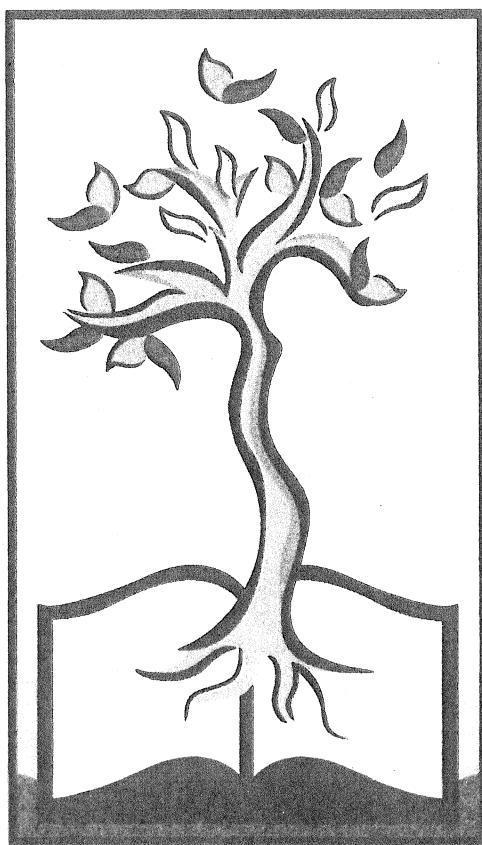


# UMF SYMPOSIUM 2005 APRIL 13

Program With Abstracts



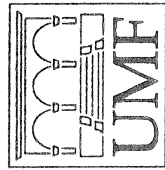
Any changes to the Symposium program will be posted by the  
Student Center mailroom on April 13<sup>th</sup>.

- A. American Legion
- B. Baptist Church
- C. Catholic Church
- D. Community Center
- E. Congregational Church
- F. Farmington Public Library



# UNIVERSITY OF MAINE AT FARMINGTON

MAINE'S FIRST CHOICE IN PUBLIC HIGHER EDUCATION



- 1. Merrill Hall
- 2. Alumni Theatre
- 3. Dearborn Gymnasium
- 4. Ricker Hall
- 5. Ricker Addition
- 6. Thomas Auditorium
- 7. Preble Hall
- 8. Mantor Library
- 9. Oisen Student Center
- 10a. Roberts Learning Center
- 10b. Roberts: Lincoln Aud. & C23
- 12. 186 High Street
- 13. Ctr. for Human Development
- 14. Brinkman House
- 15. Thomas House
- 16. Look House
- 17. Ferro Alumni House
- 18. Admissions
- 19. Art Gallery
- 20. 248 Main Street
- 21. Franklin Hall
- 22. 101 South Street
- 23. Sweatt-Winter Child Care
- 24. Honors Center
- 25. Scott Hall
- 26. Mallett Hall
- 27. Purington Hall
- 28. Stone Hall
- 29. Lockwood Hall
- 30. Dakin Hall
- 31. Archaeology
- 32. Computer Center
- 33. Health & Fitness Center
- 34. Scholar Apartments
- 35. International House
- 36. Public Safety
- 37. 124 Perkins Street
- 38. Psychology
- 39. President's House
- 40. 131 Perkins Street
- 41. 112 Maguire Street
- 42. 149 Quebec Street

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Established in 1999, UMF Symposium Day allows students and faculty to showcase the breadth and diversity of their scholarly and creative works. This day-long event includes oral and poster presentations on original research, readings, performances, art displays, and more.

### **Celebrate academic achievement and excellence!**

Please note that if you wish to have lunch in the South Dining Hall, you may purchase a NQAFL (not quite a free lunch) ticket for \$2.00 in the Student Center Lobby.

## **VENUE 1: ALUMNI THEATRE**

### **THEATRE**

Moderator: Andrea Southard

2:00 Japanese Theatre, Kyogen play, "Poison Sugar", comedy similar to commedia dell'arte

Presenters: Jenny Brown, Sam Gallagher, Susanne Gerry and Ian Griffith

Sponsor: Andrea Southard

Interdisciplinary Theatre/Arts majors, as part of their research and studies in the interdisciplinary courses ANT 277, INT 277 (Art) and THE 377, will present information about Japanese Kyogen, the comic interludes between austere and solemn Noh plays. Both forms flowered during the 15th century and continue to be presented in present-day Japan. Kyogen is a comic form similar to European commedia dell'arte, which developed around the same time.

## **VENUE 2: ART GALLERY**

### **GEOMETRY**

Moderator: Sarah Hardy

10:00 Geometric Designs

Presenters: MAT 104 Sections 2 and 3

Sponsor: Sarah Hardy

A display of artwork demonstrating the visual effects that can be achieved with geometric patterns. Patterns incorporate a variety of types of symmetry, line designs, circle designs, knot designs, and tessellations.

### **SENIOR ART EXHIBIT**

Moderator: Sarah Maline

1:00 Threshold: Senior Art Majors Present Their Degree Exhibitions

Presenters: Rebecca Benoski, Tyson Bourassa, Brooke Harrington, Joe Mocus, Molly Beth Paquin and Danielle Philbrook

Sponsor: Sarah Maline

Graduating senior art majors present their senior shows in painting, sculpture, photography and installation at the UMF Art Gallery.

## **VENUE 3: LINCOLN AUDITORIUM**

### **SCIENCE**

Moderator: Drew Barton

9:00 Science Day Opening

Opening Remarks: Drew Barton

9:30 An Investigation of the General Biological Effects of Homeopathic Therapy Using E. coli as a Biological Proxy

Presenters: Joseph Aman and Matthew Waterhouse

Sponsor: Jean Doty

The general biological effects of a widely used alternative medicine, homeopathic therapy, will be examined in this project by using E. coli as a biological model. Alternative medicines are used by 42% of Americans, and this practice continues to grow. Homeopathy is a commonly used alternative medicine, although the effectiveness of these treatments is disputed. Many of the clinical studies of homeopathy's effectiveness suffer from methodology flaws and human bias. These shortcomings may be circumvented by the use of a bacterial model as a proxy for investigating if these therapies have any biological effects. We will replicate, as closely as possible, the conditions of homeopathic therapies in cultures of E. coli and determine if there are any biological effects by assessing growth and antibiotic resistance after treatments. The results of this project may have broad implications in the use of alternative medicines and the biology of E. coli.

9:50 Invasive Aquatic Plants in Maine: Risks, Distribution, Monitoring and Management

Presenter: Dr. Daniel Buckley

Currently four species of invasive aquatic plants are found in Maine, Eurasian Water Milfoil (*Myriophyllum spicatum*), Hydrilla (*Hydrilla verticillata*), Curly-leaf Pondweed (*Potamogeton crispus*) and Variable Leaf Milfoil (*Myriophyllum heterophyllum*). These plants represent a first wave of invasive aquatic plant species that have the potential to significantly alter our freshwater environments. The Department of Environmental Protection recognizes that all of the water bodies in Maine are at risk of infestation from these plants. Slowing down the spread of these plants is through long-term monitoring and the development of rapid response management plans for when infestations occur are the primary objectives of Maine's Department of Environmental Protection. Students from UMF have made important contributions to this effort through aquatic plant surveys, habitat characterization studies and the long-term monitoring of the Variable Leaf Milfoil populations.

