UCFV
UNIVERSITY COLLEGE of the FRASER VALLEY

Undergraduate Research Excellence Awards

April 10, 2006

Welcome to the 2006 UCFV

Undergraduate Research Excellence Awards Presentation

Over $13,000 is being awarded tonight to students who were nominated by faculty based on exceptional research work, either as part of the work study program or as research assistants, or for an outstanding research project as part of a course.

Congratulations to all the students who have worked so diligently to produce award-winning research projects.

Special thanks to the family and friends of our students who support them with funding, encouragement, and patience! Your contribution is most appreciated.

Funds for tonight's awards have been provided by UCFV .

Program

Welcome
Yvon Dandurand, Dean of Research & Industry Liaison

Opening Remarks
Rob Nicklom, Chair, UCFV Board of Governors

Dinner Buffet

Vice President's Remarks
Dr. Wayne Welsh, Vice President, Academic

Awards Presentations
Dr. Wayne Welsh, VP Academic

Dr. Eric Davis, Dean, Arts & Applied Arts

Dr. Jackie Snodgrass, Dean, Science, Health, & Human Services

Tim Segger, VP Administration

Rob Nicklom, Chair, UCFV Board of Governors

Dr. Karen Evans, Dean,
Community Access, Business, & Information Technology

Hosted by
UCFV Research & Industry Liaison

Award Winners

Heather Wakely	Biology
Tegan Williams	Biology
Christine McLoughlin	Chemistry
Jason Gelderman	Criminology
Marlene Roseboom	English
Jacqueline Mulcahy	Geography
Matthew Douma	Health Sciences
Jennifer LaRoy	Kinesiology
Danika Dickson	Kinesiology
Russell Campbell	Math
Marc Sinclair	Philosophy
Nathan Becker	Physics
Julia Franta	Physics
Robin Kleiv	Physics
April Goertzen	Social Work
Marc Sinclair	Social, Cultural & Media Studies
Shirley Wilson	Theatre
Brianna Bergen	Theatre

Biology

Recipient: Heather Wakely

Faculty Supervisor: Ron Wilen
Program Head: Barbara Moon

Award: $500

Recognized for outstanding work on

The Effect of Reduced Glutathione, Ascorbic Acid, & β-Hydroxyquinoline on Nicotiana Alata & Linium usitatissimum L. cv CDC Gold Explant Growth and Morphogenesis

Nicotiana alata (tobacco) and Linium usitatissimum L. cv CDC Gold (solin) were plated on ten hormone free treatments, 9 of which were varying concentrations of ascorbic acid, glutathione, and β-hydroxyquinoline. After six weeks significant root formation was observed in both plant species and in all of the treatments, except for the control. Generally the antioxidants appeared to have no effect on shoot or callus induction. Ascorbic acid also largely contributed to explant enlargement in tobacco. It appears that changes in the redox environment have pronounced effects on explant growth and morphogenesis.

Biology

Recipient: Tegan Williams

Faculty Supervisor: Ron Wilen
Program Head: Barbara Moon

Award: $500

Recognized for outstanding work on

Isolation of Raspberry Bushy Dwarf Virus Resistance Related Genes in Raspberries Using Differential Expression

The Bushy Dwarf Virus (RBDV) affects raspberries and other *rubus* species world-wide causing substantial crop damage by inducing abnormal fruit formation as well as shortening plant lifespan. Locally, it has a severe affect on the most common variety used in the Fraser Valley's $35 million dollar per year raspberry crop. In an attempt to aid the search for control methods, the resistance gene in less agriculturally suited varieties is being sought through molecular and genetic techniques. This project deals with the identification of differences in gene activity between resistant and non-resistant plants to find genes related to resistance or viral responses. By doing so, the physiological mechanisms of resistance may be identified and testing methods may be developed from these results allowing the development of resistant varieties without use of transgenics. This would also reduce the breeding timeline from 10-20 years down to 2-3 years.

