

# NIH S10 Shared Equipment Grants:

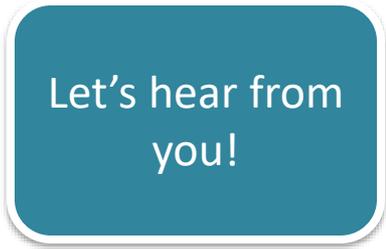
Getting Started & Lessons Learned

Susannah Imhoff, Amy Martinez, Jenny Schafer  
& special guests!

*Originally presented at Vanderbilt Core Exchange*

# Program Overview

When you see this icon...



Let's hear from  
you!



# S10 Instrumentation Programs

- Support purchases of **state-of-the-art commercially available instruments** to enhance research of NIH-funded investigators.
- Instruments that are awarded are typically too **expensive** to be obtained by an individual investigator with a research project grant.
- Every instrument awarded by an S10 grant is used on a **shared basis**, which makes the programs cost-efficient and beneficial to thousands of investigators in hundreds of institutions nationwide.
- At least **3 of the Major Users** must be a PI of an active NIH research grant, with these three major users requiring at least 35% of the instrument time. As long as this requirement is satisfied, additional major users do not need to have NIH funding (although see next point)
- **75% of use must be dedicated to NIH-funded projects.**
- Grants typically active for 5 years (purchase + follow-up)

# NIH S10 Announcements

## Shared Instrumentation Grant (SIG):

- \$50,000 - \$600,000 (direct costs)

## High-End Instrumentation Grant (HEI):

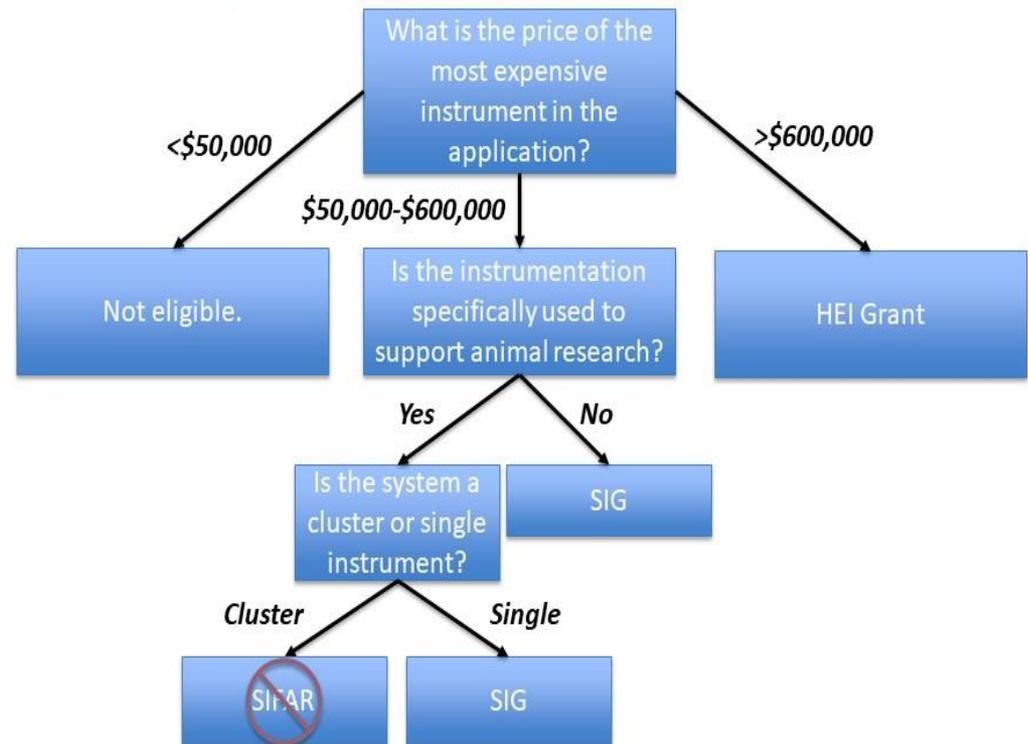
- \$600,001 - \$2,000,000

The SIFAR program is not running in 2022.