\*\*\*EXCEL sponsored session- Refreshments Provided\*\*\*

10:15 Bioinformatics and Biodiversity Research: Dragonflies & Butterflies

Presenter: Ron Butler

Bioinformatics is a science focused on the integration of large databases, information technology, and public access in order to efficiently communicate complex datasets to a wide range of potential users. Previously bioinformatics was almost exclusively associated with

molecular biology and genetics (e.g., Human Genome Project). However, the utility of this approach has resulted in its adoption in many fields, and bioinformatics has increasingly been applied to biodiversity surveys essential to ecological research and the development of effective conservation biology strategies. The Maine Damselfly and Dragonfly Survey (MDDS) will be reviewed as a simple model of bioinformatics that has produced an invaluable database-using volunteer "citizen scientists". The background biology of dragonflies, the goals and methods of MDDS, and an overview of the results to date will be reviewed. The Maine Butterfly Survey (a similar effort) is scheduled to begin in 2006 and will also be briefly described.

10:50 Environmental Applications of Nanoparticles: CFC Decomposition over Nanocrystalline MgO

Presenter: Dr. David S. Heroux

$\text{CF}_2\text{Cl}_2$  has been found to react with nanoscale MgO at 325°C and higher temperatures. The reaction results in the formation of  $\text{MgF}_2$  as a predominant solid product. The kinetics of the process are characterized by a prolonged induction period, which is as long as 8.5 hours at 325°C. Detailed HRTEM and EDX analysis has shown that the induction period involves the formation of small amounts of magnesium halide on the oxide surface and results in particle reconstruction. Modification of the nanocrystalline MgO with high surface area carbon or  $\text{Al}_2\text{O}_3$ , increases the rate of conversion to  $\text{MgF}_2$ .

11:15 High-Resolution Topographic Changes At The Voter Bar, Sandy River, Northwestern Maine, 2002-2004

Presenters: Romany Shanti, Ruth Hill, Kevin Knapp, William O'Brien and Julia Daly  
Sponsor: Julia Daly

Renewed controversy has arisen over the environmental impact of gravel removal from active sediment bars along the Sandy River. We focus on change at the Voter site near Strong. High-resolution topographic data were collected with a Total Station during the summers of 2002, 2003, and 2004. These data were used to assess patterns of erosion and deposition and their relationships to climate variables. Discharge varied only moderately during the first year. This year of low-flow resulted in cut bank erosion, sparse deposition, and a general lowering of the site on the order of 5 cm, possibly due to compaction. Net volumetric loss was significant. A 20-year flood occurred during December 2003. Cut bank erosion continued through 2004 but spatially extensive deposition, including considerable foreset progradation, countered much of the volumetric loss. Over the two-year interval, the single flood event of December 2003 seems to have dominated the pattern of deposition.

11:45 Harvey Aft Award For Excellence In Chemistry

Presenter: Chemistry Faculty

Each year the chemistry faculty recognizes a student who has excelled in upper-level chemistry courses, has outstanding general scholarship, has demonstrated interest in chemistry, and projects a good attitude toward the field. Please join us when we announce the winner and present the award.

11:50 Mills Internship Award for Science Study

Presenter: Jean Doty

The Mills Internship Award for Science Study is awarded every other year to a student who has excelled in genetics. This award, established by the late Peter Mills, pays for the recipient to intern at The Jackson Laboratory for the summer. Please join us as we announce the winner and present the award.

**REHABILITATION**

Moderator: Jewel Jones

1:00 Showcasing Student Digital Portfolios

Presenters: Mary Anderson, Becca Cianchette, Jamie Elwell, Dave Farmer, Kathleen Gsell, Keri Haight, Cynthia Irish, Nina Johnston, Kaitlyn McCormack, Shane McNear, Sean Okeefe, Paula Phillis, Sarah Prouty, Emily Rienholt, Scott Sinay, Lisa Solorzano and Heidi Wright

Sponsor: Jewel Jones

The use of portfolios is becoming commonplace in many universities. More and more students are making portfolios for potential employers as well as graduate schools. Digital portfolios help students use an individual approach while defining their professional goals. A digital portfolio allows students to showcase their technological skills and abilities including different samples of work and other experiences that they have collected through their years at UMF. Students will present their digital portfolios and briefly talk about their experience of making a digital portfolio.

\*\*\*EXCEL sponsored session- Refreshments Provided\*\*\*

**VENUE4: ROBERTS C 23**

**SOCIAL SCIENCE**

Moderators: John Olszowka and Jim Melcher

9:00 POW Camps in America

Presenter: Benjamin Andrew

Sponsor: John Olszowka

A comparison of the different POW camps that existed in the United States during WWII.

9:20 Thomas Hutchinson and the American Revolution

Presenter: Larissa Holden

Sponsor: John Olszowka

This presentation will be on Thomas Hutchinson and his view on the American Revolution.

9:40 Shipbuilding In Maine: Transition From Wood To Steel And Its Effect On The Work Force

Presenter: Michael Bourgoin

Sponsor: John Olszowka

This submission will look at the transition from wooden ship construction to iron/steel construction. The period chronicled will be from approximately 1860 to 1900.

10:00 The Media Coverage Of The Suffrage Movement 1910-1920

Presenter: Kate Herbert

Sponsor: John Olszowka

Looks at the media coverage of the suffrage movement in its last years. Focuses on the New York Times.

10:20 Slovenia's War for Independence

Presenter: Michael D. Larrabee

Sponsor: John Olszowka

Presentation of a History 400 project about the 1991 Slovenian war of secession from Yugoslavia.

10:40 Jesuit Missions of New France

Presenter: Andrew Sweeney

Sponsor: John Olszowka

From their arrival in 1610 the Jesuit missionaries in New France employed a variety of methods in their quest to convert the native populations of North America. This presentation will discuss how their approach changed over time and how they were shaped by the circumstances that Jesuits encountered.

11:00 Unite! - How To Organize a Protest

Presenter: John Woods

Sponsor: Jim Melcher

Unite! will focus on the necessary steps to organizing a protest and things to consider, including time, date, and location, how to deal with the authorities, how to handle press, and publicity.

11:30 Why Build Green?

Presenter: Jeanine Alberto

Sponsor: Jim Melcher

The current Maine Public Policy scholar of UMF will be presenting her research to date on green energy, green buildings, and how UMF is taking strides in becoming green and sustainable, as well as taking a look at other green buildings that work. This presentation will have particular focus on the new Education Center that is in the works for UMF.



## PHYSICS

Moderator: Richard Baga

~~1:00~~  
3:00 Physics And The Turn Radii Of Snowboards

Presenter: Anna Weber

Sponsor: Richard Baga

Physics can demonstrate how a snowboard effectively carves down a ski trail. For a given side cut of a snowboard there ideally should be a specific radius of a pure carved turn, which the snowboard is capable of making. Determining this radius also takes into consideration velocity of the board, edge angle, and hill angle. The turn radius is calculated mathematically for a Palmer Honeypro snowboard and a Salomon E.R.A snowboard. This ideal turning radius is then tested as close as possible according to the predicted calculations of side cut and turn radii. Various sized turn radii can be applied to different disciplines of snowboard racing to achieve increased carving effectiveness.

