

Conversations on How to Create an Inclusive Environment for Animal Caregivers in Lab Animal Science

Thursday, October 26th 2023

74th National Meeting

October 22-26 | Salt Lake City, UT

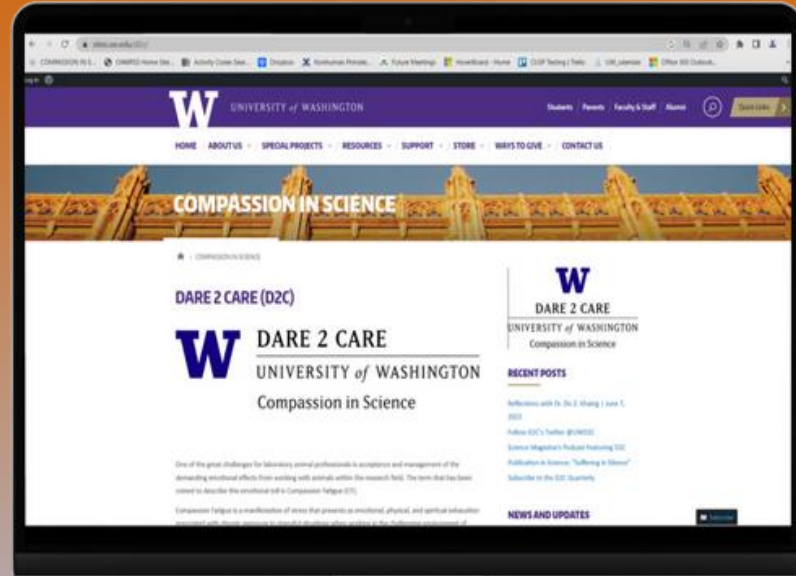




DARE 2 CARE

UNIVERSITY of WASHINGTON

Compassion in Science



<https://sites.uw.edu/d2c/>



**Office of
Animal Welfare**

Research Support Services

UNIVERSITY of WASHINGTON



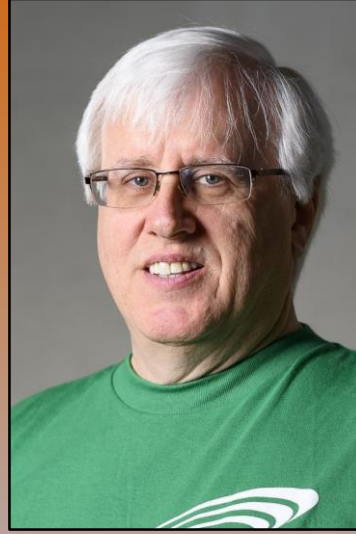
Preston Van Hooser

- Review Scientist & Compliance Manager, OAW
- Founder & Co-Chair D2C
- Since 2016
- Work with the UW to identify resource priorities and support for the D2C.

I
N
T
R
O
D
U
C
T
I
O
N
S



Dr. Arnold Arluke



Terry Fritter



Deanne Buffum



Holly Nguyen



Bruce Kennedy



Jade Arnold

HAVE THINGS CHANGED?

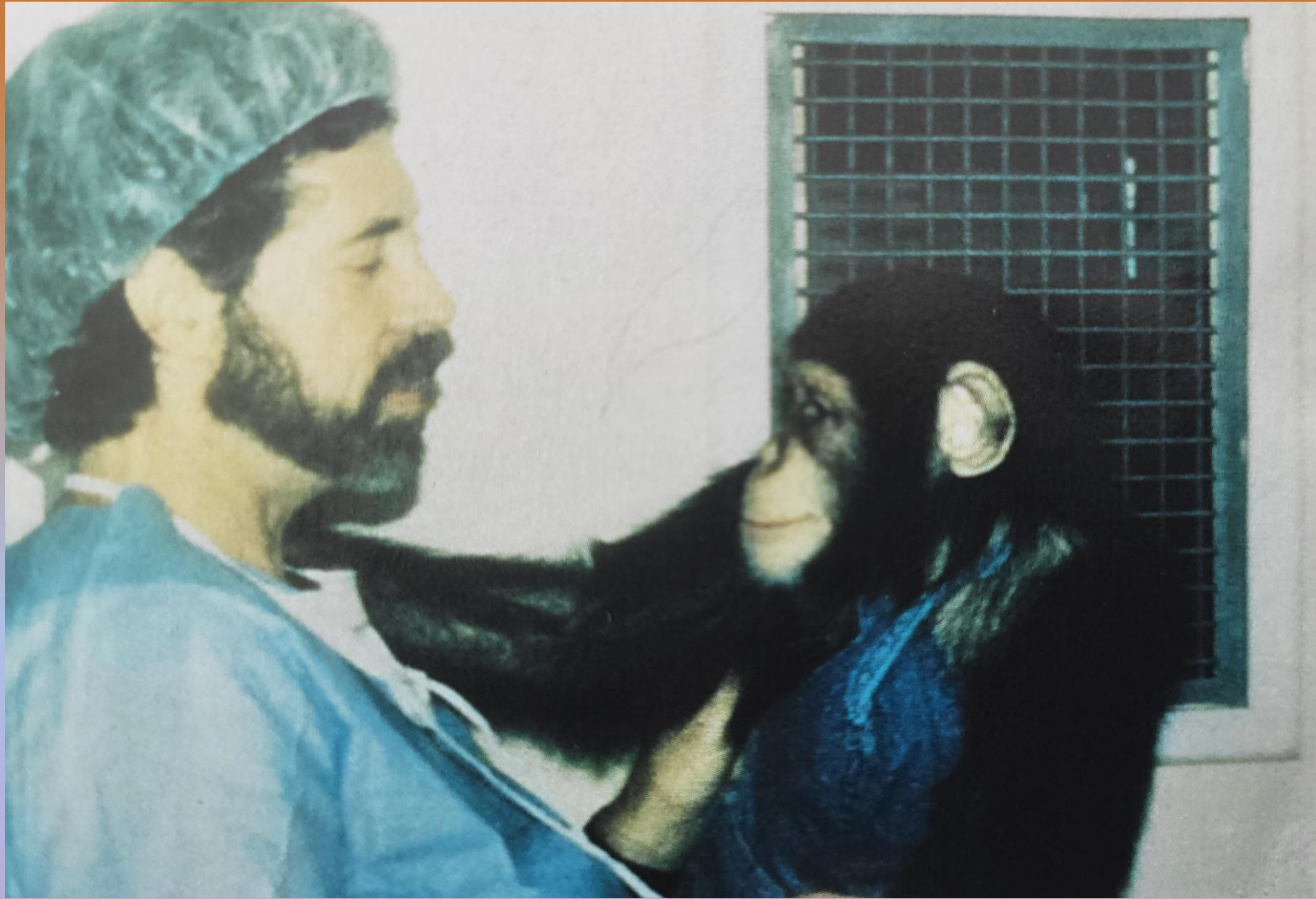
Informal rules IN BENCH SCIENCE, 40 YEARS AGO



