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Oswald Research and Creativity Program

UK Office of Undergraduate Research

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Any current UK undergraduate (full- or part-time, enrolled for either semester) who does not already have a four-year degree is eligible for the Oswald Research and Creativity competition and is invited to submit papers and other projects in the following categories:

1. Biological Sciences
2. Design (architecture, landscape architecture, interior design, etc.)
3. Fine Arts (film, music, painting, sculpture, videotape, etc.)
4. Humanities: Creative
5. Humanities: Critical Research
6. Physical and Engineering Sciences
7. Social Sciences

Entries are judged on originality; clarity of expression; scholarly or artistic contribution; and the validity, scope, and depth of the project or investigation.

The following are representative winners in the 2007-2008 competition:

(Extended versions of some of these entries are available at www.uky.edu/kaleidoscope.)

**CATEGORY 1: Biological Sciences**

1st Place

**NAME: Megan Culler**

Agricultural Biotechnology major

**TITLE: Cellular Protein Interactions with the Cytoplasmic Tail of Paramyxovirus Fusion Proteins.**

This project is the result of independent research done in the laboratory of Prof. Rebecca Dutch in the Department of Molecular and Cellular Biochemistry. Paramyxoviridae, a family of negative-strand, enveloped, RNA viruses, is composed of several important human pathogens, including measles virus and human respiratory syncytial virus, as well as the newly emerged Hendra and Nipah viruses, making the study of these viruses pertinent to human health. In the life cycle of enveloped viruses, membrane fusion is necessary for the survival of the virus, allowing viral entry into the host cell and the release of the viral genome. The fusion of these viruses to the cell membrane is promoted by two surface glycoproteins, an attachment protein needed for primary receptor binding, and a fusion protein that promotes fusion between the viral envelope and the cell membrane. The specific hypothesis tested was that the Hendra virus F protein cytoplasmic tail interacts directly with cellular components, which regulate the expansion of the fusion pore. This hypothesis was tested by identifying mammalian proteins that interact with the cytoplasmic tails of the virus. Accomplishing this goal will provide crucial information on the fusion pore formation of a critical Henipavirus protein, potentially leading to a target for anti-viral therapy against the Hendra virus.

**Honorable Mention**

**Edward Kobraei**

Biology major

**TITLE: Using Designer PGs to Reveal Inhibitory Motifs of Gial Scar Chondroitin Sulfate Proteoglycans In Vitro and In Vivo.**

See pages 100-105 for Kobraei’s article about this project.

**CATEGORY 2: Design**

1st Place

**NAME: Katherine McOwen**

Architecture major

**TITLE: Rebuilding New Orleans/Dunbar’s Restaurant.**

Dunbar’s Restaurant was a small, yet widely known soul food restaurant located in the center of New Orleans. The eclectic spirit of the restaurant developed as a direct response to the dynamic attitudes of the surrounding community and the close-knit values of family. Tina Dunbar and her famous restaurant have been featured in many national and international magazines and brochures. Everyone from politicians to movie stars to your local person went there, not only for the delicious cuisine, but also because of the warm, spirited atmosphere created by Mrs. Dunbar and her family. When Hurricane Katrina hit and the levees broke, Dunbar’s was submerged under six feet of water. The family’s only source of revenue was destroyed and, to make matters worse, the roof was heavily damaged and never received the proper preventative measures to keep out the ongoing elements; so, for over two years it has been closed up and weathering beyond its years. As a result, the condemned building must be demolished. Our goal was to design a new restaurant to replace the current building. It needed to be a place that will be relaxed and fun, but also gives a new direction for the surrounding neighborhood. Because it is the only restaurant in its vicinity, we wanted it to be a place that created the idea of community where neighbors and friends could come together. Therefore, we proposed an architectural form that will aide Mrs. Dunbar in reestablishing the characteristics and values that made the restaurant an iconic destination.
2nd Place
NAME: Ben Drewry
Art Studio major, Theatre major
TITLE: Manifold

CATEGORY 4: Humanities: Creative
No awards this year

CATEGORY 5: Humanities: Critical Research

1st place
NAME: Amanda Cothren
Art History major

The legacy of Leonardo da Vinci is most often characterized by the works of his brush; however, there is more to Leonardo than what meets the art lover’s eye. His notebooks overflow with scientific studies, the most amazing of which are his meticulous studies of human anatomy. Scholars have long assumed that Leonardo dissected corpses in order to better represent the human form in his painting. My research counters this assumption, providing evidence from Leonardo’s drawings and writings that suggests he was primarily a scientist and engineer. This paper demonstrates that Leonardo’s detailed dissections and application of the laws of physics to human physiology would have been unnecessary to a career artist. I hope to unveil Leonardo as an anatomist who painted, not a painter who studied anatomy. See pages 20-29 for the full paper.

2nd Place
NAME: Michelle Combs
Anthropology major
TITLE: Of Piety and Lineage: A New Reading of Devotional Images of Mary of Burgundy

The most famous depiction of Mary of Burgundy (1457-1482) is undoubtedly the illuminated miniature in which she sits with her book of hours contemplating the Virgin Mary, pictured inside the window to her left. Another important devotional image of Mary is found within the Guild Book of the Confraternity of St. Anne (after
1476), of which Mary and her stepmother, Margaret of York, were patrons. This work can also be viewed in conjunction with the devotional images in the Hours of Mary of Burgundy; both sets of images convey common themes of piety, childbirth, and marriage. These themes hinge upon the patronage of the works, visual analysis, and historical context.

Honorable Mention
NAME: Alice Heinz
Art History major
TITLE: You Can’t Stop Us: Why Censorship Doesn’t Work in America

CATEGORY 6: Physical and Engineering Sciences
No 1st Place award
2nd Place
NAME: Sarah Vessels
Computer Science major
TITLE: Gbrowse Modifications for Improved Usability and Ease of Customization

CATEGORY 7: Social Sciences
1st Place
NAME: Brenton Kenkel
Political Science major
TITLE: Debt, Tuition, and Growth at the Research University: An Analysis of Kentucky’s Proposed Bonding Authority Policy
A time-series regression was performed on 12 years of financial data from 166 public research universities to conclude that higher debt levels at universities do not lead to lower tuition rates, contrary to the assertions of political actors and student-mobilization leaders in Kentucky.

2nd Place
NAME: Charlee Doom
Agricultural Economics major
TITLE: Evaluation of the Flove Leaf Oil Industry on Pemba Island

Honorable Mention
NAME: James Adams
Landscape Architecture major
TITLE: Anthropogenic Land-use Change: Problems, Programs, and Predictions