SAN FRANCISCO STATE UNIVERSITY

College of Science & Engineering

# 9th annual

# STUDENT PROJECT SHOWCASE

# 2007 WINNERS

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**Dr. Kenneth** (BS '71, Biology) **&**
**Dr. Pamela** (BS '73, Math)
**F O N G**

# Graduate Biological Science Division

## FIRST PLACE

### (Kenneth & Pamela Fong Excellence Award)

Entry Number 32 GL

**SYNTHESIS OF NOVEL DI-SUBSTITUTED TETRAPHENYLPORPHYRINS AS POTENTIAL AGENTS FOR PHOTODYNAMIC THERAPY OF CANCERS**

By: Lenin Parrales, Meden Isaac, and Dr. Ursula Simonis

Chemistry

Faculty Advisors: Dr. Ursula Simonies and Meden Isacc

## SECOND PLACE

Entry Number 10 GL

**TRANSCRIPTIONAL REPRESSOR ATF3 BINDS TO THE IFN-B PROMOTER IN MACROPHAGES**

By: Roberto M. Barrozo

Cell and Molecular Biology

Faculty Advisor: Dr. Steve Weinstein

## THIRD PLACE

Entry Number 22 GL

**INCIPIENT SPECIATION IN THE DIAMOND TURBOT (*Pleuronichthys guttulatus*)**

By: Jeff Schinske and Dr. Eric Routman

Ecology and Systematic Biology

Faculty Advisor: Dr. Eric Routman

## FOURTH PLACE

Entry Number 15 GL

**THE ACTIONS OF ECDYSIS TRIGGERING HORMONE ON THE VENTRAL NERVE CORD DURING ECDYSIS IN THE TOBACCO HORNWORM, *Manduca sexta***

By: Hani El Shawa and Dr. Megumi Fuse

Physiology and Behavioral Biology

Faculty Advisor: Dr. Megumi Fuse

## FIFTH PLACE

Entry Number 6 GL

**MICRORNA EXPRESSION PROFILING IN HUMAN BREAST CANCER CELL LINES**

By: Molly Klein-McDowell, Dr. Koei Chin (UCSF),
Dr. Joe W. Gray (UCSF and Lawrence Berkeley National Laboratory), Dr. Leticia Marquez-Magaña,
Dr. Andrei Goga (UCSF), Dr. Chris Benz (Buck Institute), and Dr. Paul Yaswen (LBNL)

Cell and Molecular Biology

Faculty Advisors: Dr. Leticia Marquez-Magaña
and Dr. Koei Chin (UCSF)

# HONORABLE MENTIONS

Entry Number 2 GL

**CHARACTERIZATION OF 2'-C-METHYL ADENOSINE AND 2'-C-METHYL CYTIDINE USING THE HCV SUBGENOMIC REPLICON**

By: Hyunsoon Kang, Dr. Sophie Le Pogam (Roche), Sonal Rajyaguru (Roche), Sharon Jiang (Roche), Dr. Nick Cammack (Roche), and Dr. Isabel Najera (Roche)

Biomedical Laboratory Science

Faculty Advisors: Dr. Lily Chen and Dr. Isabel Najera (Roche)

Entry Number 7 GL

**ISOFORM SELECTIVE PI3-KINASE INHIBITORS IN BREAST CANCER CELL LINES**

By: Antonio Luna, Jr. and Dr. David Stokoe (UCSF)

Cell and Molecular Biology

Faculty Advisors: Dr. Leticia Marquez-Magaña and Dr. David Stokoe (UCSF)

Entry Number 13 GL

**MYOTOME PRECURSOR CELL SPECIFICATION AND SOMITIC MYOTOME FORMATION INHIBITED BY LIPID RAFT DISRUPTION IN CHICKEN EMBRYOS**

By: Wendy Rosenthal

Cell and Molecular Biology

Faculty Advisor: Dr. Wilfred Denetclaw, Jr.