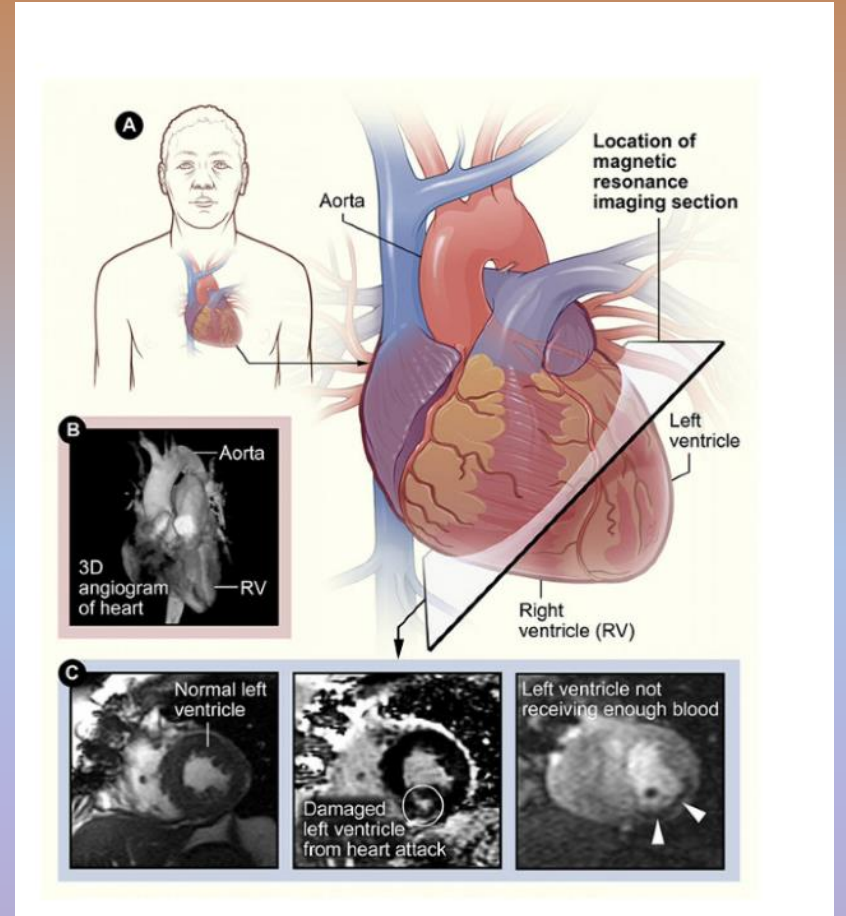
Arnie Arluke
Professor Emeritus of Sociology & Anthropology
Northeastern University



74TH NATIONAL MEETING
OCTOBER 22-26 | SALT LAKE CITY, UT



1. Don't treat lab animals as pets







2. Don't express troubled or conflicted feelings about animal experimentation



<https://www.science.org/content/article/suffering-silence-caring-research-animals-can-take-severe-mental-toll>



SUFFERING IN SILENCE

Caring for research animals can take a severe mental toll. Is anyone listening?

• 9 MAR 2023
• BY [DAVID GRIMON](#)

[Go to content](#)

SIMON PRADES



[Table of contents](#)

A version of this story appeared in Science, Vol 379, Issue 6636. [Download PDF](#)

Conner Sessions's decision to combine his love of science and animals nearly destroyed him. Growing up in rural Washington state, he spent his early life surrounded by cows, horses, cats, and dogs. He cared about all of them and considered a career in veterinary medicine. But after graduating with a bachelor's degree in biochemistry from the University of Washington (UW), Seattle, in 2016, he saw a job ad that changed his mind.

The school needed an animal technician, someone to clean and feed mice, pigs, dogs, and other creatures used in biomedical research. "I wanted to get involved with science, and working with animals was a big plus," Sessions says. He took the job, spending his shifts feeding and playing with dogs and livestock at the university, an echo of his youth. The sheep would head-butt him for snacks.

Sessions grew especially attached to the dogs, which was tough: Some were bred for two different forms of muscular dystrophy, one 100% fatal. He raised the puppies from birth, sometimes tube feeding those that had trouble nursing. "I trained one litter to line up in their kennel for treats," he says. Then he would walk in one morning and find some of them dead in their enclosures—victims of their disease.

Over the next few years, Sessions came to expect this. But it never got easier. Every time he entered the underground facility where the animals were kept, he panicked, fearful of what he might find. He became anxious and depressed, and began obsessively checking on the dogs throughout the day, a feeling that followed him home. "I'd be doing the dishes at 8 at night and wondering, 'Should I go back and check if my animals are OK?'" He hesitated to go on vacation or even take weekends off, worried one of the dogs would die or be euthanized while he was away. "I wanted to be there for them," he says. "It's almost like they become your pets."