VU & VUMC do not qualify for the new "BIG" program.

## Which grant is right for me?

- *Consider both price and purpose of instrumentation*



# Choosing your equipment

## ★ Purchase or upgrade of a single item or integrated system

- Must be commercially available
- Must be for research only
- Foreign-made equipment is eligible

## ★ Read RFA carefully about software – may or may not be allowed

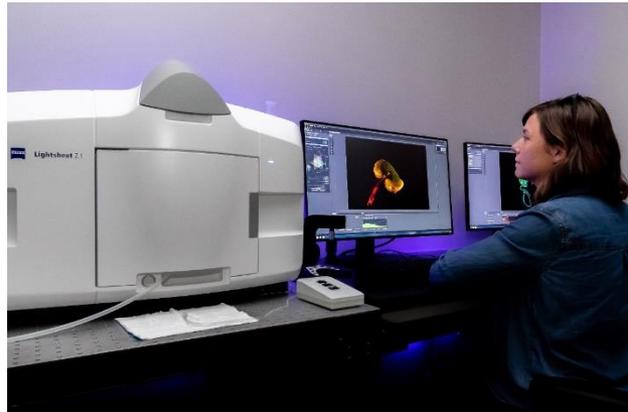
Have you  
included  
software?

### How OOR & OVPR can help:

- Applications for similar equipment is highly discouraged
  - VU and VUMC review internal applications to prevent duplication.
  - **Highly recommend connecting with us** before you start an application!
- Special Use Instrument (High-end Instrument program only)
  - Instruments that cannot be fully utilized for biomedical research may supplement use with non-biomedical research, curricular instruction, and clinical care
  - Institutional cost-sharing required! Contact OOR/OVPR before planning to apply.

# Examples of allowable equipment

- X-ray diffractometers, mass and nuclear magnetic resonance (NMR) spectrometers, DNA and protein sequencers, biosensors, electron and light microscopes, cell sorters, and biomedical imagers – *Find more on NIH Reporter!*
- *Tip: Very important to emphasize research (non-clinical) use*



## ***Advanced Microscopy***

**Project:** “A lightsheet imaging system for the Cell Imaging Shared Resource”

**PI:** Jenny Schafer

**Core Partner:** CISR



## ***Biospecimen Management***

**Project:** “Modular automated -80C sample storage system”

**PI:** Jim Goldenring

**Core Partner:** VANTAGE



## ***Human Research Imaging***

**Project:** “Replacement and upgrade of a 3T MRI scanner for research”

**PI:** John Gore

**Core Partner:** VUIIS Center for Human Imaging

# Not funded by the S10 program:

- Instrument with base cost of less than \$50K for SIG/ less than \$600K for HEI
- Multiple instruments bundled together, or a series of complementary related instruments
- **Software, unless it is integral to operation of a piece of equipment and/or necessary for the generation of high-quality output data from the instrument**
- Instruments used for clinical (billable) care or instruction
- General purpose equipment
- Proposals to advance design of existing technology or to develop new instrumentation

# More on software...

- From the [NIH FAQs](#):

▼ What software requests are allowable?

Only software that is necessary to control and monitor the operation of the instrument, generate high-quality output data and enable their visualization is allowable under the S10 mechanism. Examples of allowable software include modules to enable special imaging modalities of an optical microscope or pulse sequences for MRI/MRS. In general, software enabling a specific functional configuration of an instrument must be justified by the needs of research projects.

▼ What are examples of non-allowable software?

Examples of software items not supported by the S10 program include: (i) separate software items for post-processing of the data; (ii) software supporting data storage and database management; (iii) time- and user-limited software licenses; (iv) duplicate software. In addition, separate workstations and software to operate them are not allowable.

