

STANDARD OSSABAW SALES INITIAL CONTACT

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Contact

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First, please visit our websites, which will provide background information on:

Ossabaw miniature swine

(<http://physiology.medicine.iu.edu/people-in-physiology/michael-sturek-ph-d/#ossabaw-miniature-swine>) and vascular biology research

(<http://physiology.medicine.iu.edu/people-in-physiology/michael-sturek-ph-d/>).

Advantages of Swine in General and Ossabaw Swine Specifically for Biomedical Research

Translation of basic research to human clinical medicine is best achieved using swine because of numerous overall strong similarities of pigs to humans.

1. Tendency to remain sedentary
2. Omnivorous and monogastric (only one stomach) and metabolism of food, specifically cholesterol metabolism
3. Human-like size (~40-100 kg typically) is an advantage for adequate blood sampling volumes, use of the same medical devices as in humans, etc.
4. For studies of exercise training the oxygen consumption per kg body weight is similar.
5. Cardiovascular system, specifically the heart and coronary circulation and susceptibility to coronary artery disease. Several features are most prominent.
 - a. Gross anatomy, including paucity of innate collateral arteries
 - b. Responses of coronary arteries to drugs
 - c. Heart rate and, thus, metabolic demand on the heart and coronary blood flow
 - d. Atherosclerotic lesions, including full progression to calcification, etc.
 - e. Size of the pig heart enables trials of percutaneous catheter interventions for revascularization with identical devices as used in humans. The pig is the premiere animal model approved by the Food and Drug Administration for evaluating the effectiveness of stents that are the main treatment for occlusive coronary artery disease.
8. Kidney morphology, function, and pathology of atherosclerosis
9. The anatomy of the gastrointestinal tract is the best for studying new bariatric surgery methods.
10. Female Ossabaw pigs with obesity and metabolic syndrome ("pre-diabetes") also develop polycystic ovary syndrome, which is a major cause of female infertility.
11. Premiere neonatal physiology model
12. The size and plentiful number of pigs makes them a highly probably source of organs for transplantation to humans.
13. The Ossabaw pig is a naturally occurring, complex model of pre-diabetes and progression to type 2 diabetes, cardiovascular disease, etc. in swine, most similar to naturally occurring diseases in humans.

Uses of Ossabaw Swine for Translational Research

1. Exercise physiology
2. Cholesterol metabolism
3. Platelet aggregation, thrombosis
4. Coronary collateral development
5. Coronary artery pharmacology
6. Coronary atherosclerosis
7. Percutaneous catheter interventions, stents
8. Cardiac arrhythmias
9. Polycystic ovary syndrome (PCOS)
10. Obesity and adipokines
11. Pathogenesis and treatment of metabolic syndrome and type 2 diabetes
We have not been able to induce metabolic syndrome in genetically leaner Yucatan miniature swine.
12. Neonatology
13. Xenotransplantation
14. Lithotripsy treatment of kidney stones
15. Bariatric surgery
16. Cutaneous wound healing
17. Endothelial progenitor cell biology
18. Kidney function and disease
19. Dietary probiotics
20. Peripheral artery disease (PAD)
21. Electrical stimulation of gastrointestinal tract
22. Bladder function and disease
23. Pancreatic beta cell function and isolation
24. Non-alcoholic steatohepatitis (NASH)
25. Alzheimer's disease
26. Skeletal muscle metabolism
27. Diabetic eye disease
28. Cardiomyopathy
29. Adrenal medullary and cortical hormone regulation
30. Computed tomography (CT) and magnetic resonance (MR) imaging assessment of body composition
31. Diffuse idiopathic skeletal hyperostosis (DISH)
32. Vocal cord physiology (We have exceeded the famous quote of Upton Sinclair about the use of "everything but the squeal" in the pig.)

Pig Availability

Pigs are provided on a first come first serve basis, so there is no guarantee we will have pigs available at the time you contact us. We require a down payment to start pigs on a special diet. Currently (8/31/16) pigs of a variety of ages and both genders are available, but if pigs are sold out, sows need to be bred to create pigs for you; thus, it is important to place orders early. Breeding and gestation take ~4 months. Most people desire mature pigs at 6 months of age, thus it may require at least 10 months to provide pigs. To accurately determine pig availability, we will need the following information to place an order.

1. Quantity
2. Gender/sex or castrated males (barrows)
3. Age
4. Name of the closest major airports for air transportation option
5. Name and address of location for pigs final destination is required on our health certificate and for ground shipping calculations.
6. Preferred date of delivery

Purchase Cost

Pricing is mainly dependent on the age of the pig, as summarized in the table below (effective 7/31/2016) subject to change depending on operating costs). For IUSM and Purdue University purchasers, the cost is completely break even; for external purchasers, University F&A charges of 56% are added.

Purchase cost:

<u>Age (months)</u>	<u>Cost</u>	
	<u>IUSM/PU</u>	<u>External</u>
1	\$387	\$596
2	\$593	\$910
3	\$805	\$1234
4	\$1018	\$1558
5	\$1223	\$1872
6	\$1435	\$2196

Please first design your study, do your own cost estimate, thoroughly consider the final cost, and whether you will have sufficient financial resources. We can then provide a detailed cost estimate that includes diet treatment, shipping costs, and additional services in the sections below.