“Guilt Among Lab Technicians”

“Stress Among Lab Technicians”

“Uneasiness Among Lab
Technicians”

“How Researchers Deal with
Feelings”



3. Don't expect to talk about your work without being criticized









4. Don't admit your work





This analysis extends the notion of occupational stigmatization beyond traditionally low-status, marginal workers to scientists and technicians who conduct biomedical research on animals. Like many "dirty" workers, animal research personnel report that they see themselves as stigmatized by others and sometimes manage information about themselves and their work to avoid unpleasant interactions with those who disapprove of what they do. While information may be managed about their occupational identity through concealment or cautious disclosure, these practices suggest guilt and create a dilemma for some. Nevertheless, the use of information control strategies often seems imperative in the face of a threatening "other," defined as either reproaching, confrontive, dangerous, and/or distorting.

GOING INTO THE CLOSET WITH SCIENCE

Information Control Among Animal Experimenters

ARNOLD ARLUKE

STUDIES OF STIGMATIZED OCCUPATIONS have been limited to endeavors that society traditionally accords little prestige and that enlist workers from low-status backgrounds. In *Stigma*, Goffman (1963) himself made only rare reference to occupational groups, and then it was to hangmen and prostitutes—both marginal groups for whom stigmatization is nothing new. Those following Goffman have continued to focus on customarily regarded low-status occupations including, but not restricted to, sex work (e.g., Jackman, O'Toole, and Geis 1963; McCaghy and Skipper 1969), criminal work (e.g., Cameron 1964; Lemert 1953), death work (e.g., Pine 1977; Sudnow 1967), cleaning work (e.g., Gold 1964; Perry 1978), and money-lending work (e.g., Davis 1984; Hartnett 1981).

On the whole, these occupational stigmata are relatively profound and unambiguous such that norms are reasonably clear regarding society's reaction. While stigmatized workers

AUTHOR'S NOTE: This work was supported by a grant from the William and Charlotte Parks Trust.

JOURNAL OF CONTEMPORARY ETHNOGRAPHY, Vol. 20 No. 3, October 1991 306-330
© 1991 Sage Publications, Inc.

306



Have things changed in labs since my research decades ago?

Are the informal rules I observed only one of many other concerns faced by research and animal care technicians today?



