

ANNUAL REPORT

(Report must be typed or Word processed - handwritten forms will not be accepted. Four copies of this annual report should be routed to the Office of Research.)

Institute Director: Natasha Raikhel

Title: Distinguished Professor, Plant Cell Biology; Ernst and Helen Leibacher Endowed Chair

Phone: (951) 827 - 6370

Department: Botany & Plant Sciences

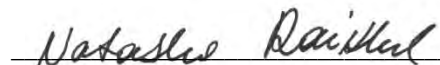
Email: nraikhel@ucr.edu

College: College of Natural & Agricultural Sciences

Period of Review: 2007-08

Name of Center:

Institute for Integrative Genome Biology



Director's Signature Date

Department Chair's Signature Date

Dean's Signature Date

NOTICE OF ACTION

The Vice Chancellor for Research has reviewed the annual report and has scheduled a follow-up meeting with the Center Director and Dean at _____ on _____ in _____.

Charles F. Louis
Vice Chancellor for Research

Date

INSTRUCTIONS: Please submit four (4) copies of this review to the UCR Office of Research, University Office Building Room 200 and (1) copy to the College Dean as appropriate. For information about the process for preparing an annual report, please contact the Office of the Vice Chancellor for Research at 951.827.5535.

A1. GENERAL NARRATIVE: Please provide a short statement highlighting the main activities in which the center has engaged during the review period and how they relate to the mission, goals and objectives of the research center and to the challenges/issues/problems central to the work of the research center. How did the center contribute to UCR's graduate and undergraduate teaching programs? What activities did the center provide to UCR's external communities?

MAIN ACTIVITIES RELATED TO MISSION, GOALS, AND OBJECTIVES:

Move to the Genomics Building (September 2009)

In the beginning of September 2009, 29 IIGB faculty from nine departments moved into the ~66,000 assignable sq. ft (109,072 gsf) Genomics building at the corner of Citrus and Eucalyptus streets, pioneering at UCR the concept of an open-design building (shared labs and student/researcher office spaces) to stimulate interactivity and creativity between members of different research groups and hopefully, innovative, translational discoveries. The new building, therefore, provides the physical infrastructure to foster the mission of the Institute as stated on its website and as provided below. The building brings together bioinformaticians and life scientists under one roof and has, as its common research thread, the use of modern genetic tools, genomics and bioinformatics to help address basic and applied questions in the plant, insect, and fungal sciences. For many IIGB researchers and staff, much time was dedicated in 2009 to designing lab/office/public space within the building, ordering furniture/supplies, coordinating the move/purchase of instruments and equipment, developing policies for shared resources and collaborative research, preparing work orders for communication/data lines and countless facility issues and, ultimately, ensuring that researchers' needs were met and the transition conducted smoothly. The building also houses a 100-seat auditorium, which is anticipated to become a major venue for national conferences, distinguished lectures, important campus events and science lecture series for IIGB and its affiliated centers.

The mission of the Institute for Integrative Genome Biology (physically represented by the open-design Genomics building) is to:

- Foster and support interdisciplinary collaborations among researchers on campus and in the scientific community utilizing a systems-based approach to science
- Develop novel approaches and technologies to solve complex biological problems
- Train students and postdocs in interdisciplinary research
- Explore the translational development of potentially commercial technologies and projects

Instrumentation Facilities at Keen Hall – Workshops:

The IIGB is a virtual Institute organized around four functional Core Facilities that provide services in the areas of Genomics, Microscopy, Proteomics and Bioinformatics. These facilities are housed in close proximity with the Genomics, Microscopy and Proteomics cores located in Keen Hall. The Bioinformatics core recently relocated to the new Genomics Building across the street where critical server rooms are efficiently air-conditioned and emergency power is provided. All Cores are spearheaded by qualified Academic Coordinators/Administrators/Faculty. This arrangement provides researchers with the ability to access diverse technologies and expertise in nearby locations which serves to foster interdisciplinary research. The arrangement also allows for broader coordination of instrumentation and expertise maximizing synergism while minimizing duplication of resources on campus. Of the 120 labs utilizing the Core Facilities, a significant proportion utilizes the services of at least two Cores. With the acquisition and operation of the Illumina (Solexa) Genome Analyzer II DNA Sequencer in 2008 and the hiring of two senior programmers to assist with data analysis, the cores have been challenged with training and research demands and coordination.

Workshops in all four instrumentation facilities are conducted regularly and are typically free of charge. All workshops and training sessions are advertised on the IIGB homepage and under their respective areas under the homepage calendar at: <http://genomics.ucr.edu/>. During fiscal year 2008-09, the following number of workshops was held:

Microscopy: 15 Workshops

Training is available regularly and on demand to students, postdocs, technicians and faculty members who want to use the resources of the Microscopy Core in their research. Training is sufficient to get new users started on using the featured equipment; refresher tips are provided at no extra charge to trained users. Sessions typically run for three hours and involve both a theory presentation and hands-on demonstration. Class sizes are kept between 4 and 10 to allow sufficient hands-on activity. Participants are encouraged to bring examples of their own experimental needs, to discuss

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the feasibility of different approaches, and to note any particular experimental problems or questions they would like addressed.

Bioinformatics: 12 Workshops

There is a continued high demand for bioinformatics workshops from internal and external participants (50% more than last year). More and more participants are attending who have to fly to Riverside in order to attend the workshops. The bioinformatics core offers a workshop program on the analysis of genomes, array data, programming in R, clustering, data mining, cheminformatics, and parallel computing on clusters. These events are attended by students and researchers from all life science, statistic, computer science and engineering departments at UCR. About 10% of the participants are from external universities and biotech companies across California. Frequently, the facility receives requests to teach these courses in other states in the US or in Europe. The extensive online material for these courses has been downloaded by several thousand scientists from international locations, and the instructors have even received an offer to publish this material in an educational book series. The online manuals for these courses can be downloaded from this site: <http://faculty.ucr.edu/~tgirke/manuals.htm>. In addition to the IIGB homepage, the Bioinformatics workshop schedule is available at: <http://faculty.ucr.edu/~tgirke/Workshops.htm>.

Proteomics: 6 Workshops

A free monthly one-day workshop is available on the first Tuesday of each month to students, postdocs, technicians and faculty members, and includes a general lecture, an operational demonstration and time for individual practice on the equipment. Session topics cover the proteomics applications of the MALDI-MS/MS system (Q-STAR, ABI). This past year, training was also offered on use of the Biacore X100. Enrollment is restricted to four people per session to allow sufficient hands-on activity. Trainees gain operational skills in using the MALDI-MS/MS and database-dependent tools to study cellular proteins with both PMF and MS/MS analyses of proteolytic peptides. In addition to the usage in protein identification, the Q-STAR system can also be a choice for studies of protein complexes, protein modifications, and protein-protein interactions. This workshop is intended to help trainees become independent experimentalists using the proteomics approach.

