

APPLICANT NAME

BPMI

What Lies Beneath: Art Created Based on MRI Scans

Oil Paintings

\$337.33

Advisor Name Assistant Professor, Advisor E-mail

ABSTRACT

In anatomy, it is taught that in the human body form follows function. This means that every structure in the body has a purpose and contributes to its actions. The same is true for other organisms as well. This funding will contribute to an artistic study of sixteen different organisms in a unique way. Using Magnetic Resonance Imaging (MRI) it will take a deeper look into the inner workings these organisms and what they are composed of. Hospitals use MRI machines in order to create detailed images of the organs and tissues within a human body. This project will use the same technology in order to create images of various organisms (including plants and animals) and in turn use these images to create paintings based off of the images.

THEME

This project will focus on using MRI machine to look at various organism's inner structures. This unique technique will use the same magnetic field that humans use to find tumors, injuries, detect organ abnormalities, and study the soft tissues found in the human body. The paintings created will provide a new insight and view within the organisms studied and hopefully spark a greater understanding and curiosity in the underlying structures which make up our world.

BACKGROUND

This proposed series of paintings will demonstrate to the audience the power an MRI machine has.

There are currently few artists who use MRI images of species other than human to create artwork. However, there are several artists and researchers which inspire and inform this project. Artwork and prints made by artists and photographers such as Hugh Turvey, Gary Yeoh, and Dain Tasker are very beautiful and unique. They take x-ray images of plants and some colorize the images to make the subject matter stand out. Architect Macoto Murayama's art work also looks similar to a radiology image at times but is actually constructed by careful observation and measurement of a plant through 3dsMAX software program. A blog entitled "Inside Insides" by Andy Ellison captures MRI GIFs of fruit. Although not an artist, his GIFs of MRI data which are captured for fun, have inspired some of the subject matter for the project. Lastly Steve Miller is an artist who creates beautiful abstract paintings on a variety of radiology data.

Sanford Sheldon Medical Center has been contacted and permission has been granted to take the images using their MRI machine. The Radiology Department manager is very interested in the project and willing to help take images of the various subject matter. Her name is Bobbi Jo

Glassmaker and she has taken two sample images of a banana to show sample images of what their device is capable of:



MRI machines are designed to capture images of the fleshy tissue in the body while x-rays are designed to capture the more solid bony structures. This project will highlight structures such as this which are not often noticed by the naked eye in a captivating way.

EXPECTED OUTCOMES

The purpose of this project is to create an interesting and dynamic series of paintings which capture the beauty of the underlying tissue and anatomy in various organisms. Each structure is essential to the function of the organism.

This project will be a series of paintings depicting sixteen different organisms. The less formal and more artistic nature of the paintings will engage viewers of all backgrounds in ways an MRI image alone cannot.

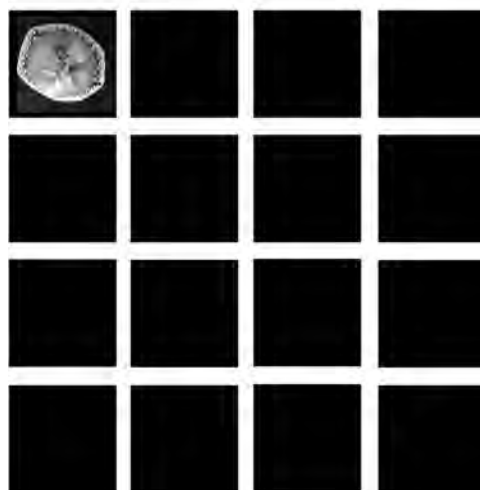
Potential subject matter includes:

- Jumbo Butterfly shrimp
- Fish
- Artichoke

- Watermelon
- Banana Flower
- Pineapple
- Beetle/ Insect
- Cactus
- Spaghetti Squash
- Cabbage
- Orange
- Kiwi
- Kiwano Melon
- Sunflower
- Strawberries
- Onion
- Ugli Fruit

More MRI images will be taken than the number of paintings required in order to insure interesting subject matter for the final paintings. The paintings will be created using oil paint and will maintain a black background to have the same aesthetic as a MRI scan. However, color will be incorporated into the subject matter to highlight important and interesting structures. White writing similar to a scan will be included to indicate the organism, scale, and view of each subject. Each painting will be 10x10inches on gessobord panel. The paintings will be arranged in a matrix (as seen below) so that the viewer is able to see the paintings of the organisms side by side and comparisons can be made between the structures. The motivation is that the viewer will get a sense of and gain an appreciation of the form and how it relates to the function of the organism in a way they have not previously.