**P
R
O
B
L
E
M
S**

Long hours

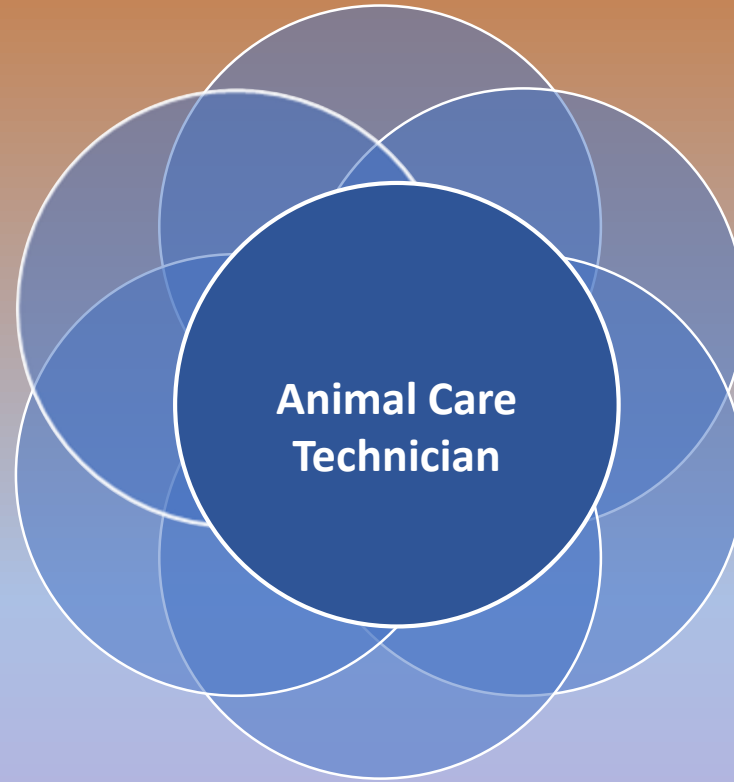
Isolation

Not valued

RATs

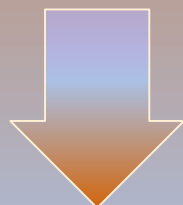
**Not
appreciated**

Not heard

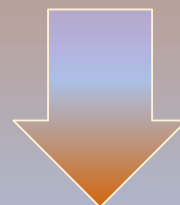


Audience Participation

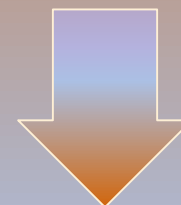
Share your thoughts and experiences



Raise your
hand



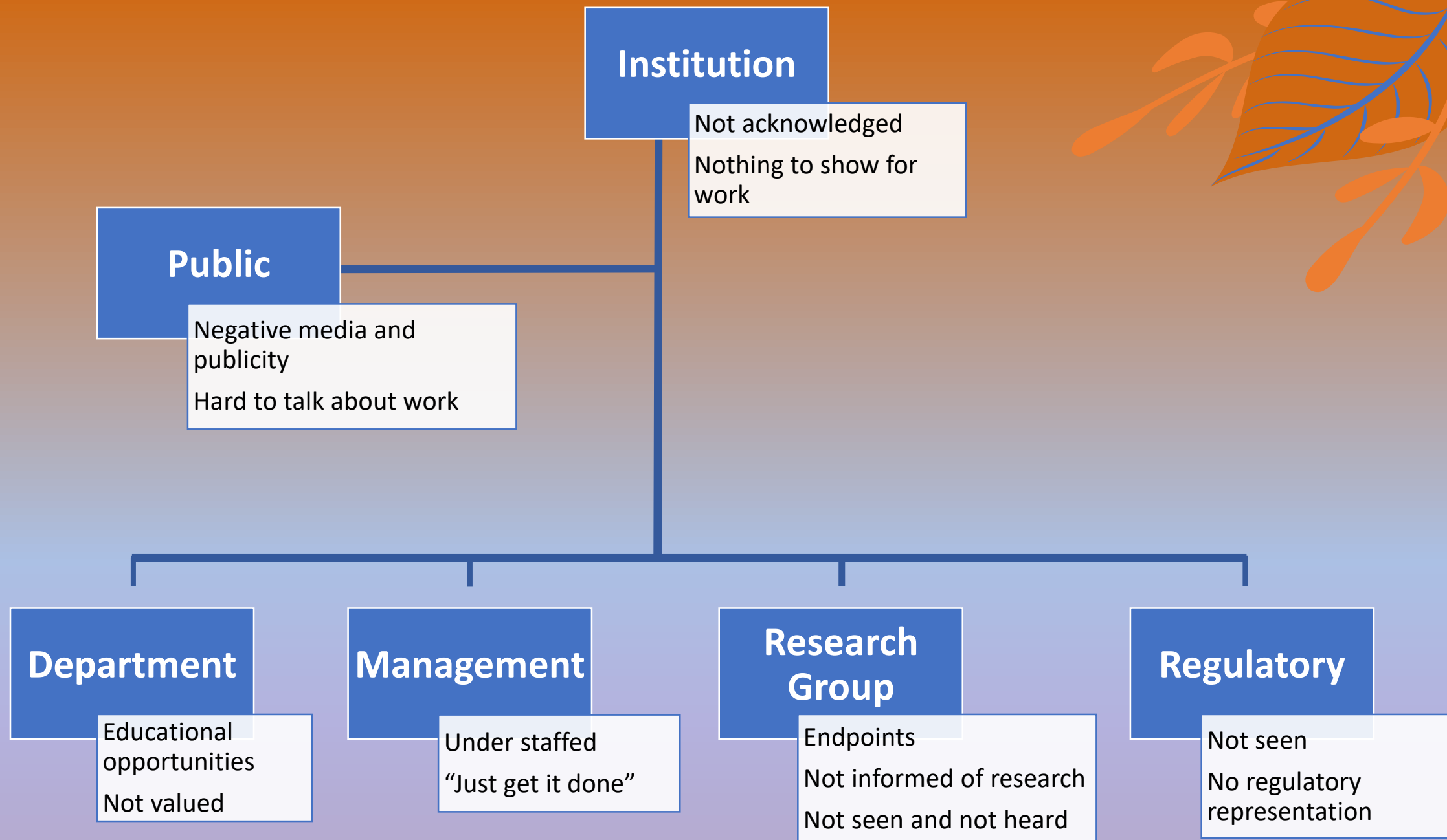
Use pen and
paper provided



Post online in
Padlet

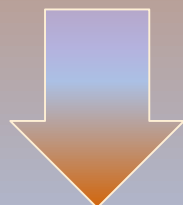


SOURCES

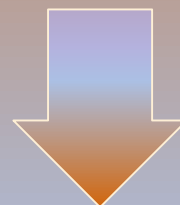


Audience Participation

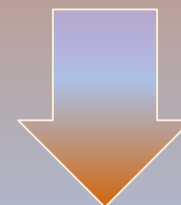
Share your thoughts and experiences



Raise your
hand



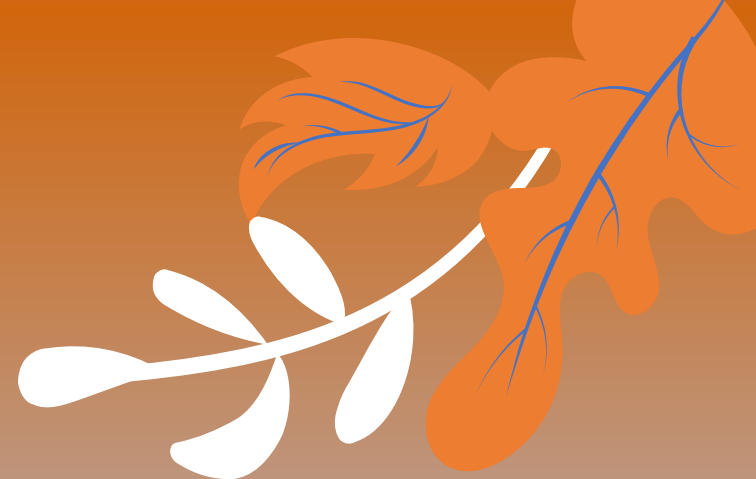
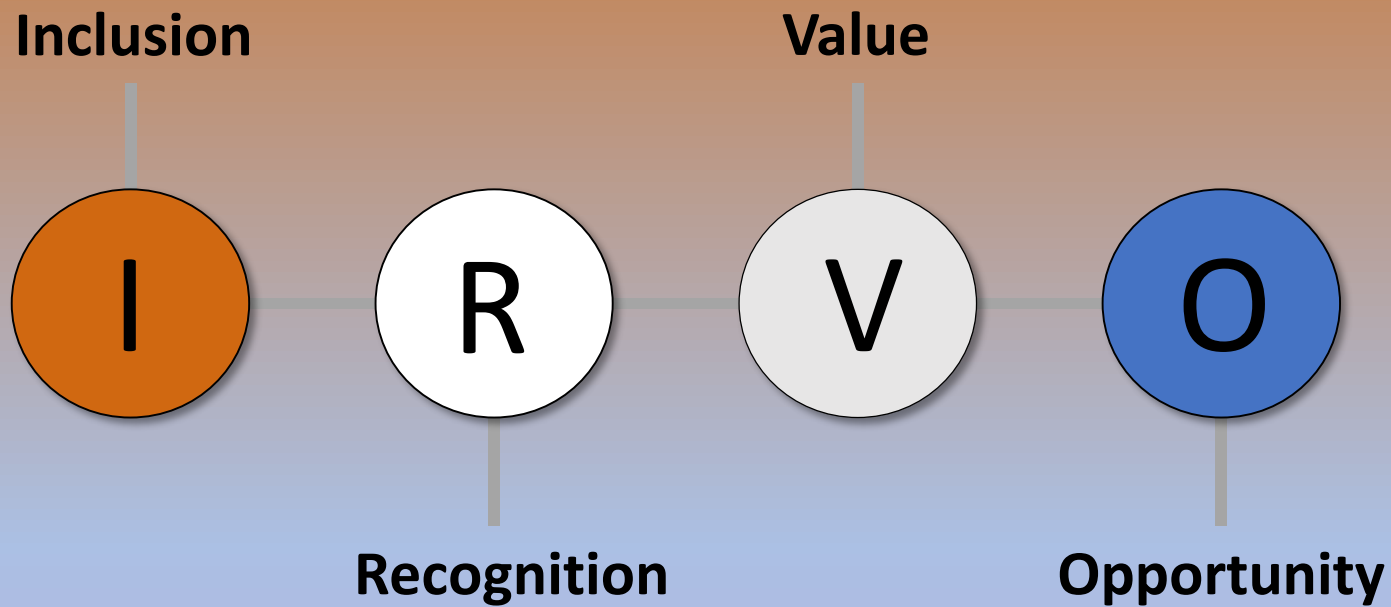
Use pen and
paper provided