Genomics: 10 Workshops

Although high throughput tasks such as DNA sequencing, Affymetrix services, and FACSaria are offered as services only, the Genomics Core offers expertise in experimental design and trouble-shooting as necessary. Free organized training is available for qPCR, which is utilized broadly, two to three times per year or as needed depending upon demand. The Genomics Core also conducts training on microsatellite marker analysis and new Affymetrix products and services. With the advent of Illumina DNA sequencing services workshops have been introduced at multiple level. These is a workshop designed to introduce new users to the technology and UCR services. Additional workshops in analysis of Illumina data are offered by the Bioinformatics Core. Individuals may reserve time with Core personnel for specific problems or more in-depth training, typically free of charge. For instruments with a lower rate of usage (VersArray, QPix, Luminometer, Hydroshear), or are simple to operate (Nanodrop) or have many legacy users (Typhoon), training is available on an individual basis.

IIGB Forums (7/22/09) [see Attachment A]:

An IIGB Forum was held on July 22, 2009 to discuss the budget situation and its impact on current and planned IIGB initiatives and activities, new staff hires (John Weger, Genomics Core Specialist), new policies/procedures (Keen Hall's electronic security system eff. 7/09 and the new Instrumentation Facilities Services and Billing Application), and the pilot Business/Science Graduate program that just completed its first year. The status of the move to the Genomics Building was summarized by CNAS Life Sciences Divisional Dean Linda Walling, and instrumentation proposals recently submitted to NIH and NSF for the following pieces of equipment were

New Instrumentation Facilities Reservation and Billing System:

In 2009, IIGB instituted instituting an automated reservation and billing system for users of Keen Hall's four instrumentation cores (Microscopy, Genomics, Proteomics, Bioinformatics). Prior to this, Academic Coordinators managing each facility were spending an inordinate amount of time collecting and computing billing data manually from paper records, resulting in a time-consuming system prone to error that detracted significantly from research services and goals. The new IIGB Instrumentation Facilities Services and Billing Site was developed as an online system for users to reserve equipment and request services and automatically bill internal and external customers accordingly in compliance with UCR formats. Due to the site's integrated functionality, recharges and monthly statements are automatically generated based on reservation times, submitted forms, and current approved rates. The new system permits efficient generation of usage data and revenue across the facilities and functions of IIGB and facilitates benchmarking to monitor overall operation.

Enhanced Keen Hall Security

IIGB installed a new security system in 2009 that requires the use of electronic fobs rather than traditional keys. This has greatly increased the security of IIGB's instrumentation and facilities by allowing the control of access after-hours. It has the added benefit of tracking after-hour online reservations to ensure accurate billing.

IIGB Deep Sequencing Innovation Grants (3) [See Attachment B]

Using limited resources, the IIGB Genomics Core introduced three Deep Sequencing Innovation Grants (up to \$6200 each) with the goal of providing new applications for methodologies for Illumina sequencing that will be of benefit to UCR researchers more broadly. This is aimed at enhancing IIGB's status nationally and in support of the IIGB mission of fostering research across campus. In view of the success of the 2007-08 IIGB Interdisciplinary Research and Training Awards, where IIGB grant recipient Frances Sladek was able to successfully receive an R21 grant from NIH as a direct result of her seed grant, these funds will hopefully once again provide preliminary data for the subsequent award of full extramural grant proposals.

Seminar Activities:

The Institute allocated \$4k/yr in 2008-09 to each of the IIGB-affiliated Centers below for seminar-related expenses with the purpose of stimulating the research environment. In order to attract the best attendance, secure optimal venues, and promote maximal educational/research benefits, IIGB, CEPCEB and IGERT seminars were scheduled on a rotating basis on Fridays; however, for the first time, Genetics, Genomics & Bioinformatics (GGB) Graduate Program seminars were also rotated into the Friday noon schedule during this period. In this manner, the chances of inundating campus researchers and students with several seminars throughout a given week are minimized. CDVR Seminars were held on Tuesdays during this period. All seminar activities below are advertised on the IIGB website (www.genomics.ucr.edu). The following faculty members coordinated seminar activities within the Institute during 2008-09:

IIGB Seminar Committee

IIGB seminars are devoted to systems biology and high-throughput genomics across all organisms. This seminar series features prominent speakers in the .
Frances Sladek - (Chair) Dept. of Cell Biology and Neuroscience
Larry Li - Dept. of Botany and Plant Sciences
Jiayu Liao - Dept. of Bioengineering

CEPCEB Seminar Committee

Established in 2002, the CEPCEB seminar series (BPSC252: Special Topics in Botany) allows prominent speakers as well as internal faculty and postdocs the opportunity to present and discuss noteworthy research discoveries in the fields of plant cell and molecular biology and genomics.
Venu Reddy (Chair) –Botany and Plant Sciences
Xuemei Chen – Botany and Plant Sciences
Tao Jiang – Dept. of Computer Science and Engineering

CEPCEB Noel T. Keen Lecture and Award Committee

Established in 2002, the Center for Plant Cell Biology (CEPCEB) scholarship award fund sponsors an annual Special Lecture and Awards Ceremony where an invited leading scientist presents his or her work and where postdocs, graduate students and undergraduate students receive public recognition of their accomplishments. The Noel T. Keen Lecture has become a top-notch lecture series. Previous lecturers have included: Fred Ausubel (Harvard), Jeffrey Dangl (University of North Carolina at Chapel Hill), Chris Somerville (Stanford), Joanne Chory (Salk Institute), Bernhard Palsson (University of California, San Diego) and Gloria Coruzzi (New York University).
Harley Smith (Award Committee Chair) – Dept. of Botany and Plant Sciences
Xinping Cui -Dept. of Statistics
Yinsheng Wang - Dept. of Chemistry
David Carter - CEPCEB Microscopy Core
Marc Surpin – Dept. of Botany & Plant Sciences (Assoc. Research Plant Cell Biologist)
James Kim -Cell, Molecular and Developmental Biology Graduate Student/IGERT Student

CDVR Seminar Committee

Started in 2005, the Center for Disease Vector Research (CDVR) continues to bring leading as well as young researchers together to discuss seminal discoveries related to molecular biology and the genomics of disease vectors.

Peter Atkinson - (Chair) Dept of Entomology
Karine Le Roch - Dept. of Cell Biology and Neuroscience
Shou-wei Ding - Dept. of Plant Pathology

Faculty Luncheon Committees

Early in 2006, CEPCEB initiated a program of quarterly luncheons for principal investigators within the Center for the purpose of learning more about each other's research interests and promoting interdisciplinary interaction. Each quarter, a different member presents a talk about his/her research, which is followed by discussion regarding potentially interesting and novel collaborations. Turnout has consistently been high for these meetings.

Due to the success of CEPCEB Luncheons, the CDVR introduced their own luncheon meetings in 2007. Below are the individuals coordinating both Luncheons, which are funded by the Institute.

