

Pink Pulsating Pancreas

An interactive, educational audio-visual experience



Firefly 2018 - Creativity Grant Application

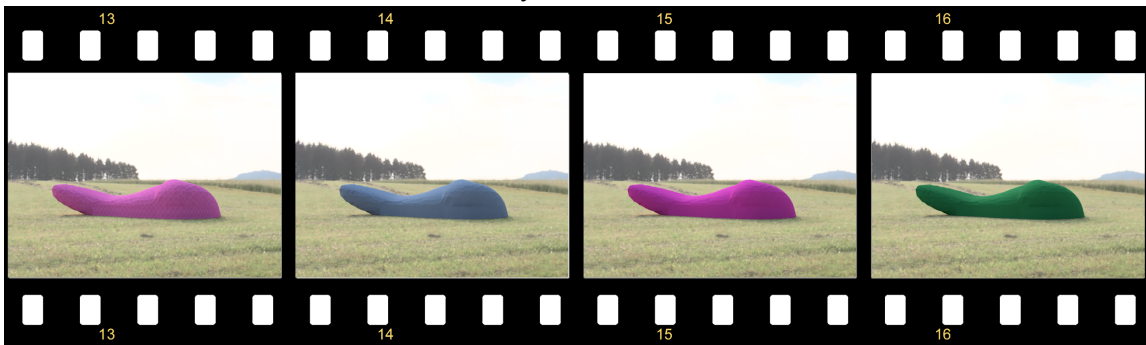
Project Overview

The Pink Pulsating Pancreas is a medium sized scale model of a human pancreas, 10'6" long x 6'6" wide x 2'8" high. The piece will be constructed using interlocking plywood pieces forming a ribbed frame, covered in pink spandex fabric. It will be lit from the inside using participant-controlled LED lighting fixtures, and will contain speakers that play entertaining and educational participant-controlled audio.

Project Philosophy

The project is inspired by a general observation that while Burners frequently create art based on human anatomy, generally this is limited to the heart, the brain, or genitalia. Out of the large number of internal organs in the human body, the pancreas was chosen due to its relative obscurity and interesting shape.

The project intends to inspire others to create interesting interactive art, especially art based on unconventional parts of human anatomy. It also aims to educate participants about the pancreas and its function in the human body.