Post online in
Padlet



S
O
L
U
T
I
O
N
S



DARE 2 CARE

UNIVERSITY of WASHINGTON

Compassion in Science

Summary of research

Principal Investigator:

IACUC Protocol:

Emergency Contact:

Telephone:

Email:

Research Team

We are Holly, Jennifer, and Conner. We work with our mice in the vivarium room every weekday and on holidays observed on weekdays. If you have any questions or concerns about our research or mice, please ask any one of us!

Significance of Research

Almost 35,000 men in the United States die from prostate cancer each year and it remains the second leading cause of cancer death in men. Essentially, no patients with advanced prostate cancer are cured of their disease.

Summary of Research

Our research group generates prostate cancer patient-derived xenografts by directly implanting tumors from humans. These models represent the many types of advanced prostate cancer found in man. Preclinical testing using our patient-derived xenografts models in mice has a high translational value and, through our studies, we continue to find new potential efficacious treatments and possibly even a cure for prostate cancer.

Notes of Importance

All mice in this room are males. The majority of the mice are albino, but occasionally there will be nude mice, which are hairless. Most mice will have a tumor growing on their right side underneath the skin and the tumor can vary in color from very light to almost black.

The three most common ailments our mice may experience/exhibit that should be reported to Veterinary Services are (1) Ulceration (a break in the skin) is noted on the tumor, (2) Penile or rectal prolapse, and (3) Rapid breathing with darkened eyes (our mice are prone to developing a type of mouse cancer in their chest which inhibits the space for lungs to expand fully).

Sometimes these mice are castrated and will be sleepy 24 hours post-surgery. The surgical date and time will be placed on their cage card. Minor bleeding is expected, but if excessive bleeding is noted, please contact Veterinary Services.

Our mice receive anti-cancer treatments including chemotherapies and radiation therapies. These treatments can cause some negative side effects on their health, which we closely and continuously monitor. We humanely euthanize any mouse who reaches a health endpoint which includes a tumor volume maximum and weight loss, or have an issue that cannot be properly managed or treated.

We thank you for the daily care you provide our mice with and acknowledge your invaluable contributions to advancing prostate cancer research towards a cure.

Study endpoint notifications

♥ Euthanasia Date: _____

Research staff – If you know your animal is approaching their endpoint, please mark the date with a **wet or dry erase pen** and place this card behind the AOPS card.

This will help husbandry staff do their jobs more efficiently and give them an opportunity to say goodbye. Your participation is appreciated.

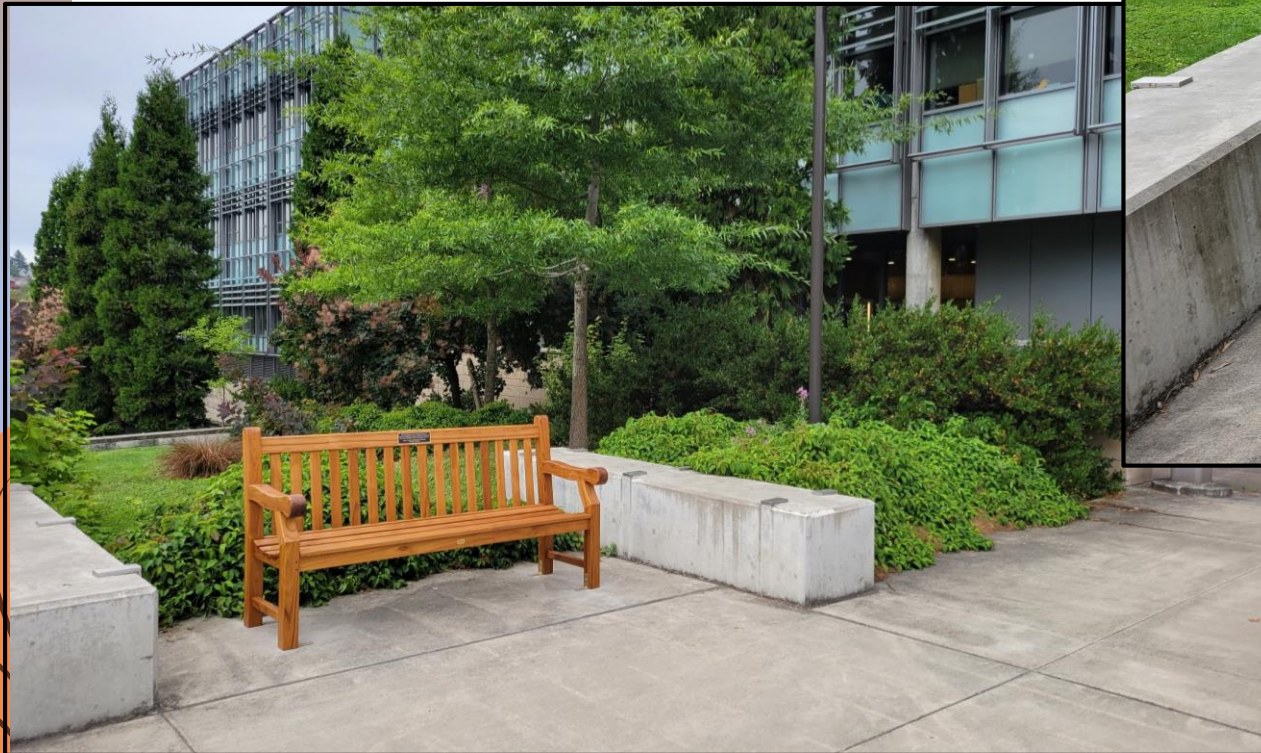
W DARE 2 CARE
UNIVERSITY of WASHINGTON
Compassion in Science