CEPCEB PI Luncheon Committee:

Katherine Borkovich – Dept. of Plant Pathology & Microbiology

CDVR PI Luncheon Committee:

Peter Atkinson – Dept. of Entomology

Recruitment Activities:

The following faculty were involved in academic recruitments for the positions indicated below.

- (2) Senior 1.0 FTE Bioinformatics Analysts (funded for two years by the Administration) Interview panel:
Thomas Girke - Assist. Prof and Director of the Bioinformatics Core Facility
Glenn Hicks - Academic Administrator & Associate Research Plant Cell Biologist
Stefano Lonardi - Assoc. Professor, Computer Sciences & Engineering

Genomics Core Specialist Position (replacing David Fang) Search Committee:

Peter Atkinson (Professor, Center for Disease Vector Research, Entomology), Chair
Linda Walling (Professor, Life Sciences Divisional Dean, Botany & Plant Sciences)
Karine La Roche (Assistant Professor, Cell Biology and Neurosciences)
Xuemei Chen (Associate Professor, Botany and Plant Sciences)
Glenn Hicks (Academic Administrator, IIGB, Botany & Plant Sciences)

INSTITUTE'S CONTRIBUTIONS TO UCR'S GRADUATE AND UNDERGRADUATE TEACHING PROGRAMS:

Genetics, Genomics, and Bioinformatics (GGB) Graduate Student Travel Awards

In 2007 and 2008, the Institute for Integrative Genome Biology allocated to the Genetics, Genomics and Bioinformatics Graduate Program \$3,000 of IIGB funds towards graduate student travel to conferences or other scientific meetings. In 2009, remaining funds were utilized by the GGB program to award the following GGB student travel. Meeting announcements, posters, abstracts and letters of support from thesis directors were submitted by students vying for consideration of these awards.

GGB 2009 Travel Award Recipients:

Michelle Brown
Patrick Schacht
Sourav Roy

Proposed Business Track in Science Graduate Programs

In the summer of 2008, IIGB Director Natasha Raikhel approached Anderson Graduate School of Management (AGSM) Dean David Stewart to explore the collaborative development of a business component to graduate

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programs in the biological sciences. The purpose was to better prepare students for entrepreneurial and commercial career options related to their scientific education and training, and to improve recruitment possibilities for both programs and for UCR. They decided to initially enroll interested students from the Plant Biology and Genetics, Genomics and Bioinformatics (GGB) programs into two introductory MBA courses: Marketing Management (MGT 209) and Financial Management (MGT 202). If successful, the next step involves a tailored business class for science students and a certificate program.

GGB and Plant Biology students were surveyed in the summer of 2008 for their interest in the Business track. Both Isgouhi Kaloshian (Director, GGB) and Patricia Springer (Vice Chair, Botany & Plant Sciences) received overwhelming support for the proposed program. A student application form to participate in the program was developed and distributed, summarizing the criteria for the selection of students from each program for Fall/Winter 09. The form asked students to submit a personal statement describing their career goals and a justification of how this experience would enhance those goals, as well as a letter of support from their major professor.

The following three students were selected and took the second AGSM business class in spring 09:

Michelle Brown (Genetics, Genomics and Bioinformatics Graduate Program/ChemGen IGERT Program)

Thanh Thu Dinh (Plant Biology Graduate Program)

Nadia Naeem Qureshi (Genetics, Genomics and Bioinformatics Graduate Program)

Impact of above: A meeting was scheduled 9/29/09 with the AGSM Dean, the CNAS Dean, the IIGB Director, and the students above to discuss the possibility of issuing certificates for completion of these courses, and to pursue the possibility of implementing business/science programs in other disciplines on campus (i.e., engineering/business).

Interdisciplinary Teaching Efforts:

Both IIGB Academic Administrator Glenn Hicks and Academic Coordinator (Microscopy) David Carter have conducted lectures involving IIGB's innovative technology and research pursuits for such UCR graduate courses as Chemistry 221E (Advanced Bioanalytical Chemistry) and Plant Cell Biology 237.

IIGB Facilities Tours: [see below]

OUTREACH ACTIVITIES:

IIGB Facilities Tours: [see Attachment C]

In an effort to showcase Keen Hall's advanced tools in bioinformatics, microscopy and imaging, proteomics and genomics and potentially assist in recruitment efforts of top-notch faculty and graduate students, IIGB's academic staff regularly participates in conducting tours to a wide range of groups. During fiscal year 2008-09, a total of 15-21 tours were conducted of one and/or all of the cores. Many tours of Keen Hall were conducted for the Copernicus, Microbiology, REU and other student programs in an effort to assist in student recruitments.

Math/Science Teacher Training:

Pamela Clute of the ALPHA Center and IIGB member Brad Hyman received an \$870,000 NSF grant during this period for math/science teacher training. They successfully made mitochondrial DNA-enriched Illumina libraries and are currently conducting their first paired-end runs in IIGB's Genomics Core facility.

International Training:

In May 2009, Dr. Isgouhi Kaloshian taught for two weeks in an international MS program in Nematology at Ghent University, Belgium, invited by the University and funded by the European Union.

A2. RESEARCH NARRATIVE: Please summarize any significant trends (new research directions, significant increases or decreases in sponsored funding, changes in outreach efforts, etc.) during the review period.

The acquisition of the following instruments by IIGB has vastly changed the nature of research being conducted at UCR.

New IIGB Illumina Sequencing Service

Effective October 2008, the IIGB Genomics Core in collaboration with the IIGB Bioinformatics Core initiated a new DNA sequencing service utilizing the Illumina GAI Genome Analyzer. This massively parallel sequencing approach is revolutionizing research in the biological sciences by making it possible to quickly and cheaply sequence entire individual genomes. The University generously provided \$500K toward this purchase with IIGB paying the remaining costs (\$180K) including significant computer hardware to analyze the enormous amount of data generated by this technology. The University also provided support for two full-time senior programmer positions for two years devoted to data analysis. Over the past year, this service has grown rapidly to the point that there is now a significant waiting time for services. This trend will continue as the technology becomes an irreplaceable component of biology and biomedical research. As an indication of the importance of this technology to successful research, the IIGB recently held (10/19/09) a special seminar series workshop on the applications of Illumina sequencing. From the UCR campus alone, there were nearly 100 participants, a remarkable turnout. Additional participants came from Loma Linda, UC Irvine and other Inland campuses. An informal poll found among just the UCR attendees present found that 41 grants had been written that incorporated Illumina sequencing. The actual number at UCR is clearly much higher since not all PIs that use this technology heavily were able to attend. In addition, more than 50 attendees signed a letter of support to acquire a second instrument. This service at IIGB is having a genuine and major impact and research and competitiveness for extramural funding.