Display of Artwork



Sanford Sheldon Medical Center is interested in displaying the finished project at their health science fair. The paintings can be used as a tool to interest the public in the field of Radiology and the technology involved. They can also be used as a tool to inspire learning in biology as they will highlight the anatomy of various organisms.

This project would be a great opportunity for me personally as well. It is an incredible chance for me to learn how to budget when working on an important project which is not something students generally focus on but is extremely important in the professional world. It will require me to use skills I have learned and developed in BPMI classes in a new way. Although I have never learned oil painting specifically, I have learned other painting application such as watercolor and Photoshop painting. Completing this undertaking will teach me more about color mixing, color theory, and inform my color application in other areas as well. Oil painting is something I have always wanted to learn but it is unfortunately not part of the BPMI curriculum at Iowa State. I would love the opportunity to have this additional experience and broaden my traditional base in skill before graduating in the upcoming year. Working with a project advisor, staff members at the hospital, and the focus grant committee will provide practical communication skills and teach me more about working with a client in the real world. Overall, this project would teach me professional presentation, time-management, and new traditional media application techniques.

TIMELINE

The majority of the work for this project will be completed during summer 2018 because there will be much more free time to work than during the school year.

April:

- *Discovery Phase:*
 - Buy painting materials and begin studying techniques for paint application
 - Do small studies based on banana MRI images already obtained
- Schedule a time in May with Sanford Sheldon Medical Center to take MRI images
- Testing and Prototyping phase

May:

- Buy all specimen to take images of
- Travel to Sheldon, Iowa and take the MRI images with the help the head of the Radiology department
- Work on oil painting technique
- Create preliminary drawings for each of the paintings
- Begin painting and complete first painting by the end of the month
- Get advisor feedback after completing the first painting

June:

- Complete one to two paintings per week throughout June

July:

- Complete one to two paintings per week throughout July

August:

- Complete one to two paintings per week throughout August
- Arrive back at school- obtain feedback from project advisor

September:

- First monthly progress check- September 1
- Complete one painting during month of September
- **September 10, 2018: Written Progress Reports Due for Applicant and Advisor**
- **September TBD, 2018: Visual Progress Reviews**

October:

- Second monthly progress check- October 1
- Complete one painting during month of October

November:

- Second monthly progress check- October 1
- Complete one painting during month of November
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December:

- Complete 1 to 2 painting if any remain
- Make adjustments

January

- Complete any remaining paintings
- Make adjustments

February

- Prepare for display
 - Attach eye screws and hanging wire to all artwork

March:

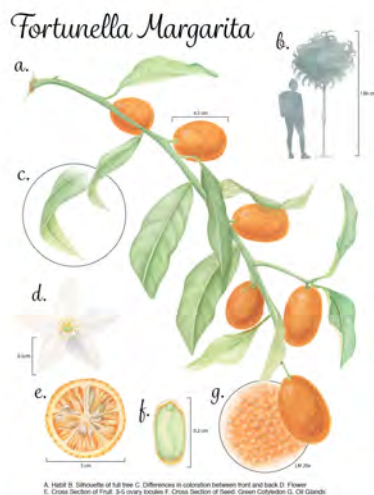
- **Project Due**

APPLICANT'S BACKGROUND

Ever since I was a child, I have spent a lot of time at a hospital as my mom was a nurse and I would wait for her there every day after school. As I have gotten older, my fascination in medical practices have continued to grow. Whenever I have needed an x-ray, MRI, etc. I have always asked for a copy of the images because I find them extremely interesting and beautiful.

As a student in Biological/ Pre- Medical Illustration, I am passionate about both science, art, and especially the combination of both. My coursework has well prepared me to take on a project such as this. I have learned how to use many traditional media and am very interested in continuing to expand my knowledge. I have also learned and grown in my time management skills which will help me to make a plan and stay on track to finish the project in a timely manner. The idea of this project excites me greatly and I would love the opportunity to bring it to life.

