Below that are additional items related to specific NIH policies, but don't have general use for our discussion today.

Slide 14 (RePORTER – Text Search)

Now I would like to take you through an example of a text search, which is one of the most common types of searches on RePORTER. First, is the box where you can enter your search terms. Then, we have the search targets, where by default you search against projects, but you can also search against the text of publications and news releases that are associated with NIH projects.

To the right, we then have options that let you target your project text searches against just the title, terms or abstracts of those projects. If you are searching against publication text, you can control what years of publications will be searched. When entering search terms in the box, the default is for RePORTER to look for projects that contain all of those terms, which we call AND logic.

For this search, I'll imagine that I'm looking for someone to help advise me on my zebrafish model of fetal alcohol syndrome and do a simple search for those words. I've placed "fetal alcohol syndrome" in quotes to make sure all three words will appear in that order in any of my results.

Slide 15 (RePORTER – Text Search)

Now that we have this simple search configured, we click Submit Query here on the upper left of the search screen.

Slide 16 (RePORTER – Search Search)

Once the query is complete, RePORTER will return your list of matches. We can see the project number, the title, the principal investigator, the organization, and the agency that funded the research, and how much funding is currently being used. If I click a title, I can read the project abstract and learn more about the project.

Going back to my example of finding experts to help me with my zebrafish model, this list likely does include some of the right experts, but the list may be too short and I may need to reach out to a broader set of folks, so I can go Back to the Query Form, and refine my search criteria.

Slide 17 (RePORTER – Advanced Text Search)

So let us take another look at this query, and try a more inclusive set of terms using the Advanced Search. We can use this option by clicking the radio button, and adding my search terms. I'll look for projects that mention either alcohol or fetal alcohol syndrome while still mentioning zebrafish. Note that I'm using the Boolean operators "OR" and

"AND", as well as parentheses around my OR statement. That results in 28 projects, better than just four. We can expand it even further to include zebrafish projects that mentioned toxicity or toxicology by using the percentage symbol as a wildcard character. With that, any word starting with "toxic" will be matched.

In summary, advanced text search allows: Boolean operators (such as AND, OR, NOT), parentheses to define search clauses, and the % wildcard to expand word matching.

Slide 18 (Search Results)

Now, I'd like to go through some of the more advanced features of the Search Results page. There are several tabs of information about what's on the hit list. First is the list of projects, with links out to the administrative and scientific details about the awarded projects which I showed earlier, and here's another view of an abstract page.

Slide 19 (Search Results)

Next, is the publications tab, with the list of publications that were supported by the projects on the first list, and we can follow out links to read more from PubMed or other sources.

Slide 20 (Search Results)

We also display any patents that have been linked to NIH awards by grantees.

Slide 21 (Search Results)

Next over are the clinical studies that are linked to NIH grants through <http://clinicaltrials.gov>, and you can follow a link to read the details of those studies.

Slide 22 (Search Results)

For large lists of projects, we offer tools to visualize the characteristics of your search results on the Data & Visualize tab. You may want to view summaries of your hit list by the funding agency, the investigator, or the organization. We also offer the Circles tool, which allows you to explore the terms and concepts used in the project descriptions.

Slide 23 (Search Results)

Next over is the Map tool, where you can explore where this research is being conducted. And you can zoom in to view the results within particular states.

Slide 24 (Search Results)

Last, we have the News & More tab with links other documents where these research projects have been mentioned, like this news release from Scripps.

Slide 25 (Search Results)

You can share your search criteria by email or otherwise by sharing a unique link to RePORTER. Every time the link is followed, the search criteria will be re-run on RePORTER and the most up-to-date results returned.

Slide 26 (Search Results)

Finally, you can export all your search results. By default, you will export all results when you click the Go button, but you can also click these checkboxes along the side to select just the projects you are interested in getting the details for. Clicking the Go button will launch a new window where you can set your download options and once things are configured the way you like, you can click Export and open the file in Microsoft Excel or other tools.

Slide 27 (MyRePORTER)

Now I'd like to take you through the features of MyRePORTER, which enables you to save your common queries and receive emailed updates for your saved searches.