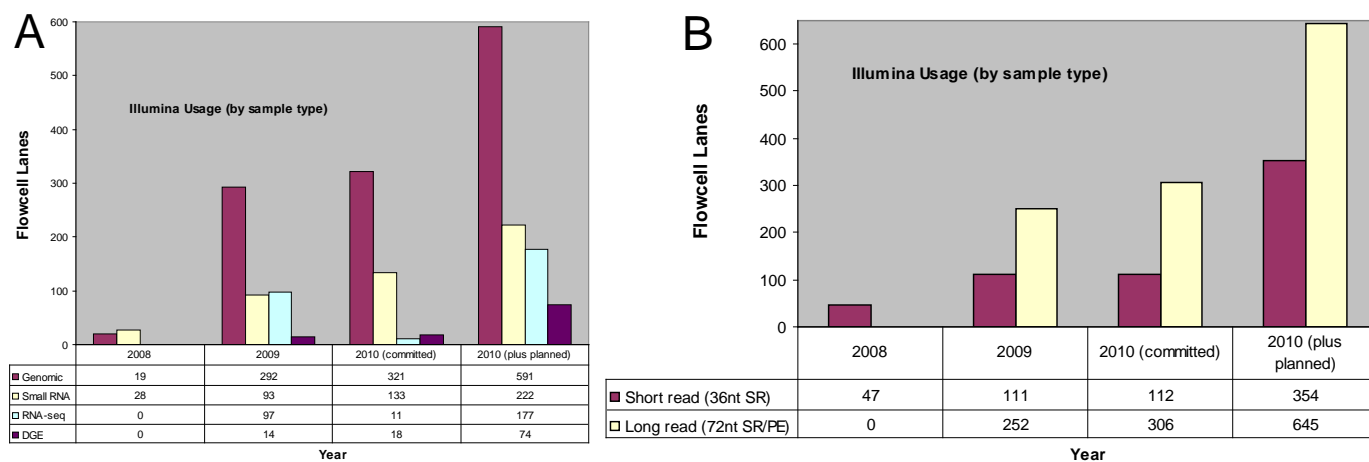


Figure 1. Per lane usage and projection of estimated usage. **(A)** lane usage by library type. **(B)** Lane usage indicates sequence read type which are classified as either short reads (36nt single end reads) or long reads. For 2008, data represent two months. **2009**, data represent actual samples sequenced to April 1, plus lanes from PIs *with current funding* who have committed to submit samples. **2010 (committed)**, data represent projected usage from PIs with current funding who have committed to submit samples. **2010 (plus planned)**, data represent 2010 (committed) plus projected usage based on lanes incorporated into grant applications as of the time of this grant submission.

Below are several examples of IIGB researchers utilizing Illumina, with other core services:

Cheryl Hayashi's lab began using the Illumina/Solexa sequencer to study expression profiles of spider silk glands. They used preliminary data from those experiments in a grant proposal submitted to NSF in July, 2009.

Isgouhi Kaloshian's lab seeks to understand tomato immune responses to root-knot nematodes and aphid pests. During 2008-09, Dr. Kaloshian initiated a new line of research to address questions related to the aphid pest. Taking advantage of the Illumina sequencing technology in the IIGB core facilities, they sequenced aphid ESTs using RNAseq. The aphid they work with, potato aphid, doesn't have a genome sequence. With the help of Dr. Girke's bioinformatics group, potato aphid transcripts were assembled using a surrogate aphid, pea aphid, transcriptome information. The assembled aphid transcriptome will be used to initiate an aphid secretion proteome project to identify aphid effectors delivered into the plant host.

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UCR is a recognized center for the study of small RNAs that regulate many important cellular processes. For example, the Zhu lab has utilized this technology to discover new small RNAs that are involved in stress tolerance of important crops such as rice. The laboratories of Shouwei Ding, Hailing Jin and Xuemei Chen have also utilized Illumina sequencing to discover new genes that are regulated by small RNAs. This has implications for not only understanding fundamental mechanisms of gene regulation but also broadly in the fields of agriculture and medicine.

Natasha Raikhel's laboratory has been utilizing next generation sequencing to detect mutations rapidly. The ability to detect mutations rapidly is key to the successful identification of gene targets of bioactive chemicals derived from IIGB's chemical biology approaches. The approach has been used to detect both EMS mutations as well as insertion mutations. This work was done as part of an NSF grant and is incorporated into several grant applications.

Karine Le Roch has utilized the Illumina to discover chromatin remodeling as a basis for global gene regulation in the malaria parasite *Plasmodium*. Malaria is a world-wide health problem affecting millions of people, especially in Africa and Asia. Dr. Le Roch's work was conducted in collaboration with the Genomics and Bioinformatics Cores at IIGB. Additional research is underway to understand the genome-wide methylation pattern in the parasite. Methylation is an important mechanism by which organisms mark genes that are active through the life cycle. In the case of malaria, such patterns can help in identifying potential routes by which the organism can be prevented from causing disease.

The above are just a few examples of many on the UCR campus that have been enabled by IIGB's new generation of sequence instruments, including both expertise from the Genomics and Bioinformatics Cores at IIGB. The close physical and operational connections between these two cores are essential for several successful services. This work would not have been possible without the new Illumina technology. Furthermore, although IIGB acquired the instrument less than a year ago, it is already clear that many new grant applications are being submitted that incorporate and in many cases rely upon this technology and the facilities at IIGB for success. At a time when the economic environment is very challenging, the investment in this technology was wise and essential to ensure that UCR remains competitive for extramural funding.

Bioinformatics (deep-sequencing analysis):

The number of researchers utilizing the Bioinformatics Core's new Linux cluster has increased by almost 20% compared to last year. This trend is related to the much faster hardware (supercomputer) that was acquired in FY 2007-08. In addition, the cluster has become a central resource on campus in analyzing the massive amounts of deep sequencing data from the Illumina genomics core facility. Currently, the Linux cluster is used by over 100 researchers on campus from all bioscience, statistics, chemistry and engineering departments.

The number of deep-sequencing projects has continued to increase almost exponentially in the past 12 months. The Illumina sequencing technology has now become the most important enabling resource for grants and research projects in the field of biosciences on campus.

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A3. ORGANIZATIONAL AND MANAGEMENT STRUCTURE: Have any changes been made to the organizational or management structure of the center during the review period? If so, please describe.

New IIGB Members:

James, Flegal, Assistant Professor, Statistics
Daniel Jeske, Professor, Statistics
Joel Sachs, Assistant Professor, Biology

New Positions Related to the Genomics Building:

Genomics Building Advisory Committee

Jory Yarmoff, CNAS Divisional Dean
Natasha Raikhel, IIGB Director
Julia Bailey-Serres, CEPCEB Director (Alternate)
Peter Atkinson, CDVR Director
Sarjeet Gill, Professor, Cell Biology & Neuroscience
Cynthia Larive, Professor, Chemistry

Floor Contacts

Given the open design of the building, it is important that occupants of each floor have a primary contact for inquiries, suggestions, and concerns. The following faculty have been designated with responsibility for management of operations and space on their floor.