Chemistry

Recipient: Christine McLoughlin

Faculty Supervisor: Noham Weinberg
Program Head: Art Last

Award: $1000

Recognized for outstanding work on

Molecular Dynamics of Aqueous Nanodroplets

When sprayed, a saline solution breaks into multiple microscopic droplets. These droplets undergo rapid evaporation that increases salt concentration and, finally, leads to crystal formation. The rate of crystallization and crystal morphology depend on the droplet charge and, as it has been recently discovered, at sufficiently high charges the crystals may acquire highly unusual shapes. If charges are further increased, the droplets become unstable and undergo fragmentation in so-called Coulomb explosion. Better understanding of these events is important for understanding of various physicochemical processes in disperse systems, in particular, atmospheric phenomena and electrospray ionization. Experimental studies of the ultra-microscopic water droplets of molecular dimension do not seem feasible at this stage because of the lack of an appropriate experimental methodology. We therefore undertook a computational study of such systems containing from 100 to 10,000 water molecules and up to 50 unbalanced elementary charges, with the focus on their stability, structure, charged distribution, and evaporation dynamics. Our results match well experimental observations for larger systems and provide an insight into the properties of smaller droplets.

Criminology

Recipient: Jason Gelderman

Faculty Supervisor: Darryl Plecas
Program Head: Martin Silverstein

Award: $1000

Recognized for outstanding work on

An Analysis of Auto Theft Routing

This study involves an analysis of travel routes followed by auto thieves in Surrey, British Columbia using auto theft files from 2001 and 2002. The results are expected to provide valuable insights into our understanding of where vehicles are stolen from and taken to, and which travel corridors auto thieves are likely to have followed. The Study consists of two parts, a spatial distribution analysis of theft and recovery locations using ArcGIS 9.1, as well as a routing analysis using Crime Stat III. Very immediately and practically, the results are expected to be very instructive to our deployment and feasibility assessment of new Automated License Recognition Program currently being considered for adoption by police departments in British Columbia.

English

Recipient: Marlene Roseboom

Faculty Supervisor: John Moffatt
Program Head: Jim Andersen

Award: $1000

Recognized for outstanding work on

The Battle of the Sexes: Authority in Marriage Debated in "The Canterbury Tales"

Church, law, and society all decreed that the medieval English wife submit to her husband in all things; she needed a strong, autocratic husband to keep both her will and her sexual appetite under control. However, in an increasingly individualist fourteenth-century society that offered women new opportunities for personal autonomy, some began to challenge this notion of absolute male authority. This essay examines Chaucer's own challenge to widespread attitudes through the lens of his Canterbury Tales. By comparing the outrageously unconventional Wife of Bath with the rigidly orthodox Clerk, and the disastrous consequences of putting their diametrically-opposite ideologies into practice as evidenced in the Tales that they tell, we find that Chaucer suggests that marital happiness lies in a compromise of those two extremes.

Geography

Recipient: Jacqueline Mulcahy

Faculty Supervisor: Michelle Rhodes
Program Head: Sandy Vanderburgh

Award: $1000

Recognized for outstanding work on

Mass Tourism and Terrorism: Identifying Motives in the Renegotiation of Private Space

Since September 11, 2001, terrorist threats have been cited as the primary reason for increased surveillance of air travellers. Although there has been substantial discussion whether increased public security has been effective and therefore, worth the depreciation of individual privacy, these debates have not explained the motivation of passengers as they renegotiate the boundaries between public and private bodily space. This paper establishes a correlation between the economic and social history of air transport and theoretical frameworks of tourism behaviour. Shaw and Williams (2001), Dann (2002), Crompton (1979), Mannell and Iso-Ahola (1987), and others link the compliance performance of tourists to status identification. I conclude that acceptance of greater intrusion into private space establishes status and as a travel ritual, stages the departure and the reimagining of 'Self' as 'Other.' Whether similar motives influence the entire tourist cycle requires further investigation.

Health Sciences

Recipient: Matthew Douma

Faculty Supervisor: Adrienne Chan
Program Head: Hannah MacDonald

Award: $1000

Recognized for outstanding work on

Homeless Adult Population Management of Chronic Illness

The purpose of this research project is to better understand the experience of homelessness and chronic illness for the purposes of directing practice, advocacy and contributing to the knowledge base. The study has the following objectives:

- To identify how homeless individuals manage chronic illness.
- To explore the lived experiences of homelessness and chronic illness.
- To identify behaviours that promote health, to contribute to the nursing and social science knowledge base.
- To identify what resources are used and needed by homeless persons

This study used qualitative methodology. The inquiry focuses on the experiences, behaviours, and emotions of people who are homeless. The principles of empowerment, inclusiveness, and feminist methods were chosen to create an open system of participative exploration and description.

