

# Curriculum for Guidance in Managing Academic Biomedical Core Facilities

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**University of Kentucky**

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# Curriculum for Guidance in Managing Academic Biomedical Core Facilities

## Curriculum


- Session recordings
- Slides

Available at:

<https://xleratornetwork.com/library/>

## Direct Communications

- [alan.daugherty@uky.edu](mailto:alan.daugherty@uky.edu)
- Zoom



NIGMS S1TR Award 3U12GM148083-01S1

## CORE FACILITIES SHORT COURSE

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### SESSION 2:

**GUIDANCE IN MANAGING BIOMEDICAL CORE FACILITIES: OPERATIONS**

**DATE: Monday, March 13, 2023**  
**TIME: 2:00 pm - 3:30 pm Eastern Time**

**Summary**  
Many operational aspects of service cores need to be considered for developing effective facilities. This includes staffing appropriately qualified people with a customer service mentality. Also, the equipment in the core needs to be matched to the users' needs and maintained in a highly functional state. The efficiency of the staff and equipment also needs to be optimized to facilitate access that can be managed by several software options. This session will discuss these aspects of core operations.

[VIEW RECORDING](#)

[VIEW SLIDES](#)

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### SESSION 3:

**GUIDANCE IN MANAGING BIOMEDICAL CORE FACILITIES: ENHANCE DATA MANAGEMENT AND SERVICE CORE USE**

**DATE: Monday, April 10, 2023**  
**TIME: 2:00 pm - 3:30 pm Eastern Time**

**Summary**  
Institutional service cores should be managed in a mode that provides data that will be highly regarded with respect to rigor and reproducibility. This includes the management of information, data quality, and availability. To sustain service cores, they must maintain and enhance their user base. This session will explore strategies for both of these elements.

[REGISTER](#)

# Curriculum for Guidance in Managing Academic Biomedical Core Facilities

**Presentation is designed to promote discussion on the diverse topics of managing cores**

**Please ask questions at the end of each topic!**

- Raise hand icon (preferred)
- Chat function

Discussion moderated by Dr. Chris Richards  
Director, Light Microscopy Core, University of Kentucky

# Curriculum for Guidance in Managing Academic Biomedical Core Facilities - Overview

Session	Element #	Topic
Operations	1	Plan for staffing and equipment
	2	Optimize staff and equipment usage and availability
Enhance data management and service core use	3	Manage information, data quality, and availability
	4	Enhance the user base
Financial management	5	Develop rate structures
	6	Fiscal management
Value assessment and contributions to the academic mission	7	Determine the value of service cores to the academic mission of the institute
	8	Institutional oversight

# Data Management and Enhancing Service Core Use

Session	Element #	Topic
Enhance data management and service core use	3	Manage information, data quality, and availability
	4	Enhance the user base

## **Element 3**

**Manage information, data quality, and availability**

### 3. Manage Information, Data Quality and Availability

An institutional core service should be managed in a mode that provides data that will be highly regarded with respect to rigor and reproducibility

- Develop SOPs and perform practices consistent with Good Research Practice
- Verify instrumentation
- Document reagents
- Data extraction, storage, and authenticity

### 3. Manage Information, Data Quality and Availability

## Develop SOPs and perform practices consistent with Good Research Practice

- Need to be accessible
- Integrated into training

**UK Research** **Rodent Behavior Core**  
TRANSFORMING TOMORROW By Powering Research Solutions

Home About Us Behavioral Tests Offered Equipment Fee Structure Schedule FAQs

**Goals**

- Conduct reliable and validated mouse behavior tests for investigators at University of Kentucky.
- Ensure that qualified and trained investigators have access to state-of-the-art instrumentation and expertise necessary to perform behavior tests.
- Provide assistance in the design, implementation and analysis of behavioral experiments in mice.

For more information, please see below or our About Us page.

+ Tests Offered

+ Hours & Scheduling

+ Pricing

**QUICK LINKS**

- » Reserve Equipment/Services
- » Behavioral Tests Offered
- » Rates
- » Staff
- » Reservations
- » Standard Operating Procedures
- » Good Research Practice (GRP)
- » Facility Description
- » IACUC Request for RBC Services

**ANNOUNCEMENTS**

- » Recent RBC Publications  
Publications utilizing RBC services.