Euthanasia
Date

Pre-endpoint and post-endpoint email notifications acknowledging high level of humane care and the greater purpose the animal served.

IN RECOGNITION TO ALL RESEARCH ANIMALS
AND THE LABORATORY ANIMAL SCIENCE COMMUNITY
WHO HELP ADVANCE HUMAN AND ANIMAL HEALTH
DARE 2 CARE: COMPASSION IN SCIENCE
AUGUST 23, 2023



RECOGNITION



How is it possible to be there everything that makes things possible to be there

1/10/2020



RECOGNITION



THE PROSTATE CANCER RAPID AUTOPSY AND DEVELOPMENT OF PATIENT-DERIVED XENOGRIFT MODELS

Nguyen HM, Morrissey C, Corey E
Department of Urology, University of Washington; Seattle, WA



INTRODUCTION

- Prostate cancer (PCa) is the second most common malignancy diagnosed in men and led to almost 27,000 deaths in 2017 within the United States.
- PCa is widely heterogeneous with differences in mutations/genomic alterations, gene expression, sites of metastases, rate of proliferation, survival pathways, and therapeutic escape mechanisms.
- A significant limitation in the understanding of PCa, and evaluating novel therapeutic strategies is the lack of pre-clinical models that closely replicate the diversity of the disease seen in man.
- To overcome this limitation, we have established over 40 advanced PCa Patient-Derived Xenograft (PDX) lines.

OBJECTIVES

- Rapid Autopsy Program**
 - To collect human PCa specimens (primary prostate, visceral and metastases) for investigation on advanced PCa biology.
- LuCaP PDX Series**
 - To establish and characterize PDXs of advanced PCa.

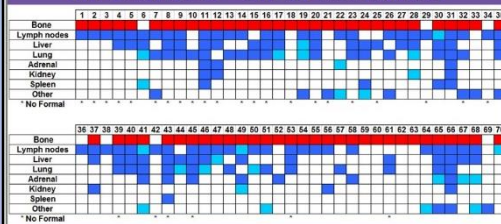
The emergence of new drug resistance is associated with altered phenotypes. Continuous collection of tissues is important to capture the biology underlying treatment responses and resistance.

PDXs provide a valuable resource to generate clinically relevant data with translational potential. PDXs demonstrate molecular features resembling patient tumors, tumor heterogeneity observed in patients, preserve tumor-microenvironment architecture, and provide clinically-relevant treatment responses.

MATERIALS AND METHODS

- Rapid Autopsy Program**
 - 1996-2018: 196 rapid autopsies performed.
 - Metastatic tissue is acquired within 4-8 hours of death.
 - 16 different bone sites collected in addition to grossly evident visceral metastases.
- LuCaP PDX Series**
 - Samples of advanced PCa obtained from primary prostate cancer from surgery or metastases collected at rapid autopsy are implanted into immunocompromised mice to establish PDXs.
 - Established PDXs are propagated in vivo.
 - Genomic, transcriptomic, and STR profiles are generated.
 - Responses to novel therapies are studied.
 - Frozen tumors, paraffin blocks, and TMA containing 40 LuCaP PDXs.

RAPID AUTOPSY—SITE OF METASTASIS



ASSESSMENT OF BONE RESPONSE IN CRPC



LuCaP PDX CHARACTERISTICS

LuCaP	Tissue Type	AR	PSA	Response to CX	LuCaP	Tissue Type	AR	PSA	Response to CX
23.1	LN	WT	High	HR	86.2	Bladder	WT	Mod.	NR
23.1CR	(EXP)	WT	Mod.	NA	86.2CR**	(EXP)	WT	Mod.	NA
23.12	Liver	WT	High	HR	92	LN	WT	Mod.	HR
35	LN	WT	Low	HR	93*	TURP	NA	NA	NR
35CR	(EXP)	WT	Low	NA	96	TURP	WT	Mod.	HR
49*	Omental Fat	NA	NA	NR	96CR	(EXP)	WT	Mod.	NA
58	LN	WT	Low	NR	105	Rib	WT	Mod.	IR
70	Liver	WT	Mod.	HR	105CR**	(EXP)	WT	Mod.	NA
70CR	(EXP)	WT	Mod.	NA	136	Achilles	WT	Low	IR
73	Prostate	MUT	Mod.	HR	136CR	(EXP)	WT	Low	NA
73CR	(EXP)	MUT	Mod.	NA	141	TURP	WT	Low	HR
77	Femur	WT	Mod.	IR	145.1*	Liver	NA	NA	NR
77CR**	(EXP)	WT	Mod.	NA	145.2*	LN	NA	NA	NR
78	LN	MUT	Mod.	HR	147	Liver	MUT	Low	NR
81	LN	WT	High	NR	147CR**	(EXP)	MUT	Low	NR
81CR**	(EXP)	WT	High	NA	167	Liver	ND	Mod.	HR

Characteristics	AS vs CR pairs	Mixed AR	AR v6.67
Number of Models	11	2	1
Characteristics	TP53/PTEN	PTEN-negative	Neuroendocrine
Number of Models	4	13	4
Characteristics	RB Deletion	Osteoblastic	
Number of Models	2	7	

*: Neuroendocrine; **: New castration-resistant sublines mice, EXP: Experimental; LN: Lymph node; TURP: Transurethral resection of prostate; HR: highly responsive (>3X median survival (>1.5X MS); NR: non-responsive (<1.5X MS); NA: not available; WT: wild type; MUT: mutation; Mod: moderate. LuCaP 86.2 h constitutively active.