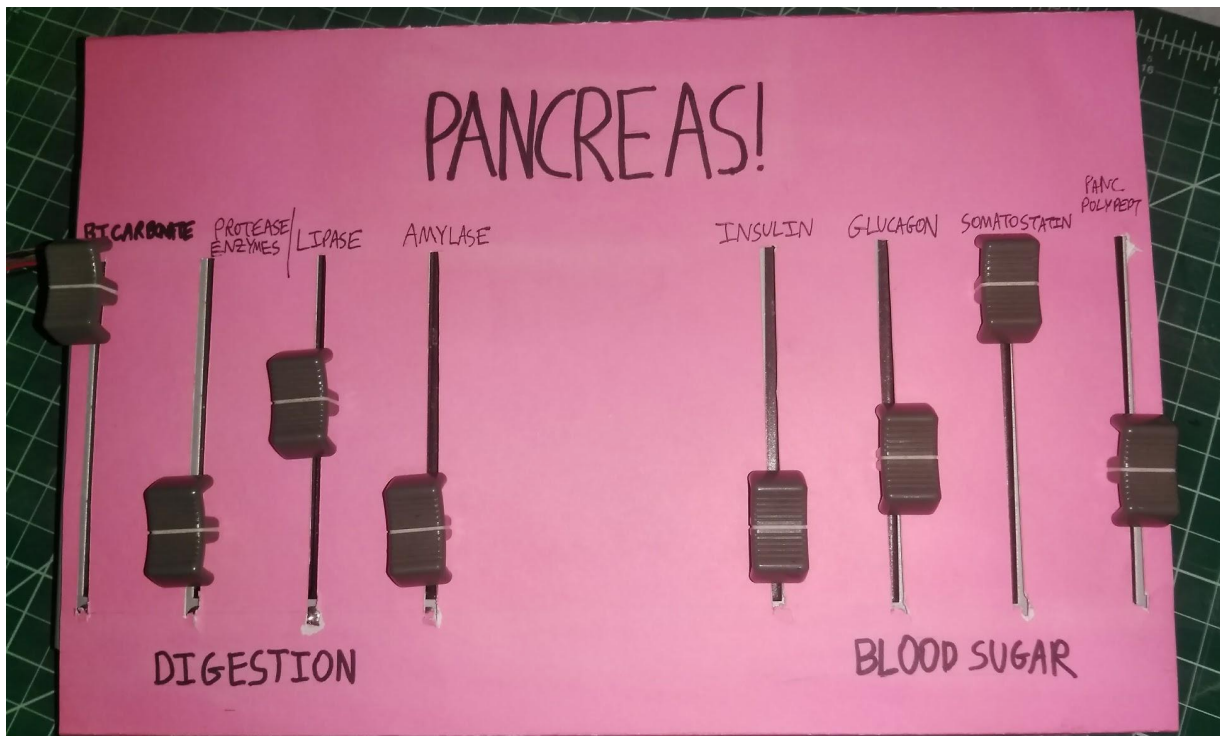


Experience Design

From afar, the Pancreas will present an intriguing visual appearance, compelling participants to venture closer. As they approach, they will notice the light and sound elements of the piece, and when they get really close they will notice the control panel that allows them to interact with the piece.

The shape of the piece will be as close as possible to that of a typical human pancreas. The artist is working from a 3D anatomical model to make sure of this. Most of the piece will be anchored to the ground, however a short 2 foot section at one end will extend into the air forming the “tail” of the organ. The cover fabric will be painted to resemble the texture of a real pancreas.

The project features participant-controlled sound and lighting as important elements. A control box made of painted plywood and containing 8 faders (slide-style controls) will be located near the piece, based on this cardboard mockup:



(Note that the plywood version of the control box will have a larger front to allow more space around the faders, and will have computer-printed or stenciled labels.)

The first 4 faders will be labeled with the main digestive substances produced by the pancreas (bicarbonate, protease enzymes, lipase, amylase) and will control lighting parameters (mode, speed, hue, colour saturation/hue 2).

The lighting system is designed to enable participants to experiment with interesting lighting effects. 3 main modes will be implemented:

1. Colour fade: gradually fade between colours, at the speed chosen by the “speed” fader, with the chosen colour saturation.
2. Single colour strobe: Flash the selected hue at the speed chosen by the “speed” fader, with the chosen colour saturation.
3. Dual colour strobe: Flash between two selectable hues at the chosen speed.

Modes 2 and 3 can be used to explore several lighting illusions, including imaginary colours (colours outside the gamut of the human retina that can still be perceived in the human visual cortex) and the Ganzfeld Effect, where nonexistent shapes are seen in response to strobe effects.

The other 4 faders will be labeled with the main blood sugar-control hormones secreted by the pancreas (insulin, glucagon, somatostatin, pancreatic polypeptide) and will control sound parameters (volume, tone, filter resonance / echo, stereo width).

The audio aspects will consist of a variety of sound effects and music designed to amuse and delight participants close enough to hear them, played over a 4 speaker system. Sound effects will be based on interviews about the pancreas between the artist and friends, as well as on educational documentaries about the pancreas. Music will include songs and remixes of songs about the pancreas as well as original work.

The control system will also track an “intensity” value not directly controlled by participants. Intensity will be raised whenever a participant interacts with any control. At lower intensity levels, short sound clips and low-level “creepy” music will be played. At higher intensity levels, longer sound clips will be played and louder songs will be triggered. At very high intensity levels, the lighting mode will switch to the “dual colour strobe” mode regardless of the “mode” setting.

Intensity will lower automatically when nobody has interacted with the controls for a while. As a result, only low intensity sounds will be played when nobody is around. The lighting will also revert to the “colour fade” mode.

Technical Design

The primary structure of the Pancreas is a frame consisting of “ribs” cut from plywood, attached using slots cut into the wood and metal fasteners. The ribs have been designed using 3D CAD software and will be traced onto plywood using a projector, then cut using a jigsaw. When needed for additional precision, templates will be created from scrap materials and traced using a router. All slots will be cut using a router. In order to suspend the tail, metal conduit (EMT) will be cut and drilled to form support struts.