- From the RFA:

Justify the need for software. All software supported by this program must be integrated in the operation of the instrument or be necessary for the generation of high-quality data from the instrument. Depending on the needs of research projects, different configurations of such software may be needed to ensure productive scientific use of the instrument. If such additional software modules are requested (e.g., software configuration for the acquisition of metabolomics data, microscope image acquisition, and control modules), they must be essential for the advancement of research projects of least three Major Users. As noted previously, stand-alone workstations, duplicate software items, and software licenses are not allowed.

# Getting started: the “big questions”

## What?

- Equipment should be unique and well-justified
  - What NIH-funded research is not currently possible at VU/MC?
    - E.g. Major users are currently sending samples to external institution
  - Is there significant need? (75% of usage must support NIH research!)
  - Is there anything similar on campus?

## Who?

- Choose PI & Major Users thoughtfully
  - Core Scientific Director or Managing Director often serves as PI
  - Multiple PIs not allowed, but 3 Major Users with active NIH research awards must be included (We'll dig into AUT!)

## Where?

- Plan to partner with a Shared Resource
  - Incorporation of an instrument into a core/shared resource is highly encouraged by NIH
  - Partnering with a core is required for consideration of VU/VUMC matching funds.
  - Establish relationships toward future applications

How did YOU  
choose PI,  
major users &  
equipment?

# Key Program Changes

You are strongly encouraged to carefully read the appropriate RFA(s)!

- **The SIFAR program is not running (again) in 2022**

- This means that there is no RFA that supports the purchase of a cluster of instruments

- **NIGMS is co-funding a subset of applications**

- Will your instrumentation support NIGMS-aligned research? Make it known!
- NIGMS is interested in co-funding S10s that include research projects [aligned with the mission of NIGMS](#). NIGMS-supported research may utilize specific cells or organ systems if they serve as models for understanding general systemic principles. NIGMS also supports research in specific clinical areas that affect multiple organ systems.

## **Current S10 PIs take note:**

- **NIH continues to “tighten up” on citations**

- Papers that acknowledge the S10 grant must now be confirmed in NIH Reporter.
- These citations affect our ability to get future grants!
- Only official acknowledgements + grants linked in myNCBI will show up in NIH Reporter

## Project Information

1S10OD021771-01

[Back to Query Form](#) [Back to Search Results](#) [Print Version](#)

PREVIOUS Project 3 of 8 NEXT

DESCRIPTION	DETAILS	RESULTS	HISTORY	SUBPROJECTS	SIMILAR PROJECTS	NEARBY PROJECTS BETA	LINKS	NEWS AND MORE
Project Number: 1S10OD021771-01		Title: REPLACEMENT AND UPGRADE OF A 3T MR SCANNER FOR RESEARCH		Contact PI / Project Leader: GORE, JOHN C		Awardee Organization: VANDERBILT UNIVERSITY MEDICAL CENTER		
<b>ABOUT RePORTER RESULTS</b> Publications: <a href="#">Publications missing?</a> <a href="#">Principal Investigators click here</a> Click on the column header to sort the results								
Page 1 of 2 <a href="#">Next</a> <a href="#">Last</a> <a href="#">Export</a>								
<a href="#">PubMed</a> <a href="#">PubMed Central</a> <a href="#">Google Scholar</a>								
Title (Link to full-text in PubMed Central)	Journal (Link to PubMed abstract)	Authors	Similar Publications	Cited By				
MRI-cytometry: Mapping nonparametric cell size distributions using diffusion MRI.	<a href="#">Magnetic resonance in medicine</a> , 2021 Feb; 85 (2): 748-761	Xu, Junzhong; Jiang, Xiaoyu; Devan, Sean P; Arlinghaus, Lori R; McKinley, Eliot T; Xie, Jingping; Zu, Zhongliang; Wang, Qing; Chakravarthy, A Bapsi; Wang, Yong; Gore, John C						
Multi-shot acquisitions for stimulus-evoked spinal cord BOLD fMRI.	<a href="#">Magnetic resonance in medicine</a> , 2021 Apr; 85 (4): 2016-2026	Barry, Robert L; Conrad, Benjamin N; Maki, Satoshi; Watchmaker, Jennifer M; McKeithan, Lydia J; Box, Bailey A; Weinberg, Quinn R; Smith, Seth A; Gore, John C						
MR cell size imaging with temporal diffusion spectroscopy.	<a href="#">Magnetic resonance imaging</a> , 2021 Apr; 77: 109-123	Jiang, Xiaoyu; Li, Hua; Devan, Sean P; Gore, John C; Xu, Junzhong						