All Announcements

Watch on YouTube



### 3. Manage Information, Data Quality and Availability

## Develop SOPs and perform practices consistent with Good Research Practice

- Need to be accessible
- Integrated into training

The screenshot shows a SharePoint interface for the 'Rodent Behavior Core' library. The left sidebar contains navigation links: Home, Conversations, Documents (selected), Shared with us, Notebook, Pages, Site contents, Recycle bin, and Edit. The main content area displays a list of documents under the 'Good Research Practices' tab. The list has columns for Name, Modified, and Modified By. The documents listed are: Deviation Reporting (modified May 31, 2022), Equipment (modified April 20, 2020), Forms (modified April 20, 2020), Personnel Training Files (modified April 20, 2020), Quality Management SOPs (modified April 20, 2020), and Website (modified April 20, 2020). All documents are modified by 'Kline, Robert'.

Name	Modified	Modified By
Deviation Reporting	May 31, 2022	Kline, Robert
Equipment	April 20, 2020	Kline, Robert
Forms	April 20, 2020	Kline, Robert
Personnel Training Files	April 20, 2020	Kline, Robert
Quality Management SOPs	April 20, 2020	Kline, Robert
Website	April 20, 2020	Kline, Robert

## 3. Manage Information, Data Quality and Availability

### Develop SOPs and perform practices consistent with Good Research Practice

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NIH Encourages the Use of the ARRIVE Essential 10 Checklist in all Publications Reporting on the Results of Vertebrate Animal and Cephalopod Research

Notice Number:

NOT-OD-23-057

#### Key Dates

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Release Date:

February 10, 2023

<https://grants.nih.gov/grants/guide/notice-files/NOT-OD-23-057.html>

### 3. Manage Information, Data Quality and Availability

## Develop SOPs and perform practices consistent with Good Research Practice

989 Save	1,732 Citation
56,823 View	113 Share

PLOS BIOLOGY

PERSPECTIVE

#### The ARRIVE guidelines 2.0: Updated guidelines for reporting animal research

Nathalie Percie du Sert<sup>1\*</sup>, Viki Hurst<sup>1</sup>, Amrita Ahluwalia<sup>2,3</sup>, Sabina Alam<sup>4</sup>, Marc T. Avey<sup>5</sup>, Monya Baker<sup>6</sup>, William J. Browne<sup>7</sup>, Alejandra Clark<sup>8</sup>, Innes C. Cuthill<sup>9</sup>, Ulrich Dirnagl<sup>10</sup>, Michael Emerson<sup>11</sup>, Paul Garner<sup>12</sup>, Stephen T. Hoigate<sup>13</sup>, David W. Howells<sup>14</sup>, Natasha A. Karp<sup>15</sup>, Stanley E. Lazic<sup>16</sup>, Katie Lidster<sup>1</sup>, Catriona J. MacCallum<sup>17</sup>, Malcolm Macleod<sup>18</sup>, Esther J. Pearl<sup>1</sup>, Ole H. Petersen<sup>19</sup>, Frances Rawle<sup>20</sup>, Penny Reynolds<sup>21</sup>, Kieron Rooney<sup>22</sup>, Emily S. Sena<sup>18</sup>, Shai D. Silberberg<sup>23</sup>, Thomas Steckler<sup>24</sup>, Hanno Würbel<sup>25</sup>

**1** NC3Rs, London, United Kingdom, **2** The William Harvey Research Institute, London, United Kingdom, **3** Barts Cardiovascular CTU, Queen Mary University of London, London, United Kingdom, **4** Taylor & Francis Group, London, United Kingdom, **5** Health Science Practice, ICF, Durham, North Carolina, United States of America, **6** Nature, San Francisco, California, United States of America, **7** School of Education, University of Bristol, Bristol, United Kingdom, **8** PLOS ONE, Cambridge, United Kingdom, **9** School of Biological Sciences, University of Bristol, Bristol, United Kingdom, **10** QUEST Center for Transforming Biomedical Research, Berlin Institute of Health & Department of Experimental Neurology, Charité Universitätsmedizin Berlin, Berlin, Germany, **11** National Heart and Lung Institute, Imperial College London, London, United Kingdom, **12** Centre for Evidence Synthesis in Global Health, Clinical Sciences Department, Liverpool School of Tropical Medicine, Liverpool, United Kingdom, **13** Clinical and Experimental Sciences, University of Southampton, Southampton, United Kingdom, **14** Tasmanian School of Medicine, University of Tasmania, Hobart, Australia, **15** Data Sciences & Quantitative Biology, Discovery Sciences, R&D, AstraZeneca, Cambridge, United Kingdom, **16** Priors.ai Inc, Ottawa, Canada, **17** Hindawi Ltd, London, United Kingdom, **18** Centre for Clinical Brain Sciences, University of Edinburgh, Edinburgh, United Kingdom, **19** Academia Europaea Knowledge Hub, Cardiff University, Cardiff, United Kingdom, **20** Medical Research Council, London, United Kingdom, **21** Statistics in Anesthesiology Research (STAR) Core, Department of Anesthesiology, College of Medicine, University of Florida, Gainesville, Florida, United States of America, **22** Discipline of Exercise and Sport Science, Faculty of Medicine and Health, University of Sydney, Sydney, Australia, **23** National Institute of Neurological Disorders and Stroke, Bethesda, Maryland, United States of America, **24** Janssen Pharmaceutica NV, Beerse, Belgium, **25** Veterinary Public Health Institute, Vetsuisse Faculty, University of Bern, Bern, Switzerland