Here is a rendering of the frame:

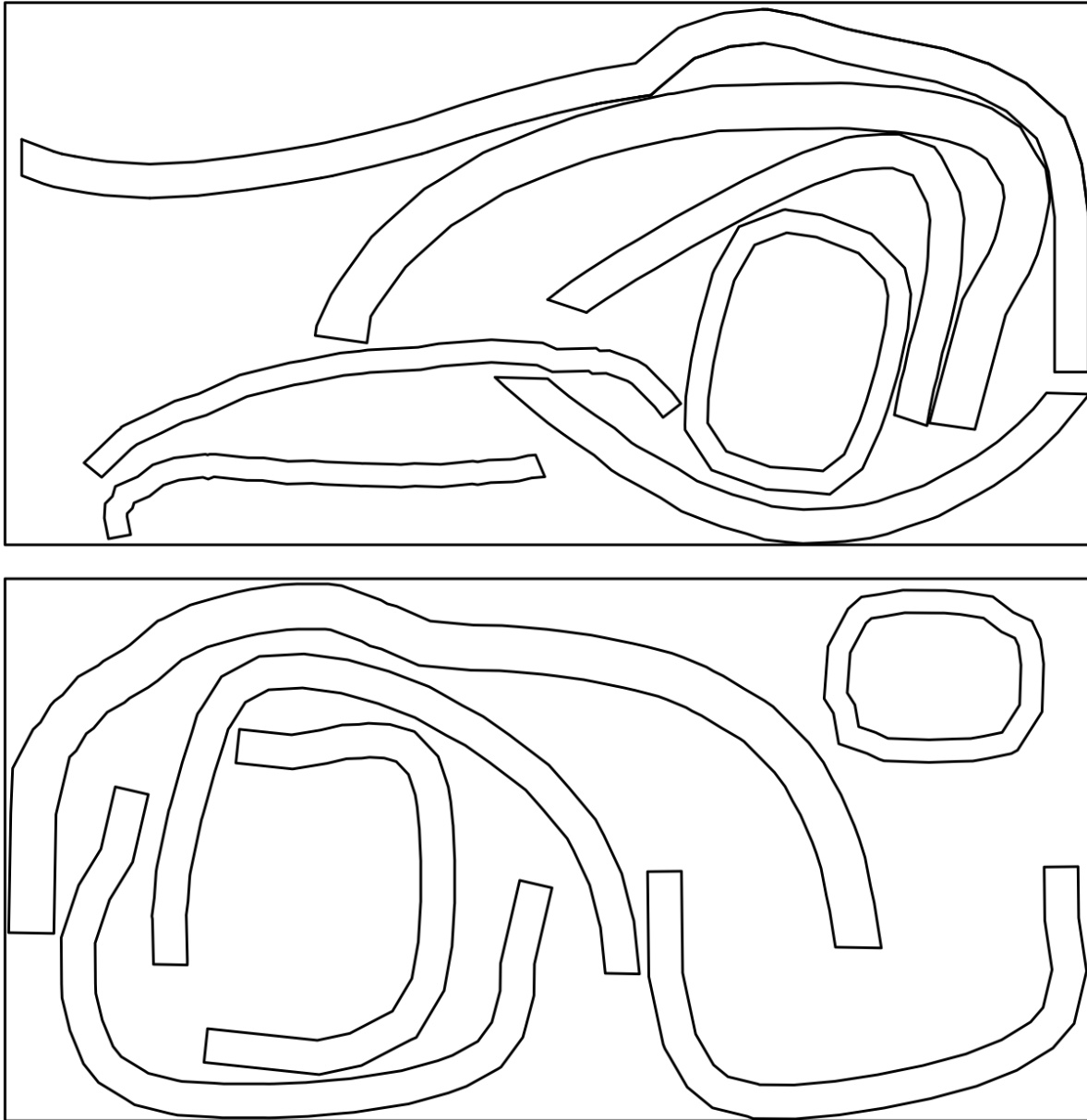


(Tail support struts and metal fasteners are not shown.)