Slide 28 (RePORTER)

At the top of the RePORTER search page, there is a Register button. And you can click this button.

Slide 29 (Register)

You will see a popup window where you can enter your email address and preferred password. We also need you to do a verification step. And then click Register. The RePORTER website will then send you an email with a confirmation link to activate your account.

Slide 30 (MyRePORTER)

This is what the confirmation request email will look like. You can click confirm.

Slide 31 (MyRePORTER)

MyRePORTER will launch in your browser, and you'll receive a message that your account has been confirmed, and you can then login using your registered email address and your password.

Slide 32 (MyRePORTER)

You are then taken to the MyRePORTER dashboard, where you can launch a new query.

Slide 33 (MyRePORTER)

You will be taken to the query screen, but the RePORTER logo will be replaced with the MyRePORTER logo to let you know that you're logged in.

Slide 34 (MyRePORTER)

So now we can do a simple search, say, for osteoarthritis and get our results.

Slide 35 (MyRePORTER)

Now, in addition to all of the capabilities we had before, we now have the option to save the query here at the top.

Slide 36 (MyRePORTER)

After clicking Save Query, you are taken to a new screen where you can give your saved query a name and choose to receive email updates when there are new projects, publications, or news releases associated with this saved query.

Slide 37 (MyRePORTER Saved Queries)

Now our search criteria have been saved and are listed on our dashboard. We can return to the dashboard at any time to run the search by clicking the arrow, and you can also delete the query, or adjust your email preferences.

Slide 38 (MyRePORTER Project Alert)

Once a week, MyRePORTER will send you an email with any new items that match your saved queries, and you can follow links from the email to see all items that match your search, or just the new items. So in summary, MyRePORTER allows you to automatically monitor your portfolio using saved queries and emailed updates.

Slide 39 (Matchmaker)

Next, I'd like to take you through Matchmaker, which offers another way to search projects listed in RePORTER. With this tool, you can search with the full text of a document you might be working with, say an animal protocol, research abstract, or other scientific text, and find similar NIH projects.

Slide 40 (Matchmaker)

Matchmaker is available from the RePORTER homepage on the right-most tab.

Slide 41 (Matchmaker)

The Matchmaker search interface is just one box; just copy and paste your scientific text into the box. For instance, you might use a conference abstract, a research statement, or other scientific text up to fifteen thousand characters. Here you can copy and paste it in your text, then click Submit. In the background, RePORTER is analyzing your text for key terms and concepts, and matching those against the key terms and concepts used in the abstracts of funded NIH research.

Slide 42 (Matchmaker Results)

Once this comparison is complete, Matchmaker will return the one hundred most similar projects, as well as display a graphical bar chart summary of the results by NIH Institute or Center, activity code, or study section. Below the charts, projects are listed in decreasing similarity, as indicated here by the match score.

Slide 43 (Matchmaker Results)

From this page, you can refine your set of results by clicking the relevant bar chart. For instance, you may wish to look only at similar R01 projects, just click the R01 bar, now the bar charts have been refreshed to show where similar R01 projects were reviewed

and which Institute or Center made the award. You can drill down even further to a single IC, like NIMH, and restrict the results further.

Slide 44 (Matchmaker Results)

You can explore your results by clicking on the project titles, to read the abstract, or click on the project number to learn more about the funding details of the project. If you are an investigator interested in applying for grants, you can also click to see the Program Officers' email address. You can also export all of your results, just like you can do for any RePORTER hit list. In summary, Matchmaker is a tool to find similar projects based only scientific text.

Slide 45 (Federal RePORTER (Alpha))

Finally, I wanted to make you aware of another tool we have in development, which is called Federal RePORTER, part of the STARMETRICS initiative among five key agencies. This tool lets you search across the research portfolios of several agencies, including the NIH, the National Science Foundation, the USDA [U.S. Department of Agriculture], the EPA [Environmental Protection Agency], the Department of Defense, and others. You can find this tool at <http://FederalReporter.nih.gov>, as seen in the upper right hand.