1:00 The Pioneer Anomaly

Presenter: Bryan Holmes

Sponsor: Richard Baga

There are several hypotheses for the inexplicable linear deceleration of the Pioneer 10 and 11 spacecrafts. Telemetry from the spacecraft, translated by John Anderson et al of the Jet Propulsion Laboratory, will be analyzed to find the magnitude of the deceleration. That will be compared to the expected rate of deceleration caused by gravitational sources and heat loss, which are the two major causes of the craft's expected deceleration. Neither of those causes currently account for the rate of Pioneer's deceleration. Some hypothesis for this discrepancy will be presented and evaluated for merit. The Pioneer Anomaly could herald a new facet of modern physics, or could be a systemic error, but the telemetry shows the latter to be unlikely.

1:15 Falling Forces and Climbing Anchors

Presenter: Eben Baker

Sponsor: Richard Baga

Climbing gyms use various apparatuses to anchor top-roping routes. These anchor points provide re-direction of falling forces to a belayer on the floor. There are several ways that these pivot points can be set up. The three apparatuses studied are a pulley-system, carabiner anchors, and a system using thick piping. Differences between the amount of force transferred directly to the belayer in varying rope systems are examined in an effort to determine which system imparts the least amount of force to the belayer; and therefore is the best. All of these tensile forces will be compared with the theoretical gravitational force acting on a mass to quantify the frictional force on each rope-system.

1:30 Limit of Human Physical Activity

Presenter: Amanda Taylor and Drew Croteau

Sponsor: Richard Baga

Running speed is limited by the rate a human body can metabolize oxygen to produce power. This experiment examines the correlation between heart rate and power output to determine an individual's maximum running speed.

1:45 Efficiency of Hydrogen Extraction

Presenters: Charles Longstaff, Carlyle Smart and Sophia Stanley

Sponsor: Richard Baga

Due to rising fuel costs, renewable energy sources are receiving increased attention. One of these renewable energy sources is hydrogen fuel. In this experiment we compare the efficiency of extraction of hydrogen from three different sources.

2:00 Physics of the Frisbee Toss

Presenter: Erica Costello

Sponsor: Richard Baga

To improve a person's Frisbee toss, an individual is often told to put more spin on the disc. This experiment will compare the Frisbee's airborne distance and its angular velocity based on the kinetic energy imparted by the thrower's arm. Data from several throwers is used to examine the relationship between the angular momentum of each arm to distance thrown.

2:15 Water Overdose!?

Presenter: Abby West

Sponsor: Richard Baga

Humans overdosing on water is addressed in this presentation. Water overdose is due to an increased rate of net osmosis into the cell causing the cell to become hypotonic and then to lyse. We measured the volume of water required to lyse the cells as a function of time. Trials were conducted with both deionized water as well as water with a sodium content.

2:30 The Mechanics of the Game of Paintball

Presenter: Holly Castle

Sponsor: Richard Baga

Paintballs must break on the target person in order for them to be considered out. Occasionally the paintballs will break a hopper (container above marker that loads paintballs), causing the person to be out for several games if not the whole day. The kinetic energy a paintball must have in order to break a hopper on impact is demonstrated by examining the mechanics of a paintball shot from a Tippman 98 marker. The force the paintball needed to break the hopper was measured along with the average mass of the paintballs used. The velocity was measured to calculate the maximum kinetic energy allowable before the hopper breaks and the minimum kinetic energy to still break on a target person.

2:45 The Cost of Heat Loss in a Maine House

Presenters: Katelyn Dumont, Miranda Hubley and Justin Pleva

Sponsor: Richard Baga

Heat loss through a Maine house can be more costly than it need be. We compare the yearly heating bill for our Maine house in 2004 to a theoretical heating cost for the same house using calculations, which examine various aspects of the house such as dimensions, window and door area, and materials used in construction. We demonstrate why the actual cost of heating is higher than the theoretical cost as well as improvements that this house and others like it can make in order to lower the house's fuel cost and save energy.

**VENUE 5: LATTE LANDING**

**ENGLISH**

Moderator: Tiane Donahue

9:00 The Writing Adventure: UMF's Longitudinal Study of Student Writing

Presenters: Tiane Donahue and Hannah Robbins

Sponsor: Tiane Donahue

This presentation will feature a brief overview of UMF's four-year research study of student writing, the Writing Adventure, launched in the fall of 2004. We will explore the what, how, and why of the study: What is the study about? Who is involved? What research methods are we using? What do we hope to find out? Why does it matter?

**WOMEN'S STUDIES**

Moderator: Tiane Donahue

9:20 Ripple Reading: A Celebration of Contributors, Past and Present

Presenters: Aileen Dinsmore (MC), Ally Day, Sarah Carnahan, Anna Smith, Tessa Parmenter, Abby Austin, and Cassie Moore

Sponsor: Alice Adams

This presentation is to honor the students who have made contributions to Ripple, our on-campus feminist 'zine. Writers will read from their work and take a brief moment to discuss what their involvement in Ripple has meant to them. Students will also have an opportunity to display artwork and other visual contributions. Past issues of Ripple will be on display, and there will be copies available for the audience to take home.

**CREATIVE WRITING**

Moderator: Gretchen Legler

9:40 B.F.A. Senior and Poetry Publisher Reads from Her Newly Published Collection of Poetry

Presenter: Cynthia Brackett-Vincent

Sponsor: Gretchen Legler

Cynthia Brackett-Vincent, UMF student since 2002 and publisher of THE AUROREAN, (a poetry journal with international readership and a New England focus), since 1995, will read from her newly published collection of poetry, THE 95 POEMS. Many of these poems have been published in literary journals and were first written for Poetry Writing classes at UMF. This collection chronicles Cynthia's transition from Massachusetts to Maine.

10:10 Poetry Off the Page

Presenters: Tessa Parmenter, Cynthia Ravinski and Aaron Witham

Sponsor: Gretchen Legler

Poetry Off the Page is a theatrical presentation that will mix recited poems and minimal acting into an enticing show of art. Three senior creative writing majors, Tessa Parmenter, Aaron Witham, and Cindy Ravinski, will act out a 25-minute recitation of the poems using minimal props. The event will be especially entertaining for English, writing, and theatre majors, but even more important for students outside of Humanities. We want to give an experience of poetry to everyone in math, science, history, and elementary education. Poems will include an eclectic mix of old verse forms and maybe even contemporary free verse.

1:00 Women Writers in Maine: An Honors Project

Presenter: Amanda Coffin

Sponsor: Gretchen Legler

How do women writers in Maine view their connection to this state? What are the central challenges they face? How do these writers define success? This talk will present the findings of an Honors Project, which addressed these broad topics by interviewing five women writers in Maine and creating their oral histories.

**MUSIC**

Moderator: Steven Pane

1:20 Everyday Music for the Absurd Mind: A Societal Perspective of Erik Satie's Sports et Divertissements

Presenter: Meghan L. Dzyak

Sponsor: Steven Pane

Erik Satie's Sports et Divertissements is a collection of compositions which presents drawings (by Charles Martin), poetry and music (by Satie) in one collection to the viewer and listener, making this work not only something that has to be heard but also seen. The amalgamation of art forms represents a multimedia masterpiece of the imaginative and avant-garde. Each of the twenty-one pieces decisively represents Satie at the height of his humoristic piano period, which rebelled against music that took itself too seriously, and used common folk themes to reach beyond the art music of the period. From a societal context Sports et Divertissements embodies culture in pre World War I Paris, France by basing each piece on various pastimes of the upper-class.