**Preparing the internal pre-  
application & final submission**

# Preproposal & Institutional Preapproval

- Deadline: April 1
- RedCap Survey (VU & VUMC)
- Pre-application mostly requires documents that you'll use for the full proposal
  - Remaining work will be writing the full project.
  - Make it count! This will save you time later
- Start early
  - Will take more than 1 sitting; save & return in RedCap
  - VU: must secure matching commitments BEFORE submitting (See SOPs)
- Goals: Screen for overlap, confirm matching funds, give feedback

## Examples of Preproposal Inputs

- Instrument description
- Vendor's quote for instrument, accessories, maintenance...
- Core partner
- Renovations & data storage considerations
- Project abstract
- Major/minor users
- Financial and operational plan
- Request for institutional support



# Final Application

- If no overlap occurs and no down-selects are necessary, proposals should move forward to OOR & OVPR approval
- Final commitment letters to NIH are prepared for inclusion with the final proposal
  - Combined Statement of Support letter that was drafted at the preproposal stage and signed by the Core Director and either the relevant Center Director or Departmental Chair [VU]
  - Institutional Matching Support letter provided by the primary Dean [VU] or Office of Research [VUMC]
  - Table of Performance by OVPR (VU) & OOR (VUMC)
  - Letters about inventory of instruments that are unavailable to the PI
  - Biosafety letter (see next slide)
- PI will complete their proposal and submit through their home Department or Administrative Pod.

# Required Proposal Elements

***Overview only! Refer to RFA for specific requirements!***

- Project Summary/Abstract (30 lines of text)
- Project Narrative: 2-3 sentences
- Bibliography & References Cited
- Equipment description & quote
- Instrumentation plan
  - Introduction (for re-submissions)
  - Justification of Need – Why this instrument and software? Accessible User Time.
  - Technical Expertise of staff
  - Research Projects – How will this equipment benefit NIH supported research projects?
  - Summary tables – Summarize research projects and usage time
- Organizational/management plan
- Institutional commitment
- Overall benefit to NIH-funded research & institution

# Required Administrative Elements

- Letters of support
- Key personnel biosketches
- Annual Advisory Committee meetings and reports (5 years after award)
- Definition and justification of Accessible User Time (AUT)
- Inventory of other similar instruments, including justification/documentation for why these are not available to the PI and user group
- 5-year financial plan
- Institutional support for backup of the financial plan for 5 years from installation of the instrument or for its effective lifetime
- Plan about how the Users will be instructed and reminded about citing the S10 award in their publications and how their compliance will be verified  
*(Compliance with publication reporting rules now strictly enforced)*