\* [nathalie.perciedusert@nc3rs.org.uk](mailto:nathalie.perciedusert@nc3rs.org.uk)



#### OPEN ACCESS

**Citation:** Percie du Sert N, Hurst V, Ahluwalia A, Alam S, Avey MT, Baker M, et al. (2020) The ARRIVE guidelines 2.0: Updated guidelines for reporting animal research. *PLoS Biol* 18(7): e3000410. <https://doi.org/10.1371/journal.pbio.3000410>

**Academic Editor:** Isabelle Boutron, University Paris Descartes, FRANCE

**Published:** July 14, 2020

<https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.3000411>

## 3. Manage Information, Data Quality and Availability

### Develop SOPs and perform practices consistent with Good Research Practice

The screenshot displays the ARRIVE guidelines website. The top navigation bar includes links for 'About', 'ARRIVE guidelines', 'Supporters', 'Resources', 'Translations', 'Publications', and 'News'. A left-hand menu lists the following items: 'ARRIVE guidelines', 'Essential 10', '1. Study Design', '2. Sample size', '3. Inclusion and exclusion criteria', '4. Randomisation', '5. Blinding/Masking', '6. Outcome measures', '7. Statistical methods', '8. Experimental animals', '9. Experimental procedures', and '10. Results'. The main content area is titled 'The ARRIVE guidelines 2.0' and contains the following text: 'This section of the website provides detailed explanations about each item of the guidelines. Use the left-hand side menu to navigate to each item. The guidelines in their entirety can also be downloaded as a PDF, in [English](#) or a variety of [translations](#).' Below this, it states: 'To facilitate a step-wise approach to improving reporting, the guidelines are organised into two prioritised sets:'. Two highlighted boxes are present: 'ARRIVE Essential 10' with the text 'These ten items are the basic minimum that must be included in any manuscript describing animal research. Without this information readers and reviewers cannot assess the reliability of the findings.', and 'Recommended Set' with the text 'These items complement the Essential 10 set and add important context to the study described. Reporting the items in both sets represents best practice'.

<https://arriveguidelines.org/arrive-guidelines>

### 3. Manage Information, Data Quality and Availability

#### Develop SOPs and perform practices consistent with Good Research Practice

1. Study design
2. Sample sizes
3. Inclusion and exclusion criteria
4. Randomization
5. Blinding
6. Outcome measures
7. Statistical methods
8. Experimental animals
9. Experimental procedures
10. Results

Requires a consultation service component to the Core

### 3. Manage Information, Data Quality and Availability

#### Service Cores can be a Nidus for Promoting Rigor and Reproducibility Through Good Research Practice



Kos-Braun, Gerlach, Pitzer. *Elife*. 2020; 9: e62212



### 3. Manage Information, Data Quality and Availability

#### Verify instrumentation performance Routine Equipment

- Maintenance should be at some consistent interval
- Documenting maintenance



Pipette  
Calibration



Weigh  
Scale  
Calibration

### 3. Manage Information, Data Quality and Availability

## Verify instrumentation performance Specialized Equipment

The screenshot displays a SharePoint interface for the 'Rodent Behavior Core' (RB) private group. The left sidebar shows navigation options: Home, Conversations, Documents (selected), Shared with us, Notebook, Pages, Site contents, Recycle bin, and Edit. The main content area shows the 'Equipment SOPs' folder under 'Good Research Practices' > 'Equipment'. A table lists various equipment manuals and their maintenance procedures, all modified on May 31, 2022, by Kline, Robert.