First Floor: Howard Judelson, Plant Pathology & Microbiology
Second Floor: Peter Atkinson, Entomology
Third Floor: Linda Walling, Botany & Plant Sciences
Fourth Floor: Natasha Raikhel, Botany & Plant Sciences

Emergency Contacts:

Building Supervisor for Emergency Conditions (BSEC):
Rebecca Stevenson, SRA, Botany & Plant Sciences
Mien Van de Ven, SRA, Botany & Plant Sciences (Alternate)

Genomics Core Specialist (eff. March 2009):

Upon David Fang's resignation in August 2008, John Weger was subsequently hired and approved by the IIGB Advisory Committee as the IIGB Genomics Core Specialist, effective March 2, 2009. John Weger comes to the position with more than ten years of direct experience in the technical aspects of the position including overseeing several DNA sequencing core facilities at the Ludwig Institute for Cancer Research (La Jolla) and UC San Francisco Comprehensive Cancer Center. Essential to his hiring was his direct experience setting up a new Illumina GA II DNA sequencer, an instrument recently acquired and housed at the Genomics Core facility at Keen Hall. This is a new technology for which there are few individuals with significant expertise, and is one of John's primary responsibilities as an IIGB Specialist is to manage this increasingly popular technology. With Illumina expertise and broad knowledge of Genomics-related technologies and new and upcoming approaches and instrumentation, John has proven himself to be qualified in adapting to a rapidly changing research environment and the needs of campus researchers.

Three (2) Faculty Positions in Bioinformatics/Computational Biology:

In addition to Chia-en (Angelina) Chang from the Howard Hughes Medical Institute at UC San Diego, who accepted an offer and started January 2008 in the Chemistry department, Maksim Bazhenov from The Salk Institute for Biological Studies in San Diego was hired, effective July 2008. Dr. Bazhenov works on neuro-physiological data modeling and will be part of the Cell Biology & Neuroscience department. Jason Stajich, a Miller Research Fellow from UC Berkeley, was also hired and started his appointment in the Plant Pathology & Microbiology department. All three new hires moved to the Genomics Building in September 2009 as part of the Bioinformatics cluster.

Two 1.0 FTE Senior Bioinformatics Analysts (eff. July/Aug 2008)

Two senior bioinformatics statisticians funded for two years by the administration, Tyler Backman, eff. 7/30/08, and Ruobai (Rebecca) Sun, eff. 8/6/08, were hired to manage all analysis tasks associated with the vast amounts of data generated by the newly acquired deep-sequencing Illumina technology. These positions are largely responsible for developing and implementing a comprehensive data analysis/management infrastructure for large-scale comparative

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genomics and systems biology projects, and they have specifically focused on the development of several data analysis pipelines for modern deep-sequencing projects (e.g. Illumina) for expression profiling, small RNA discovery, methylation studies, SNP detection and genotyping. Currently, these two positions are fully occupied with the programming and analysis needs of Illumina users on campus.

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B.1: PARTICIPATING PERSONNEL								
UCR FACULTY (Senate Members)			Type of Participation (check all that apply)					
Name	Payroll Title	Affiliation	PI/Co-PI on Center Sponsored Award	IIGB Advisory Committee Member	Speaker at Center Event	Author on Center Publication	Other	(Description of Other)
Adams, Michael E.	Professor	Entomology/Cell Biology and Neuroscience	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	IIGB Equipment Committee
Atkinson, Peter W.	Professor	Entomology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	CDVR Dir; CDVR Seminars and PI Luncheons; CMDDB Dir; IIGB Gen. Core Specialist Search Cmte; IIGB Advisory Committee; Gen Bldg Advisory Committee; IIGB Forum Participant
Bailey-Serres, Julia	Professor	Botany & Plant Sciences	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Gen Bldg Advisory Committee; Gen Bldg Floor Contact (Alt); IIGB Forum Participant; Co-PI, NIH Instrumentation Proposal (Sequencer)
Borkovich, Katherine	Professor	Plant Pathology & Microbiology	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	IIGB Advisory Committee; CEPCEB PI Luncheons; IIGB Forum Participant; Gen Bldg Emerg Staff (BES)
Carson, Monica J.	Assoc. Professor	Biomedical Sciences	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	IIGB Advisory Committee
Chen, Xuemei	Assoc. Professor	Botany & Plant Sciences	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	IIGB Gen Core Specialist Search Cmte; IIGB Forums; Co-PI, NIH Instrumentation Proposal (Sequencer)
Close, Timothy	Professor	Botany & Plant Sciences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Cui, Xinping	Asst. Professor	Statistics	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	IIGB Forum Participant
Cutler, Sean	Asst. Professor	Botany & Plant Sciences	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ChemGen IGERT Assoc Dir, Speaker Host; IIGB Interdisc. Award
Ding, Shou-Wei	Professor	Plant Pathology and Microbiology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	IIGB Forum Participant; Co-PI, NIH Instrumentation Proposal (Sequencer)
Ellstrand, Norman	Professor	Botany & Plant Sciences	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Eulgem, Thomas	Asst. Professor	Botany & Plant Sciences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	IIGB Forum Participant
Federici, Brian A.	Professor	Entomology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Garland, Theodore	Professor	Biology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Co-PI, NIH Instrumentation Proposal (Sequencer)

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Gill, Sarjeet S.	Professor	Cell Biology & Neuroscience	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	IIGB Advisory Committee; Gen Bldg Advisory Committee; IIGB Forums
Girke, Thomas	Asst. Professor, Dir of Bioinformatics Facilities	Botany & Plant Sciences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	(2) Sr. Bioinf. Analyst Search Committee Chair; IIGB Forums
Hayashi, Cheryl Y.	Assoc. Professor	Biology	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	IIGB Advisory Committee; IIGB Forums
Jiang, Tao	Professor	Computer Science & Eng	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PhD Guidance Cmte of GGB students (w/IIGB advisors) ; IIGB Forums
Jin, Hailing	Asst. Professor	Plant Pathology & Microbiology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	IIGB Forums
Judelson, Howard S.	Professor	Plant Pathology and Microbiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Gen Bldg Floor Contact; IIGB Forums; PI, CEPCEB REU Renewal (proposal)
Kaloshian, Isgouhi	Assoc. Professor	Nematology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	GGB Graduate Program Dir; Pilot Bus/Science Grad Program Coordinator
Larive, Cynthia	Professor	Chemistry	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Gen Bldg Advisory Committee; ; IIGB Forums
Le Roch, Karine	Asst. Professor	Cell Biology & Neuroscience	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	IIGB Gen Core Specialist Search Committee; IIGB Forums; Co-PI, NIH Instrumentation Proposal (Sequencer)
Li, Bai-lian (Larry)	Professor of Ecology	Botany & Plant Sciences	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IIGB Forums
Liao, Jiayu	Asst. Professor	Bioengineering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Lo, David	Professor	Biomedical Sciences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lonardi, Stefano	Assoc. Professor	Computer Science & Engineering	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	IIGB Forums; (2) Sr. Bioinf. Analyst Search Committee
Lord, Elizabeth M.	Professor	Botany & Plant Sciences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	IIGB Forums
Lyubovitsky, Julia G.	Asst. Professor	Bioengineering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	IIGB Forums
Maduro, Morris	Asst. Professor	Biology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	IIGB Forums
Martinez, Ernest	Assoc. Professor	Biochemistry	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	IIGB Forums
McHughen, Alan	Cooperative Extension Plant Biotechnologist	Botany & Plant Sciences	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Nunney, Leonard	Professor	Biology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	IIGB Forums
Pirrung, Michael	Professor, Presidential Chair	Chemistry	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IIGB Forums, CEPCEB ChemGen IGERT Co-PI and Mentor
Raikhel, Alexander S.	Professor	Entomology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Co-PI, NIH Instrumentation Proposal (Sequencer)
Raikhel, Natasha V.	Dist. Professor, IIGB/CEPCEB Dir.	Botany & Plant Sciences	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Dir, IIGB and CEPCEB
Reddy, Venugopala G.	Asst. Professor	Botany & Plant Sciences	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	IIGB Forums
Ray, Anandasankar	Asst. Professor	Entomology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Roose, Mikeal L.	Professor, Vice-Chair Teaching	Botany & Plant Sciences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	IIGB Forums