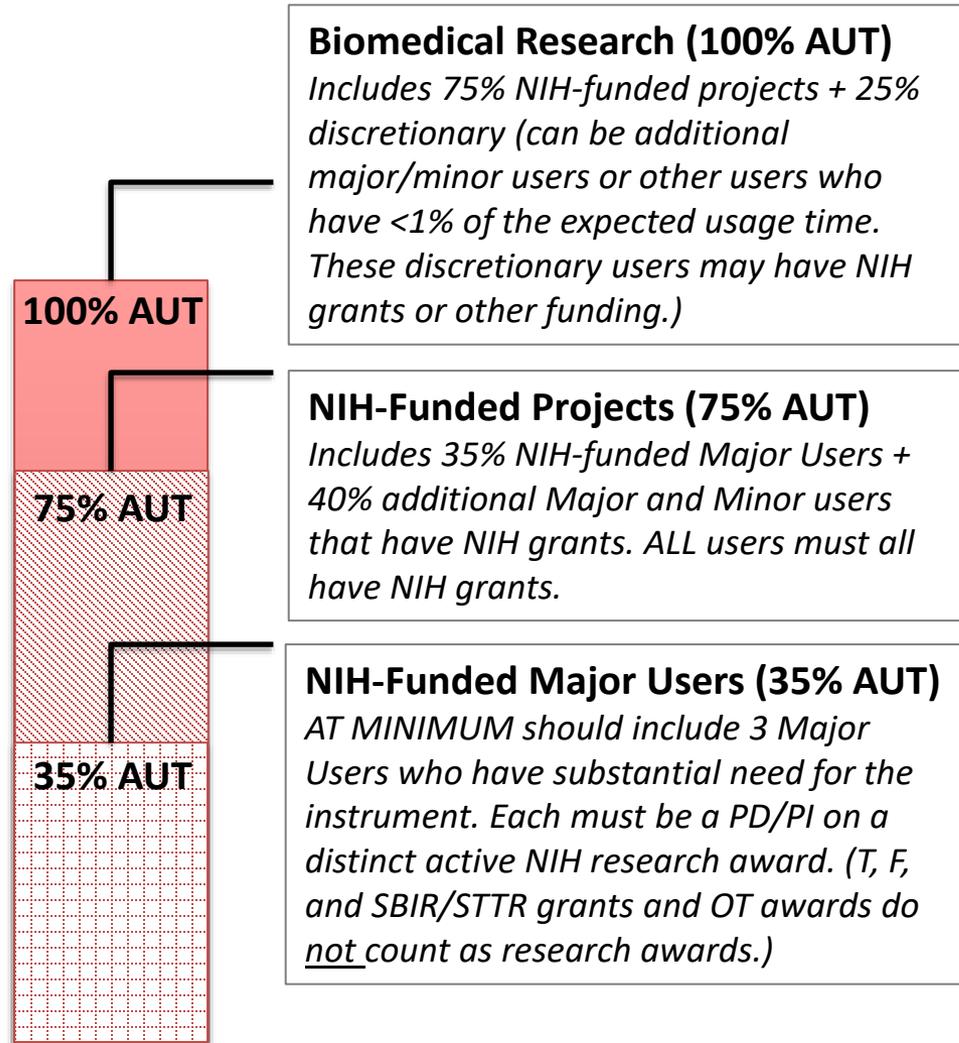
# S10 Concept: Accessible User Time

- AUT = **total number of annual hours the instrument can be used for any biomedical research purpose**
- Goal = Demonstrate need
- AUT is personal
  - “Make clear that the AUT corresponds to expected practical full-time use of the instrument at your institution.”
  - Type of technology
  - Individual managerial plan

*Can this be operated without oversight?  
What's the expected downtime?  
What other questions should I ask?*



# Breaking down the AUT



## **Biomedical Research (100% AUT)**

*Includes 75% NIH-funded projects + 25% discretionary (can be additional major/minor users or other users who have <1% of the expected usage time. These discretionary users may have NIH grants or other funding.)*

## **NIH-Funded Projects (75% AUT)**

*Includes 35% NIH-funded Major Users + 40% additional Major and Minor users that have NIH grants. ALL users must all have NIH grants.*

## **NIH-Funded Major Users (35% AUT)**

*AT MINIMUM should include 3 Major Users who have substantial need for the instrument. Each must be a PD/PI on a distinct active NIH research award. (T, F, and SBIR/STTR grants and OT awards do not count as research awards.)*

# Requesting an Institutional Biosafety Letter of Support (VU & VUMC PIs)

To request an Institutional Biosafety Letter of Support for an S10 grant, please submit the following items at least **3 weeks before the proposal deadline**:

1. Sections of the grant proposal that provide the following details:
  - a. a detailed description of the equipment including technical and safety feature specs
  - b. full characterization of the types of biomaterials that will interface with the equipment
  - c. location of the equipment
  - d. whether the equipment will be used/operated by core customers and/or core personnel only
  - e. point of contact for more information about the equipment, space and intended use
  - f. Vanderbilt Scientific Director or PI and department
2. Address information needed for the cover letter (who it should be addressed to- name, title, address, etc.)
3. Date the letter is needed and whether hard copy, e-copy or both is needed.

