

1996

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**CELEBRATION OF  
STUDENT RESEARCH**



**1995/96**

**XAVIER UNIVERSITY  
Cincinnati, Ohio**

# CELEBRATION OF STUDENT RESEARCH



1995/96

XAVIER UNIVERSITY  
Cincinnati, Ohio

**XAVIER UNIVERSITY**  
**Cincinnati, Ohio**

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**BUSINESS**



## **The Relationship Between R&D Activity and Performance in Downsized Companies.**

Downsizing has been one of the major strategies pursued by large corporations in the 1980s and 1990s. Despite considerable research in this area, there is no consensus either in the financial or the strategic management literature on the benefits of downsizing. The purpose of this research was to empirically investigate the following hypotheses: (1) The relationship between downsizing and organizational performance is curvilinear and, (2) greater investments in research and development in downsized firms can have a positive impact on performance. The sample comprised of 62 Fortune 500 firms that reported work force reductions during the period 1984-1990. Data were analyzed using hierarchical and simple linear regression. Results reveal support for hypothesis 2. That is, if there is an increase in R&D expenses, it leads to better performance in downsized companies. Implications of this research will be discussed.

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## **Accounting for Research and Development Costs.**

Research and development (R&D) efforts are important for companies to create new products and processes and to improve on existing ones. Organizations often spend a large amount of money for these endeavors and the treatment of these costs on a company's financial statements can have a significant impact. Various accounting standards may allow research and development costs to be reported as an asset or require costs to be expensed immediately. When R&D is expensed, net income is decreased, which may discourage companies from spending money on R&D activities.

Accounting standards of various countries regarding the classification of R&D costs, as well as the standards set by the International Accounting Standards Committee, have been examined thoroughly to consider differences in their approaches. Findings indicate three alternatives: (1) Expense all R&D costs as incurred, (2) expense all research costs and allow development costs to be reported as assets when they meet certain criteria, and (3) allow research and development costs to be reported as assets when they meet the established criteria. The reasons for these differences, potential impact of the differences, and possible recommendations for revision of U.S. Standards will be discussed.

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## **Are Changing Demographics of Workforce 2000 Affecting Small Businesses in America?**

Over recent years, a great deal has been written about Workforce 2000's effect on business. Most of the dialogue has centered on large businesses, even though small companies offer the most job opportunities in the United States, a trend that is projected to continue. To examine the implications of Workforce 2000 for small business, national interviews were conducted to determine if current human resource practices in small business are responding to demographic changes in the workforce. Results indicate that where small business managers say they are aware of the changing demographics, only a minority have actually implemented new personnel practices.

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## **The Effect of Candid Versus Lawyer Proof Language on Management Budget Decisions: An Empirical Study.**

The objective of the study is to determine whether managers' budgeting decisions concerning the need to correct environmental hazards would vary depending on whether memos describing the hazards are written in a "candid" versus a "legally defensible or lawyer proof" style.

Environmentally prudent companies face a dilemma. On the one hand, only through voluntary, internal, and comprehensive critical self-examination can they analyze their environmental weaknesses and develop solutions that lead to a safer, cleaner corporate environment, one that meets and exceeds legal requirements.

On the other hand, if their environmental audits are written candidly, some believe that external agents, such as governments or public interest groups, may use that information to prosecute or otherwise penalize the company. As a result, some company auditors write vague environmental audits which are legally defensible because they admit no fault, rather than writing candid audit reports that get management's attention by forcibly stating the case for environmental remediation.

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**Skyline Chili, Inc.:**  
**A Case for Small Business Management.**