Metal fasteners (generally 90° brackets but in some cases flat plates) will be attached between ribs as needed for strength. Brackets will also be attached to the bottom of each rib, to be used on site to secure the installation to the ground using 12” landscaping nails.

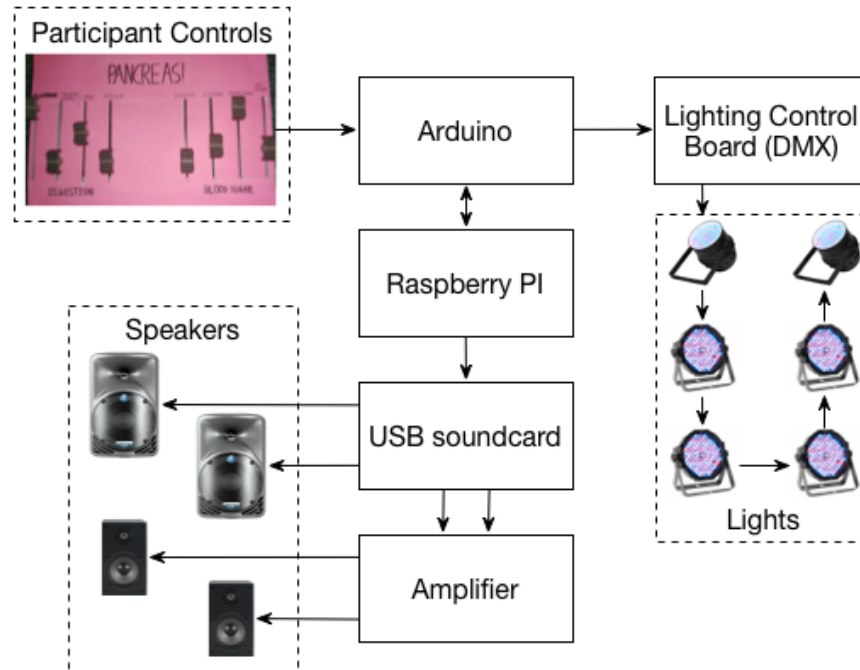
A cut plan for the plywood is shown on the next page.

Cut Plan for Plywood (4' x 8' sheets)



The pre-sewn spandex cover will be attached to the structure using staples and (fluorescent pink) batten tape. The lighting and sound elements will be installed under the cover and waterproofed using plastic. A 10' x 10' canopy will be erected near the structure and the control box will be installed under the canopy.

The control box used by participants to interact with the installation will be made of plywood, painted pink. The box will feature a fader bank (slide-style controls) salvaged from an old lighting controller. The circuitry will consist of a Raspberry Pi (as the main controller) connected to an Arduino (for lighting via a custom control board and to read the fader bank) and a USB sound card (for high quality sound).



Signage will be installed to inform participants of the title of the piece, and prominent “do not climb” signs will be placed around the outside of the structure.

Build Plan

As described above, the ribs that form the frame will be cut from plywood. After cutting, the frame will be assembled at an indoor test site, including all support struts and metal fasteners.

The spandex fabric will be cut to fit the frame, attached to the frame temporarily with push pins, and safety pinned together to form a tent-like structure that covers the entire frame. It will then be removed and sewn together into a single piece using industrial sewing equipment.

The structure will be assembled again as a test, and the fabric will be spray painted to resemble the surface of the human pancreas using a stencil. Lighting and sound programs will be tested using the assembled structure and any needed tweaks will be made. The structure will then be disassembled for transport to the event.

Lighting programming and sound design are already underway and will continue until the event opens.