This information should be sent to [biosafety@vumc.org](mailto:biosafety@vumc.org) with “S10 letter of support request” in the subject line. Bettye Ridley & Richard DiTullio are the individuals who will be handling these requests this year.

Requestors should be prompt and send all requested information to ensure that the Biosafety Team has ample time to address anything that may impact our ability to issue a letter of support.

# PI Check List



- Nail down the basics: Technology, PI, Core Facility Partner
- Submit expression of intent (highly recommended)
- Review the RFA & make yourself a detailed timeline/checklist
- Confirm commitments to financial back-up plan
- Submit an internal proposal online by April 1!**
  - Find more info at: <https://www.vumc.org/oor/nih-s10-grant-program>
- Communicate plans with your grants team – be aware of submission deadlines
- Request Major User info (project write-up, biosketch)
- Request all necessary letters of support – Institutional is required!
- Contact the Office of the Vice Provost (VU) or Office of Research (VUMC) with any questions about eligibility, institutional commitments, reporting, or Special Use Instrument option.

# Sample timeline

- Dec/Jan
  - Identify technology, PI, and major users
- Jan/Feb
  - Review RFAs and assess eligibility
  - Consult with OOR/OVPR on initial questions
  - Demo instruments & prepare preliminary data
  - Get initial instrument quotes
  - Internal application opens
- March
  - Prepare & submit internal application
  - Outline/draft technical justification and business plan
- April
  - Ask Major Users for Project write-ups and NIH Biosketches
  - Ask Minor Users for Project write-ups
  - Request letters of support (provide draft & project info) – *don't forget biosafety letter!*
- May
  - Assemble, revise, edit, repeat!
  - Final submission to NIH

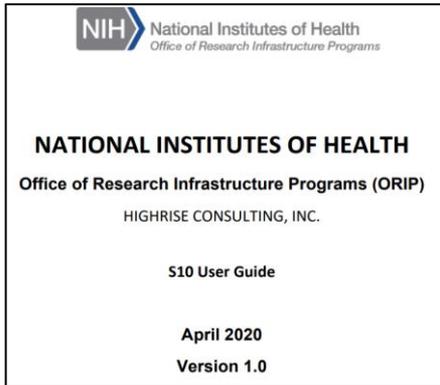
Did you work with a team?

Who did what?

# Post-Award Reporting

# Just-In-Time (JIT)

- Spring/Summer before Notice Of Award
- **14 days to complete**
- Response to Summary Statement
- Updated quote
- Updated Major/Minor user list and funding
- Changes – equipment, institutional commitment
- **CHANGES TO FUNDING AMOUNT**
- “You have received the below automated e-mail from NIH as confirmation that your below referenced application has completed the initial Peer Review Phase and has received an **impact score of 30 or less**. If you believe your score is within the NIH Institute or Center’s (IC) current payline, you will want to begin gathering the necessary Just-In-Time (JIT) materials. Regarding the timetable for submission of JIT materials, NIH recommends holding the submission of JIT material until **60 to 90 days prior to the award’s anticipated start date.**”



# Final Research Performance Progress Report (FRPPR)

- End of funding year (not installation)
- 120 days after end of funding year
- Accessible User Time (AUT)
- Updated Major/Minor user list and funding
- Advisory Committee