Skyline Chili Inc. was founded in 1949 by the Lambrinides family. Nicholas Lambrinides, a former cook for railroad workers and native of Kastoria, Greece, used his culinary expertise to open the chili restaurant in downtown Cincinnati. Today, Skyline Chili produces the secret-recipe chili [see Exhibit 1] for its restaurants and several frozen chili products for local grocery stores. "Cincinnati-style" chili is defined by its presentation: a plate of spaghetti with sauce and shredded cheddar on top. Native Cincinnatians know it simply as a "3-Way." If onions are added, it's called a "4Way." The addition of beans makes it a "5-Way." Skyline restaurants are located throughout Greater Cincinnati and Dayton, Indianapolis, Louisville, and Columbus. The company also operates five restaurants in Florida, including two in Ft. Lauderdale and one each in Clearwater, Ft. Meyers and Naples. Of the 82 Skyline stores operating now, 30 are company-owned, and the rest are franchises. Skyline Chili opened its first franchised store in 1958. Its major competitors are Empress Chili, which has been in existence since 1922, and Goldstar Chili with 118 outlets. Skyline became a publicly traded company in 1986 in an offering that raised about \$4 million. Skyline currently has 500 employees. Additional information (selected financial data and consolidated financial statements) is provided in the Appendix.

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## **Examining the Relationship between Organizational Strategy and Human Resource Management: A “Meso” Study.**

Striving for the meso paradigm in strategic management research, the purpose of this study is to reexamine the relationship between organizational strategy and human resource management. This study focused on the following research question raised by Miles and Snow (1984): Prospectors ‘buy’ employees whereas defenders ‘make’ employees. According to Miles and Snow, prospectors operate in dynamic environment emphasizing new product/market development and innovation. Investment in developing employees is a risky option for prospectors. Thus, they go to the open market to ‘buy’ human resources. By contrast, defenders ‘make’ employees because they can reliably predict future organizational requirement. Promoting predictability and efficiency is a key to a defender strategy. Data were obtained through a survey instrument mailed to members of the Greater Cincinnati Human Resource Management Association.

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# HUMANITIES

## **Origen and Sexism in Early Christianity.**

Topic limitation is an essential component to writing a good research paper. It also helps to choose a topic of interest. I've always found the theologian Origen interesting. There is something morbidly fascinating about a person who castrates himself in support of his ideology. I knew his entire life was too broad a topic for my paper so I searched for some aspect of his life that hadn't been examined in any great detail. I began to think of other subjects that interested me and how Origen might relate to them. One of these areas is the role of women in the early Christian church; especially any leadership roles they might have held. From this thought process came the idea for examining Origen's opinion of women.

None of the literature I found on Origen gave a specific treatment of this topic. Undeterred, I realized that there were many ways to draw inferences about his feelings. It may seem impossible to reconstruct his opinion since this is not a major concern of his writings. There is, however, a logical place to begin. To some extent, society shapes people's opinions on all subjects. All people reflect some of the values of the culture in which they were raised. The society of second century Rome must have in some way shaped Origen's opinion of women. In using this approach, Origen's views must be inferred from an aspect of feminine culture that was affected by the same societal values. As the Christian Church became more important to society, women with leadership positions came under attack for violating the roles society established for them. By correlating Origen's comments on the importance of strong church leaders with the historical facts of female leadership in the church, I was able to construct my thesis. Borrowing from the fields of history, theology, sociology, psychology and philosophy,



my paper asserts that Origen believed the female body represented a soul that had fallen further from God than the souls paired with male bodies.

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**Recognizing the Prejudices Within Science:  
Edmund Husserl on the Subjective Foundations  
of the Modern Objectivistic Sciences.**

A central thesis in the philosophical works of Edmund Husserl is an indictment of the modern sciences in their claims to objective knowledge of the universe. Essential to Husserl's criticism of the modern sciences is his assertion that the allegedly objective sciences are, in fact, subjective themselves, because the consciousness that does science operates according to certain subjective principles that cannot be examined by the sciences themselves according to their own methods; the sciences, in fact, presuppose these principles. However, the scientific community continues to reject all subjective forms of knowledge, thereby neglecting the legitimacy of the very subjectivity which accomplishes science. Husserl calls for a redirection of the sciences from their purely naturalistic (physicalistic) view of reality, toward a more grounded and comprehensive conception of the world. In order to do this Husserl means to create a phenomenological foundation for all science, grounded upon a knowledge of the very subjectivity that accomplishes all meaning, necessarily strengthening all science.

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## A Peircean View of Musical Signs.