Kinesiology

Recipient: Jennifer LaRoy

Faculty Supervisor: Chris Bertram
Program Head: Gregory Anderson

Award: $500

Recognized for outstanding work on

The Effects of Various Feedback Conditions & Skill Level on Immediate & Delayed Retention of Golf Swing Performance

The effectiveness of knowledge of performance (KP) feedback on the refinement of a complex motor skill was examined. Ten novice and ten experienced golfers were pre-tested by collecting performance data from twelve golf shots to determine baseline swing characteristics. The participants were then randomly assigned to one of three groups: 1) a verbal feedback group, in which information was provided after each trial on how many degrees the club face deviated from square at impact; 2) a verbal plus video feedback group which consisted of club face angle information plus the addition of a video replay of every 5th trial; or 3) a control group which engaged in self-guided practice without intervention from the experimenter. The instructional sessions involved a series of 25 shots. Retention tests were given following a 10 minute rest period, and then again one week later. Each retention test involved collecting data from a series of 12 shots without feedback to look for improvements relative to baseline testing. The results showed that the experienced golfers were able to produce greater club head speeds than the novices, while still maintaining a relatively square club face at the point of impact. Furthermore, it was found that providing experts with video feedback had a greater impact on performance than in the novice group.

UCFV UNDERGRADUATE RESEARCH EXCELLENCE AWARD 2006

Kinesiology

Recipient: Danika Dickson

Faculty Supervisors: Chris Bertram & Michael Gaetz
Program Head: Gregory Anderson

Award: $500

Recognized for outstanding work on

The Role of Attentional Focus on Closed Motor Skill Performance

The role of attentional focus may play a large role in the development and refinement of motor skills. Athletes in particular, must train to focus to the task at hand, while ignoring irrelevant thoughts and stimuli. Closed motor skills such as a golf putt can become automatic or even 'overlearned' which creates opportunities to focus on other things. This research project investigated the effectiveness of a training program to enhance the performance of a closed motor skill, a golf putt. Results show that participants in the experimental group significantly improved overall accuracy and performed more consistent putts.

Math / Statistics

Recipient: Russell Campbell

Faculty Supervisor: Robin Endelman
Program Head: Gillian Mimmack

Award: $1000

Recognized for outstanding work on

The Unraveler Algorithm

The Unraveler Algorithm is a new algorithm for finding modular inverses. Modular arithmetic concepts are used in encryption systems, hash tables for computer programs, and other branches of mathematics, especially Number Theory. For instance, the ancient Chinese could count their armies in a short period of time using modular arithmetic. The Unraveler Algorithm has been proven to work for every integer where the modulus is prime. An added advantage of the algorithm is that it also gives a pair of inverses for every step taken to complete. Perhaps this will lead to a new perspective on complexity of algorithms, considering the value of every step in addition to how fast the end goal is achieved.

Philosophy

Recipient: Marc Sinclair

Faculty Supervisor: Hamish Telford
Program Head: Glen Baier

Award: $1000

Recognized for outstanding work on

The Lion, the Witch, the Wardrobe and the Rebel: An Exploration of Queer Politics and Theory

In this paper the development of 'queer' social movements are explored. These social movements include gay liberationism, lesbian-feminism, gay assimilationism and queer theory. Special attention is given to the theoretical and ideological belief systems of each social movement that dictates the political pursuits that they pursue. Gays and lesbians and other sexual minorities are thus caught between the multiple challenges of developing a coherent and unified movement, achieving legislative gains, and dismantling the hegemony of heterosexualism. The advancement of one objective, however, frequently results in a setback for one of the other objectives. The very real differences between various sexual minorities and debates over political strategy may work to undermine the advancement for all gays, lesbians, bisexuals and transgendered people.

Physics

Recipients: Nathan Becker, Julia Franta, Robin Kleiv

Faculty Supervisor: Derek Harnett
Program Head: Norm Taylor

Award: $350 each

Recognized for outstanding work on

Binding Energies in Positronium

Quantum mechanics is the area of physics which deals with microscopic systems. Arguably its biggest success is the explanation of the spectrum of radiation emitted by atomic hydrogen; a system comprised of an electron in orbit around a proton. This calculation serves as the prototype for any quantum mechanical two-body problem including, for example, positronium. In positronium, the proton is replaced by a positron, the antimatter particle dual to the electron. As the simplest possible bound state, positronium serves as an important proving ground for quantum mechanics and its successor, quantum field theory. For the most part, the resulting energy levels, and therefore the spectrum of emitted radiation, are determined by the electrical attraction between the two oppositely charged particles. However, there are a number of small corrections to these energy levels which need to be included. These corrections are due to subtle magnetic interactions, relativistic effects, as well as a contribution arising from the quantized nature of the electromagnetic field itself. The combination of these effects comprises the fine structure, and, in this project, we calculated the resulting splittings of the ground state energy of positronium due to such fine structure contributions.