Slide 46 (Federal RePORTER (Alpha))

As a quick example, we can search for prairie dog and we find four projects in 2014, including projects from USDA in their Agricultural Research Service, and their [National] Institute of Food and Agriculture, as well as projects from the National Science foundation and the NIH.

Thank you. With that, I'll turn things over to Alissa Resch from the Coriell Institute.

Slide 47 (Coriell Institute)

>>Resch: Thank you, Brian. Before discussing the sample collections housed at Coriell, I would like to provide background about the history of the Institute.

Slide 48 (Coriell Institute)

Coriell is a non-profit biomedical research institute founded by Dr. Lewis Coriell in 1953. Early in his career, Dr. Coriell succeeded in optimizing techniques to sustain living human cells in culture, free from contamination. This breakthrough allowed scientists to grow the polio virus and work toward the first vaccine. For over 60 years, Coriell has demonstrated achievement in cell culture technology and developed standard practices in cell characterization and cryopreservation.

Slide 49 (Overview of Coriell)

Many of the samples housed at Coriell are used as gold standards and reference sets in the scientific community. Coriell is a basic biomedical research institute committed to genetic research, biobanking, and education. Coriell is home to several large biorepositories that rank among the worlds' largest collection of living cells and DNA used

for human and animal research. We operate a fully-funded iPSC laboratory and stem cell biobank containing human and mouse lines. Coriell is known for its expert staff and pioneering programs in the fields of genetics, cell biology, and personalized medicine. We strive to provide the highest quality biomaterials and are certified to the ISO standard for quality management.

Slide 50 (Coriell Recognition)

Coriell is recognized as a leader in biobanking. We are at the forefront of many exciting developments in the fields of personalized genomics, genetics, and stem cell biology, and have been recognized for these efforts.

Slide 51 (Coriell Biorepositories)

These developments would not be possible without Coriell's biorepositories, which contain more than seven million samples collected over 60 years.

Slide 52 (Repository Highlights)

In 1959, Dr. Coriell recognized the value of collecting and preserving biospecimens in anticipation of advanced research discovery techniques. The NIH also saw the value in this practice, and in 1964, partnered with Coriell to create the first standardized cell repository, in collaboration with the National Institute of General Medical Sciences or NIGMS. Originally launched in 1972, the NIGMS Repository contract at Coriell is the longest uninterrupted contract at the NIH.

Slide 53 (Coriell's Repository)

Coriell's publicly accessible biorepository contains a diverse collection of sample types from humans and animals. Collections are organized by species, disease-type, mutation-type, data-type, and by population. For example, we distribute cell lines and DNA samples from numerous species including humans, non-human primates, mouse, cow, dog, and hamster, to name a few. Our collection also includes samples donated from individuals with a variety of confirmed diseases including neurological, age-related, heart, eye, and immunodeficiency diseases.

Coriell is home to the largest inherited disease collection in the world and samples in this collection include known genetic mutations, chromosomal abnormalities, and cancers. Many of the samples in our collection are accompanied by rich phenotypic, clinical, and next-generation sequencing datasets.

Coriell hosts the largest collection of human populations in the world, including samples collected for the International HapMap and 1000 Genomes Projects comprised of samples from 27 unique populations. Next-generation sequencing and genotyping [data] are also available for these samples, making it one of the largest open-access datasets with companion cell lines and DNA.

Slide 54 (Repository Collections and Services)

The repository is organized by collections and services. The boxes across the top row show the types of repositories housed at Coriell [Government Repositories, Non-Profit Repositories, Coriell-Owned Repositories]. We store and distribute thousands of samples for our large NIH repositories, which include the National Eye Institute (NEI), National Human Genome Research Institute (NHGRI), National Institute on Aging (NIA), National Institute for General Medical Sciences (NIGMS), and the National Institute for Neurological Disorder and Stroke (NINDS).

We are home to several non-profit collections, including the American Diabetes Association (ADA) and the Huntington's Disease Foundation (CHDI). An important Coriell-owned collection is the Integrated Primate Biomaterials and Information Resource, or IPBIR, which includes cell lines and DNA samples for multiple non-human primate species.