EXAMPLES OF PREVIOUS PERSONAL WORK



Botanical Plate
12x16
Watercolor Painting
BPMI 337



Grapefruit
8.5x 11
Photoshop Painting
BPMI 326



Bowfin Fish Skull
8.5x11
Photoshop Painting
BPMI 326



Tendons of the Hand
11x14
Colored Pencil
BPMI 323

BUDGET

Expense Detail	Purpose	Source	Quantity	Expense (Each)	Expense (Total Quantity)
Painting Supplies					
Hanging Wire	To hang the final pieces	Amazon.com	1	3.58	3.58
Small Eye Screw	To hang the final pieces	Amazon.com	1	7.99	7.99
Grumbacher Academy Oil Colors- Collegiate Set	Paint to complete the pieces	Dickblick.com	1	37.57	37.57
Grumbacher Academy Oil Color- Ivory Black 37 ml	Since there will be a significant amount of black used in the paintings	Dickblick.com	1	3.90	3.90
Grumbacher Academy Oil Color- Titanium White 37ml tube	A significant amount of white is used in oil painting	Dickblick.com	1	3.90	3.90
Blick Palette Paper Pad 9" x 12"	Used for painting purposes to hold paint	Dickblick.com	1	4.76	4.76
Winsor & Newton Monarch Mongoose Brush- Round, Long Handle, Size 0	Based on list of oil painting supplies by Barbara Walton (Iowa State painting instructor). Various	Dickblick.com	1	3.86	3.86
Winsor & Newton Monarch Mongoose Brush- Bright, Long Handle, Size 0		Dickblick.com	1	4.74	4.74

Winsor & Newton Monarch Mongoose Brush- Round, Long Handle, Size 8	brushes to be used in the painting process	Dickblick.com	1	8.79	8.79
Winsor & Newton Monarch Mongoose Brush- Flat, Long Handle, Size 8		Dickblick.com	1	11.40	11.40
Winsor & Newton Monarch Mongoose Brush- Flat, Long Handle, Size 4		Dickblick.com	1	6.73	6.73
Winsor & Newton Monarch Mongoose Brush- Flat, Long Handle, Size 2		Dickblick.com	1	5.33	5.33
Winsor & Newton Monarch Mongoose Brush- Filbert, Long Handle, Size 12		Dickblick.com	1	14.79	14.79
Winsor & Newton Monarch Mongoose Brush- Filbert, Long Handle, Size 4		Dickblick.com	1	7.99	7.99
Winsor & Newton Monarch Mongoose Brush- Bright, Long Handle, Size 12		Dickblick.com	1	14.39	14.39
Winsor & Newton Monarch Mongoose Brush- Bright, Long Handle, Size 6		Dickblick.com	1	8.79	8.79
Strathmore 400 Series Layout Bond Pad 11" x 14"	Used to create preliminary drawings to transfer onto final surfaces	Dickblick.com	1	8.99	8.99
Ampersand Gessobord 10" x 10"	Final surface for the paintings (2 extra to conduct studies and test materials)	Dickblick.com	18	5.90	106.20
Blick painting Knife	Used to mix paint	Dickblick.com	1	8.29	8.29
Weber Turpenoid Natural	Used for brush cleaning	Dickblick.com	1	15.16	15.16
The Masters Brush Cleaner and Preserver 1 oz	Used for brush cleaning	Dickblick.com	1	3.87	3.87
Supplies Expenses					291.02
Subjects					
Jumbo Butterfly Shrimp	Used as a subject	Hy-Vee	1	3.00	3.00
Fish (Whole Tuna)	Used as a subject	Hy-Vee	1	5.99	2.49
Artichoke	Used as a subject	Hy-Vee	1	2.49	2.49
Watermelon	Used as a subject	Hy-Vee	1	5.99	5.99
Pineapple	Used as a subject	Hy-Vee	1	2.48	2.48
Cabbage	Used as a subject	Hy-Vee	1	.99	.99
Orange	Used as a subject	Hy-Vee	1	.99	.99

Kiwi	Used as a subject	Hy-Vee	1	1.00	1.00
Onion	Used as a subject	Hy-Vee	1	.80	.80
Cauliflower	Used as a subject	Hy-Vee	1	3.88	3.88
Eggplant	Used as a subject	Hy-Vee	1	.99	.99
Ugli fruit	Used as a subject	Hy-Vee	1	1.99	1.99
Sunflower	Used as a subject	Event Flower Home and Gifts	1	7.00	7.00
Strawberries	Used as a subject	Hy-Vee	1	2.22	2.22
Cactus	Used as a subject	Walmart	1	10.00	10.00
Subject Expenses					46.31
TOTAL EXPENSES					337.33

SANFORD HOSPITAL RADIOLOGY DEPARTMENT MANAGER'S E-MAIL