Social Work & Human Services

Recipient: April Goertzen

Faculty Supervisor: Adrienne Chan
Program Head: Gloria Wolfson

Award: $1000

Recognized for outstanding work on

Research on Identifying Sexually Exploited Youth in Chilliwack

The purpose of this study is to develop a demographic profile of youth who are being sexually exploited. This study draws from data collected from social workers, youth probation workers, youth outreach/street workers, harm reduction workers, high school and middle school counsellors, and drop in centre staff who are involved with youth. A literature review determined themes and risk factors that have been identified in other regions in British Columbia and Canada, and to compare these findings with information from our own local study in the Chilliwack area. Risk factors include homelessness, substance misuse issues, previous experiences with foster care, depression and mental health issues, and general home environment stability levels.

The study consists of a survey containing both qualitative and quantitative questions. It is anticipated that the information from the study will be used to develop services and programs targeted toward this particular group of youth.

Social, Cultural, and Media Studies

Recipient: Marc Sinclair

Faculty Supervisors: Katherine Watson
Program Head: Elizabeth Dennis

Award: $1000

Recognized for outstanding work on

A Re-Examination of the Role Structure in Laud Humphreys' Tearoom Trade: A Player is a Player

Laud Humphreys' ethnographic research Tearoom Trade: Impersonal sex in public places has provided sociologists with a geographically and socially descriptive analysis of men who partake in homosexual acts within the public sphere. Humphreys suggests that there are eleven variations of the primary roles players, lookouts, straights, teenagers and agents of social control that a participant can assume at the 'tearoom.' The roles he suggests however are grounded in observations of various sexual actions or collective actions that each participant enacts to attain a particular end. In this paper I will argue that the roles as suggested are not roles independent of each other, notwithstanding agents of social control, but are 'normal variations' of one primary role: player.

Theatre

Recipient: Shirley Wilson

Faculty Supervisor: Ian Fenwick
Program Head: Ian Fenwick

Award: $500

Recognized for outstanding work on

Developing the Methodology for Undertaking a Scan of Arts and Cultural Activity in Abbotsford

Shirley Wilson developed a plan to undertake a scan of arts and culture activity in the City of Abbotsford. The community has been in existence since 1892; however, the amalgamation of Abbotsford with its surrounding communities is only ten years old. No scan of arts and cultural activity was done either prior to or following amalgamation. Abbotsford and its residents will benefit culturally, socially, and economically from a scan of arts and cultural activity. This methodology will provide the groundwork for performing the scan.

Theatre

Recipient: Brianna Bergen

Faculty Supervisor: Bruce Kirkley
Program Head: Ian Fenwick

Award: $500

Recognized for outstanding work on

Set Design for UCFV Theatre Production of Oliver Goldsmith's "She Stoops to Conquer"

Brianna Bergen designed the set for UCFV Theatre's Fall 2005 production of Oliver Goldsmith's She Stoops to Conquer. Goldsmith's period comedy is set in an 18th Century English country manor house with a secondary setting in an English pub. To create the design for this play, Brianna had to research the architectural features, furnishings, and decorations of these places, which involved consulting resources from a range of disciplines, including history, architecture, visual arts, domestic arts, and theatre. Brianna had to synthesize elements from diverse historical materials into a coherent and visually stimulating design that also functioned effectively for the purposes of performance. Brianna met these challenges brilliantly, producing a design that functioned superbly from a theatrical perspective, and also authentically recreated the impression of a "living" country manor house and pub. Many audience members commented on the beauty of Brianna's set, and how it seemed to transport them believably into the world of the 18th Century. Clearly, such praise attests to the clarity and strength of Brianna's design, and to creative work that is deeply informed by excellence in research. This was Brianna's first set design.

Thank you for joining us for this special recognition of student achievements!