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Sauer, Frank	Assoc. Professor	Biochemistry	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Co-PI, NIH Instrumentation Proposal (Sequencer)
Schultz, Jerome	Dist. Professor, Chair	Chemical/Env Engineering	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IIGB Advisory Committee
Sladek, Frances	Professor	Cell Biology & Neuroscience	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	IIGB Seminar Cmte. Chair; IIGB Forums; NIH Instrumentation Proposal (Sequencer)
Smith, Harley	Asst. Professor	Botany & Plant Sciences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	IIGB Forums
Springer, Patricia S.	Assoc. Professor	Botany & Plant Sciences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	CEPCEB REU Program Dir, IIGB Forum; IIGB Science/Business Grad Program Pilot Coordinator
Sutch, Richard	Dist. Professor, BIC Assoc. Dir.	Economics	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IIGB Advisory Committee
Walling, Linda	Professor, Divisional Dean of Life Sciences	Botany & Plant Sciences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	IIGB Gen Core Specialist Search Committee; Genomics Bldg Coordinator/Moving Committee; Gen Bldg Floor Contact; IIGB Forum Presenter
Zhong, Wenwan	Asst. Professor	Chemistry	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Co-PI on NIH Instrumentation Grant proposal for Mass Spec
Zhu, Jian-Kang	Professor	Botany & Plant Sciences	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

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For Other Academics: Please list professional researchers, post-docs, visiting scholars, adjunct professors, academic specialists, research associates, academic coordinators, and academic CE appointees who actively participated in Center activities, e.g., PI on a sponsored project administered by the Center, member of a Research Team, speaker at a Center Conference/Event, author on a Center publication, etc.

Name	Payroll Title	Affiliation	PI/Co PI on Center Sponsored Award	Center Advisory Committee Member	Speaker at Center Event	Author on Center Publication		(Description of Other)
Aliyari, Roghiyh	Asst. Specialist	Plant Pathology & Microbiology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gen Bldg Lab Contact
Bideshi, Dennis	Asst. Specialist	Entomology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Carter, David	Academic Coordinator, Microscopy	Center for Plant Cell Biology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PI, NSF Instrumentation Proposal (multiphoton scanner); IIGB Equipment Committee; IIGB Forum Participant
Clark, Clay	Laboratory Assistant	Inst. For Integrative Genome Biol	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	IIGB Forum Participant
Dinh, Theresa	Grad Student	Botany & Plant Sciences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gen Bldg Lab Contact and Bldg Emerg Staff
Fukao, Takeshi	Asst. Specialist II	Botany & Plant Sciences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gen Bldg Lab Contact; Gen Bldg Supervisor for Emerg Conditions (Alt)
Gao, Zhihuan	Asst. Specialist	Plant Path & Micro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gen Bldg Emerg Staff
Hice, Robert	SRA	Entomology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Gen Building Emergency Staff and Lab Contact
Hicks, Glenn	Academic Administrator/Assoc. Research Plant Cell Biologist	Inst. for Integrative Genome Biology/Botany & Plant Sciences	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	IIGB Search Cmte, Gen Core Specialist; (2) Sr. Bioinf. Analyst Search Committee; IIGB Forum Speaker, IIGB Innovation Deep Seq Grant Coordinator; NIH Instrumentation Proposal (Sequencer)
Holzer, Fran	SRA	Botany & Plant Sciences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gen Bldg Emerg Staff and Lab Contact
Jablonska, Barbara	SRA	Botany & Plant Sciences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gen Bldg Lab Contact
Mandal, Jayati	Jr. Specialist	Botany & Plant Sciences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gen Bldg Lab Contact
Nagawa, Shingo	Postdoc	Botany & Plant Sciences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gen Bldg Lab Contact and Bldg Emerg Staff
Pan, Songqin	Academic Coordinator, Proteomics	Center for Plant Cell Biology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Co-PI on NIH Instrumentation Grant proposal for Mass Spec ; IIGB Forums
Park, Sang-Youl	Asst. Specialist	Botany & Plant Sciences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gen Bldg Emerg Staff
Park, Gyungsoon	Specialist	Plant Pathology & Microbiology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gen Bldg Lab Contact
Perales, Mariano	Postdoc	Botany & Plant Sciences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gen Bldg Lab Contact
Sauer, Slyvia	SRA	Biochemistry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gen Bldg Emergency Staff and Lab Contact

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Stevenson, Rebecca	Staff Research Associate	Botany & Plant Sciences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gen Bldg Supervisor for Emerg Conditions; Gen Bldg Lab Contact
Swiecicka, Isabela	Visiting Scholar	Entomology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Van de Ven, Wilhemina	Staff Research Associate	Botany & Plant Sciences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gen Bldg Supervisor for Emerg Conditions (Alt); Gen Bldg Lab Contact
Wanamaker, Steve	Programmer	Botany & Plant Sciences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Wei, Linda	Postdoc	Botany & Plant Sciences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gen Bldg Lab Contact
Xu, Tongda	Graduate Student	Botany & Plant Sciences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gen Bldg Lab Contact

OTHER ADMINISTRATIVE AND SUPPORT STAFF

For other administrative and support staff, please include Director along with other Center administrative support staff.

Name	Payroll Title	FTE	Source(s) of Funding
Natasha Raikhel	Director	0.00	Campus Allocation (Botany-100%)
Glenn Hicks	Academic Administrator IV	1.00	Campus Allocation (80%); IIGB Genomics Sales & Service Fund (20%)
Jocelyn Brimo	Analyst III	.04	IIGB Genomics Sales & Service Fund
Nicholas Rainsberry	Analyst II	0.66	Campus Allocation (46%); IIGB Genomics Sales & Service Fund (20%)
Guille Vallejo	Analyst I	1.00	Campus Allocation (91%); IIGB Genomics Sales & Service Fund (9%)

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GRADUATE STUDENTS [List does not incorporate information from affiliated Centers (CEPCEB, CDVR, BIC; pls see their reports) Information dependent on PI response.

For Graduate Students, please indicate degree being pursued, program/department/institutional affiliation, and faculty mentor.

Name	Degree	Faculty Mentor	Dept/Program
Atamian, Hagop	PhD	Kaloshian, I.	GGB
Bhattacharai, Kishor	PhD	Kaloshian, I	Plant Pathology
Brady, Brian	PhD	Hyman, B	Biology
Brown, Michelle	PhD	Raikhel, N	GGB
Cervantes, Serena	PhD	Le Roch, Karine	Cell Biology & Neuroscience
Chaudhary, Ritu	PhD	Kaloshian, I.	GGB
Chung, Doug	PhD	Le Roch, Karine	Cell Biology & Neuroscience
Collin, Matthew	PhD	Hayasha, C.	GGB/Biology
Collin, Matthew	PhD	Hayashi, C	GGB
Crowley, Jennifer	PhD	Roose, M	GGB
Fernandez, Laurie	PhD	Talbot, P	Cell Biol & Neuroscience
Garcia, Janet	PhD	Ellstrand, N	Plant Biology
Gosses, James	PhD	Maduro, M	GGB
Gusti, Veronica	PhD	Lo, D.	CMDB
Hsieh, Gracie	PhD	Lo, D.	Biomed
Kan, Alice	PhD	Sauer, F	GGB
Khalon, Amandeep	PhD	Atkinson, P	Entomology
Knapp, Joshua	PhD	Atkinson, P	Entomology
Lewis, Samantha	PhD	Hyman, B.	GGB
Lewis, Samantha	PhD	Hyman, B	GGB
Lin, Sabrina	PhD	Talbot, P	Cell Biol & Neuroscience
Liu, Min	PhD	Roy-Chowdhury, A	Electrical Eng
Pasala, Sumana	PhD	Sladek, F	GGB
Peng, Hsuan-Chieh	MS	Kaloshian, I.	Botany & Plant Sciences
Pham, Christine	PhD	Ray, A	Entomology
Ridley, Caroline	PhD	Ellstrand, N	Plant Biology
Roy, Souray	PhD	Judelson, H.	GGB
Ruegger, Paul	PhD	Borneman, J	GGB
Saha, Tusar	PhD	Raikhel, A	GGB
Schacht, Patrick	PhD	Borkovich, K	GGB
Severo, Maiara	PhD	Joao, Pedra	Entomology
Spears, Tatsinda	PhD	Federici, B.	CMDB
Starrett, Jamese	PhD	Hayasha, C.	GGB/Biology
Tauxe, Genevieve	PhD	Ray, A	Entomology
Turner, Stephanie	PhD	Ray, A	CMDB
Wang, Jing	PhD	Lo, D.	Biomed
Wright, Jennifer	PhD	Atkinson, P	Entomology
Yang, Jiue-in	PhD	Borneman, J	Plant Pathology
Ye, Jingxiao	PhD	Borneman, J	Plant Pathology

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ADVISORY COMMITTEE MEMBERS

For Advisory Committee members, please indicate name, title, and affiliation. Below the table, list dates of meetings held for the period under review and attach a copy of the agenda for each meeting listed.

2008-09 Internal IIGB Advisory Committee:

Formulated in 2006, the IIGB Advisory Committee is comprised of faculty representing each of the major research areas within the Institute (vector biology, mammalian biology, plant biology, biology, bioengineering, social/ethical considerations). The IIGB Advisory Committee serves as the primary consultative body for the director and provides input regarding daily operational issues, expenditures exceeding \$60k and the short- and long-term goals of the Institute. Committee members are approached on a regular basis by the director and have agreed to respond to all general and pressing issues within 12 hours via email whenever possible. The committee also meets on an as-needed basis, as determined by the Director or advisory committee members.

<i>Name</i>	<i>Title</i>	<i>Affiliation</i>	<i>Period of Service on Advisory Committee</i>
Atkinson, Peter	Professor	Entomology	2006-09
Borkovich, Katherine	Professor	Plant Pathology & Microbiology	2006-09
Carson, Monica	Assoc. Professor	Division of Biomedical Sciences	2006-09
Gill, Sarjeet	Professor, Chair	Cell Biology & Neuroscience	2006-09
Hayashi, Cheryl	Assoc. Professor	Biology	2006-09
Schultz, Jerome	Distinguished Professor	Bioengineering	2006-09
Sutch, Richard	Distinguished Professor	Economics	2006-09

2008-09 Genomics Building Advisory Committee

The Genomics Building Advisory Committee is authorized to assess space allocations (general purpose, conference/public, research, bioinformatics training, and office/study) and make final decisions regarding unresolved procedural issues and concerns affecting occupants on floors or throughout the Genomics Building. Committee membership will include the Institute for Integrative Genome Biology (IIGB) director, IIGB center directors (Center for Plant Cell Biology, Center for Disease Vector Research), two outside members (non-building residents), and the divisional dean responsible for facilities and research as an ex officio member. Current members are below.

Jory Yarmoff, CNAS Divisional Dean
 Natasha Raikhel, IIGB Director
 Julia Bailey-Serres, CEPCEB Director (Alternate)
 Peter Atkinson, CDVR Director
 Sarjeet Gill, Professor, Cell Biology & Neuroscience
 Cynthia Larive, Professor, Chemistry

B.2: IIGB PUBLICATIONS

No maximum page limit. Provide information only for fiscal year under review. List only those publications resulting from programs administered through the Center and those authored jointly as a result of collaborations between or among Center participants. Use suggested format below. Use full citation and arrange alphabetically by author under the Center's major research programs.

AGRICULTURAL GENOMICS:

Kim, S., **Bhat, P.R.**, **Cui, X.**, Walia, H., Xu, J., Wanamaker, S., Ismail, A.M., Wilson, C., **Close, T.J.** 2009. Detection and validation of single feature polymorphisms using RNA expression data from a rice genome array. *BioMed Central Plant Biology*. 9: 65-75.

Walia, H., Wilson, C., Ismail, A.M., **Close, T.J.**, **Cui, X.** Comparing genomic expression patterns across plant species reveals highly diverged transcriptional dynamics in response to salt stress. *BioMed Central Genomics*. 10: (Accepted 08/25/2009. 27 manuscript pages.)