Project Timeline

1 division = 1 week. Most work is planned for weekends :)

Task Description	Task Start		Task End
Notification of grant; order spandex & tape	Mar. 29		Mar. 29
Buy plywood; cut ribs & support struts	Mar. 31		Apr. 1
Receive spandex & tape (at latest)	Apr. 11		Apr. 11
Extra build day	Apr. 14		Apr. 14
Build frame, cut spandex	Apr. 21		Apr. 22
Sew spandex	May 5		May 6
Build control box, assemble electronics	May 26		May 27
Test Build!	Jun. 2		Jun. 3
Sound design & lighting programming	Mar. 29		Jul. 2
Placement / work weekend 1?	Jun. 9		Jun. 10
Extra build weekend (buffer)	Jun. 23		Jun. 24
Assemble & cover frame on work weekend 3?	Jun. 30		Jul. 1
Early Arrival, assemble frame?	Jul. 2		Jul. 2
Cover frame, install light & sound; event opens	Jul. 3		Jul. 3
Teardown, end of Firefly	Jul. 8		Jul. 8
Grant documentation deadline	Jul. 23		Jul. 23

Dates in June will be adjusted to accommodate the actual dates of work weekends.

Installation Plan

The frame for the project is designed to pack flat for transportation. The remaining components are relatively small. The project will be transported to Firefly in the artist's 4x4 truck, and if trail conditions permit it will be driven to its installation site. If not, the individual parts are small enough (and few enough in number) to hand carry or cart in.

On site, the base structure will be assembled, fastened, and staked to the ground. If necessary due to slightly uneven ground, we will attach plywood pieces leftover from the original cutting to extend some of the legs. Next, the cover will be attached using staples and batten tape.

After the cover is installed and we are satisfied that it is secure, the lighting and sound elements will be installed under the cover and waterproofed using plastic. A 10' x 10' canopy will be erected near the structure and the control panel will be installed under the canopy.

If allowed, we would assemble and cover the frame during a work weekend and complete installation during early arrival.

If we're not allowed to assemble the frame during a work weekend, we can easily assemble it during the first half-day + evening of early arrival. (By the time we reach Firefly we will have built the frame at least twice at home.) We would then attach the cover and install the remaining elements on the following day.

Risk Analysis

It is possible that a participant will attempt to climb the structure, causing a collapse. This is unlikely given that the structure won't have any apparent handholds and won't "feel" strong enough to climb, and also won't be high enough to form an appealing target. However we will address this risk by adding "do not climb" signs around the base of the structure.

There is a slight risk of the structure becoming airborne due to wind, however this is extremely low. The proposed structural design and anchoring techniques have been tested on the Black Rock playa with significantly larger structures. To further lower this risk we will check the structure and anchors for defects daily.

LNT concerns (and those related to the local environment) are discussed under "Leave No Trace Plan".

Leave No Trace Plan

Our team will ensure that our project Leaves No Trace by taking the following steps:

1. Great care will be taken to produce a non-moopy art piece. All plywood edges will be sanded and/or rasped to minimize the possibility of splinters or flakes. Spandex is generally a non-moopy material to begin with, but care will be taken during cutting and sewing to make sure there are no edges that might fray, and if necessary these will be corrected using an industrial serger. Spray paint will be tested to make sure it adheres properly to all needed surfaces and will not flake off.
2. During the build, our installation crew will exercise care not to produce MOOP, and will conduct regular MOOP sweeps.
3. A member of our installation crew will MOOP sweep the installation and surrounding area daily to collect any MOOP left by participants interacting with the installation.
4. After teardown, our installation crew will perform a line sweep of the area occupied by the installation to catch any errant MOOP, including sweeping the area with a magnetic rake.

Project Budget

Two project budgets are included on separate pages.

The first, "Budget, Firefly Only", itemizes the costs involved to build the piece, and mostly covers the materials needed to build the frame and cover. (\$300)

We have also requested the Canadian equivalent of \$300 USD from Hyperborea, a regional burn held in Ontario, Canada in late May. We're seeking funding from both events because while the artist owns 2 lighting fixtures that will be sufficient to produce the intended visual effects, this will result in uneven lighting levels that are dimmer than intended and 2 dark spots. Ideally we need 6 lighting fixtures, and an additional \$300 from Firefly will allow us to purchase

the additional 4 lights. The “Firefly’s part if also funded by Hyperborea” document lists the lighting that will be used in this case.

So to summarize, if we’re just funded by Firefly (\$300) we’ll be able to build the frame and cover, but the lighting will be suboptimal. If we’re funded by both organizations (\$600 total) we’ll be able to realize our full vision of even and bright lighting, visible to participants regardless of where they are in relation to the piece.