Peirce's theory of signs, or semiotics, has been used in many ways to describe how we come to understand and interpret things. Two aspects of Peirce's theory that can be applied to the analysis of music are his definition of sign, which is "something which stands to somebody for something in some respect or capacity," and his division into icons, indexes, and symbols. Conversely, music provides an excellent basis for clarifying Peirce's theory. This presentation examines the icon/index/symbol distinction by means of examples from Beethoven's *Symphony No. 5 in C minor* and Vivaldi's *The Four Seasons*.

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## Marlowe's Faust and Goethe's Faust.

The years before the sixteenth century mark a time commonly referred to as the Dark Ages. It was a time of superstition, persecution, pestilence, death and fear. People of this time cowered before what they feared to be an angry God and lived their lives on Earth as if it were a trial period for the afterlife. Out of this mentality, in a small town in Germany, arose a character by the name of Johann Faust. Faust was an alchemist and a magician and enjoyed traveling from town to town, playing his tricks on unsuspecting townsfolk. He gained the reputation of being a braggart and the devil's minion. Among his favorite nicknames were philosopher, demigod and devil's brother-in-law. Despite his negative image, Faust was respected by many scholars for his unrelenting pursuit in realms of knowledge unknown to most. In the year 1540 Faust's exploits came to an end in what was described to be a violent death. Those who were familiar with his story said he had been finally snatched away by the devil.

Many used stories of Faust as a religious warning and as an example of what would happen if one consorted with the devil. But for others, Faust was a romantic figure who rebelled against the ideology and superstition of his time, unheeding of the consequence in his pursuit for knowledge. It is this perception of Faust which inspired poets to write about him for years to come. Among the dramas written about Faust, two of the most significant versions were written by an English writer named Christopher Marlowe in the sixteenth century, and by the German writer, Johann Wolfgang von Goethe in the late eighteenth and early nineteenth centuries.

The two hundred years that passed between the creation of Marlowe's play *The Tragical History of the Life and Death of Doctor Faustus* and Goethe's *Faust*, marked

a time of significant evolution for all of Europe. Within these years was the Renaissance, the Reformation and the Enlightenment which inspired many other political and literary movements. Due to the fact that Marlowe wrote his version of *Faust* at the beginning of the European evolution and Goethe wrote his at the end, their versions of the same subject matter are quite different. In my thesis, I explore each version of Faust and how the author's treatment of the Faust character can be attributed to the time in which he wrote. I also point out the major differences between each work and explain them based on the significant historical events that transpired between the sixteenth and early nineteenth century of Europe.

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## Fauvism.

The world of art at the end of the nineteenth century was always in transition. Therefore, these years represent an era in the history of art that is difficult to classify because of the diversity of the works produced and the rapid movement from one style to another. In the middle of the nineteenth century, the world was shocked by the works of the Impressionist painters. Among the artists involved in this movement, who are well known by the world today, were Claude Monet, Edouard Manet, Edgar Degas, Pierre Auguste Renoir, and Berthe Morisot. This movement was followed by, logically, Post-Impressionism. The major figures in this movement were Paul Gauguin, Vincent Van Gogh, and Henri Matisse, also well-known painters today. After this, however, there was a brief movement which followed, and which remains fairly unknown. This movement was named Fauvism, and proved to be very important to the development of art in the twentieth century. The Fauvist painters, specifically Henri Matisse, Raoul Dufy, and Andre Derain, used vibrant color to produce a liberating effect on the convictions concerning art which the world held at the turn of the century.

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**Sagacious Choice of Genre in Seneca's  
*Apocolocyntosis* and William Cowper's  
*The Sofa*.**

Both poets use genre in the above works for purposes which reach beyond average genre usage. By means of genre, each makes his own commentary on issues not included in the actual content of his poem. Also, both poets wrote in a time of change in terms of the dominant form of their period: Seneca as a representative of the style being replaced, and Cowper as a representative of the new style replacing the old. Furthermore, both are able to undermine the genre and consequently those writers associated with it simply by using it themselves in the context of their whole work.

