EXHIBITS
SPRING 2018

University of Nebraska-Lincoln
ANTRO 498/898
JOMC 491/891
GRPH 491
The 2018 Exhibits Project represents the work and dedication of students and faculty from the University of Nebraska-Lincoln Spring 2018 JOMC 491/891, ANTRO 498/898, GRPH491 class. This class focused on how exhibits communicate, educate, inform, and motivate audiences. The course provided hands-on experience in collaborating, designing, building and assessing an exhibit for the real-world setting at the University of Nebraska-Lincoln. The class reviewed the client’s proposal, conducted content research, planned, designed, and constructed exhibit elements, installed the exhibit at its local site, and created this portfolio of the entire process.

This Spring Semester 2018 class featured the “The Original Sucrose Density Gradient Swinging Bucket Rotor” for the Nebraska Center for Virology at the Morrison Life Sciences Research Center.
ACKNOWLEDGMENTS

We would like to thank sponsors, Andrew “Andy” Jackson and Thomas “Jack” Morris, for funding the Nebraska Center for Virology exhibit, and to Susan Weller from the University of Nebraska State Museum and the Biology of Human NIH-SEPA project for supporting the course fees. We are grateful to Charles Wood, Jim Van Etten, and David Dunigan for their encouragement and support throughout. This project was made possible through the assistance of David Martin and Jerry Reif at Nebraska Innovation Studio, Aaron Sutherlen from the School of Art and Art History, Katie Krcmarik from the College of Journalism and Mass Communications, Robb Nelson from the Department of History, and Judy Diamond from the University of Nebraska State Museum.

The research, design, production and installation of the exhibit was made through the collaborative efforts of Mahra Al Raisi, Jinell Carslin, Tiah Davis-Northway, Ruth Grady, Devra Hock, Jacob Kennedy, Daisha Marquardt, Madison Mascare, Steven Petty, Daisy Sarne, Cameron Scheele, Phuc Tran, Juan Velasco, Amanda Wade and Monica Zurek.
The 2018 class project was “The Original Sucrose Density Gradient Swinging Bucket Rotor” in honor of Myron Brakke, the first Nebraska scientist to be inducted into the National Academy of Sciences. The exhibit and associated web site showcases Brakke’s life and work, the density gradient centrifugation technology he invented, as well as the viruses studied, and the achievements of the Nebraska Center for Virology. Density gradient centrifugation continues as a globally significant technology in molecular biology and virology.

The exhibit is located in the North Atrium of the Ken Morrison Life Sciences Research Center on the University of Nebraska-Lincoln campus.

Our goals were to display the original swinging bucket rotor, present the scientific context for the development of the density gradient centrifugation technology, highlight the contributions of Myron Brakke, and represent the many achievements of the Nebraska Center of Virology. An important part of the process was our extensive research conducted to fully understand the rotor, Myron Brakke, viruses, and design solutions for displays and production materials that will work in our given space. We collaborated ideas and inspiration to begin and intermingled them throughout our process to form our final designs and exhibit.
The exhibit features the original sucrose density gradient swinging bucket rotor used by Myron Brakke. This display is interactive, giving users an opportunity to visualize the operation of the swinging buckets on the rotor. The evolution to the final product is shown starting with the first sketches. These sketches show the many different styles, shapes and details we considered as we developed the final design.
The graphic panels on the rotor exhibit creatively highlight who Myron Brakke was as a person, his achievements, and the significance of his invention of sucrose density gradient centrifugation.

A full-scale cardboard working prototype was created to understand and visualize the structural characteristics, functionality and configurations of the pieces.
The panel pieces were produced with 2mm thick foam PVC and cut into trapezoids.
Illustrations depict the various viruses that are researched at the Nebraska Center of Virology.