## **VENUE 6: NORTH DINING HALL B**

### **9:00 Saving a Holy River**

Presenter: Ruth Hill

Sponsor: Daly, Julia

The Ganges River in India is one of the most sacred bodies of water on Earth. Each year millions of Hindus pilgrimage to its shores to be cleansed in its holy waters. The Ganges is also one of the most polluted of the world's great rivers. While attending a recent water conference in India, I took a side trip to the Ganges River in Varanasi where I was introduced to an organization that has been dedicated to restoring 'Mother Ganga' (Ganges) for the past 22 years. Based on observations from a boat ride along the Ganges, reports from local scientists monitoring the river pollution, and from interviews with villagers around Varanasi, this report will focus on past attempts that have been made to clean the river, how and why those attempts have failed, and new approaches and solutions that are currently being proposed.

### **9:20 Awareness of cultural diversity and poverty: A window to the world**

Presenters: Jessica Andreozzi and Sheanna White

Sponsor: Ray Glass

The presenters will describe recent mission trips they have made to third-world countries and discuss how volunteer work can be brought into the classroom and our communities.

### **9:40 New Zealand**

Presenters: Jill Tarkleson and Brie Lawrence

Sponsor: April Spencer

Amazing adventures are found among the rugged, beautiful landscape and captivating culture. Photographic presentation of two journeys around New Zealand.

### **10:00 Bicycling Across America**

Presenters: Jasper Walsh, Jay Delehanty, Matt Thomson, Chris Irwin, and Jon Brown

Sponsor: Doug Reusch

During the summer of 2004, several UMF students bicycled across the country. Learn about the educational dimensions of this adventure as well as the societal reasons for supporting the use of bicycles. The group also raised \$5000 to buy helmets for local children.

### **1:00 Senior Class Commencement Speaker Auditions**

Presenters: TBA

Sponsor: Patricia Carpenter

Members of the Senior Class 2005 will present their speeches to a number of faculty judges. One senior will be chosen to present at the Commencement Program on May 14, 2005; up to two others will be chosen to present at their senior banquet the Friday evening prior to graduation. Two seniors will also be chosen from the group presenting to be the Class Marshalls for commencement.

## **VENUE 7: NORTH DINING HALL C**

### **GENDER ISSUES**

Moderator: Alice Adams

9:00 Sports celebrity and masculinity: representations of David Beckham as a 'queer' subject

Presenter: Momin Rahman

David Beckham is a significant global celebrity as well as an international soccer icon. Based on data gathered from lifestyle magazines in the UK during the last soccer World Cup, this analysis explores the dimensions of Beckham's celebrity and its relationship to his sporting prowess. I argue that masculinity is a key-organizing category of Beckham's celebrity. However, the power of using masculinity in these representations does not lie exclusively in the traditional confirmation of heterosexual masculinity and sporting success, but rather in the dynamic of confirming and destabilising traditional sporting masculinity. This is achieved through the induction of both feminized and queer representations, whilst at the same time contextualizing these within codes of family, fatherhood and football. In conclusion, I discuss whether this signals an increased diversity in sexual and commodity politics, or whether it suggests a re-absorption of 'queer' iconography into the mainstream.

### **MENTORING**

Moderator: Kirsten Swan

9:25 GIRLS TALK & TEEN VOICES Mentor Partnership MSAD# 58 & UMF

Presenters: Kirsten Swan, Lynne Eustis, Laurie Tranten and representatives from the programs

Sponsor: Kirsten Swan

GIRLS TALK & TEEN VOICES are programs which utilize mentoring partnerships by pairing girls in grades 5 through 8 in MSAD #58 with women roles models within the communities of Kingfield, Phillips, Strong and student leaders from UMF. Programs are designed to raise aspirations, build self-esteem, develop personal responsibility and decision-making, and create an environment that fosters a strong commitment to the community. The programs use recommended literature read monthly to discuss themes and issues pertinent to girls and young adolescents. The program is funded through grants and financing from local businesses. Come listen to the participants discuss the program components, learn what we have learned in five years and see the replicability for other school districts.

## **PSYCHOLOGY**

Moderator: Susan Anzivino

### 10:15 Psychological Questions and Answers of Students of PSY 400

Presenters: Lydia Conroy, Leigh Eldredge, Molly Hagstrom, Angeliz Hernandez, Dawn Howley, Cynthia Irish, Jillian Magee, Jennifer Merrill, Catherine Michaud, Heather Pierce, Terrence Reuwer and Cathy Ryder

Sponsor: Susan Anzivino

This presentation will summarize the individual and group projects of students in Dr. Susan Anzivino's Research Methods class: Does eating chocolate help you learn? Do students of different majors drink different amounts of coffee? Do female college athletes differ from their non-athlete female peers on body image? Does your attachment to your parents affect your love style? How do persons who believe in spanking differ from those who do not believe in spanking? Does aura color affect one's college major?

\*\*\*EXCEL sponsored session- Refreshments Provided\*\*\*

## **CHEMISTRY**

Moderator: Mariella Passarelli

### 1:00 From Cooking Oil to Diesel

Presenter: Bernard Fournier

Sponsor: Mariella Passarelli

It is well known that fossil fuel supplies are limited. It is also well known that burning fossil fuels increases the amount of carbon dioxide in the atmosphere and contributes to global warming. To counter both effects, scientists have turned to using plant material for the generation of fuels. We have gone one step further, we start with used vegetable cooking oil from the UMF cafeteria and turn it into fuel. We use traditional methods for the conversion but are also developing new methods. We are also using a very simple NMR technique to analyze the results as opposed to the time consuming GC or HPLC methods used traditionally. The talk will summarize the advances made to date.

## **BIOLOGY**

Moderator: Chris Magri

### 1:20 "Eye've evolved, how 'bout you?": A comparative study of the eye

Presenters: Hannah Robbins and Lianne Koczur

Sponsor: Mary Schwanke

This talk will explore the evolution of the eye. It will focus on the function, importance as a spatial sensory organ, and developmental history.

### 1:40 Botanical treasure hunts in Western Maine. Go off the beaten path... but tread lightly.

Presenter: Nancy Prentiss

Rare and endangered plants in Maine are continually monitored through the coordinated efforts of the Maine Natural Areas Program (Dept. of Conservation) and the New England

Wildflower Society. This presentation takes a look at some rare plant habitats within a close radius of Farmington, Maine, and addresses the importance of protecting rare plant communities.

2:10 Disease Signs in Veal Hearts in Relation to the Transfer of Antibodies

Presenters: Kristin Beale, Aline Potvin and Richard Robinson

Sponsor: Robinson, Richard

Veal heart dissections in student laboratories and previous studies here have shown many disease signs. These include pathological effects such as redness, swelling, blood blisters, ante mortem clots, and other lesions. A likely contributory cause is that the animals have not received adequate colostral antibodies to help fight off bacteria and viruses. Our presentation will provide survey, interview, and immunological data to help determine if there is a failure of passive transfer correlated with the heart pathologies.