Users/Projects*										
New Project	User Type ▲	Research Area	Source of Funding (e.g. NIH, NSF, HHMI)	Grant Number (NIH format: <Yxx> <YY><xxxxxx> e.g., R01IC123456)	Grant Status	PI's First Name	PI's Last Name	HIV/AIDS	Usage Hours	% Usage
No	Major		NSF	R835736		Shane	Hutson	No	1	0.04
No	Major		NIH	UC4DK108120	Active	Christopher	Wright	No	10	0.42
No	Major		NIH	R01NS096238	Active	Rebecca	Ihrie	No	1	0.04
No	Major		NIH	R01DA042475	Active	Danny	Winder	No	1	0.04
No	Major		NIH	U01DK110804	Active	Michelle	Southard-Smith	No	1	0.04
No	Minor		NARSAD			Teru	Nakagawa	No	1	0.04
No	Minor		NIH	R01DK117147	Active	Wenbiao	Chen	No	1	0.04
No	Minor		NIH	R01DK101332	Active	James	Goldenring	No	1	0.04
Total number of Users:		Minor: 3	Major: 5	Total: 8						
Actual Usage Time: 17 hours		Usage for NIH Projects: 15 hours		Percentage of usage for NIH projects: 0.63%			Percentage of usage for HIV/AIDS projects: 0.00%			

*“The FRPPR Narrative should contain a list (and remedies) of problems you encountered while ordering the instrument, during the time of instrument installation and testing, and your assessment of the initial operating period.”*

# Annual Usage Report (AUR)

**Publications:**  
Do you have any publications to report that used the awarded S10 instrument during the reporting period?

Yes  No

If there were any publications that need to be reported, then PI would choose "Yes" and enter all the required information the Publication table.

**Publications:**  
Do you have any publications to report that used the awarded S10 instrument during the reporting period?

Yes  No

The Number of Publications which Cite and/or Link this S10 Award in this Reporting Period\*:

Attach the list of publications in this reporting period, citing the S10 award and/or linked to the S10 award in NCBI My Bibliography:

List meeting abstracts, posters, press releases, and other publications reporting the use of this S10 award:

Publications

[Click on Add New Publication to add another row](#)

Author(s) ▾	Title	PMCID	Publication Citation	
				Delete

Total: 1

Author is required  
Title is required  
PMCID should have PMCxxxxx format  
Reference is required

Required

- Annual (4 years)
- Accessible User Time (AUT)
- Updated Major/Minor user list
- User funding
- Publications
- Advisory Committee meeting







# S10 Grants

- **As for ALL grants:**
  - follow the instructions EXACTLY
  - Write clear, logical, persuasive language
  - Do not assume reviewers have same knowledge or environment
- Most Important piece = **JUSTIFICATION OF NEED**
  - Big picture overview of what the instrument can do and why that is important (again: do not assume reviewers have the whole picture)
  - Include very specific (and persuasive) examples of how new instrument will enhance funded projects
  - Show exemplary preliminary results and previous use
  - Highlight what specific new capabilities will enhance research (especially if its a replacement)
  - Make sure every Major User really needs the instrument; and have more than the minimum (SIG: 6-8; HEI 10-20)



- **Technical expertise**
  - Cannot be too modest: other places also have worthy projects but do they have the same support team? Same environment?
  - Emphasize applications AND new “in-house” technological developments or previous innovations
  - Include strong support team (including RAs, technicians, etc) not just for instrument but also ancillary needs e.g. data analysis
- **Admin / Management / Finance etc.**
  - This is where they can get you!
  - Be sure to include everything required: details! Do not give the reviewers any reason to be “concerned”
  - e.g. where sited, maintenance contract, booking, how new projects picked, training, committees, who does what/responsibility, etc. etc. etc.