Entry Number 17 GL

**FACTORS AFFECTING MICROHABITAT SELECTION BY THE TIGER BEETLES CICINDELA HIRTICOLLIS AND C.OREGONA (COLEOPTERA: CICINDELIDAE)**

By: Tara Cornelisse

Conservation Biology

Faculty Advisor: Dr. John Hafernik

Entry Number 19 GL

**CONTROL OF LEPIDIUM LATIFOLIUM IN SAN FRANCISCO BAY TIDAL WETLAND**

By: Anya P. Burdick and Dr. Katharyn E. Boyers

Conservation Biology

Faculty Advisor: Dr. Katharyn E. Boyers

Entry Number 26 GL

**WHAT ARE THE LEARNING STYLES OF PRE-MEDICAL STUDENTS IN LOWER AND UPPER DIVISION SCIENCE COURSEWORK?**

By: Amanda del Rosario, Huy Ngo, and Dave Joun

Microbiology

Faculty Advisor: Dr. Jennifer Breckler

Entry Number 29 GL

**ALKALI-METAL DOPED, NANOSCALE ZEOLITE FILMS AS POTENTIAL OPTOELECTRONIC SENSORS**

By: Georgi Diankov and Dr. Andrew S. Ichimura

Chemistry

Faculty Advisor: Dr. Andrew S. Ichimura

# Graduate Physical Science Division

## FIRST PLACE

Entry Number 36 GP

**MACE: A SIMPLE ALGORITHM FOR LOSSLESS COMPRESSION OF MICROARRAY IMAGES WITHOUT SPOT SEGMENTATION**

By: Robert Bierman

Computer Science

Faculty Advisor: Dr. Rahul Singh

## SECOND PLACE

Entry Number 46 GP

**THE SEARCH FOR BROWN DWARF COMPANIONS AT WIDE SEPARATIONS**

By: Adam Garland

Physics

Faculty Advisor: Dr. Chris McCarthy

## THIRD PLACE

Entry Number 35 GP

**PREDICTION OF PROTEIN-LIGAND INTERACTIONS USING COMPUTATIONAL MODELS OF ACTIVE SITES**

By: Joanna Lipinski

Physiology and Behavioral Biology and Computing for Life Sciences

Faculty Advisor: Dr. Rahul Singh

## FOURTH PLACE

Entry Number 52 GP

**NEW METHODS FOR MULTI-CARRIER MODULATION**

By: Donovan Cheuk

Electrical Engineering

Faculty Advisor: Dr. Todor Cooklev

## FIFTH PLACE

Entry Number 44 GP

**THE METABOLIC SYNDROME: A PRECURSOR TO CARDIOVASCULAR DISEASE & DIABETES AND ADOLESCENTS - WHO'S AT RISK?**

By: Debbie Lee

Mathematics

Faculty Advisor: Dr. Mohammad Kafai

# HONORABLE MENTIONS

Entry Number 37 GP

**NOVEL BAYESIAN NETWORK EVALUATION ALGORITHM FOR DISCOVERING GENE REGULATORY PATHWAYS FROM MICROARRAY DATA**

By: Arturo Flores, Lala Motlhabi, Rocco Varela, and Elinor Velasquez

Computer Science

Faculty Advisors: Dr. Frank Bayliss, Dr. Hui Yang, Dr. Ilmi Yoon, and Mike Wong

Entry Number 43 GP

**EXPLORING EHRHART QUASIPOLYNOMIAL PERIODS OF 2-D RATIONAL POLYTOPES**

By: Anastasia Chavez and Chris O'Neill

Mathematics

Faculty Advisor: Dr. Matthias Beck

Entry Number 49 GP