**ECOLOGY**

Moderator: Chris Magri

2:30 The ecological dynamics of a wayward tree species on Great Wass Island, Maine

Presenter: Drew Barton

Populations at the edge of a species' range are often ecologically distinct and the first to respond to environmental change such as global warming. Great Wass Island supports a large population of the fire-dependent jack pine at its southeastern geographic limit. All six study stands exhibited continuous regeneration since the 1800s, despite the absence of fire, probably because of little competition from shade tolerant species. Jack pine on outcrops exhibited synchronous age structure peaks and included many trees over 150 years old. In contrast, bog stands were younger, were not synchronized in terms of age structure, and contained few large dead trees, suggesting recent invasion of bogs. Historical aerial photographs supported this hypothesis by revealing substantial infilling of bogs by jack pine since 1940. I'll discuss climate change and fire hypotheses that might explain these recent shifts in jack pine distribution and plans for testing these and related ideas.

\*\*\*EXCEL sponsored session- Refreshments Provided\*\*\*

3:00 Good Tree Gone Bad: colonization of the invasive tree, common buckthorn, in a Farmington woodlot

Presenters: Laura Lalemand, Aline Potvin and Drew Barton

Sponsor: Drew Barton

Invasives are species that colonize and spread outside their native range, and cause environmental or economic damage. Barton et al (2004) found twelve invasive tree species in the Farmington area, spreading mainly from ornamental trees. Although most of these trees are in disturbed sites, common buckthorn has been found in a local woodlot. We are investigating the chronology and spatial pattern of invasion of this species in the woodlot. We mapped (using GPS), cut down, and aged about 400 buckthorn trees. The oldest buckthorns are between 40-50 years, suggesting colonization in the 1950s. The age structure exhibits many young individuals, characteristic of a thriving and possibly spreading population. Buckthorns are also showing positive growth. We plan to develop a GIS map,



age the largest hardwoods in the stand, and analyze historical aerial photographs to test hypotheses about the colonization and spread of this population through the woodlot.

## **VENUE 8: RICKER 202**

### **EARLY CHILDHOOD EDUCATION**

Moderator: Loraine Spenciner

#### 9:00 Studies in Childhood Obesity

Presenters: Tabitha Davis, Deanna DiSotto, Meghan Foster, Karen Lelansky, Judy Macomber, Dayna MacIntosh, Asheley Neal, Tom Mowrey, Holly Phillips, Sarah Stuart and Danielle Williams

Sponsor: Loraine Spenciner

This session focuses on individual research projects designed and implemented during an early childhood senior seminar class. The presentation includes 11 individual research projects presented by the following students.

9:00 Tabitha Davis: Serving sizes and growing obesity rates.

9:20 Deanna DiSotto: After school physical activity in children, ages 5-8 years.

9:40 Meghan Foster: Parental rules about snacking, meals, and food choices among children ages 3-6

10:00 Karen Lelansky: Healthy snacks for young children: What is really being served?

10:20 Judy Macomber: Opportunities for physical activity: A report from public schools

10:40 Dayna MacIntosh: Physical education in public schools: Has it changed?

11:00 Ashley Neal: Head Start and nutrition

11:20 Tom Mowrey: TV, video games and the life of a 3rd grader.

11:40 Holly Phillips: Activity levels of children today and their grandparents

1:00 Sarah Stuart: Physical activity in preschool children.

1:20 Danielle Williams: Central Maine school lunch program: Nutritional value and parental beliefs.

\*\*\*EXCEL sponsored session- Refreshments Provided\*\*\*

## **VENUE 9: RICKER 205**

### **MATHEMATICS**

Moderator: Paul Gies

#### 9:00 Darwinian Cumulative Selection: Identifying Probabilities

Presenter: Dustin Gage

Sponsor: Paul Gies

Richard Dawkins, author of "The Selfish Gene" and "The Blind Watchmaker," is an evolutionary biologist who devised a theory called "Cumulative Selection" trying to explain the mechanism behind Darwinian Natural Selection. The major roadblock with most evolutionary theories has been the infinitesimally small probabilities associated with their requirement of lots of random genetic mutations. Dawkins proposed a theory that restricts this random element and provides feasible probabilities for life to evolve. This presentation involves looking at an analogous and simplified version of Dawkins' theory to show its

mathematical underpinnings. This talk is strictly from a mathematical viewpoint, but no higher mathematical knowledge is needed. Simple examples will be used to lead the way toward understanding how and why Cumulative Selection could possibly be applied to the real world.

9:20 How Much Beer?

Presenter: Aaron Tanenbaum

Sponsor: Michael Molinsky

How to maximize or minimize something when you have constraints.

**BIOLOGY**

Moderator: Paul Gies

9:45 Understanding Winter Foraging Patterns of Birds in Response to Proximity of Forest Edge Habitat in Western Maine.

Presenter: Joyce Webster

Sponsor: Sarah Sloane

Understanding the ecological impact of forest fragmentation is important to understanding the habitat choices and foraging patterns of avian species. Forest fragmentation results in the opening of tree stands, which increases the amount of area along the forested habitat and forest gap. I investigated the foraging patterns of winter birds in response to proximity to edge habitat in a large open area with little proximate edge compared to a smaller open area with reduced space and more forest edge. I observed a greater frequency of visits among ravens, crows, and downy woodpeckers (*Picoides pubescens*) at larger open area sites. Blue jays (*Cyanocitta cristata*), chickadees (*Poecile atricapillus*), and grackles (*Quiscalus quiscula*) were observed with greater frequency at the smaller open areas.

**PSYCHOLOGY**

Moderator: Steven Quackenbush

10:15 The Marilyn Monroe You Never Knew

Presenter: Shawna Newton

Sponsor: Steven Quackenbush

The purpose of this presentation is to examine the life of Marilyn Monroe from a narrative perspective. Specifically, Monroe's two "personas" (i.e., "Marilyn" and "Norma Jean") illuminate a deep tension with respect to the story she was living. This tension was manifest in various personal relationships and it ultimately led to the dissolution of her two marriages. I will argue that Marilyn Monroe could have adequately resolved her developmental issues by renouncing, once and for all, the "Norma Jean" persona.

10:35 Agency and Communion in the Mission of Mother Teresa

Presenter: Sarah Tucker

Sponsor: Steven Quackenbush

In the minds of many, Mother Teresa embodies what the typical caregiver should be. As President Nixon commented, she is "a symbol of total charity and selflessness". In this presentation, I will argue that such an assessment may represent an oversimplification of Mother Teresa's motives. Specifically, Mother Theresa's "communal" persona may mask a deeper concern with themes of agency and power.

## **VENUE 10: RICKER 207**

### **BUSINESS**

Moderators: Thomas Maroney and Waleck Dalpour

9:00 Financial Planning Basics

Presenter: Ethan Masterman

Sponsor: Thomas Maroney

Upon leaving college there are many investing issues that will have to be dealt with. This presentation will cover different forms of retirement accounts, stock, bonds, and mutual funds. I'll also touch on other financial topics like credit cards, student loans, and taxes.

9:25 History and Evolving Strategy of Wal-Mart

Presenter: Jon Bird, Steve Ginn and Luke Nielsen

Sponsor: Thomas Maroney

In this presentation we will focus on the origin and development of Wal-Marts history and their overlying strategy that has helped propel themselves to the top of the retail industry.

10:00 The Positive Wal-Mart

Presenters: Andrew Cutting, Zach Ferri and Ryan Hamann

Sponsor: Thomas Maroney

Wal-Mart provides expanding consumer choice by maintaining consistently low prices allowing consumers to live a more comfortable lifestyle. This Corporation is U.S.'s largest civilian employer. Also the Wal-Mart Effect helps keep inflation down allowing lower interest rates. In addition Wal-Mart is a generous local corporate donor. This presentation will show the many positive ways Wal-Mart benefits local communities.

10:35 The Controversial Side of Wal-Mart

Presenters: Amanda Chappell, Samantha Goyette and Ashley Foley

Sponsor: Thomas Maroney

Many people look at Wal-Mart as an economic force, creating new jobs and offering low prices to customers. However, Wal-Mart has many controversial affects. Here we will look at the impact that Wal-Mart has on the environment, their employees and the local economy.

11:10 Wal-Mart in the Local Community

Presenters: Jared Archilles and Nathaniel Delalio

Sponsor: Thomas Maroney

An examination of Wal-Mart's effects on the Farmington area. Topics will include the impact on the local economy, Wal-Mart's impact on the employment base, consumer-buying power, and how downtown Farmington businesses have been impacted.

11:35 Marine Corps Management

Presenters: Michael Nile, George Davis and Stephen Marquis

Sponsor: Thomas Maroney

This presentation will be a compare and contrast analysis of military management viz a viz civilian corporate management. It will look at decision-making, task delegation, and other management tactics.

12:00 Marketing to the Three Major Generations

Presenters: John Nickerson, Pat Connors and Andrew Ricker

Sponsor: Thomas Maroney

The Presentation will consist of three people doing three separate parts: baby boomers (yuppies), generation X (baby busters), and generation Y (echo boomers), and how they affect marketing in several ways.

12:15 Slotting Fees

Presenter: Ryan Lilly

Sponsor: Thomas Maroney

Slotting Fees, or product placement fees, are becoming prevalent in the retail world. Slotting fees are affecting manufacturer/retailer relationships due to an uncontrolled power given to the retailer. Manufacturers have to pay retailers in food, services, goods, or all three for the storage and maintenance of their product from warehouse to shelf, and it has even gone further... I shall explore the effects of retail slotting fees, both good and bad. Are slotting fees helping the market, or hurting it?

1:00 Marketing On Steroids -NASCAR

Presenter: Matthew Greenleaf

Sponsor: Thomas Maroney

This presentation will focus on the marketing power of NASCAR and why they are so successful.

1:25 Subliminal Advertising in Marketing

Presenters: Sara Paquette and Jodie Welch

Sponsor: Tom Maroney

Subliminal advertising is one of the most controversial and misunderstood techniques used in marketing today. Subliminal advertising is advertising beneath the threshold of conscious perception. It sparks many legal and ethical issues in marketing. Public awareness of

subliminal advertising first became popular with the publication of Vance Packard's book *The Hidden Persuaders*. Subliminal advertising is also used today through product placement and buzz marketing. Buzz marketing is advertising through word of mouth, which can sometimes work best when influencing consumers. The influence of Vance Packard, product placement, and buzz marketing are all very important concepts applied to subliminal advertising.

2:00 Blind Vertigo

Presenters: Scott Marquis and Rory Flynn

Sponsor: Thomas Maroney

This presentation will be on the brand Blind Vertigo, which is a company started by two Auburn High School students. We will discuss the entrepreneurial history, the downfalls, successes and plans for the future.

2:25 Airline Deregulation: Does It Safely Fly?

Presenters: Renee Gravelle, Marykate Kontio and Aimee St. Amand

Sponsor: Thomas Maroney

A comprehensive analytical perspective of airline deregulation encompassing issues of competition, safety, and cost with a particular emphasis on the Airline Deregulation Act of 1978. We will focus on answering the question: Has airline deregulation changed the industry for the better or worse?

2:40 The Cheating Culture

Presenters: Seabren Reeves, Jasper Brown and Trafton Teague

Sponsor: Thomas Maroney

This presentation will examine *The Cheating Culture* by David Callahan. There will be a focus on corporate culture and how Business Schools are graduating students into jail because of the lack of business ethics.

2:50 "Born To Buy," Pre-teen Marketing

Presenters: Stephanie Lake, Melissa Johnston and Ashlee Gregory

Sponsor: Thomas Maroney

This presentation is a discussion and analysis of Juliet Schor's book, *"Born to Buy."* It explores how major marketing companies are targeting and using pre-teens' buying power. Children have become an immense consumer-driven culture. They consume more than any previous generation and are a huge source of profit for marketers. Children are now able to recognize brands as young as 18 months. Their purchases are made based on a status-driven culture.

## VENUE 11: RICKER 217

### HEALTH

Moderator: Lea Bryant

#### 9:00 The Seedlings

Presenters: Desirae Haines, Heidi Parker and Chris Charlton

Sponsor: Lea Bryant

"The Seedlings" is a service-learning project for Health Education Planning (HEA 411). Children will plant and later harvest an organic garden as part of a hands-on learning experience. "The Seedlings" will plan and implement a nutrition unit to reinforce the importance of consuming fruits and vegetables in the diet.

#### 9:20 Women Working with Weights

Presenters: James Rand, Garth Twitchell, Russ Peters and Mike Sullivan

Sponsor: Lea Bryant

"Women Working With Weights", was created part of a service-learning requirement for HEA 411, Health Education Planning. "Women Working with Weights" assesses women members at the Health and Fitness Center who want to enhance their education of fitness, working out with weights, and an overall educational experience of equipment and program design. The population includes women members of all age groups and abilities. The purpose of "Women Working With Weights" is to educate women with facts. For example, weight lifting increases bone density, therefore, reduces the risk of osteoporosis. It also gives them the opportunity to have a hands-on experience in a group setting that can benefit their specific fitness needs.

#### 9:40 Sober Beavers

Presenters: Melissa Jordan, Brandi Rideout and Nicole Welch

Sponsor: Lea Bryant

The Sober Beavers were created as part of the service-learning portion of HEA 411, Health Education Planning. The Sober Beaver's goal is to assess the current drinking habits of varsity and club athletes on the UMF campus by conducting surveys as well as providing student athletes with an alternative to partying on a Thursday night. In collaboration with the UMF athletic department, the Sober Beavers will provide a night of fun, including games, prizes and health information concerning the health effects of alcohol, alcohol's effect on athletic performance, the importance of leaders role modeling responsible behavior, and encouraging athletes to make better choices.

#### 10:10 "Step by Step": To a Healthier Lifestyle, Pedometer Program

Presenters: Anna Starr, Vicky LaBreque and Brenda Maines

Sponsor: Lea Bryant

This presentation will explain the Pedometer Program, "Step by Step" which we implemented this spring at the University of Maine at Farmington. The goal of our project

is to provide a fitness walking program to UMF faculty and staff. It will explain how the program was planned by using the PRECEDE-PROCEED Model.

10:30 Mission For Nutrition

Presenters: Derek Hurst, Kirsten Webster, Travis Magnusson and Dan Currier  
Sponsor: Lea Bryant

"Mission for Nutrition" is a service-learning project for HEA 411, Health Education Planning, to address the need for nutritional labeling in the UMF cafeteria. A needs assessment of UMF students and faculty revealed that there is a lack of nutrition information, which we feel is necessary to make healthy food choices. The Mission for Nutrition is to provide the cafeteria dependent population with nutrition facts and information so they have better chances at improving their quality of life. This project will be conducted over a period of 4 weeks and will determine whether or not nutritional labeling makes a difference in food choices.

11:00 Information is Power- Presentation of the Rape Crisis Directory

Presenters: Erica Colucci, Megan Mayo, and Ashley Wainwright  
Sponsor: Lea Bryant

The goal for this semester-long project in HEA 411: Health Education Planning is to create a directory of local resources available to all survivors of sexual abuse and sexual assault living in and around Franklin County, Maine. The directory will include contact information for assistance in many areas such as housing, transportation, childcare, counseling, medical assistance, legal assistance, pet care, and others. The directory will be available at the Sexual Assault Victims Emergency Services (SAVES).

## **VENUE 12: THOMAS AUDITORIUM**

### **BIOLOGY**

Moderator: Jean Doty

1:00 Is Cat Litter Safe? A Survey of Consumer Cat Litter Antibacterial Properties.

Presenters: Amy Tardif and Sarah Winslow  
Sponsor: Jean Doty

The purpose of this project is to determine if clay, crystal, clay/crystal mix and cedar cat litter have different antibacterial properties. In houses with house cats, fecal bacteria that are left on the cat after using the litter box can be spread to humans causing various diseases. Bacteria can also be spread to human hosts through improper disposal of litter, which may lead to ground water contamination. This project will help determine which kind of litter will be least likely to spread disease throughout a household with cats.

1:15 A Survey of Pathogens in Fresh Produce

Presenters: Jamie Keiper, Amanda Kyes and Stephanie Moriarity

Sponsor: Jean Doty

The goal of the project is to determine the types of bacteria found on fresh fruits and vegetables and the threat they pose to human health. Fresh produce will be gathered from both Hannaford and Wal-Mart Supermarkets in Farmington, Maine. Samples will be obtained from randomly selected fruit and vegetables at each location. The samples will be tested for bacteria present on the produce when it is purchased and also for any remaining bacteria after washing. The purpose of this project is to determine which cleaning methods work best to eliminate bacteria found on fresh produce and what risks are associated with eating unwashed produce.

1:30 Comparison of Hand-washing Regimes and the Effect of Temperature on Hand-washing Effectiveness

Presenters: Tobin Carson and Annie Peckham

Sponsor: Jean Doty

This project is intended to establish the efficacy of hand-washing in different water temperatures, and whether typical soap and water hand-washing is more or less effective than asepsis by alcohol gel. This study will demonstrate the prevalence of bacterial contamination of sink fixtures and whether air-drying or the use of an automatic dryer confers a lesser risk of immediate re-infection. This study will also survey the variety of hand borne bacteria present on the UMF campus.

1:45 Bad Breath: Which Mouthrinse Works the Best?

Presenters: Tom McLaughlin and Dawn Pray

Sponsor: Jean Doty

The purpose of this experiment is to determine which over-the-counter, antimicrobial, breath-enhancing products are most effective in eliminating mouth bacteria. Oral malodor is caused by bacteria that inhabit the tongue and periodontal pockets. The specific bacterial species that cause this, however, have yet to be identified due to the large variety of bacteria in the oral cavity. The treatment goal for oral malodor is to reduce the overall bacterial load in the mouth to decrease microbial metabolism and the foul smelling odors that are associated with it. Commercially available products contain several different active ingredients that are marketed as effective in killing bacteria that cause bad breath; our goal is to determine which active ingredient and therefore which product is most effective in decreasing the total load of bacteria present in the mouth.

2:10 A Study of the Effectiveness of Natural Antibacterial Compounds

Presenters: Christopher Bailey and Paul Harriman

Sponsor: Jean Doty

This project will test the effectiveness of different herbal remedies that are purported to act as antibacterial agents. We will study the effects of colloidal silver, olive leaf extract, grapefruit seed extract, urine, honey, garlic, Echinacea, and golden seal on E. coli reproduction and growth. These substances are some of the most highly regarded natural



antibacterial compounds. If these compounds truly are antibacterial in nature then they will negatively impact the growth and reproduction of bacteria. However, if these substances are not antibacterial, then bacteria growth will continue or even be enhanced from the addition of a new carbon source. The ultimate goal of the project is to confirm or dispel the idea that these substances work as antibacterial agents.

2:25 The Development of Bacteria Utilizing Motor Oil as a Primary Carbon Source

Presenters: Mark Eisel and Kate Gassman

Sponsor: Jean Doty

This project is designed to determine if a strain of bacteria can be developed to use motor oil as their carbon source for metabolism. Initial cultures of *Pseudomonas aeruginosa*, *Bacillus subtilis*, and *Escherichia coli* will be grown individually on mediums with glucose as the only carbon source. The growth medium will then be altered for each succeeding generation by a stepwise reduction of glucose and concurrent increase in motor oil. Through the instrument of natural selection, only those organisms able to use the motor oil in metabolism will be able to survive the switch from glucose to motor oil and go on to produce the next generation. The results of this experiment may be beneficial toward furthering our knowledge of means to deal with the clean up and elimination of hazardous wastes.

2:45  
~~2:55~~

Antibiotic Resistant Bacteria in Treated Sewage Effluent

Presenters: Jon Fortin and Dinesh Pohkrel

Sponsor: Jean Doty

Although treatment of sewage has a positive effect in limiting the dissemination of resistant bacteria, various studies have found traces of multiple resistant bacteria in the treated sewage. This suggests that municipal sewage effluents are potentially a source of spread of these bacteria in aquatic environments. This is, hence, a public health concern as the resistant bacteria and resistant genes are then capable of moving from one ecosystem to another indirectly via the food chain. By investigating the resistance of *E. coli* isolates from the treated sewage of a local municipal treatment plant, this study hopes to address the issue of the spread of antibiotic resistance through water treatment systems, and its risk to public health.

## **VENUE 13: STUDENT CENTER LOBBY**

### **SOCIOLOGY/ANTHROPOLOGY (POSTER)**

Presenters will be at their posters between ~~2:30pm~~ 10:30 - noon.

#### Doing Sociology/Anthropology With Student Chip

Presenters: Christy Cummings, Matthew Greene, Peter Lary, Travis Lowe, Elizabeth Seubert, Daniel Sweetser and Nina Teague

Sponsor: Richard Talbot

Students will report the results of their quantitative research projects using nationally representative General Social Survey data. Poster board presentations will test hypotheses involving such topics as intergenerational occupational mobility, emotional well-being and internet use, beliefs about gun control, social class and psychological health, and ethnic diversity and civil war. Poster boards session will begin at 10:30a and run until noon.

## **BIOLOGY (POSTERS)**

Presenters will be at their posters between 2-3pm

### Evolution Of Feet

Presenters: Amber Braley and Dawn Pray

Sponsor: Mary Schwanke

Different habitats have led to an evolution of specialized feet for the animal to thrive. For example, a lion is not suited for life in a tree; similarly a sloth would be inept at life in the grasslands. We intend to demonstrate, by looking at organisms and their lifestyle, the differences that occur in feet and how they are suited for individual habitats.

### Evolution Of Speech

Presenters: Adam Staier and Emily Jones

Sponsor: Mary Schwanke

An exploration of the muscular and skeletal developments leading to the acquisition of speech. From the first utterance of sound, to the complex interconnected networks of language and culture, this presentation will shed light on the origins of speech.

### Evolution Of Locomotion In Vertebrates

Presenters: Charles Longstaff, Josh Kangas

Sponsor: Mary Schwanke

This poster will illustrate an overview of the evolution of locomotion in vertebrates, from the fishes to mammals.