Diet Treatment

Induction of metabolic syndrome is frequently desired. A special, custom-made atherogenic diet or a commercial atherogenic diet created by Purina TestDiet can be used. We refer the reader again to our website (typical design chronic studiesv1.pdf; Figure 1) to determine the typical duration and degree of obesity and metabolic syndrome, cardiovascular disease, etc. desired. The special atherogenic diet, KT324 or 5B4L, created by Purina TestDiet contains high levels of fructose, mixed fat, and cholesterol. The cost is ~ \$15.23/kg and typically 1.0-2.0 kg is fed per pig daily when purchased from your local dealer. To locate a TestDiet / LabDiet distributor near you, go on line at www.testdiet.com or go directly to <http://www.labdiet.com/indexlabdiethome.htm>, click on distribution, then click on USA, click on your location on the USA map, and a list of dealers will appear. For studies conducted at IUSM and Purdue we use KT324, which is a proprietary formulation of 5B4L and is \$9.14/kg.

Shipping Costs

Our ground shipping delivery charge is \$4 per loaded mile plus F&A charges of 56%. Transportation has nothing to do with the number of pigs as long as they all fit in pickup truck and trailer. Thus, if we hauled more pigs per trip the cost per pig would be reduced. Below is a list of a few commercial transporters to compare delivery charges. We can also determine the cost of shipping pigs to you by air cargo, which requires a service charge for staff time.

Air Cargo Airlines

Delta Air lines Pets 1st 1-800-352-2746 www.Delta.com, Indianapolis, weight limit 175 lbs

Continental Airlines 1-800-421-2456, Indianapolis, weight limit 55 lbs

Frontier Air Cargo 1-800-394-2158

United Airlines Cargo 888-888-8463 or 1-800-825-3788 www.unitedcargo.com

Other Commercial Shipping Companies

1. Paul Ruggere Jr, Manager, Business Development

Transportech, LLC

508-436-6766 ext16, 508-326-7405 cell

508-436-6768 fax

pruggere@transportech.com

or

Terry Costa, Customer Service, Transportech, LLC

1-866-998-8324 ext 13, 508-436-6766 ext 15 office, 508-857-8304 cell

508-436-6768 fax; terry@transportech.com

or

Paul at 866-998-8324 ext 16

2. Gay O'Brien, O'Brien Animal Transportation & Services/ OATS

Johnathan O'Brien
650-525-9099.

www.animaltransportation.com

Gay O'Brien [gay@animaltransportation.com]

Office: 650-525-9099

Cell: 650-642-5719

Fax: 650-525-9199

3. Two national animal transporter organizations which may have a local member near you are [IPATA \(Independent Pet and Animal Transportation Association\)](http://www.ipata.com)

745 Winding Trail

Holly Lake Ranch, Texas 75755

Tel: (903) 769-2267

Fax: (903) 769-2867 <http://www.ipata.com>

and

Animal Transportation Association (AATA)

111 East Loop North, Houston, TX 77029

713-532-2177,

Fax: 713-532-2166

<http://www.aata-animaltransport.org>

Health Status of Closed Colony

Mycoplasma	negative
PRRS	negative
TGE	negative
Brucellosis	negative
Circovirus	vaccinated (CircoFlex)
Influenza	vaccinated (FluSure)
Ileitis	vaccinated (Enterisol Ileitis)
Salmonella	vaccinated (Argus SC/ST)
Parvovirus	vaccinated (Parvo Shield)
Erysipelas	vaccinated (Parvo Shield)
Bordetella	vaccinated (Rhinogen CTE)
Pasteurella	vaccinated (Rhinogen CTE)
Leptospirosis	vaccinated (Parvo Shield)
Clostridia	vaccinated (ProSystem CE)
E.coli	vaccinated (ProSystem CE)

Additional Services

1. Intravenous glucose tolerance test (IVGTT)

Cost is \$169.45/pig, excluding insulin measures by an outside lab. LINCO (now Millipore) charges \$22.20/sample with minimum 35 samples. We usually do 5 time points per pig, thus \$280.45/IVGTT.

2. Percutaneous central venous catheter

Catheterization is required to conduct IVGTT; \$137/catheterization.

3. Angiography and intravascular ultrasound (IVUS) = \$ 1,028 / pig

+Bare metal vascular stent deployment = add \$439 / pig

4. Adult castration or vasectomy = \$100/pig

5. Surgery room rental is ~\$50/hr, with angiography suite ~\$50/hr.

6. On campus pig housing \$14.50/pig/day.

7. Serology for non-standard health testing = variable \$ / pig

External purchases must add 56% F&A charges for items 1-6.

Literature References

Again, please see our website and the manuscripts referenced in the file "Ossabaw graphic--IU&PU Comp Med v14bib.pdf" to ensure that you have a solid knowledge base on which to make your purchase.