Coriell offers a wide range of custom services, as illustrated on the bottom row [Custom Services, Safe Storage, Testing Services]. Custom services are offered by our cell culture, stem cell, molecular biology, and genotyping and sequencing laboratories. Coriell's genotyping lab is CLIA-certified and our stem cell lab grows and distributes both human induced pluripotent stem cells, or iPSCs, and mouse embryonic stem cells. We offer a variety of safe storage options for short and long-term storage. Popular testing services include DNA fingerprinting for sample identification, karyotyping for chromosomal analysis, PluriTest for stem cell characterization, and qPCR.

Slide 55 (Collection Types in the Repository)

Coriell's collections are organized by repository and the descriptions of several large repositories are shown in the last column. The funding organization for each repository is shown in the first column. Information about grant and contract award numbers is shown in column two, and the award number for federally funded grants and contracts can be entered into NIH RePORTER. Animal cell lines, DNA samples, and stem cell lines are maintained and distributed for several collections on this list, including NIGMS, NIA, the Jackson Laboratory Collection, the Yerkes Primate Resource, and the Integrated Primate Biomaterials and Information Resource.

Slide 56 (Animal Models of Aging)

This screenshot from the National Institute on Aging webpage highlights the animal models used for aging studies that are available from the NIA repository. Biospecimens from many animals including panda, dog, cow, pig, rabbit, horse, non-human primates, and several rodents are distributed by the repository. The NIA collection also includes mouse embryonic stem cell (mES) lines.

Slide 57 (Other Important Partnerships)

Coriell's collections are not limited to the NIH. We also partner with other government agencies and disease foundations to build, maintain, and distribute their collections.

Examples of government organizations not previously mentioned include the National Cancer Institute (NCI), National Science Foundation (NSF), Centers for Disease Control and Prevention (CDC), and the U.S. Immunodeficiency Network (USIDNET). In addition, we host several important disease foundation collections from the Huntington's Disease Foundation (CHDI), American Diabetes Foundation, Autism Research Resource, and the Wistar Institute.

Slide 58 (Sample Types in the Repository)

Coriell's biorepositories distribute a wide range of sample types, as shown here. Human and animal genomic DNA, RNA, and cell lines are widely distributed, as are biofluids such as saliva, whole blood, plasma, serum, urine, and cerebrospinal fluid, which are important for human biomarker studies. A variety of normal and tumor tissue and cell lines are also included in these collections, as are transformed B-cells and polyclonal and monoclonal antibodies for immunological studies. Other sample types include purified proteins, plasmid "mini-genes", and mouse and human stem cell lines.

Slide 59 (Biobanking Logistics Capabilities)

Coriell's biorepositories are equipped with state-of-the-art freezers and cryogenic tanks armed with temperature monitors and alarms. Our collections are stored in multiple fail-safe storage locations and our repository inventory management system, or RIMS, allows for "real-time" inventory management.

Slide 60 (Stem Cell and Induced Pluripotent Stem Cell Lines)

Our stem laboratory maintains a large collection of human induced pluripotent stem cell (iPSC) lines for reprogramming, expansion and cryopreservation. Our lines undergo extensive quality control and characterization measures including surface antigen testing, PluriTest gene expression analysis, G-banding karyotype analysis, and genotyping. The stem cell lab also grows and characterizes mouse embryonic stem cells (mESCs).

Slide 61 (The CIRM Stem Cell Repository)

We recently launched the world's largest collection of publicly available human iPSCs for disease studies, funded by a \$10 million dollar grant awarded by the California Institute for Regenerative Medicine, or CIRM. CIRM was established to accelerate stem cell research in California through establishment of a \$3 billion dollar fund approved by taxpayers. Tissue samples collected from patients suffering from Alzheimer's disease, autism spectrum disorders, liver disease, cardiovascular disease, neurodevelopmental disorders including cerebral palsy and epilepsy, respiratory disease, and diseases of the eye were used to build the collection. Coriell is collaborating with Cellular Dynamics International (CDI) to create and distribute three iPSC lines for each of the 3,000 healthy and diseased donors who participated in the study.