### Comparative Anatomy And Evolution Of Egg-Laying In Vertebrates

Presenters: Amanda F. Lewis and Brie Lawrence

Sponsor: Mary Schwanke

Fishes, amphibians, reptiles, birds and monotremes are all known to reproduce by laying eggs, but all produce and lay them differently. The focus of this scientific poster will be to compare the anatomy and evolution of egg-laying in these vertebrates. It will examine such comparisons as the type of reproduction (internal versus external fertilization), egg production, laying and the evolution behind the strategies of each vertebrate.

### Purring Mechanism/Vocalization In Cats

Presenter: Jody Dolley

Sponsor: Mary Schwanke

A comparison of the vocalization between cats and humans, as well as evolutionary mechanisms, which allow the purring in cats. A poster will be presented discussing and visualizing the difference between the two.

### The Evolution Of The Vertebrate Brain

Presenters: Joeseeph Aman and Mark Eisel

Sponsor: Mary Schwanke

The brain is an organ that shows dramatic variability in the evolutionary history of vertebrates. From the disorganized neural ganglia present in the most primitive vertebrates, to the immensely complex and little understood cerebral cortex in humans, the increasing neural complexity of vertebrates is probably a large reason for their success. This success has allowed them to exploit a wide range of ecological niches, and selection pressures have given rise to the differentiation and size differences of the various regions of the brain. This project will look into the evolution of the vertebrate brain by comparing the brains found in bony fish, amphibians, reptiles, birds, and humans. It will also examine how each organism's brain is optimally equipped for the environment it habitates. It is hoped that the comparison of these vertebrates will provide some insight into how the invertebrate brain has evolved over the ages.

### Evolutionary Adaptations For Flight In Birds

Presenters: Keith Farr and Mike Morrell

Sponsor: Mary Schwanke

This scientific poster will examine the evolutionary adaptations that birds acquired for the ability of flight, which are believed to be derived from reptiles due to the multiple characteristics shared with reptilian ancestors. Transitions in the adaptations of flying birds to flightless birds will then be explored. Changes seen in flying and flightless birds will include examination of skeletal structure and muscle structure. Why these changes may have occurred in particular species of birds will also be considered.

### Evolution Of Speech

Presenters: Adam Staier and Emily Jones

Sponsor: Mary Schwanke

An exploration of the muscular and skeletal developments leading to the acquisition of speech. From the first utterance of sound, to the complex interconnected networks of language and culture, this presentation will shed light on the origins of speech.

### The Evolution Of Teeth

Presenter: Jon Fortin and Ethan Tracy

Sponsor: Mary Schwanke

Teeth have evolved as a function of evolutionary time and in conjunction with the changes in animal habitats. Most animal species have a unique dental structure and orientation. Some fossils of dinosaurs are assigned species designations due to dental patterns. Many more complex and higher order animals, especially mammals, have a large array of dental organizations. These dental structures are a great indicator of what the animal eats and, more generally, their life strategy. Teeth have many specific purposes in hunting, scavenging, chewing and some non-specific functions such as defense or sexual selection. Dental systems play a large role in predicting the constraints or advantages for that particular organization in relation to other body systems. We are going to focus, in a scientific poster, on the

evolutionary advantages of tooth function and dental structure among many different animals in the sea and on land.

Maine Center For Invasive Aquatic Plant's Virtual Herbarium

Presenter: Sarah Winslow

Sponsor: Dan Buckley

This poster presentation will introduce the Maine Center for Invasive Aquatic Plants' Virtual Herbarium. Goals of the MCIAP Virtual Herbarium project is to provide volunteers, educators, students and the general public with a comprehensive resource to facilitate the early detection of invasive aquatic plants in Maine. The website features both the invasive aquatic plants that are currently threatening Maine's lakes and streams, and the beneficial aquatic plants that are native to Maine waters. Phase one of the project focuses on eleven invasive aquatic plants on Maine's "watch list" and native plants that look like invaders. (Hyperlinks between the invaders and their native "look-alikes" allow easy visual comparisons between key features.) Phase two, continuing through 2005, will expand the herbarium collection to include additional native plants and will feature several improved search functions. Each plant species featured on the website may be explored through photos, line drawings, and descriptive narrative.

Impact Of Short-Term Exposure To Lysol Household Cleansers On Bacterial Diversity And Abundance On The Common Surfaces At UMF.

Presenters: Sections 001, 002, 003, and 005 of Biology 100F

Sponsor: Dan Buckley

Today's manufacturers of household cleansers seem to have a solution for every application kitchen cleansers vs. bathroom cleansers vs. those for everyday cleaning. There is an implication that the cleaning needs of one area are different than those of another area in the household. If these cleansers have an antimicrobial agent it is intimated that they also may be more effective in the different locations by listing different groups of bacteria that they are effective in killing. Students in sections 001, 002, 003, and 005 of biology 100 F. tested the effectiveness of two Lysol household cleansers in decreasing in bacterial abundance and diversity. Classroom and bathroom door knobs/handles and stair railings were sampled and then subjected to cleaning and an exposure time of two minutes to the cleanser prior to re-sampling. It was hypothesized that there would be no difference in the effectiveness of the two products.

Multi-Year Surveys For Variable Leaf Milfoil, Myriophyllum Heterophyllum, In Messalonskee Lake And Pleasant Pond, Maine

Presenters: Ken Baker, Erica Costello, Mark Eisel and Dan Buckley

Sponsor: Dan Buckley

Little has been done in Maine to examine the rate of spread of Variable Leaf Milfoil (Myriophyllum heterophyllum) in unmanaged infestations. In 2004, UMF students completed milfoil surveys at Messalonskee Lake and Pleasant Lake, Maine. These are compared to previous survey data from Messalonskee Lake (2001, 2002) and Pleasant Lake (2002). Both lakes have multiple infestations ranging in size from single plants to patches where milfoil covers hundreds of square meters. In all surveys, locations of infestations

were mapped using high definition Global Positioning Systems (GPS) and GIS technology in UMF's Spatial Ecology Lab. Two recent infestations in Messalonskee Lake had expanded dramatically near the mouth of Belgrade Stream. The 2004 Pleasant Pond survey found less dramatic changes. Pleasant Pond's infestation is moderately severe with much of the shoreline having small to medium-sized patches of milfoil from Horseshoe Pond in Litchfield to the dam in Gardner.

### **PHYSICS (POSTER)**

Presenters will be at their posters between 2-3pm

#### Alternative Energy: Fueling The Future

Presenters: The students of Foundations Physics, PHY 100F

Sponsor: Chris Magri

Physics students will present poster displays on a variety of alternative energy modes and devices, including photovoltaics and other approaches to solar home heating, hybrid electric vehicles, geothermal energy, biodiesel and other alternative fuels, wind power, hydroelectric power, gas turbine engines, and nuclear fission. The posters will be up all day and the authors will be on hand to answer your questions during the scheduled hour.

### **MATHEMATICS (POSTER)**

Presenters will be at their posters between 2-3pm

#### What Is A Typical UMF Student

Presenters: Students in MAT102 sections 1 and 2

Sponsor: Pam Mitchel

Students from MAT102 will present the results of their surveys of UMF students that attempt to answer the question "What is a typical UMF student?" The surveys cover a wide variety of topics including but not limited to sleep habits, music preferences, eating habits and childhood remembrances.

# NOTES PAGE

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