Name	Modified	Modified By
User Manuals	July 14, 2020	Kline, Robert
Word Files	July 13, 2020	Kline, Robert
EQP-300-02-LUMAC.pdf	May 31, 2022	Kline, Robert
EQP-301-1 Operation Maintenance and use of ThermPro Digital Thermometer Humidity Meter.pdf	May 31, 2022	Kline, Robert
EQP-302-1 Operation Maintenance and use of Lux Meter.pdf	May 31, 2022	Kline, Robert
EQP-303-1 Operation Maintenance and use of Laser Thermometer.pdf	May 31, 2022	Kline, Robert
EQP-304-1 Operation Maintenance and use of Heating Pad.pdf	May 31, 2022	Kline, Robert
EQP-306-01 Maintenance and Use of Basler Gig E Camera.pdf	May 31, 2022	Kline, Robert
EQP-307-01 Maintenance and Use of Ikegami Camera.pdf	May 31, 2022	Kline, Robert
EQP-308-01 Maintenance and Use of Polestar 2 Camera.pdf	May 31, 2022	Kline, Robert
EQP-308-01 Operation Maintenance and Use of Polestar 2 Camera.pdf	May 31, 2022	Kline, Robert
EQP-309-01 Maintenance and Use of Grip Strength Meter.pdf	May 31, 2022	Kline, Robert
EQP-310-01 Maintenance and Use of Gemini Avoidance System.pdf	May 31, 2022	Kline, Robert



### 3. Manage Information, Data Quality and Availability

#### Document reagents

Journals are increasingly requiring full documentation of reagents that includes both catalog numbers and batch lot numbers

#### Examples of Core reagents in which it is preferable to provide users with reagent documentation

Animal

Food

Bedding

Pathology

Antibodies

Flow cytometry

Antibodies

Analytical

ELISA kits

## 3. Manage Information, Data Quality and Availability

### Data extraction, storage, and authenticity

#### Major points

- All primary data generated in core needs a transfer mode to faculty members preferred storage system
- Emphasizing that it is the responsibility of the faculty member to store primary data – not the service core
- Have an SOP that states the responsibility of data storage
- Emphasized at time of training

# 3. Manage Information, Data Quality and Availability

## Data extraction, storage, and authenticity



### RODENT BEHAVIOR CORE STANDARD OPERATING PROCEDURES

SOP Number-version: QMP-704-01	
SOP Title: DATA Storage on Rodent Behavior Core Computers	
Author: Robert H Kline IV	Date:13-Nov-19
Management: Robert H Kline IV	Date:13-Nov-19
Robert H Kline IV <small>Digitally signed by Robert H Kline IV Date: 2020.09.16 10:21:11 -04'00'</small>	Effective Date:13-Nov-19

**SOP Number-version: QMP-704-01**  
**SOP Title: DATA Storage on Rodent Behavior Core Computers**

#### 1.0 Purpose / Scope:

- 1.1 The purpose of this SOP is to describe the procedures for data storage on Rodent Behavior Core (RBC) computers.
- 1.2 The Scope of this procedure covers all studies conducted within the RBC.

#### 2.0 Definitions: (if applicable)

- 2.1 "Study data": spreadsheets, Ethovision XT tracking files (including media files) are indicated as "study data" and are referred to as such within this SOP
- 2.2 "Third Party": An independent and trained user of the RBC facilities.

#### 3.0 Specialized Materials & Equipment:

- 3.1 If none, "There are no specialized materials and equipment associated with this SOP."

#### 4.0 Procedures:

- 4.1 All original third-party study-associated files shall be removed from RBC computers within 30 days of study completion.
- 4.2 All study-associated files run by RBC staff shall be archived for a period of one year using "Lab Archives".

### 4.0 Procedures:

**4.1** All original third-party study-associated files shall be removed from RBC computers within 30 days of study completion.

**4.2** All study-associated files run by RBC staff shall be archived for a period of one year using "Lab Archives".

#### 5.0 Attachments:

- 5.1 "There are no attachments associated with this SOP."

#### 6.0 Record Retention:

- 6.1 "There are no records associated with these procedures"

We would like your thoughts on the below topics:

- How do you handle users that simply refuse to remove data from the instrument computer?
- Do you ever just delete?

## Questions

## **Element 4**

### **Enhance the User Base**

## 4. Enhance the User Base

A communication plan increases institutional awareness of services provided by core facilities

- Increase institutional awareness of services provided by core facilities
- Advertise to external users

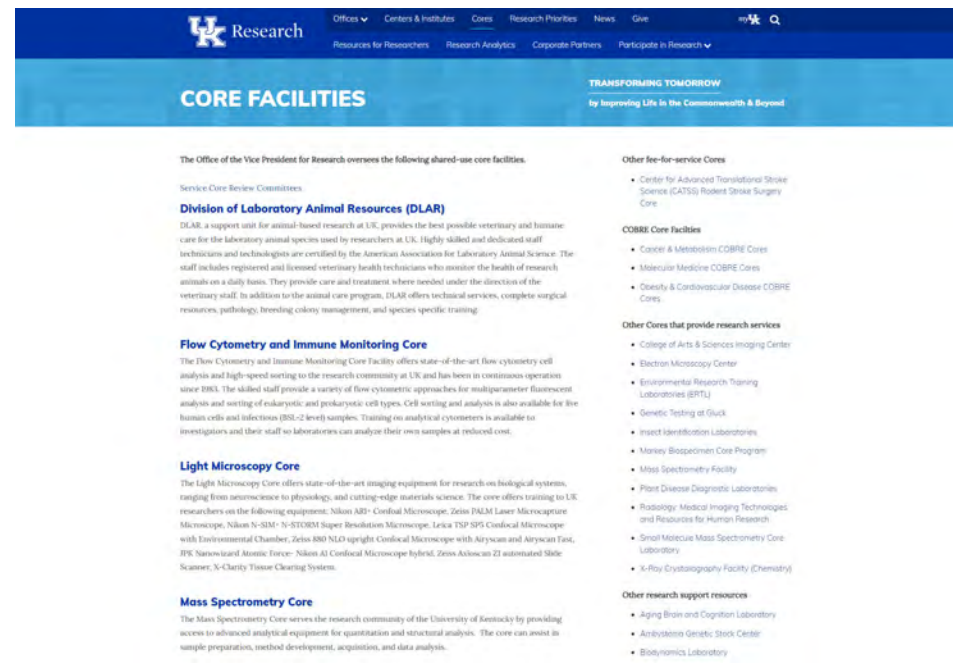
## 4. Enhance the User Base

### **Increase institutional awareness of core facilities Reputation**

Probably the most effective mode of enhancing the user base is to develop a stellar reputation for being a core of helpful and expert staff using highly functional advanced technology that provide support to facilitate research productivity.

## 4. Enhance the User Base

### Increase institutional awareness of core facilities Web Sites



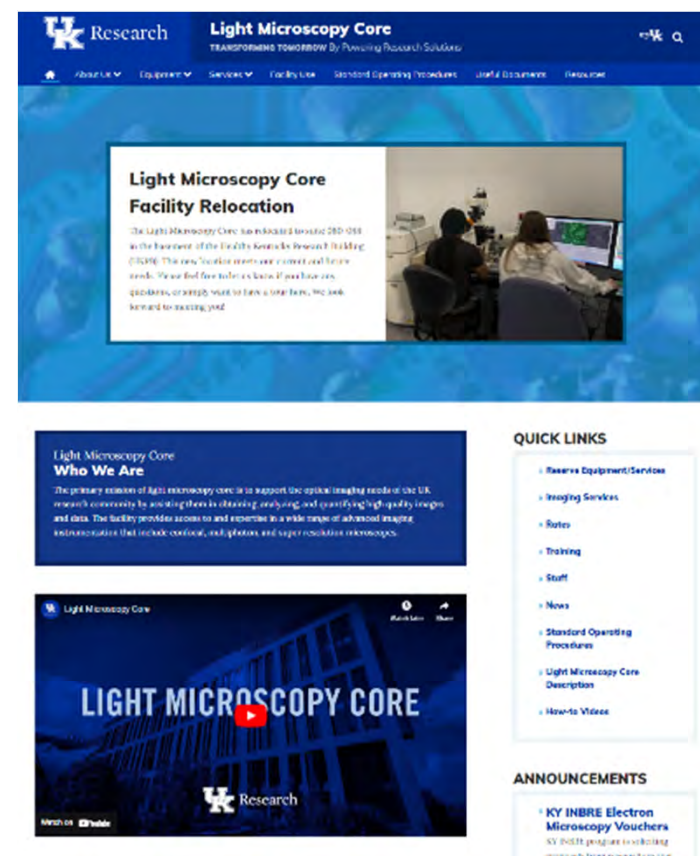


## 4. Enhance the User Base

### Increase institutional awareness of core facilities Web Sites

#### Contents

- Standardized format
- Reference source for all information
- Booking portal



## 4. Enhance the User Base

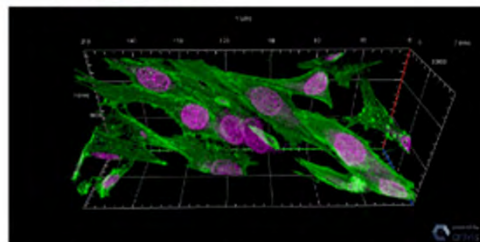
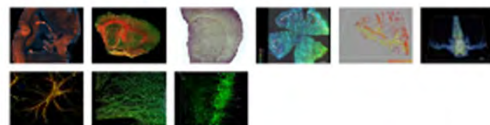
### Increase institutional awareness of core facilities Web Sites

- Enhanced content



#### Photo Gallery

Click through these images to see our equipment in action.



Cells grown on 3D scaffold, imaged with the Zeiss 880. Courtesy of O. Ivankov-Karandj.



## 4. Enhance the User Base

### Increase institutional awareness of core facilities Newsletters



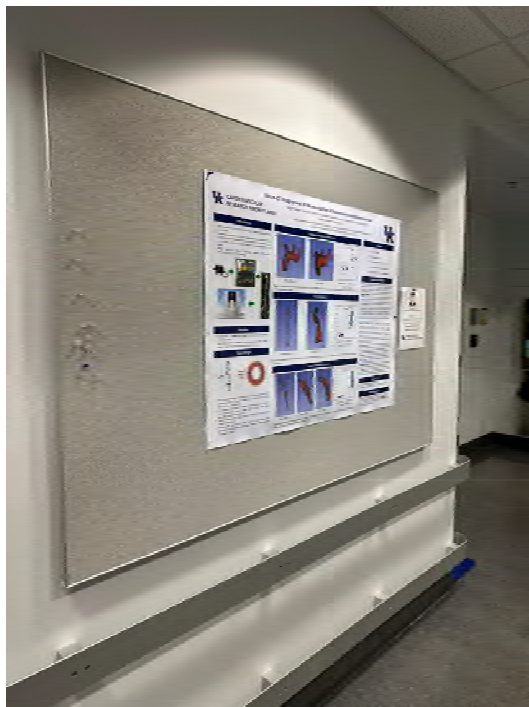
#### CORE FACILITIES

UK Flow Cytometry and Immune Monitoring Core Facility (FCIM) has added the IsoSpark Instrument to its list of cutting-edge equipment for immune profiling. IsoSpark, designed by Isolexes, is a fully automated chip-based technology to perform functional immune profiling at the single-cell level. Simply load cells onto the chip and detect secreted and intracellular proteins or protein phosphorylation at a single-cell level without further cell manipulations.

[Learn more](#) →

## 4. Enhance the User Base

**Increase institutional awareness of core facilities**  
**Corridor screens and posters**



## 4. Enhance the User Base

**Increase institutional awareness of core facilities**  
**Others**

- Seminars
- Social media
- Participate in course teaching
- Departmental visits
- Facility tours
- Link to startup packages

## 4. Enhance the User Base

### Increase institutional awareness of core facilities

#### Bottom line

- It is challenging to have campus-wide awareness of the full extent of core services and equipment
- Unclear that there is a single mode of increasing awareness
- All modes of advertising take time and effort

## 4. Enhance the User Base

### Advertise to external users

- Networking of the core personnel is likely a major driving force external users
- Random web searches

We would like your thoughts on the below topics:

- What has been effective in your own institute?
- Has social media been effective?
- Do you engage in other activities?

## Questions



# Curriculum for Guidance in Managing Academic Biomedical Core Facilities – Schedule for 2023

Session	Date	Time (EST)
Operations	March 13	2-3:30 pm
Data management and enhancing service core use	April 10	2-3:30 pm
Financial management	May 15	2-3:30 pm
Value assessment and contributions to the academic mission	June 12	2-3:30 pm

# Curriculum for Guidance in Managing Academic Biomedical Core Facilities - Overview

Session	Element #	Topic
Operations	1	Plan for staffing and equipment
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Financial management	5	Develop rate structures
	6	Fiscal management
Value assessment and contributions to the academic mission	7	Determine the value of service cores to the academic mission of the institute
	8	Institutional oversight

# Feedback

**Alan Daugherty**  
**alan.daugherty@uky.edu**

**Session recording and slides will be available at:**  
**<https://xleratornetwork.com/library/>**