Slide 62 (Coriell Research Services)

In addition to establishing, maintaining, and distributing cell cultures and DNA samples from our biorepositories, Coriell offers a wide array of research services.

Slide 63 (Coriell Cell Culturing Services)

Services offered by our cell culture laboratory include: isolation and cryopreservation of peripheral blood mononuclear cells, or PBMCs; Epstein-Barr Virus (EBV)-transformation of PBMCs for establishment of immortalized lymphoblastoid cell lines (LCLs); establishment of primary fibroblasts and differentiated cell lines from biopsy; growth of cell lines for isolation of DNA and RNA; and expansion of cell lines for distribution, stock maintenance, and molecular and cytogenetic analysis. Successful long-term maintenance and cryopreservation of cell lines is crucial for our repositories, since cell lines serve as a renewable source of DNA.

Slide 64 (Coriell Molecular Biology Services)

Services offered by our molecular biology lab include: isolation of genomic DNA, total RNA, and microRNAs (miRNA) from blood, cells, and tissues; large-scale propagation of transfection-ready plasmid DNA; genotyping with highly polymorphic microsatellite markers using multiplex fluorescent PCR, and pedigree verification and cell line authentication; hemoglobin testing of biofluids including plasma and serum; and mycoplasma testing using real-time PCR.

Slide 65 (Coriell Genotyping and Microarray Center)

Coriell operates a CLIA-certified genotyping and microarray center and is one of the largest microarray facilities to offer genome-wide genotyping. The lab is CLIA-certified in 50 states and offers a variety of services including mRNA and microRNA (miRNA) expression profiling, copy number variation analysis, and custom genotyping panels. Our Affymetrix platform has capacity for 2,000 to 3,000 samples per month. We also offer targeted DNA or RNA sequencing using the Ion Torrent PGM platform.

Slide 66 (Sequencing Options for Multiple Organisms)

Coriell can accommodate sequencing experiments for multiple organisms. Affymetrix offers over six dozen types of arrays, and a subset are shown here. Coriell has experience running several types of human arrays, mouse and rat arrays, the *Drosophila* gene array, and arrays for *E. coli* and *P. aeruginosa*, to name a few.

Slide 67 (Cytogenetics)

Many of the samples in our biorepository include samples collected from individuals with confirmed disease mutations or chromosomal aberrations. These samples require cytogenetic analysis for further characterization. Services offered by our cytogenetics laboratory include: G-banded karyotype analysis; analysis of copy number variation and loss of heterozygosity using the Affymetrix genome-wide human SNP array; fluorescence in situ hybridization (FISH) analysis including probe design, labeling, purification, and validation; and application of cytogenetic and cytogenomic services for stem cell studies and transgenics quality control.

Slide 68 (How to Order Samples)

Coriell maintains a state-of-the-art online catalog that contains a complete inventory list of all publicly available samples, and provides a platform for placing online orders.

Slide 69 (Access Coriell's Online Catalog)

This is a screenshot of [Coriell's online catalog](#) homepage. The URL for accessing the catalog website is shown at the top. The catalog has a powerful search engine and samples can be searched for by repository, collection-type, sample-type, disease name, species name, or sample ID. Links to our biorepository collections, laboratories, and custom services department are included at the bottom of the page.

Slide 70 (Instructions for Ordering Samples)

It is easy to order samples from Coriell. Our samples are used by scientists affiliated with academic, government, non-profit, and commercial organizations. These three steps should be followed when placing an order:

1. identify the repository that contains your sample or samples of interest;
2. click on the sample ID to retrieve information about the sample;
3. fill out the required paperwork, which includes a Statement of Research Intent and Material Transfer Agreement (MTA) specific to the repository from which the sample is ordered.

Your order can be placed through Coriell's online ordering system, or by speaking directly with our Customer Service Department. Our toll free number [800-752-3805], international number [+1 856-757-4848], and email address [customerservice@coriell.org] are shown at the bottom of the slide.

