



# **Graduate Biological Science Division**

## **FIRST PLACE**

### ***(KENNETH & PAMELA FONG EXCELLENCE AWARD)***

Entry Number: 9 GL

**THE ATF3 TRANSCRIPTION FACTOR INDUCIBLY BINDS TO THE IFN- $\beta$  PROMOTER IN MACROPHAGES DURING SIMULATED MICROBIAL INFECTION**

By: Marvin J. Sandoval, Ami Antani, and Dr. Steve Weinstein

Cell and Molecular Biology

Faculty Advisor: Dr. Steve Weinstein

## **SECOND PLACE**

Entry Number: 6 GL

**WNTLESS-DEPENDENT DISTRIBUTION AND  
ACTIVATION OF WNT1 AND WNT3A**

By: Lydia Li

Cell and Molecular Biology

Faculty Advisor: Dr. Laura W. Burrus

## **THIRD PLACE**

Entry Number: 25 GL

**ROLE OF CONFORMATIONAL CHANGES IN  
SOLUBLE GUANYLATE CYCLASE**

By: Jasmin Kristianto, Kensuke Yamamoto, Stephanie Wood, and Makena Muchunku

Biochemistry

Faculty Advisor: Dr. Nancy Gerber

## **FOURTH PLACE**

Entry Number: 28 GL

**THE ORIGIN OF THE pH DEPENDENCE ON  
LIGAND RECOMBINATION FOLLOWING PHOTOLYSIS OF  
SPERM WHALE CARBONMONOXYMYOGLOBIN**

By: Benjamin Lintner and Ignacio Lopez

Chemistry

Faculty Advisor: Dr. Raymond Esquerra

## **FIFTH PLACE**

Entry Number: 20 GL

**METABOLIC RESPONSES TO ENVIRONMENTAL SALINITY IN THE CLAM CORBULA AMURENSIS**

By: Adam Paganini and Dr. Jonathon Stillman

Marine Biology

Faculty Advisors: Dr. Jonathon Stillman and Dr. Wim Kimmerer

# HONORABLE MENTIONS

Entry Number: 3 GL

## **THE EFFECTS OF WNT6 IN SOMITE PATTERNING**

By: Eugenel Espiritu

Cell and Molecular Biology

Faculty Advisor: Dr. Laura W. Burrus

Entry Number: 18 GL

## **MOLECULAR SYSTEMATICS OF *PHACELIA* (BORAGINACEAE)**

By: Genevieve K. Walden

Ecology and Systematic Biology

Faculty Advisor: Dr. Robert Patterson

Entry Number: 24 GL

## **EFFECT OF BINDING FATTY ACIDS ON THE GLYCATION OF HUMAN SERUM ALBUMIN**

By: April Ranney and Emelia Padilla

Biochemistry

Faculty Advisor: Dr. Raymond Esquerra

# **Graduate Physical Science Division**

## **FIRST PLACE**

Entry Number: 33 GP  
**DIRECTIONAL MEAN SHIFT**  
By: Mehran Kafai and Yiyi Miao  
Computer Science  
Faculty Advisor: Dr. Kazunori Okada

## **SECOND PLACES**

Entry Number: 32 GP  
**XMAS: EXPERIENTIAL VISUALIZATION, MINING, AND ANALYSIS OF TIME-SERIES MICROAR-  
RAY EXPERIMENTS**  
By: Ben Dalziel  
Computer Science  
Faculty Advisors: Dr. Hui Yang and Dr. Rahul Singh

Entry Number: 44 GP  
**USING HOMOLOGY TO DETECT COPY NUMBER VARIATION ASSOCIATED WITH BREAST CAN-  
CER RECURRENCE**  
By: Daniel DeWoskin  
Mathematics  
Faculty Advisor: Dr. Javier Arsuaga

## **FOURTH PLACE**

Entry Number: 31 GP  
**ORDERED TITANIUM DIOXIDE FILMS  
GROWN ON SELF-ASSEMBLED MONOLAYERS**  
By: Shirin M. Usmani, Diana Mars, and Dr. Andrew S. Ichimura  
Chemistry  
Faculty Advisor: Dr. Andrew S. Ichimura

## **FIFTH PLACE**

Entry Number: 34 GP  
**AUTOMATED IMAGE-BASED PHENOTYPIC SCREENING FOR HIGH-THROUGHPUT DRUG DIS-  
COVERY**  
By: Michalis Pittas and Ido Heskia  
Mathematics  
Faculty Advisor: Dr. Rahul Singh