1. Paramecium bursaria chlorella virus 1 (PBCV-1)
2. Human papillomavirus (HPV)
3. Human immunodeficiency virus 1 (HIV-1)
4. Adenovirus
5. Potato yellow dwarf virus (PYDV)
6. Kaposi’s sarcoma-associated herpesvirus (KSHV)
7. Influenza virus A
8. Tomato spotted wilt virus (TSVV)
A graphic of the achievements of the Nebraska Center of Virology started as a simple linear timeline and evolved to an abstract graphic highlighting the Center's milestones, research and discovery, and international training and outreach. This graphic, including research featured on scientific journal covers, is wrapped around main column in the lobby.
OUR VISION
It is the vision of the NCV to create a nationally recognized center of biomedical research excellence. The NCV will accomplish this by creating an infrastructure linking the strong virology programs of these three institutions and attracting to Nebraska promising new investigators with similar research interests.
A full-scale mock-up of the timeline was created to help visualize how the layout looks to scale, determine readability, and how it will look wrapped around a column.
The rear wall design in the Nebraska Center of Virology lobby features illustrations of important viruses worked on at the Center. A plaque, mounted on the side of the wall, highlights the mission of the Nebraska Center for Virology.
The common purpose of the Nebraska Center for Virology is to add expertise in biomedically important areas of virology by:

- Creating a multi-disciplinary environment that will stimulate cross-fertilization to produce a new generation of innovative researchers with a broad knowledge encompassing the entire field of virology.
- Developing partnerships between basic and clinical researchers working with human, animal, and potentially important plant systems, with a common goal of unraveling the mechanisms of viral pathogenesis and replication. The understanding of these fundamental processes will enable the design of novel vaccines and therapeutic strategies to block disease.
- Conducting innovative research addressing the fundamental questions about infectious agents and the host responses that may lead to pathological changes, especially neuropathogenesis and apoptosis.

The virus designs were created on vinyl and the Center title was cut out of black acrylic. The mission statement plaque was mounted to the back wall with an acrylic front.
PRODUCTION
Different materials were researched and tested to understand and decide functionality, quality, and the best fit for the objects and content in our space.
The base of the rotor display stand was produced with two-four foot by eight foot ¾-inch birch plywood from Innovation Studio. It was cut into equal sized rectangular pieces to complete the hexagon shape. The sides were then mitered together to fit together clearly. Wood glue was used to connect all pieces and the edges were sanded to round them.

Lastly, the wood was stained with Golden Pecan stain to match the interior wood of the center lobby. The panel section on the display used four large planks of white maple from the Big Red Saw Mill in Palmyra. A wood plainer was used to get the pieces to the desired ¾-inch thickness and then was cut into trapezoid shapes. These were meticulously mitered on each side to have each angle meet correctly. Wood glue and wooden braces were
used to connect each trapezoid. Small gaps were filled with wood putty; then the entire piece was sanded, stained with Golden Pecan, and coated with satin finish polyurethane.

A Lazy Susan pedestal was used to allow spinning of the rotor. This section was produced with six small pieces of birch plywood glued together and secured by a nylon belt. The circular piece of the Lazy Susan was produced with ¾-inch sheet of birch plywood, cut with the C&C router. This was also sanded, stained, and coated with satin finish polyurethane. The Lazy Susan itself was attached to the circle and base with screws. The case for the rotor display is an enclosed acrylic cylinder.
APPENDICES

Sponsors

Andrew O. Jackson, Professor Emeritus, Plant & Microbial Biology, University of California, Berkeley.

Thomas Jack Morris, Distinguished Professor, School of Biological Sciences, University of Nebraska-Lincoln.

Susan Weller, Director of the University of Nebraska State Museum and Professor, Entomology, University of Nebraska-Lincoln.

Biology of Human NIH SEPA Project (Principal Investigators: Judy Diamond, Charles Wood, and Julia McQuilllan).

Advisors

Aaron Sutherlen, Assistant Professor of Art, School of Art and Art History, University of Nebraska-Lincoln.

Judy Diamond, Professor & Curator of Informal Science Education, University of Nebraska State Museum.

Katie Krcmarik, Assistant Professor of Practice, College of Journalism and Mass Communications, University of Nebraska-Lincoln.

David Martin, Director of the Nebraska Innovation Studio.

Jerry Reif, Shop Manager of Nebraska Innovation Studio.

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