# Shared Equipment Grants – Lessons Learned

*Susan Meyn, Senior Director, VUMC Office of Research*

## DO

- Read the RFA
- Know your institution: who, what, how, where
- Place instrumentation plan in context of overall core management/operations
- Align your narrative with institutional commitments and letter of support
- Use OOR boilerplate and research center text to describe institutional environment
- Copy edit (or ask someone else to do!)
- Respond specifically to past peer review comments
- Reach out to OOR and NIH PO with questions
- Start early
- Keep trying! Third time may be the charm

## DON'T

- Fudge the financial plan. Consult an expert
- Expect reviewers to connect the dots for you. State information plainly, and use figures to clarify complex interactions and workflows
- Go it alone. Collaborate, reach out to successful applicants for advice and review
- Skip generating/include preliminary data. Truly worth a 1000 words!
- Copy/paste text from past applications without updating
- Automatically recycle past application investigator projects – what's new?
- Ignore/dismiss critiques from past peer review
- Wait for the NIH RFA announcement. Plan ahead!

# Questions?

- Contact us with any questions about the S10 program!

## **VUMC Investigators**

*Amy Martinez, PhD*

*Office of Research*

[amy.f.martinez@vumc.org](mailto:amy.f.martinez@vumc.org)

615-875-0740

## **VU Investigators**

*Susannah Imhoff, MA*

*& Janice Ascano, PhD (non-SOM)*

[rds@vanderbilt.edu](mailto:rds@vanderbilt.edu)

*Chuck Sanders, PhD (Basic Sciences)*

[chuck.sanders@vanderbilt.edu](mailto:chuck.sanders@vanderbilt.edu)

- Find general program information [HERE](#)
- Find FAQs on the NIH site [HERE](#)

# **Additional Post-award Reporting Info**

# Reporting: Instrument Performance

- Each year, **VU & VUMC must submit tables** including the following for all S10 awards from previous 5 years:
  - Current instrument status
  - Actual usage time
  - Status of maintenance agreement
  - **Number of publications citing the S10 award**
  - Explanation for any instrument that is non-functional
- OOR collects this via annual survey effort in ~Feb.

It's required to ensure that users acknowledge your S10! See next slide

# Publication Reporting Update

- NIH now allows reporting of only publications which are linked to the S10 in myNCBI
- Instrument PIs can link publications to their S10 awards, *regardless of whether they are authors on the publications!*
- [Contact OOR](#) for a step-by-step guide on linking publications in myNCBI. See also [myNCBI help](#).

# Instrument Performance Report Example

S10 Grant Number	Year of Award	Installation Date of the Instrument	PD/PI's Name	Generic Name of Instrument	Instrument Status	Actual Usage Time (hours per year)	Maintenance Agreement	Number of Publications Citing the S10 Award**	Shared Resource or Core Facility	Notes
1S10OD016245-01	2013	May 2015	PETERSON, TODD E	Small Animal PET Scanner	Active	186	None	15	VUIIS Center for Small Animal Imaging	Service contract ended due to issues with the manufacturer and with the CT modality. PET imaging remains fully functional.**
1S10OD016355-01A1	2014	May 2014	BOYD, KELLI L	Automated Tissue Microarrayer	Active	400	Active	9	Translational Pathology Shared Resource	
1S10OD018015-01	2014	October 2014	LANNIGAN, DEB	Extracellular Flux Analyzer	Active	460	Active	8	High-Throughput Screening Facility	
1S10OD016204-01A1	2014	March 2015	PERRIEN, DANIEL S	Small Animal Micro-CT Scanner	Active	140	Active	1	VUIIS Center for Small Animal Imaging	
1S10OD017985-01	2014	June 2015	RODEN, DAN M	Minus 80C Freezer for Plasma Banking	Active	8,760	Active	2	Vanderbilt Technologies for Advanced Genomics (VANTAGE)	

# Reporting: Final Progress Report

- At the end of Funding Year 1, the PI must submit a Final Progress Report, including the following:
  - List of users, their funding and hours of use
  - List of publications
  - Narrative describing impact
  - Report from Advisory Committee

# Reporting: Annual Instrument Usage Report

- At the end of Year 2, the PI must submit a Usage Report, similar to the Final Progress Report and including the Advisory Committee Report.
- The NIH Scientific Research/Contact staff will provide specific instructions to grantees prior to the due date for report.

# Summary:

## S10 Reporting Requirements

### Submitted to NIH:

