



College of Agriculture,  
Food & Natural Resources  
University of Missouri

# Scientific Poster Design

# Presented by

# CAFNR Communications

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Posters serve as an  
advertisement of  
your hard work





Impact on the Health of the Park System  
 Eric Duke  
 William Horner  
 of Political Science

**MU**

Interviews  
 Commission Bill Lane (LMU)

David Nichols (Texas A&M)

86



**Introduction**

Pregnancy diagnosis is critical to the proper management of various species. Various forms of pregnancy diagnosis include the use of real-time ultrasonography, transrectal palpation, steroid monitoring, and detection of pregnancy associated glycoproteins. When managing captive wild animals, it is ideal to monitor pregnancy through non-invasive approaches to reduce stress due to handling. Pregnancy associated glycoproteins (PAGs) are aspartic proteins produced by even-toed ungulates (Szafranska et al., 2006). Their function is still unknown. The PAG gene is composed of 9 exons and 8 introns. There are 18 PAGs in cattle (Telusa et al., 2009) and 9 PAGs in white-tailed deer (Brandt et al., 2007). PAGs have been used to diagnose pregnancy in cattle, sheep, goats, buffalo, bison, moose, and elk (Sasser et al., 1986; Sousa et al., 2006; Szafranska et al., 2006).



Figure 1. PAG gene representing the 9 exons (boxes) and 8 introns (lines). Primers were designed to conserved regions of exon 1 and 9 across multiple species.

**Hypothesis**

PAGs can be detected to accurately diagnose pregnancy in red deer from serum and plasma samples. PAG genes sequenced from elk cDNA are similar to those sequenced in white-tailed deer. Additionally, PAGs should be present in other deer and whale species, as they are in the Artiodactyla order.

**Objective**

- Experiment 1: To detect PAGs from blood and serum
- Experiment 2: To sequence PAG genes in elk.

**Materials and Methods**

Experiment 1: Female red deer (hind; n=20) were turned out to pasture and stag for 75 days. Pregnancy status was determined through real-time ultrasonography. Serum and tissue samples for DNA were collected. Serology and enzyme-linked immunosorbent assays (ELISA) were used to detect PAGs. The first was an in-house ELISA and the second a commercial BioPRYN® ELISA. The ovine ELISA was used for quantitative measurement of PAGs. The BioPRYN® ELISA allowed for a distinction: A female was considered pregnant if the BioPRYN® ELISA if the pregnancy was confirmed while the non-pregnant sample was negative.

Figure 2. Male red deer, Texas A&M University, Center (Overton, TX)

# It's an illustrated abstract

## POSTER 9

CORNELL POLYMER OUTREACH PROGRAM  
POSTER SESSION  
May 23, 2005

### SIMULATIONS OF POLYMER NETWORKS WITH A BIMODAL CHAIN LENGTH DISTRIBUTION

Dhananjay Shown, Claude Cohen and Fernando Escobedo  
School of Chemical and Biomolecular Engineering

We have conducted molecular simulations of end-linked polymer networks with a bimodal chain length distribution. Short and long chains with lengths differing by an order of magnitude make up a typical network. Such networks have been experimentally demonstrated to have superior mechanical properties (modulus and toughness) as compared to the corresponding unimodal networks. The causes of this enhancement are not well understood. It is also not clear which combination of chain molecular weights in what proportion will yield this improvement. We have systematically explored networks with a range of chain lengths in varying proportions to explore the causes of mechanical enhancement and to optimize mechanical properties. Two possible reasons for better mechanical properties have been proposed in the literature: finite extensibility of the short chains and clustering of short chains. When the short chains are so short as to be non-Gaussian, they reach their maximum extensibility at smaller deformations than longer chains - this makes the network more difficult to deform and hence stronger. Also, short chains tend to cluster when they contribute most of the mass fraction in the network while the long chains contribute most of the volume fraction - short chain clusters act as reinforcing regions to make the network stronger. We changed chain lengths and proportions of long and short chains to explore all combinations of the following scenarios: clustered and non-clustered short chains and Gaussian and non-Gaussian short chains. We also looked at the micrograph structure of the various networks and studied bond breakage. We conclude from the study that the main reason for the mechanical enhancement is the finite extensibility of short chains and that clustering protects short chains from excessive deformation but does not improve mechanical properties.



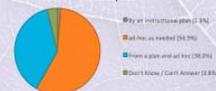
## Doubling down: analyzing the Wilfrid Laurier University Library's online teaching and learning programme

Pauline Dewan and Michael Steeleworthy  
pdewan@wlu.ca / msteeleworthy@wlu.ca

### The Situation

Wilfrid Laurier University has transformed into a multi-campus university. WLU Library internal studies have shown a growing, unmet demand for online services for our users. Like many libraries, its online teaching and learning programme has not always been governed by a plan.

### How are your online instructional tools developed?



### The Task

Our team was tasked to:

1. Articulate a vision of our online teaching and learning programme in 5 years, including its goals, content and delivery.
2. Determine the resources required to accomplish this vision, including skills, resources, and organizational structures.

### Our Methods

We analyzed our instructional programme and performed an extensive review of LIS and management literature. We also undertook an REB-approved survey of academic librarians across North America to learn how online teaching and learning is conducted at other universities.

### Our Findings

#### Users

- Two-thirds of students prefer online to face-to-face instruction; over 60% will enroll in online classes by 2020
- Users perceive online resources and online learning as a natural part of their post-secondary experience
- Users prefer having both self-service help modules and also access to people who can assist them with their work

#### Instructional Tools

- The focus of most online instructional programmes are tutorials and chat-reference
- A wide variety of tools are under-utilized, e.g., mobile reference, streaming, live video, screen-sharing

#### Organizational Makeup

- Most libraries do not have an online instruction coordinator
- There is no consensus on how online learning should be governed

### Our Recommendations

- Embrace a web-based teaching and learning model
- Expand relationships with campus stakeholders, e.g., Learning Services and Educational Development
- Create an online instruction coordinator and team, who are all responsible for development and assessment

### Do you have an online instruction coordinator?



### Current Status and Actions

- Our findings have been presented to and accepted by our Associate University Librarian for Teaching & Learning, as well as our Instruction Group
- Our Instruction Group is considering how to incorporate our recommendations within a pending Strategic Plan for the Library
- The Library plans to increase its kinds of and number of learning objects in the new year

Library  
WILFRID LAURIER UNIVERSITY

"The growth rate for online courses ... is 21%, while the growth rate for higher education in general is less than 2%."

- J. Seaman and J.E. Allen (2010)

Get our annotated bibliography and contact us at  
bit.ly/OLA-WLU2013



# Common Ways to Design

- 48" x 36"
- Horizontal orientation
- PowerPoint: single slide for design
- Check with your event for specific formatting requirements!



# Is my poster effective?

- What is the problem?
- What is my solution?
- Why should people care?



# Answer these questions

## Problem

- Why did I research this?
- Methods?

## Solution

- What am I seeking?

## People should care because...

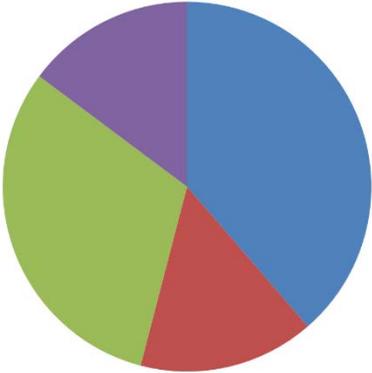
- Why is this important?
- Why is it different?





# Poster Title

Authors and affiliations

Intro or Research Question	Methods and Approach	Results or Findings
Objectives		Conclusions, Discussion or Summary
Background and Context		References, Funding Acknowledgements, Contact Info, Abstract



# Logo

- Use stacked MU, not tiger head
- Use high-resolution logos



Use this!



Not that!



# Obtaining logos

- Always use original artwork obtained from the Division of Marketing & Communications
- **Email:** [identity@missouri.edu](mailto:identity@missouri.edu)
- **Website:** <http://identity.missouri.edu/>





# Visual Hierarchy

- Organize content for easy, quick understanding
- Guide the viewer using different levels of importance
- Larger size and/or heavier weight = more important
- Smaller size and/or lighter weight = less important
- Bright colors stand out
- Dominant element attracts the eye first



# Text Size Suggestions

- Title: 85+ point
- Authors: 56+ pt
- Sub-headings: 36+ pt
- Body text: 24+ pt
- Captions: 18+ pt

**Your Ingenious Teaser Right Here to Woo Them Down to the Body**

**Conclusions first: 44 pt bold**  
Always put the most important part - your conclusions - first! Place your conclusions in the upper left hand corner of your poster. Prepare your material from the reader's perspective. What was done, by who and your conclusion has to be understood within a couple of second's reading. Use active voice when writing the text.

**Introduction**  
Posters are primarily visual presentations. Your poster should be dominated by self-explanatory illustrations such as graphs and pictures while the amount of text should be kept to the minimum.

**Your aim**  
Your poster is an advertisement for your research and as such it needs to be eye-catching and straight to the point. You only have seconds, or at best a few minutes to attract the attention of the visitor to a poster session. Keep your message short and clear.

**Your message**  
Keep your message clear and your text concise. Decide what is relevant for this poster and try to get your message across to your target group.

**Layout, photos and print**  
Contact [Mediahub](#) at University Library for help with layout and image enhancement. For printouts and professional photographers contact [Björnska](#). For more information: [www.bjornskans.kth.se](http://www.bjornskans.kth.se)

**Handouts**  
If you succeed in getting the reader's attention, provide her/him with more detailed information in the form of handouts or printed articles. Include references on your handout instead of your poster.

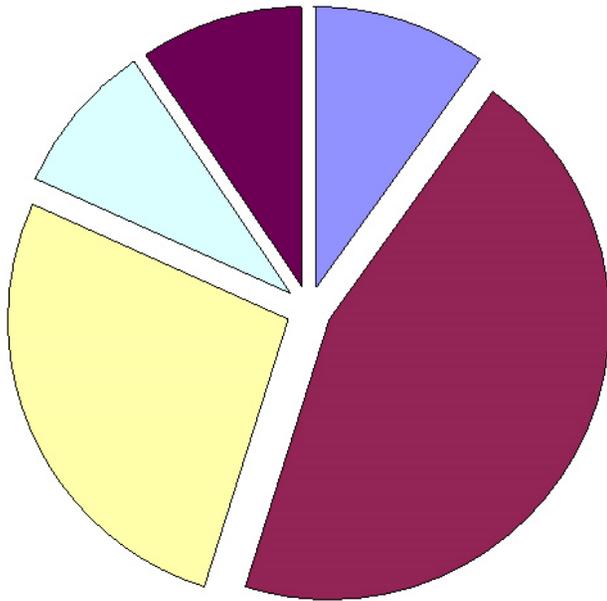
It is always nice to put in a picture and write some few short notes of what's going on in the future. Put handouts, business cards, nearby - on a table or in an envelope hung with the poster.

# Body Text Format

- Breathing space around your text
- Plain fonts in the same size and style
- Left-aligned
- Bullet points
- Bold is easier to read than underlining
- Make text legible from 5-7 feet away



# Make your poster as visual as possible



By Seattle Municipal Archives from Seattle, WA (Doctors with patient, 1999) [CC BY 2.0 (<http://creativecommons.org/licenses/by/2.0>)]



# Avoid “chart junk”

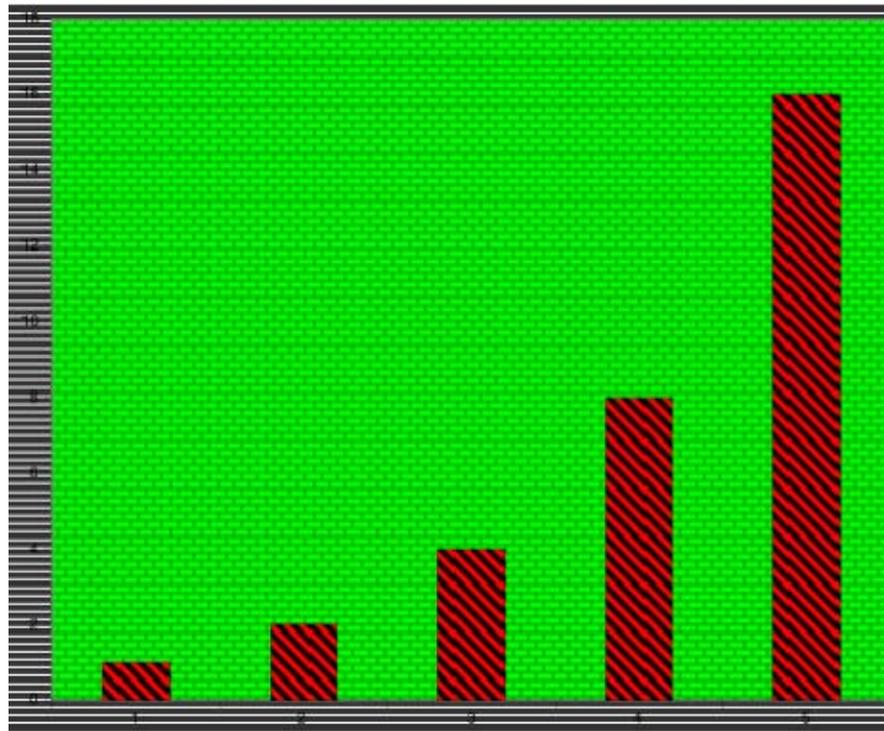
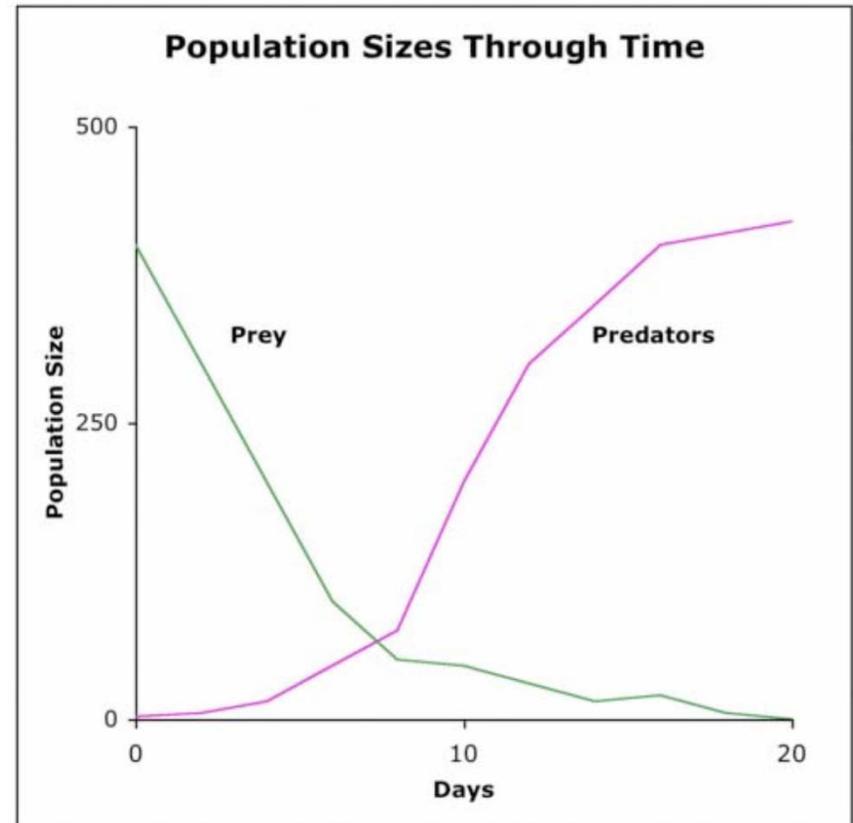
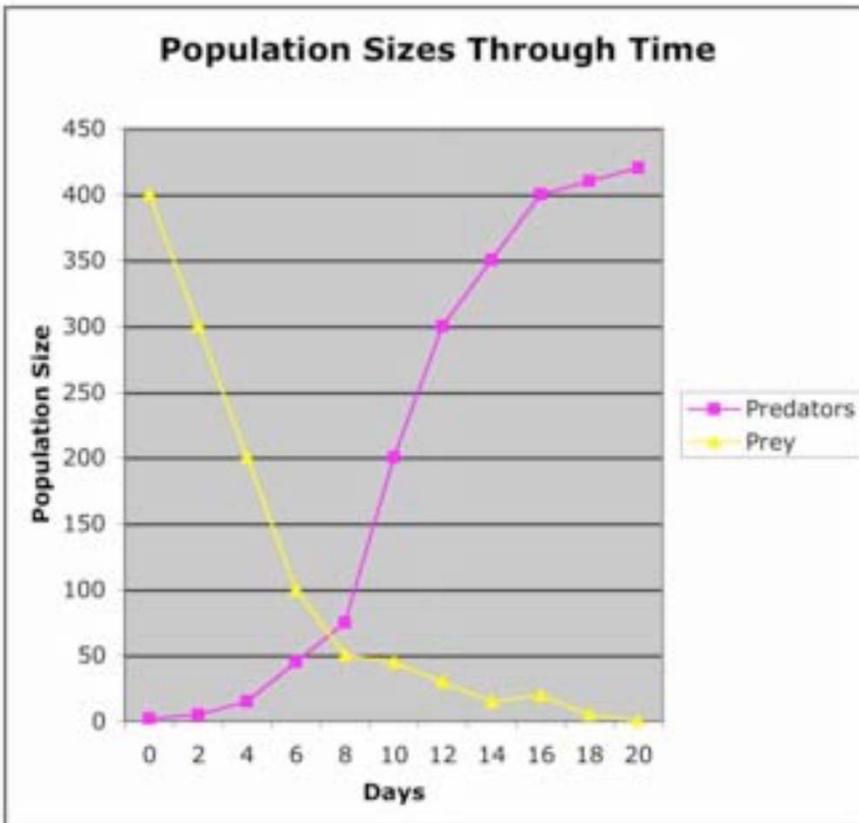


Image from The Next Web, “5 qualities that make images more memorable”



# Simple = more effective

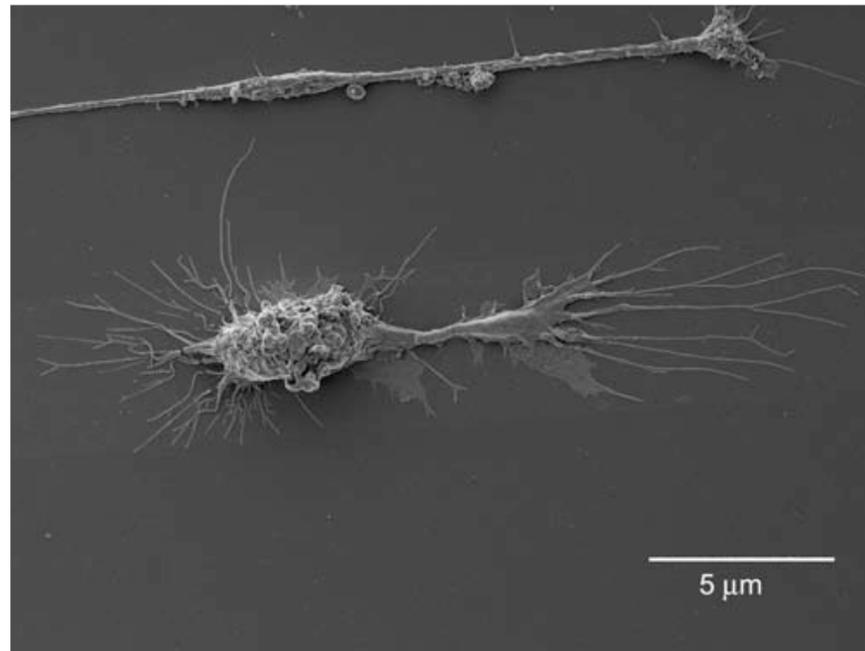


# Picture-perfect photos

- Need high resolution!
  - At least 150 dpi
- Save photos as jpg or png
  - Line art as a png (graphs)
- Web images are usually poor resolution – find the original
- CAFNR photos on Flickr: [flickr.com/photos/cafnr](https://www.flickr.com/photos/cafnr)