**COMPARISON OF UBC 1997 AND IBC 2006 USING STEEL BRACED FRAMES AND STEEL MOMENT FRAMES**

By: Tim Le

Civil Engineering

Faculty Advisors: Dr. Wenshen Pong and Dr. Norm Owen

Entry Number 51 GP

**CLOCK GATING AND NEGATIVE EDGE TRIGGERING FOR ENERGY RECOVERY CLOCK**

By: Vishwanadh Tirumalshetty

Electrical Engineering

Faculty Advisor: Dr.Hamid Mahmoodi

Entry Number 56 GP

**TITAN: EXPLORING EARTH-LIKE EROSION MECHANISMS ON A FROZEN MOON**

By: Beth Zygielbaum

Geology

Faculty Advisor: Dr. Leonard Sklar

Entry Number 58 GP

**PREDICTING THE GRAIN SIZE DISTRIBUTION SUPPLIED TO RIVER CHANNELS FROM HILLSLOPES**

By: Jill Marshall

Geology

Faculty Advisor: Dr. Leonard Sklar

Entry Number 60 GP

**QUANTIFYING BEACH RESPONSE TO EPISODIC LARGE WAVE EVENTS, AN EMPIRICAL PREDICTIVE MODEL, OCEAN BEACH, SAN FRANCISCO, CA**

By: Jeff Hansen

Geology

Faculty Advisor: Dr. Newell Toby Garfield

# Undergraduate Biological Science Division

## FIRST PLACE

### *(Kenneth & Pamela Fong Excellence Award)*

Entry Number 61 UL

**EMBRYONIC CELLS DEPLETED OF MATERNAL BETA CATENIN REMAIN COMPETENT TO DIFFERENTIATE INTO DORSAL MESODERMAL DERIVATIVES**

By: Michael Sanchez, Franchie H. Chu, Bonnie Afonin, and Dr. Carmen Domingo

Cell and Molecular Biology

Faculty Advisor: Dr. Carmen Domingo

## SECOND PLACE

Entry Number 79 UL

**SYNTHESIS OF A NEW DIAGNOSTIC AGENT FOR PROSTATE CANCER**

By: Brian Blank and Dr. Cliff Berkman

Chemistry

Faculty Advisor: Dr. Cliff Berkman

## THIRD PLACE

Entry Number 63 UL

**MBC DISRUPTION OF LIPID RAFTS REVERSIBLY INHIBITS BREAST MUSCLE CELL CULTURE DIFFERENTIATION VIA NITRIC OXIDE SIGNALING**

By: Izhar Batth, Sannah Ladiwalla, Jared M. Greenberg, and Dr. Wilfred Denetclaw Jr.

Cell and Molecular Biology

Faculty Advisor: Dr. Wilfred Denetclaw, Jr.

## FOURTH PLACE

Entry Number 73 UL

**INVESTIGATING THE CONTRIBUTION OF THE S1' POCKET OF TRYPSIN TO SUBSTRATE RECOGNITION**

By: Timothy Acker

Biochemistry

Faculty Advisor: Dr. Teaster Baird, Jr

## FIFTH PLACE

Entry Number 69 UL

**SALINITY TOLERANCE IN INVASIVE ASCIDIANS**

By: Amelia Rodelo

Ecology and Systematic Biology

Faculty Advisor: Dr. Sarah Cohen

# HONORABLE MENTIONS

Entry Number 66 UL

**NITRIC OXIDE REGULATION OF MYOTOME DEVELOPMENT BY LIPID RAFT CONSTITUENT NITRIC OXIDE SYNTHASE IN CHICKEN EMBRYO**

By: Karen Berry and Natasha Chandiramani
Cell and Molecular Biology
Faculty Advisor: Dr. Wilfred Denetclaw, Jr.