MOLECULAR ANALYSIS OF DR

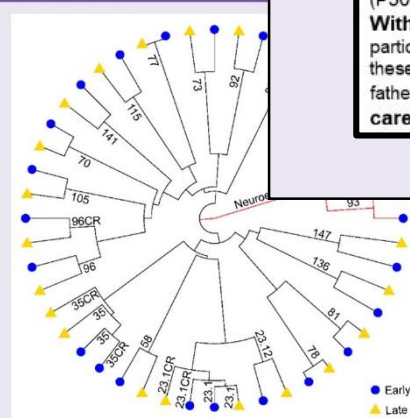
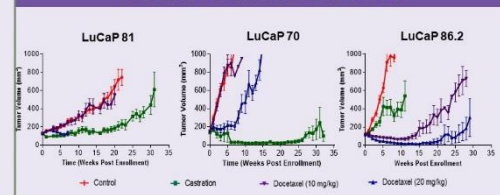
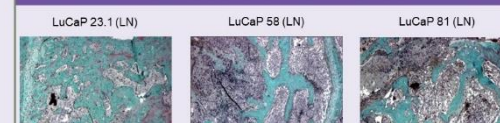


Figure 1. To determine if drift has occurred in the LuCaP xenografts, we compared gene expression analysis of early and late passages of 24 xenografts. From a cluster analysis of 1000 randomly assigned genes, all 24 LuCaP xenografts clustered with their parental tumor. We determined that while some changes were observed, a limited amount of drift had occurred in the LuCaP xenograft lines. Previous limited studies showed clustering of xenografts with the clinical tumors of origin.

HETEROGENEITY OF RESPONSES



OSTEOBLASTIC BONE RESPONSES



ACKNOWLEDGEMENTS

These studies have been funded by the Prostate Cancer Foundation (PCF), The Richard M Lucas Foundation, NIH PO1 (PO1-CA163227), Pacific Northwest Prostate Cancer SPORE (P50-CA097186), the Prostate Cancer Biorepository Network (PCBN), and Movember.

With great appreciation we acknowledge the patients and their families for their participation in the UW Rapid Autopsy Program, the animals who have been sacrificed to make these breakthroughs to relieve the suffering and death associated with prostate cancer for fathers, sons, brothers, and husbands around the world, as well as the exceptional daily care of these animals provided by the Animal Caretakers.

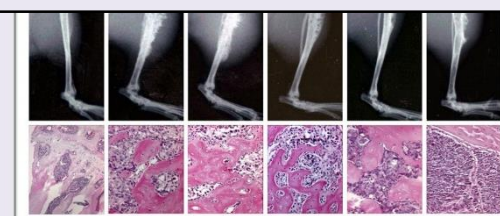
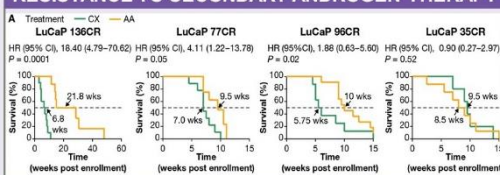


Figure 2. Radiographs and H&E stains from LuCaP xenografts injected and grown in the tibia of SCID male mice. *: Osteoblastic; **: Mixed. Additional lines showing an osteoblastic response include LuCaPs 23.1, 23.1CR, 93 and 136.

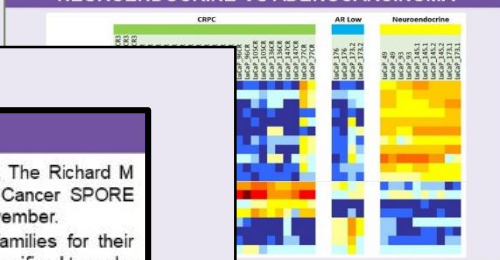
CLINICALLY RELEVANT TO EVOLVING PHENOTYPE

New treatments and development of resistance results in alterations of tumor genotypes/phenotypes. In order to understand mechanisms of resistance and develop new therapies for the resistant tumors, PDXs representing these new tumor phenotypes are urgently needed.

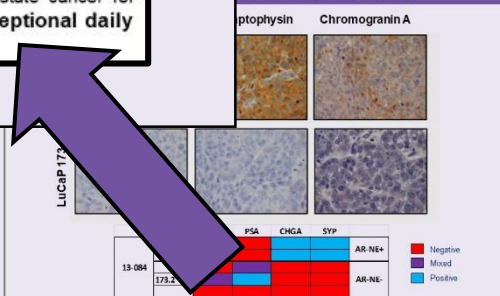
RESISTANCE TO SECONDARY ANDROGEN THERAPY



NEUROENDOCRINE VS ADENOCARCINOMA



AR-PDX MODELS



ACKNOWLEDGEMENTS

These studies have been funded by the Prostate Cancer Foundation (PCF), The Richard M Lucas Foundation, NIH PO1 (PO1-CA163227), Pacific Northwest Prostate Cancer SPORE (P50-CA097186), the Prostate Cancer Biorepository Network (PCBN), and Movember.

With great appreciation we acknowledge the patients and their families for their participation in the UW Rapid Autopsy Program, the animals who have been sacrificed to make these breakthroughs to relieve the suffering and death associated with prostate cancer for fathers, sons, brothers, and husbands around the world, as well as the exceptional daily care of these animals provided by the Animal Caretakers.

Molecular profiling stratifies diverse phenotypes of treatment-refractory metastatic castration-resistant prostate cancer

Mark P. Labrecque, ... , Peter S. Nelson, Colm Morrissey

Published July 30, 2019 Citation Information: *J Clin Invest*.2019. <https://doi.org/10.1172/JCI128212>.

ACKNOWLEDGEMENTS

This work was supported by a Department of Defense Idea Development Award-Partnering-PI (W81XWH-17-1-0414;W81XWH-17-1-0415), W81XWH-15-1-0430, PC170431, the Pacific Northwest Prostate Cancer SPORE (P50CA97186), the Department of Defense Prostate Cancer Biorepository Network (W81XWH-14-2-0183), Department of Defense Prostate Cancer Clinical Trials Consortium W81XWH-15-2-0008, NCI R01 CA230617, NCI P01 CA163227, the Prostate Cancer Foundation, the AACR NextGen Transformative Cancer Research Grant, the Institute for Prostate Cancer Research, and the Richard M. LUCAS Foundation.

We would like to thank the patients who generously donated tissue that made this research possible. **We would also like to thank** Jennifer Conner, Michiyo Dalos, Daniel Sondheim and **the Comparative Medicine Animal Caregivers for assistance with the LuCaP PDX work**. Additionally, we would like to thank Paul Lange, Robert Vessella, Funda Vakar-Lopez, Martine Roudier, Xiaotun Zhang, Belinda Nghiem, Jennifer Noteboom and the rapid autopsy teams in the Urology and Pathology Departments at the University of Washington.



the London Plane



VALUE



VALUE

Thanks so much for everything you do on a daily basis. We are so appreciative of your tireless efforts in making sure our animals are well taken care of. Without you, many groups around campus wouldn't be able to do the research that has the potential to impact millions of people worldwide. Thanks for making all the difference!

Thank you so much for taking such good care of all the animals.

Anitha Pasupathy (BioStructure and WaNPRC)

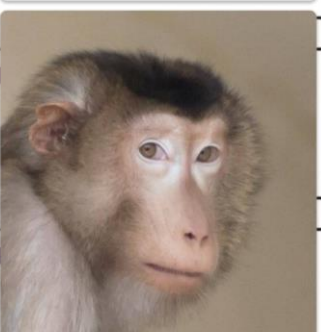
Thanks to all Brotman husbandry staff for your continued dedication to your work for the well-being of all animals. Caitlyn Connolly is very competent and very dependable weekend animal care staff!

Many thanks for all of your hard work and dedication to caring for the animals, and for making this a great place for scientific research! -Wyeth Bair (Biological Structure, and Primate Center)



Clara has been the most thoughtful, diligent tech I have ever had the opportunity to work with. She is observant and clearly cares about her charges, animal and human. We appreciate all her thoughtful touches and her proactive monitoring of our animals, the woman saves our bacon on the regular. Clara, I cannot thank you enough!

D2C KudoBoard



We can never say enough how grateful we are for all that you do for the animals in our care. It isn't an easy job. It requires the physical strength and stamina to transport heavy racks and cages around and the delicate care to avoid pinching little fingers and toes. You interpret what the animals are telling you without words. You come in when everyone else is staying home, whether it's a snowstorm or a pandemic. Research that saves lives can happen because of the work that you do. Thank you!

Thank You to Our Laboratory Animal Technicians!

DARE 2 CARE

Thank you so much for taking such good care of all the animals.

Anitha Pasupathy (BioStructure and WaNPRC)

Many thanks for all of your hard work and dedication to caring for the animals, and for making this a great place for scientific research! -Wyeth Bair (Biological Structure, and Primate Center)

Thank You to Our Laboratory Animal Technicians!

DARE 2 CARE

Thank you so much for taking such good care of all the animals.

Anitha Pasupathy (BioStructure and WaNPRC)

Many thanks for all of your hard work and dedication to caring for the animals, and for making this a great place for scientific research! -Wyeth Bair (Biological Structure, and Primate Center)

Thank You to Our Laboratory Animal Technicians!

DARE 2 CARE

Thank you so much for taking such good care of all the animals.

Anitha Pasupathy (BioStructure and WaNPRC)

Many thanks for all of your hard work and dedication to caring for the animals, and for making this a great place for scientific research! -Wyeth Bair (Biological Structure, and Primate Center)

Thank You to Our Laboratory Animal Technicians!

DARE 2 CARE

Thank you so much for taking such good care of all the animals.

Anitha Pasupathy (BioStructure and WaNPRC)

Many thanks for all of your hard work and dedication to caring for the animals, and for making this a great place for scientific research! -Wyeth Bair (Biological Structure, and Primate Center)



VALUE

OPPORTUNITY

IACUCs



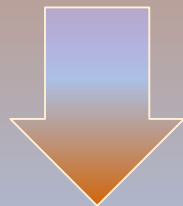
Conferences

Committees

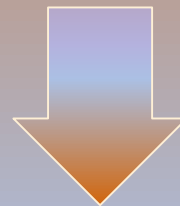
Classes/Workshops

Audience Participation

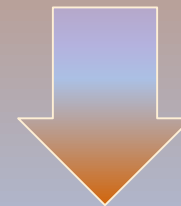
Share your thoughts and experiences



Raise your
hand



Use pen and
paper provided



Post online in
Padlet



The background of the slide features a soft, out-of-focus bokeh effect with circular light spots in shades of blue and green. Overlaid on this are numerous translucent, spherical bubbles of varying sizes, some of which are in sharp focus while others are blurred, creating a sense of depth and movement.

Closing remarks



Thank you