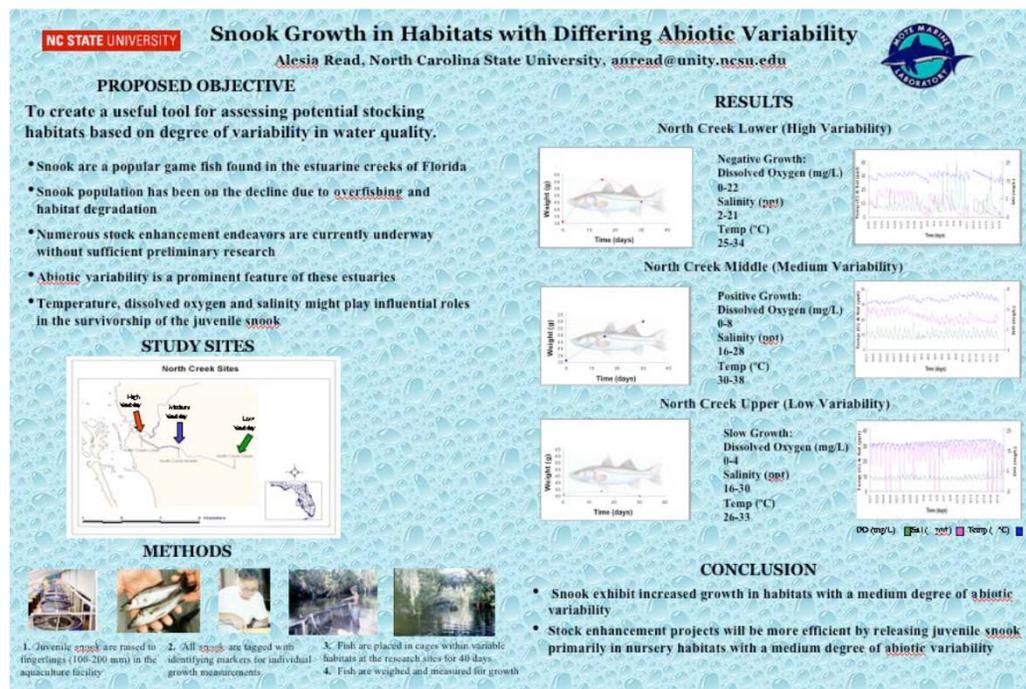


Your images mean nothing  
without a scale bar or description



# Backgrounds

- Dark type on light color background easy to read
- Solid background or simple gradient (not too busy!)



# Colors

- Limit choices to 2-3 colors. Too many can be distracting
- Consider using the official Mizzou colors: black and gold

MU GOLD



PMS: 124  
CMYK: 0C/25M/90Y/5K  
RGB: 241,184,45  
HEX: #F1B82D

BLACK



CMYK (RICH BLACK): 60C/50M/40Y/100K  
RGB: 0,0,0  
HEX: #000000

*When a single ink is available, you can produce black by printing 100K.*

- Be aware some color schemes are inaccessible to people with color-blindness, such as red and green



# Don't forget

- Funding acknowledgements
- Final grammar and spelling check
- Check that your poster meets conference requirements and/or judging criteria
- Contact info
  - Mail address
  - Phone
  - Email





# ENGAGING CITIZENS IN PUBLIC SERVICE CO-PRODUCTION: VOLUNTEER-BASED ROAD CONSTRUCTIONS IN THAILAND'S LOCAL GOVERNMENT<sup>1</sup>

Grichawat Lowatcharin<sup>2</sup> and Judith I. Stallmann<sup>3</sup>, Truman School of Public Affairs, University of Missouri



## ABSTRACT

This study explores the nature of public participation, particularly the extent to which citizens were willing to participate in public service production, their motivations to do so and the outcomes of the production. A holistic case study approach examined public participation in the volunteer-based road construction projects of a small-sized local government in Thailand.

The volunteer-based road construction projects emerged in response to the citizens' need for a higher quality transportation network under a limited budget. A wide range of citizens participated in all stages of the project. The projects not only led to lower monetary costs and faster building, but also yielded more meters per worker day with higher quality compared to those built by a contracting-out approach. The projects also strengthened relationship among the citizens, sustaining local norms and values. Key factors that made public participation feasible and contributed to the success of the projects were leadership of the mayor, human resources, and cultural foundations.

*Keywords:* public participation, citizen co-production, local government

## BACKGROUND

Public participation is an important aspect of democratic governance. Since the 1990s, Thailand's governmental agencies and local governments are expected to use public participation in their policy process. However, attention to and outcomes of public participation are varied across the country. Various questions remain unanswered, particularly those about why people participate and the economics of the projects.