Entry Number 70 UL

**INDENTIFYING AN APPROPRIATE BLOOD SUGAR ASSAY FOR THE TOBACCO HORNWORM, *Manduca sexta***

By: Allison Dias and Dr. Megumi Fuse
Physiology and Behavioral Biology
Faculty Advisor: Dr. Megumi Fuse

Entry Number 75 UL

**A NOVEL APPROACH FOR THE INDEPENDENT SYNTHESIS OF 2[*3H*]OXAZOLINONES -- COMPOUNDS OF POTENT ANTIBIOTIC PROPERTIES**

By: Helen Lee and Mohamad Azimi
Biochemistry
Faculty Advisor: Dr. Ihsan Erden

Entry Number 76 UL

**MOLECULAR DYNAMICS SIMULATION FOR THE LABORATORY**

By: Heath Kornblum and Dr. Marc Andersen
Biochemistry
Faculty Advisors: Dr. Marc Andersen and Dr. Cliff Berkman

# Undergraduate Physical Science Division

## FIRST PLACE

Entry Number 90 UP
**STEEL BRIDGE TEAM**
By: Guy Halperin, Quint Herrmann, Haislip Hayes,
Adrian Gotauco, Jeff Quock, Jeremy McGee,
David Hungerford, Wendy Zambrano, and Azin Zarei
Civil Engineering
Faculty Advisor: Dr. Norman Owen

## SECOND PLACE

Entry Number 104 UP
**ANIMAL: THE MIDI CONTROLLED PNEUMATIC DRUMMER**
By: Gong Ye Chen, Anthony Freggiaro,
Sang Chul Lee, and Alex Rivera
Mechanical Engineering
Faculty Advisors: Dr. A.S. Ed Cheng and Dr. Michael Holden

## THIRD PLACE

Entry Number 105 UP
**R.E.A.C.H. BIOBOT**
By: Marshall Rice, Holly Gothard, and Jesse Gwynne
Mechanical Engineering
Faculty Advisors: Dr. A.S. Ed Cheng and Dr. Michael Holden

## FOURTH PLACE

Entry Number 108 UP
**GPS/INU GUIDED AUTONOMOUS VEHICLE**
By: Steve Jain and Mikhail Levitskiy
Computer Engineering
Faculty Advisors: Dr. Ying Chen and Dr. Hamid Mahmoodi

## FIFTH PLACE

Entry Number 89 UP
**GUIDING LIGHT: IN PERIODIC STRUCTURES**
By: Daniel Shuldman and Simon Huang
Physics
Faculty Advisor: Dr. Zhigang Chen

# HONORABLE MENTIONS

Entry Number 82 UP
**VISION-BASED DETECTION OF VISUALLY DISSIMILAR OBJECTS**
By: Taeil Goh and Ryan West
Computer Science
Faculty Advisor: Dr. Kaz Okada

Entry Number 88 UP
**MOVEMENT OF LATTICE KNOTS AND DNA**
By: Andrew Herrmann and Nicholas Normandin
Mathematics
Faculty Advisor: Dr. Mariel Vazquez

Entry Number 92 UP
**SFSU-LAKE MERCED WOOD BRIDGE**
By: Israel De La Cruz, Jerry Wong, Keith Fang, Yu Rong Zong, and TzeYee Tsang
Civil Engineering
Faculty Advisor: Dr. Wenshen Pong

Entry Number 96 UP
**SFSU HUMAN POWERED VEHICLE**
By: Alex Polonsky, Jorge Corona, Daniella Dragon, Kevin Morgan,
Anthony Truong,Yousef Golsorkhi, Jay Coquilla, and Jose Coto
Mechanical Engineering
Faculty Advisors: Dr. A.S. Ed Cheng and Dr. Michael Holden

Entry Number 98 UP
**FUEL GUARD**
By: Gaunt Murdock, James Bottomley, Donald Best III, Estuardo Ramirez, and Conmin Cheng
Mechanical Engineering
Faculty Advisor: Dr. A.S. Ed Cheng

Entry Number 110 UP
**AUTOMATIC VIOLIN TUNER**
By: Edward Mazmanian, Luis Eguizabal, and Juan Carlos Alfaro
Electrical Engineering
Faculty Advisor: Dr. Tom Holton

Entry Number 112 UP
**CLASS D AUDIO AMPLIFIER**
By: Anton Suryana, Karen Chan,
Michael Solivan, and Ricardo Marangco
Electrical Engineering
Faculty Advisors: Dr. Tom Holton and Dr. Hamid Shahnasser