Slide 71 (Sample Pricing)

Coriell strives to keep sample prices reasonable as part of our mission to advance scientific research. Tiered pricing for academic and commercial organizations, as well as bulk discounts, are offered by some repositories.

Slide 72 (Sample Pricing)

Sample prices vary depending on the repository from which the sample is ordered. Information about sample prices can be obtained by clicking on the sample ID. Examples of popular product types include: live or frozen cell cultures, cell pellets, DNA aliquots, DNA panels, and DNA plates. Custom orders or special orders can also be placed with our Customer Service Department.

Slide 73 (Price by Contract)

The snapshot shown on this slide is taken from the NHGRI repositories and provides an example of sample prices for DNA, cell lines, and other sample types distributed by the repository. Pricing information is clearly defined by contract and sample type.

Slide 74 (Detailed Sample Information)

Samples are accompanied by detailed information, including characterizations, phenotypic data, relevant publications, and more.

Slide 75 (Thank You!)

If you have specific questions about our samples or collections, you can contact the Principal Investigators and Project Managers that manage each of our repositories, by clicking on the "Mission and Organization" tab under each repository. Our phone numbers and email addresses are listed here and we are happy to help however we can. Thanks for tuning in today and thank you for your time.

Slide 76 (Uses for These Resources)

>>*Brown*: Thank you Brian and Alissa for your excellent presentations. How can NIH RePORTER and its tools and the Coriell Institute and its resources be useful? Here are just a few ideas. RePORTER can be used to identify similar or complementary models that may replace a current animal model. RePORTER can also assist in identifying refinements that minimize pain and distress. RePORTER may help investigators in finding collaborators and IACUCs in finding subject matter experts.

The Coriell Institute repositories offer investigators alternatives to the use of live animals, which may also reduce the cost of conducting their experiments.

Slide 77 (Questions)

We do have some time for some questions. We'll start with questions that we have on hand, and then move to those received during the webinar. Please submit your questions through the GoToWebinar question box on your screen. We will accept questions for up to two weeks and amend them to the transcript of the recorded webinar. So as you think of questions, go ahead and submit them now or at a later time.

Slide 78 (Question 1)

First question: Does OLAW expect investigators to use NIH RePORTER and the Coriell's resources exclusively?

Slide 79 (Answer 1)

No. While NIH produces RePORTER and supports many of the Coriell's repositories, use of these resources is optional. As we learned from Brian and Alissa, these resources offer valuable information that may be useful in identifying collaborations, finding subject matter expertise, and obtaining samples as an alternative to the use of live animals. RePORTER and Coriell are examples of the types of resources that may be used to implement the 3Rs. There are many other ways to find this type of information, including literature searches, as we highlighted in the OLAW [June 2014 webinar](#).

Slide 80 (Question 2)

Question 2: Would searching NIH RePORTER or Federal RePORTER qualify as an alternative search to meet Animal Welfare Act Regulation requirements?

Slide 81 (Answer 2)

Maybe. NIH and Federal RePORTER provide valuable information about research models

and NIH RePORTER includes publications resulting from NIH funded research. Their usefulness in finding alternatives to painful or distressful procedures has not been evaluated. It's an interesting idea that may be best explored with the help of your institution's librarian. Ultimately, it is the effectiveness of the search itself that matters.

Slide 82 (Question 3)

Question 3. This is a question for Brian. What other features do RePORT and RePORTER offer that might be of interest to investigators?

Slide 83 (Answer 3)

>>*Haugen*: There's three examples that I would like to point out to you. NIH [Awards by Location and Organization](#) tool, which can simplify the process of finding NIH-supported projects in particular states, at particular organizations, or particular types of institutions, like schools of veterinary medicine. We also have the NIH [Data Book](#), which summarizes the most frequent questions that we get about trends in research funding and success rates. Finally, we have the NIH [Funding Facts](#) site, which offers quick access to statistics from the NIH Data Book and a variety of other annual reports produced by NIH Office of Extramural Research.