This research study explores the nature of citizen co-production based on a case of volunteer-based road construction projects in Nongwaeng Subdistrict Administrative Organization (SAO), Thailand, taking advantage of an opportunity to compare actual projects—traditional road construction with construction using citizen co-production and volunteers—at all steps of the process from planning to construction.

## RESEARCH QUESTIONS

The research questions are:

- How did the volunteer-based road construction projects emerge and develop?
- How did citizen volunteers participate in the road construction projects?
- How do the projects compare to contracted-out projects in terms of cost and quality?
- What made the road construction projects succeed?

## METHODS

The study employs a holistic case study design (Yin, 2009) as the co-production was considered a bounded-system (Creswell, 2013)

The study also takes advantage of the concept of a natural experiment (Shadish, Cook & Campbell, 2002) to compare building costs and outputs of the volunteer-based approach with those of traditional contracting-out approach. Fourteen co-production roads are compared with traditional contracted roads.

## RESEARCH FINDINGS



Citizen volunteers preparing the road surface

### Origin and Development

The projects emerged in response to the citizens' need for a higher quality transportation network under a limited budget. The first project was piloted in 2008 and served as a model for other local road construction, community houses, and a bridge.

*“ Before, I thought I could do anything. Now the people can do anything with me keeping my profile low as only an advisor, a facilitator, or a coordinator. ”*  
(Mayor, personal communication, July 2011 )



A volunteer finishing the road

### Levels of Citizens' Participation

Citizens participated in the projects in different forms. Those with building knowledge and skills were mainly responsible for building the roads, including planning, inventory checking, concrete mixing, monitoring, and evaluation. Other citizens provided food.

Based on IAP2 (2007)'s spectrum of public participation, the projects allowed Nongwaeng SAO to enhance citizens' involvement to the highest level—from informing to consultation, involvement, collaboration, and empowering.

### Outcomes

The roads were built at a lower cost due to the use of volunteer labor. Volunteers built more meters per worker day and the pavement was more durable because they monitored the concrete mix. The projects also reinforced local norms and values, particularly unity and reciprocity.

Table 1. A Comparison of Average Road Construction Outcomes: Contracting-Out VS Co-production

Outcomes	Contracting-out*	Volunteer-based**
Budget	\$3,000	\$3,000
Width	5 m	5 m
Depth	15 cm	15 cm
Length	50-57 m	100-110 m
Number of workers	4-7 workers	8-13 volunteers
Days to complete	2-3 days	1 days
Meters per worker day	2.38-7.125	7.69-13.75
Pavement quality at one year	Decayed	Intact

Source: Nongwaeng SAO, 2010a; 2010b; Nongwaeng officer, personal communication, January 27, 2014.

\* Average of contracted roads built in 2007 and 2008.

\*\* Fourteen road segments built in 2009.



*“ They knew how many cubic meters [of concrete] were needed. They knew how to mix it. The contractor couldn't tell them a lie. ”*  
(Councilman, personal communication, July 2011 )

Children observing the volunteers placing concrete

### Success Factors

- **Leadership of the mayor:** well regarded by local citizens, the mayor served as a credible facilitator for project initiation.
- **Human resources:** citizens with construction knowledge made it possible to build the road without contractors.
- **Cultural foundation:** unity, sharing, and reciprocal traditions facilitated the participation.

According to Irvin and Stansbury (2004)'s framework, human resources and culture are low cost factors that facilitated the success of the projects, while the mayor's leadership is a high benefit factor.

## SUMMARY AND IMPLICATIONS

- Public administrator's leadership and initiative, as well as local human resources and culture were key to successful co-production.
- In certain contexts, public participation can be used to the highest levels for public service delivery and lead to outcomes that are acknowledge as successful by both government officials and citizens.

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<sup>1</sup> This study was funded by Division of Technology Transfer and Research Affairs, Khon Kaen University, Thailand.  
<sup>2</sup> Grichawat Lowatcharin: glowatcharin@mizzou.edu <sup>3</sup> Professor Judith I. Stallmann, PhD: stallmannj@missouri.edu





# PIGS IN SPACE: EFFECT OF ZERO GRAVITY AND AD LIBITUM FEEDING ON WEIGHT GAIN IN CAVIA PORCELLUS



SPACE-EXES

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## ABSTRACT:

One ignored benefit of space travel is a potential elimination of obesity, a chronic problem for a growing majority in many parts of the world. In theory, when an individual is in a condition of zero gravity, weight is eliminated. Indeed, in space one could conceivably follow ad libitum feeding and never even gain an gram, and the only side effect would be the need to upgrade one's stretchy pants("exercise pants"). But because many diet schemes start as very good theories only to be found to be rather harmful, we tested our predictions with a long-term experiment in a colony of Guinea pigs (*Cavia porcellus*) maintained on the International Space Station. Individuals were housed separately and given unlimited amounts of high-calorie food pellets. Fresh fruits and vegetables were not available in space so were not offered. Every 30 days, each Guinea pig was weighed. After 5 years, we found that individuals, on average, weighed nothing. In addition to weighing nothing, no weight appeared to be gained over the duration of the protocol. If space continues to be gravity-free, and we believe that assumption is sound, we believe that sending the overweight — and those at risk for overweight — to space would be a lasting cure.

## INTRODUCTION:

The current obesity epidemic started in the early 1960s with the invention and proliferation of elastane and related stretchy fibers, which released wearers from the rigid constraints of clothes and permitted monthly weight gain without the need to buy new outfits. Indeed, exercise today for hundreds of million people involve only the act of wearing stretchy pants in public, presumably because the constrictive pressure forces fat molecules to adopt a more compact tertiary structure (Xavier 1965).

Luckily, at the same time that fabrics became stretchy, the race to the moon between the United States and Russia yielded a useful fact: gravity in outer space is minimal to nonexistent. When gravity is zero, objects cease to have weight. Indeed, early astronauts and cosmonauts had to secure themselves to their ships with seat belts and sticky boots. The potential application to weight loss was noted immediately, but at the time travel to space was prohibitively expensive and thus the issue was not seriously pursued. Now, however, multiple companies are developing cheap extra-orbital travel options for normal consumers, and potential travelers are also creating news ways to pay for products and services that they cannot actually afford. Together, these factors open the possibility that moving to space could cure overweight syndrome quickly and permanently for a large number of humans.

We studied this potential by following weight gain in Guinea pigs, known on Earth as fond of ad libitum feeding. Guinea pigs were long envisioned to be the "Guinea pigs" of space research, too, so they seemed like the obvious choice. Studies on humans are of course desirable, but we feel this current study will be critical in acquiring the attention of granting agencies.

## MATERIALS AND METHODS:

One hundred male and one hundred female Guinea pigs (*Cavia porcellus*) were transported to the International Space Laboratory in 2010. Each pig was housed separately and deprived of exercise wheels and fresh fruits and vegetables for 48 months. Each month, pigs were individually weighed by duct-taping them to an electronic balance sensitive to 0.0001 grams. Back on Earth, an identical cohort was similarly maintained and weighed. Data was analyzed by statistics.

## RESULTS:

Mean weight of pigs in space was 0.0000 +/- 0.0002 g. Some individuals weighed less than zero, some more, but these variations were due to reaction to the duct tape, we believe, which caused them to be alarmed push briefly against the force plate in the balance. Individuals on the Earth, the control cohort, gained about 240 g/month ( $p = 0.0002$ ). Males and females gained a similar amount of weight on Earth (no main effect of sex), and size at any point during the study was related to starting size (which was used as a covariate in the ANCOVA). Both Earth and space pigs developed substantial dewlaps (double chins) and were lethargic at the conclusion of the study.

## CONCLUSIONS:

Our view that weight and weight gain would be zero in space was confirmed. Although we have not replicated this experiment on larger animals or primates, we are confident that our result would be mirrored in other model organisms. We are currently in the process of obtaining necessary human trial permissions, and should have our planned experiment initiated within 80 years, pending expedited review by local and Federal IRBs.

## ACKNOWLEDGEMENTS:

I am grateful for generous support from the National Research Foundation, Black Hole Diet Plans, and the High Fructose Sugar Association. Transport flights were funded by SPACE-EXES, the consortium of wives divorced from insanely wealthy space-flight startups. I am also grateful for comments on early drafts by Mañana Athletic Club, Corpus Christi, USA. Finally, sincere thanks to the Cuy Foundation for generously donating animal care after the conclusion of the study.

## LITERATURE CITED:

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- Creating Effective Poster Presentations  
(<http://www.ncsu.edu/project/posters/>)



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