In both cases we are seeking full funding for the project (\$300 from Firefly).

Project Placement

The Pink Pulsating Pancreas prefers project placement in the main field. We need a reasonably flat (though not necessarily level) place to accommodate the structure’s footprint of 10’6” x 6’6”.

Based on our experience at past Firefly events, we know there are many places like this in the main field.

To maximize the sound and light impact of the project, we would prefer to be placed reasonably far (100’ if possible) from any projects with sound elements or bright lights.

Someone from our installation team will be able to attend the Placement Weekend and we’re happy to figure out the details then.

Sound Note

The project includes sound elements of varying volume levels, but nothing that would be described as “loud” relative to the average Firefly sound camp. We do realize that Firefly needs to be careful about sound levels, and we’re willing to work with Sound Core to set appropriate levels. We’ll also be able to program the installation to lower sound levels or disable sound completely during certain hours. Finally, we’ll make Sound Core aware of how to shut off the sound if that needs to be done while a member of the installation team can’t be found.



Pink Pulsating Pancreas: Budget, Firefly Only

	qty	unit price	total	total w/ tax	notes
Structure					
Plywood panels 4' x 8' x 3/4"	2	\$32.58	\$65.16	\$74.91	
90° corner braces, wide, 4pk	5	\$1.43	\$7.16	\$8.23	
Connection plates, flat	4	\$1.06	\$4.25	\$4.89	
Screws, #8 x 1", 300pk	1	\$12.30	\$12.30	\$14.15	
Landscaping Nails, 12" galv, ea	20	\$0.76	\$15.25	\$17.53	
90° corner braces, narrow	30				Reusing from previous projects
Jigsaw blades, 5pk			\$10.76	\$12.37	
Flush trim router bit			\$8.46	\$9.73	
Metal Tubing (EMT), pieces	4				Reusing from a broken dome my friend donated
Template material (MDF, plywood)					Repurposing scrap materials
Total Structure				\$141.81	
Cover					
Spandex, Spandex World #16542, yards	7	\$8.00	\$56.00	\$56.00	
Shipping for spandex			\$9.00	\$9.00	
Batten tape, pink, 25 yard roll, shipped	1		\$13.95	\$13.95	
Spray paint, can	7	\$6.07	\$42.47	\$48.83	
Staples for power stapler, 1000 pk	1		\$9.22	\$10.61	
Coroplast for stencil					Reused election signs
Total Cover				\$138.39	
Lighting					
ColorKey LED Par 64 10mm DMX	2				Already own
DMX cables	2				Already own
DMX controller for Arduino	1				Already built for a previous project

Pink Pulsating Pancreas: Budget, Firefly Only

	qty	unit price	total	total w/ tax	notes
Sound					
Mackie SRM350 self powered speaker	2				Already own
Small generic bookshelf speaker	2				Already own
Realistic STM-450 integrated amplifier	1				Already own
iConnect AUDIO 4+ USB soundcard	1				Already own
Cables for speakers					Already own
Interactivity					
Plywood for control box					Repurposing scrap materials
Paint for control box					Using leftovers from a previous project
Fader bank (8 faders)					Salvaged from old lighting controller
Arduino					Already own
Raspberry Pi					Already own
Power supply					Already own
Misc Costs					
Generator: Honda EU2000i					Already own
Gasoline, gallons	4	\$2.69	\$10.76	\$10.76	
Coroplast for signage					Reused election signs
Canopy, 10' x 10' EZ-UP style					Already own
Transportation	The disassembled installation will easily fit in the artist's vehicle. No transportation costs are requested.				
Contingency / extra				\$9.04	
Total Misc Costs				\$19.80	
Total					
Total requested from Firefly				\$300.00	

Pink Pulsating Pancreas: Firefly's part if also funded by Hyperborea

		qty	unit price	total	notes
Lighting					
	ColorKey LED Par 64 10mm DMX light fixture	2			Already own
	DMX cables	6			Already own
	DMX controller for Arduino	1			Already built for a previous project
	American DJ Mega Par Profile Plus DMX light fixture, shipped	4	\$75.00	\$300.00	
Total					
	Total requested from Firefly			\$300.00	