Slide 84 (Question 4)

>>*Brown*: Question 4. Must an investigator have an NIH grant to procure samples from Coriell? So, this one is for Alissa.

Slide 85 (Answer 4)

>>*Resch*: No, our biorepository samples are available for purchase regardless of the funding arrangements that the Principal Investigators have. While procurement requirements vary across collections, all investigators must at minimum complete a Material Transfer Agreement form and a Statement of Research Intent. And these documents just ensure that the research intent aligns with the goals of the repository, but these are actually reviewed by repository staff before the samples are shipped out.

Slide 86 (Question 5)

>>*Brown*: Thank you. Must IACUCs review requests when investigators obtain items from Coriell?

Slide 87 (Answer 5)

No. IACUC review is not required when animal tissue or other materials are obtained from repositories like Coriell. However, some institutions may have animal biosecurity policies that require review of biological products to be administered to animals or that are classified as biohazards. And that would be made at the local institutional level.

Slide 88 (OLAW Online Seminar)

We are now going to accept questions that have come in during the webinar. We do have a few. The first question is [Question 6]: How do IACUCs resolve the conflict between

reduction and refinement? For example, 15 painful or distressful measurements on three animals versus three measurements on 15 animals, both will give 45 data points.

Well, I'm going to refer the questioner to the *Guide* and the *Guide* on page 5 goes into some detail about this idea. Refinement and reduction goals should be balanced on a case-by-case basis. Investigators are discouraged from advocating animal reuse as a reduction strategy, and the rationale for reusing an animal or animals that have already [undergone] experimental procedures, especially if the well-being of the animals should be compromised, should be seriously considered. I think this really is a case-by-case determination by the IACUC based on the invasiveness of the procedures and the outcome that it may have on the animals, if those procedures are repeated.

Now we have a question for Brian [Question 7]: Will the RePORTER utility be replacing the search of scientific literature on PubMed Central? Will it draw from the same database of literature? And if PubMed Central will continue to exist, please clarify how its literature database differs from RePORTER.

>>*Haugen*: Thank you for that question. PubMed Central will continue to exist and grow. RePORTER only searches the text of NIH-supported publications and gets that publication data from PubMed. Searching PubMed or PubMed Central will generally result in a lot more results; while results in RePORTER will have a direct connection to NIH funding. An example of how this might be helpful is if you want to find collaborators that are already supported by the NIH and they have published on a certain topic that might not have been mentioned in their NIH grant abstract.

>>*Brown*: Okay. We have another question for Brian [Question 8]: Are other NIH search tools, such as QVR and SPIRES available to other federal agency scientists? QVR provides more in-depth data not available through RePORTER.

>>*Haugen*: Yes. Well, RePORTER makes use of the SPIRES database in order to connect publications to the NIH projects. But the SPIRES application itself is not available outside of the NIH firewall. The QVR tool does provide more in-depth data, but much of that data is proprietary, so you would have to have a particular job role in order to gain access to that database. You can [send us an email](#) and we can put you in contact with the people that might be able to help you with that.

>>*Brown*: Well, we have no more questions coming in, but we've received a number of kudos for both Brian and Alissa complimenting on what a wonderful resources these are and how wowed people are from learning about them.

So at this point, we have no more questions. So we're going to go ahead and come to the end of our time together. If we didn't get your question or if you come up with a question at a later time, we will be compiling questions and adding them to the transcript. We'll ask our speakers to answer those questions. If you think, as I said, of more questions in

the next two weeks, please send them to OLAW. We will include them in the transcript, as I said. You're also welcome to call or write us with any questions at any time. The two week deadline is only for inclusion in the transcript.

Our next OLAW seminar will be a question and answer session with the OLAW senior staff, including personnel from the Divisions of Compliance Oversight, Assurances, and Policy and Education. We will need time to prepare the webinar, so please send your questions as soon as possible, no later than November 13th. We look forward to hearing from you about the issues you are interested in. So send questions to us at OLAWDPE@mail.nih.gov.

Thanks for your participation today and we look forward to meeting with you again on December 3, 2015.

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