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## **Homeric Similes: Part of Oral Tradition or Late Composition?**

This paper will present an explanation of the simile's importance in the Homeric corpus as a means of propagating oral tradition. The question of whether some similes were part of the original oral work or embellished by subsequent storytellers will be raised, as a result of the grammatical and morphological discrepancies manifest in comparative research of both the Iliad and the Odyssey. The conclusion of the presenter is that during the transition from oral to written form, the aforementioned works underwent a change in semantics and morphology to correspond with the modern development of the language.

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# **SOCIETAL ISSUES**

## **It was the Best of Time, It was the Worst of Time.**

More and more of us, whether we realize it or not, accept the copy as the original. Increasingly removed from experience, overdependent on the representation of “reality” that comes to us through computers and e-mail, we seem more willing to put our trust into intermediaries who “re-present” the world to us. The public, defined as associative, inclusive, and a social product brought about through public interaction, stresses the importance of face-to-face social interaction that brings about racial discourse. Computers and e-mail do not allow for this and my presentation will give reasons why we need to pour our energies into other forms of communication to bind the public together.

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## **Media Influence on Political Issues.**

Politicians have for years complained of unfair treatment by the media. Some believe there is a built in bias. This distrust of the media is spreading to other segments of society as well. Groups with divergent points of view on an assortment of political issues feel they are not getting fair treatment from the media. The resulting problem is that the American people may not be getting all of the facts to make proper and informed decisions.

This paper will address these concerns. The issue of bias will be discussed to see if it does exist, what is the basis for it, and what are the ramifications for society. To illustrate possible biases, several contemporary political issues will be discussed, including gun control, economics, religion and various other subjects.

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## Women are Perceived to Interrupt More Than Men.

The current study examined gender differences in the perception of interruptive behavior during crossgender conversations. An objective preanalysis of the stimulus pairs revealed equal interruptive behavior. Five cross-gender pairs (including one "test" pair) were viewed on video for 5 minutes each by 88 male and female undergraduate students. Following each conversation, the students rated the stimulus pairs on a scale of 0-10 in terms of interruptive intensity. The study was a 2 x 2 x 4 (stimulus gender, males and females perceive that females are more interruptive than males ( $F(1, 86) = 78.97$ ,  $p = .000$ ). Overall, the stimulus gender is significant, whereas the subject gender is nonsignificant.

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## **The Psychology of the Military: A Case Study of El Salvador's El Mozote Massacre.**

In my paper I analyze the psychology of the National Military and their actions in Latin America. More specifically I am interested in the case of El Salvador during its twelve year civil war. My focal point is the military's cold-blooded massacre of the villagers of El Mozote and surrounding hamlets located in the Morazán region of northeastern El Salvador. I will refer to military documents and a variety of outside sources in order to discuss questions central to this recent and controversial topic: How does the military justify so many innocent civilian deaths? What gain is there in violating the human rights of those who pose no threat?

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## The Evolution of Argentina's Gaucho.

The purpose of this project is to study the evolution of the gaucho, the Argentine cowboy, in history and literature. This is done by tracing the gaucho's transition from a rustic, folkloric figure on the fringes of society, to an active member in the political forum, replacing the traditional European-style government and culture once dominant in the larger cities in Argentina. The types of gaucho and the political roles taken by a prominent few of them will be described based on information from Domingo Sarmiento's essay/commentary *Facundo*, Ricardo Güiraldes' novel *Don Segundo Sombra*, and various examples of gauchesca poetry.

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## **The Societal Advancement of Women as Portrayed in Chivalrous Literature.**

The literature of Western Europe in the eleventh through the fourteenth centuries is dominated by two prominent genres, the epic poem and the romance poem. Through examination of these two genres, one can see the social transcendence which takes place in European culture. The epic tradition, marked by excessive violence, superhuman deeds, and feudal fealty mirrors an age in which physical prowess and loyalty were valued above all else. The literary advancement of women into the romance poems, with their focus on love, lust, and chivalrous behavior, clearly mimics the expanding social roles of women in medieval European culture.

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**SCIENCE**



## **The Nazi Regime: Its Ideology, Propaganda, and Effect on the German Culture.**

How did it ever happen? That remains one of the most frequently asked questions about the Third Reich Era. Adolf Hitler's rise to power as the leader of the National Socialist German Worker's Party seemed unstoppable. Hitler learned to manipulate the masses through his intense propagandistic measures and eventually utilized the press, films, art, literature, education, radio broadcasts and mass public rallies to spread his National Socialist ideals of hatred. In every aspect of daily life, the German nation experienced the terror and inhumanity of this psychologically warped leader and his fanatic followers.

In this paper, I wish to analyze the philosophy and ideology of the Nazi party and the propaganda tactics utilized. In addition, I want to study the effect of Hitler's regime on the human culture, both at the time of the war as well as in modern times. I feel it is essential to remember how easily a phenomenon such as this can occur in order to prevent such horrid events from becoming a reality again. We must learn from the Nazi tragedy and strive to ensure that we will never forget the shocking truths of this time in history.

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## **The Relationship Between the Schizophrenia Scale and the Bizarre Mentation Scale of the MMPI-2.**

The Minnesota Multiphasic Personality Inventory (MMPI-2) is the most widely used personality instrument in psychological assessment today. It is designed to aid in psychological assessment. The MMPI-2 consists of 567 items and is grouped into ten primary scales and various subscales. One of these primary groups is the Schizophrenia (Sc) scale. The Sc scale was created by using items endorsed by patients showing bizarre or unusual thoughts or behavior, who are often withdrawn and experiencing delusions and hallucinations. The Bizarre Mentation (BIZ) scale was created based on the content of items that indicate endorsement of bizarre thoughts and thought processes. The present study consisted of a sample of 300 psychiatric inpatients who were administered the MMPI. The hypothesized correlation between the Sc and the BIZ scale was found to be highly significant. Similarities and differences between the scales will be discussed.

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## **The Relationship Between the MMPI-2 Clinical Depression Scale and Content Depression Scale.**

The Minnesota Multiphasic Personality Inventory-2 (MMPI-2) is a tool that many clinicians use to assess and diagnose individuals that are in need of psychological treatment. The test contains 567 items that make up three validity scales, ten clinical scales, and several content scales. The purpose of this study is to determine the relationship between the clinical depression (D) scale and the content depression (DEP) scale in a clinical population. The D scale was created by comparing depressed people's responses with nondepressed people's responses, while the DEP scale is grouped based on expert's opinions of the items with depressive content. The responses of 223 psychiatric inpatients were studied. The results indicate that the two scales are, as expected, highly correlated in a clinical sample ( $N = 223$ ,  $r = .64$ ,  $p < .001$ ).

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## **The Effects of Derogatory Humor on Aggression: A Study Based on Gender.**

This study looks at the relationship between derogatory humor and aggression. Voluntary participants were undergraduate students enrolled in a general experimental psychology class at Xavier University. The male and female subjects were randomly assigned to complete one of three variations of a booklet where they rated a series of cartoons for humorous content. The three types of booklets were either male, female, or neutrally targeted. Participants then took a projective test, the Rosenzweig P-F, to evaluate extrapunitive and intropunitive aggression. The hypotheses that men and women would differ significantly in expressed extrapunitive and intropunitive aggression when exposed to the three types of target humor were not supported. Results indicated only that male subjects expressed significantly more over all extrapunitive aggression regardless of the type of derogatory humor they had been exposed to. Although the type of derogatory humor was not significantly linked to aggression in this study, future research might still be able to support a causal inference between these variables.

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## **Immunologic Sexual Dimorphism: Implications toward the Difference in Male and Female Rat Gastrointestinal Microflora.**

It has been proven that males and females exhibit different immune responses when subjected to infection. This immunologic sexual dimorphism is a result of hormonal regulation.

The gastrointestinal tract is naturally inhabited by trillions of bacterial cells. Because males and females exhibit different immune responses, we propose that the flora in the male and female gastrointestinal tract will differ accordingly.

To test our hypothesis, we had to create anaerobic conditions. This was pivotal to our research, for gastrointestinal bacteria must be either strictly or facultatively anaerobic in that they live in an environment void of oxygen. This was accomplished by one of two measures: either by using an anaerobic chamber or by using a thioglycolate broth media.

Fecal pellets were taken from both male and female rats, macerated and placed in test tubes of either nutrient broth media (in which they were placed in the anaerobic chamber) or thioglycolate. In both cases, the test tubes were then grown in an incubator set at 37 degrees celsius and their growth measured by an electrophotometer at three hour increments for a twenty-four hour period. Following this twenty-four hour period, the growth of male and female flora was compared.

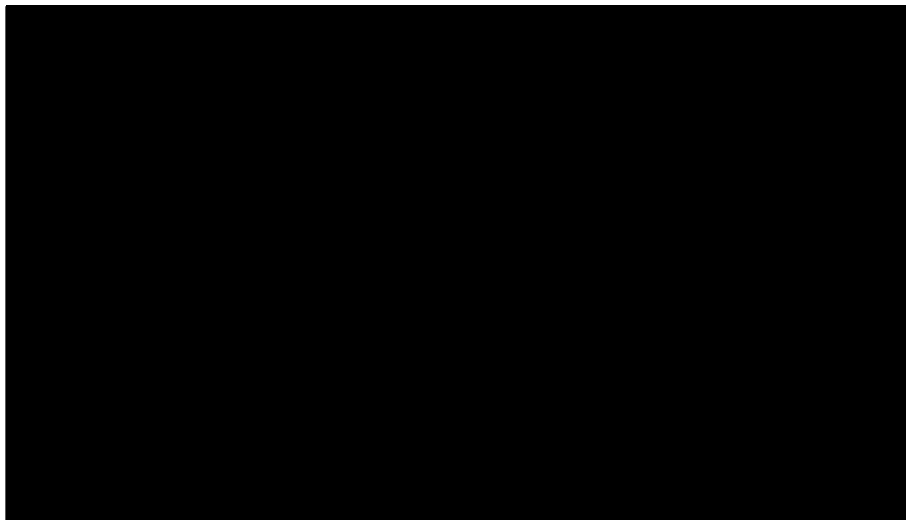
At this point in our research, we have found a trend such that males and females demonstrate a different degree of growth over a twenty-four period, possibly attributable to the immunologic dimorphism present between the sexes.

Because this research is the first of its kind, we do not have statistics to offer, as of yet. However, our findings do offer interesting possibilities for future research. These possibilities include not only comparing males and females, but also pregnant and lactating females. Once significant statistics are available as to a difference in degree of growth between the sexes, one may begin comparing the different types of bacteria present within the gastrointestinal tract of these animals as well.

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**The Synthesis of Mercury-etheno-nucleosides  
and Nucleotides.**



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## The Synthesis of Mercury-etheno-nucleosides and Nucleotides.

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**Diastereoselective Approach to  
Z-2, 3-Methanophenylalanine.**



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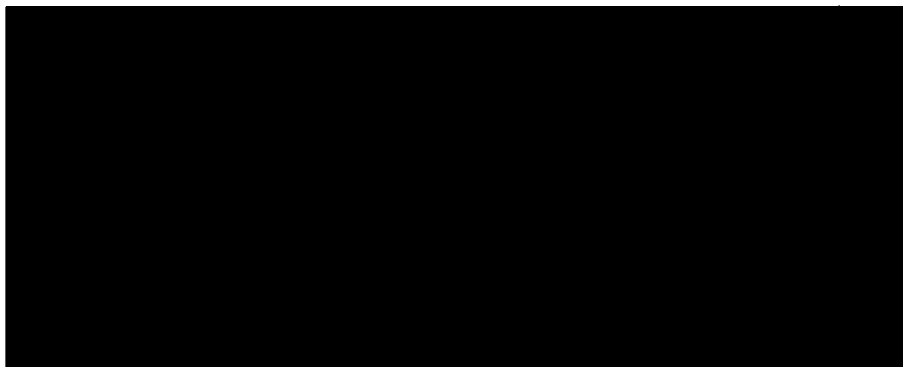
## Analysis of Steel: Nickel, Chromium and Silicon.



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## Synthesis of (E)-2, 3-Methanotryptophan.