## **Undergraduate Biological Science Division**

### **FIRST PLACE**

#### ***(KENNETH & PAMELA FONG EXCELLENCE AWARD)***

Entry Number: 55 UL

**ROLE OF WNT4 ON MYOGENESIS DURING  
EARLY EMBRYONIC DEVELOPMENT IN THE CHICK**

By: Anthony Eritano

Cellular and Molecular Biology

Faculty Advisor: Dr. Laura W. Burrus

### **SECOND PLACE**

Entry Number: 73 UL

**THE EFFECTS OF NON-ENZYMATIC GLYCATION ON  
THE NITRITE REDUCTASE ACTIVITY OF HEMOGLOBIN**

By: Damon Robles, Yadiel K, and Kay Saw

Chemistry

Faculty Advisor: Dr. Raymond Esquerra

### **THIRD PLACE**

Entry Number: 76 UL

**SYNTHESIS AND CHARACTERIZATION OF  
AMINO ACID SUBSTITUTED PHEOPHORBIDES AS  
POTENTIAL AGENTS FOR PHOTODYNAMIC THERAPY OF CANCERS**

By: Kara Cross

Chemistry

Faculty Advisor: Dr. Ursula Simonis

### **FOURTH PLACE**

Entry Number: 70 UL

**NEW FIELD METHOD FOR DETERMINATION OF ARSENIC IN  
WATER USING ION EXCHANGE AND XRF**

By: Rene L. Johnson and Peter E. Baker

Biochemistry

Faculty Advisor: Dr. Pete T. Palmer

## **FIFTH PLACE**

Entry Number: 65 UL

**SYNTHESIS, CHARACTERIZATION, AND SUBCELLULAR LOCALIZATION OF AMINO  
ACID-SUBSTITUTED TETRAPHENYLPORPHYRINS**

By: Hnin Khin

Biochemistry

Faculty Advisors: Dr. Ursula Simonis and Dr. Meden Issac

## **HONORABLE MENTIONS**

Entry Number: 58 UL

**MEMBRANE RAFT DISRUPTION IN  
CHICKEN EMBRYO SKELETAL MUSCLE CELL CULTURES**

By: Dianna Baldwin

Zoology

Faculty Advisor: Dr. Wilfred Denetclaw

Entry Number: 68 UL

**NADH AND METAL BINDING EQUILIBRIA OF PHENYLACETALDEHYDE**

By: Levenlou Vender

Biochemistry

Faculty Advisor: Dr. George Gassner

Entry Number: 77 UL

**REDUCTION OF SELENIUM OXYANIONS BY ZERO-VALENT IRON SURFACES**

By: Marisa Miller

Chemistry

Faculty Advisor: Dr. Bruce Manning

# **Undergraduate Physical Science Division**

## **FIRST PLACE**

Entry Number: 113 UP  
**PROGRESSIVE METAL STAMPING DIE**  
By: Richard Moore  
Mechanical Engineering  
Faculty Advisor: Dr. Kwok-Siong Teh

## **SECOND PLACE**

Entry Number: 111 UP  
**THE ELECTRIC MOTORCYCLE PROJECT**  
By: Oliver Burke and David Shirling  
Mechanical Engineering  
Faculty Advisor: Dr. A. S. (Ed) Cheng and Dr. Kwok-Siong Teh

## **THIRD PLACE**

Entry Number: 108 UP  
**CNG LAWNMOWER**  
By: Christopher Fernandez, Paul Stelter, and Yeygeuiy Shkelev  
Mechanical Engineering  
Faculty Advisor: Dr. Ahmad Ganji, Dr. A. S. (Ed) Cheng,  
and Dr. Kwok-Siong Teh

## **FOURTH PLACE**

Entry Number: 109 UP  
**RAPID SYNTHESIS OF HIGH-ASPECT RATIO ZINC OXIDE NANOWIRES BY A CATALYST-FREE,  
LOW-POWER INDUCTIVE HEATING PROCESS**  
By: Joachim Pedersen  
Mechanical Engineering  
Faculty Advisor: Dr. Kwok-Siong Teh

## **FIFTH PLACE**

Entry Number: 81 UP  
**SELF-ASSEMBLED MONOLAYERS TO SUPPORT  
THE GROWTH OF INORGANIC FILMS**  
By: Diana Mars and Shirin M. Usmani  
Chemistry  
Faculty Advisor: Dr. Andrew S. Ichimura

# **HONORABLE MENTIONS**

Entry Number: 83 UP

## **THE AVERAGE CROSSING NUMBER OF EQUILATERAL POLYGONS IN CONFINEMENT**

By: Benjamin Borgo, Dr. Rob Scharein, Dr. Yuanan Diao (University of North Carolina, Charlotte), and  
Dr. Javier Arsuaga  
Applied Mathematics  
Faculty Advisor: Dr. Javier Arsuaga

Entry Number: 86 UP

## **CONSTRUCTION OF LATTICE KNOTS FROM THE GAUSS CODE**

By: Nicholas Normandin  
Mathematics  
Faculty Advisor: Dr. Mariel Vazquez

Entry Number: 98 UP

## **REAL-TIME IMPACT LOGGER & ANALYSIS**

By: Christina Phan, Teo Limbo, and Eli Lyons  
Electrical Engineering  
Faculty Advisor: Dr. Tom Holton