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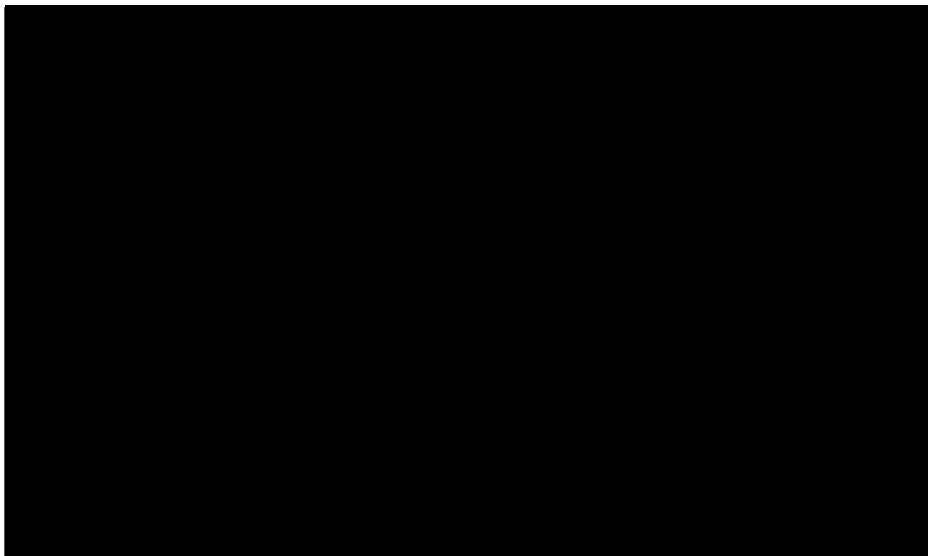
## **Decrease in Oocyte Production in Insulin- Dependent Diabetic Mice and the Role of Hormone Levels in the Disturbance of Oocyte Production.**

Insulin dependent diabetes is a disease in which the individual is unable to regulate normal glucose levels of 60-100 mg/dl, hindering routine processes, such as reproduction. A decrease in the reproductive success of diabetic mice has been observed, however the exact mechanism of interference is unknown. The goal of this set of experiments was to verify that insulin dependent diabetic mice did indeed show a decrease in oocyte production. The immature female mice were injected with alloxan which resulted in insulin dependent diabetes. The mice were then injected with hormones, PMSG and then two days later HcG, to replicate the normal reproductive cycle. The results confirmed that insulin dependent diabetic mice produce less oocytes. Then the injections of the hormones were increased, PMSG, HcG, and then simultaneously PMSG and HcG, to test if perhaps an increase in their levels would improve reproductive functions. The results of these tests will soon follow.

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**A Study of Factors Which Influence Fluorescence  
Using Quinine and Thiamine as Models.**



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**The Effects of Environmental and Technological  
Factors Influencing Radon Concentration in  
Indoor Air.**



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## **Population Genetics of Pound Dogs.**

The purpose of our research was to investigate mixed breed dogs of nearby pound populations with respect to pure breed dogs. A large homogeneous population would occur under the assumptions of the Hardy-Weinberg equilibrium. This law presumes that the population is large, randomly breeding, nonselective towards a specific genotype, and lacks such factors as mutation and migration. A heterogeneous population would occur if one or more of these assumptions is violated. Our hypothesis is that the pound populations make up a larger homogeneous population. If our hypothesis is rejected, we will offer some explanation as to the possible causes.

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## **A Comparison of Airborne Molds in Simulated Desert and Tropical Environments.**

This study was undertaken to investigate the presence of airborne molds, in the form of spores in tropical and desert environments in order to determine which climate is preferable for allergy sufferers. Molds exhibit habitat restriction and in fact are influenced greatly by temperature and humidity. In order to carry out this experiment, mold spore collections were made at Krohn Conservatory in the Desert and Tropical Rooms for one hour in the early part of the day. Types and amounts of molds were recorded and it was found that in this closed environment setting, little correlation can be made between temperature and humidity with regards to mold type and quantity that would be of value for allergy relief studies.

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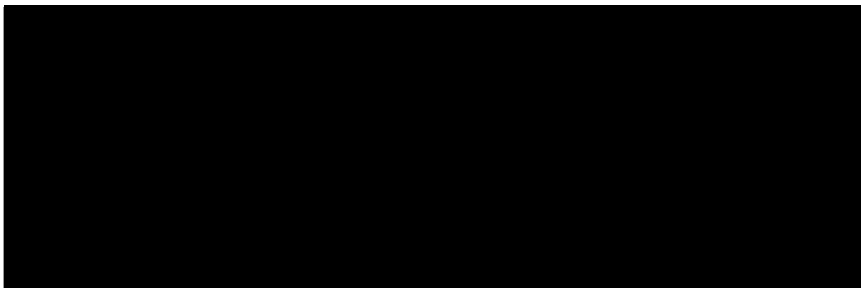
## **Analysis of Dog Populations for the Presence of Sub-Populations.**

Data is being collected on the coat colors and patterns of mixed breed dogs. Sample populations are from the immediate tri-state area as well as populations in Minnesota, Wisconsin and Illinois. The data will then be statistically analyzed, I.e. Chi Square analysis. The population genetics of the local populations will be described and compared to those of the populations from Minnesota, Wisconsin and Illinois. Through these comparisons the hypothesis of *Subdivisions exist in the dog population* will be tested. Determination of possible causes of sub- divisions will also be performed.

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Reactions of an Asymmetrical Alkyne  
with Munchnones.



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## **Analysis of Cell Cycle Suppressors in Aspergillus.**

Discovering new mutations within the cell cycle is vital towards understanding cancer cell development. The mechanisms involved in the cell cycle are homologous throughout evolution. The fungus, Aspergillus nidulans, was selected for this study due to its genetic manipulability. Because its mutation causes G<sub>2</sub> arrest at restrictive temperatures, the nimT23 gene was used. Several new extragenic suppressors were generated and are being analyzed for dominance and chromosomal location.

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**A Game Theory Analysis of Behavior: War of Attrition and Sexual Selection in the Siamese Fighting Fish, *Betta Splendens*.**

Intraspecific animal competition in nature usually involves ritualized interactions and rarely escalates into injurious combat. During these ritualized interactions, animals assess the competitive ability and motivation of their opponents. Based upon this assessment, a decision is made whether to escalate or abandon the competition. One means by which animals determine competitive motivation of their opponent is by assessing the relative value of the resource being contested. We are examining the role that territorial bubble nest is an indicator of territory value, a male without a nest will be less willing to persist in an aggressive encounter with a rival possessing a nest. We are currently conducting female choice experiments to determine the value of the bubble nest and male-male competition experiments to test our prediction.

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## **Fluctuating Asymmetry and Sexual Selection in the Guppy, *Poecilia Reticulata*.**

Fluctuating asymmetry in a morphological character exists when small, random deviations from perfect bilateral symmetry occur. This asymmetry is recognized as resulting from developmental perturbations due to environmental stresses, and it has been proposed that an individual's ability to resist such developmental perturbations is correlated with genetic quality. We are examining the role that fluctuating asymmetry in male-color-pattern plays in sexual selection in the Guppy. If female Guppies choose mates on the basis of genetic quality, we predict that they will prefer to mate with males with bilaterally symmetrical color-patterns. We are currently conducting female mate choice and male-male competition experiments to test this prediction.

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## **Abstract Representations of Nature.**

Intuition and risk were the starting points for these multi-media prints that were created as depictions of nature. By experimenting with several printmaking methods — lithography, intaglio and monotype — I was able to build content through successive and increasingly deliberate printing. The “edition” can then be found within the entire series of prints where the roots began with subtractive and additive techniques utilized by gum resist, tusche, grease crayons, grease/gum transfer of grasses, corn husks and leaves, and litholtene washes. The step after the lithographic stage was to pair off the prints and complete the images by points of opposition, such as Spring and Fall, death and rebirth, light of day and darkness of night. All of the lithographs were created on Bavarian limestone, the intaglios were created on zinc plates, and the monotypes were produced on lexan matrixes.

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