BIOMEDICAL:

Ling, J., Liao, H., Clark, R., Wong, M.S.M., and **Lo, D.D.**, Structural constraints for the binding of short peptides to Claudin-4 revealed by Surface Plasmon Resonance. *J. Biol Chem.*, 283:30585-95 (ePub September 9), 2008. (Used the Biacore in the IIGB core)

Cai X and **Liu X** (2009) Inhibition of Thr-55 phosphorylation restores p53 nuclear localization and sensitizes cancer cells to DNA damage *PNAS* 2008 105:16958-16963.

EVOLUTION/BIOMATERIALS

Blackledge TA, Scharff N, Coddington JA, Szuts T, **Wenzel JW**, **Hayashi CY**, Agnarsson, I (2009) Reconstructing web evolution and spider diversification in the molecular *PNAS* 2009 106:5229-5234

VIROLOGY/BACTERIOLOGY

Note: The publications listed below used the proteomics services of CEPCEB/IIGB:

Swiecicka, I., D. K. **Bideshi**, and **B. A. Federici**. 2008. Novel isolate of *Bacillus thuringiensis* that produces a large quasicuboidal inclusion of Cry1Ab21 highly toxic to *Trichoplusia ni*. *Applied and Environmental Microbiology* 74, 923-930.

Tan, Y., D. K. **Bideshi**, J. J. Johnson, Y. Bigot, and **B. A. Federici**. 2009. Proteomic analysis of the structural proteins in the *Spodoptera frugiperda* ascovirus 1a virion reveals 21 proteins. *Journal of General Virology* 90, 359-365.

Park, H.-W., M. Tang, Y. Sakano, and **B. A. Federici**. 2009. Insertion of a 1.1 kb downstream region from *Bacillus sphaericus* 2362 into *B. sphaericus* 2297 decreases Bin toxin synthesis and mosquitoicidal activity. *Applied and Environmental Microbiology* 75, 878-881.

Tan, Y., T. Spears, D. K. **Bideshi**, **R. Hice**, Y. Bigot, and **B. A. Federici**. 2009. P64, a novel major virion structural protein is involved in condensing and packaging *Spodoptera frugiperda* ascovirus 1a genomic DNA. *Journal of Virology* 83, 2708-2714.

B.3: DISTINGUISHED AWARDS RECEIVED OR HELD BY CENTER PARTICIPANTS [does not incorporate information from affiliated Centers – CEPCEB, CDVR, BIC]

Please list prestigious awards received or held by Center participants from professional organizations, industry, etc.

Recipient Name	Name of Award	Year Award Received
CRANOR, CARL Philosophy	UCR Academic Senate Distinguished Campus Service Award (2007-08)	2008
ELLSTRAND, NORMAN Botany & Plant Sciences	Botanical Society of America (BSA) Merit Award	2009
TED GARLAND Biology	Recipient of the 2009 Frontiers in Physiology Professional Development Fellowship (program of the American Physiological Society); program builds ongoing working relationships between research scientists and middle and high school teachers	2009
MARTINS-GREEN, MANUELA Cell Biology & Neuroscience	UCR Academic Senate Distinguished Campus Service Award (2007-08)	2008
MARTINS-GREEN, MANUELA Cell Biology & Neuroscience	UCR Academic Personnel Innovative Teaching Award (2007-08)	2008
McHUGHEN, ALAN Botany & Plant Sciences	2008 Fellow, American Association for the Advancement of Science (AAAS)	2008
MIR S. MULLA ENTOMOLOGY	UCR's First Dickson Emeritus Professor	2008
MULCHANDANI, ASHOK Chemical & Environmental Engineering	UCR Chancellor's Award for Excellence in Undergraduate Research (2007-08)	2008
NOTHNAGEL, EUGENE Botany & Plant Sciences	2008 Fellow, American Association for the Advancement of Science (AAAS)	2008
NOTHNAGEL, EUGENE Botany & Plant Sciences	UCR Academic Personnel Innovative Teaching Award (2007-08)	2008
RAIKHEL, ALEXANDER, Entomology	Election to the National Academy of Sciences	2008
RAY, ANAND, Entomology	Winner, Drosophila Image Award, Genetics Society of America	2009

B.4: EVENTS SPONSORED BY CENTER

Please list events sponsored by Center during the period under review.

EVENTS SPONSORED BY CENTER					
Title of Event	Type of Event	Date of Event	Number of Attendees	Names of Featured Speakers	Title and Affiliation of Featured Speakers
IIGB Tours	Tours of Instrumentation Facilities (microscopy, bioinformatics, proteomics, genomics)	See Attachment C	See Attachment C	Microscopy: David Carter Bioinformatics: Thomas Girke Proteomics: Songqin Pan Genomics: Glenn Hicks	Academic Coordinator, Imaging/Microscopy Asst. Professor/Dir. of Bioinf Facilities Academic Coordinator, Proteomics IIGB Academic Administrator
IIGB Seminars	Seminars		~25	See Attachment D	
IIGB Forum	Forum	July 22, 2009	~40	Natasha Raikhel Linda Walling Glenn Hicks	IIGB/CEPCEB Director CNAS Life Sciences Divisional Dean IIGB Academic Administrator
CDVR PI Luncheons	Meetings	Please see CDVR Annual Report			

B.5: SPACE UTILIZED BY CENTER

Fiscal Year Period:

Center Name:

Please provide explanations or descriptions as required. Changes to number of square feet, space configuration, or space use should be described.

Space Description	Square Feet
Meeting Space	298 (2018 Keen Hall)
Office Support	884*
Research	6518**
Special Use	
Miscellaneous	148
Total Assigned Space	7,848

* Offices assigned to IIGB/CEPCEB

** Core Instrumentation Facilities: Lab/Offices belonging to Genomics.

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On the second table below, please list all pending and planned proposals in fiscal year under review and indicate the total amount of the request.

Proposals Pending

Proposal Title	PI	Co-PIs	Funding Agency	Period of Funding	Total Award Requested	Status
DNA Demethylation and Transcriptional Gene Silencing	Jian-Kang Zhu		NIH	9/1/2009-8/31/2011	\$291,278	Awarded
Vector Biology and Control	Peter Atkinson		NIH	NA	\$168,920	Withdrawn
ChemMine Tools: an Open Source Framework for Mining Small Molecule Data	Thomas Girke		NIH	1/1/2010-12/31/2012	\$836,381	Pending
Advanced DNA sequencing and computing resources in support of NIH-funded research	Glenn Hicks		NIH	12/1/2009-11/30/2010	\$961,179	Pending
CMPscreenR: an analysis environment for large sets of small molecule bioassay data	Thomas Girke		NIH	9/30/2009-8/31/2011	\$608,097	Pending

Institute for Integrative Genome Biology

Fiscal Year 2008-09

B.7: NON-SPONSORED RESOURCES

Fiscal Year Period:

Center Name:

Sources of Funding		Amount
Funding Provided by UCR Institutional Sources	CNAS Staff funding	\$325,712
	CNAS Operating Budget	\$25,290
Funding Provided by UC System Sources		
Funding from Endowments or Gifts	Noel Keen Memorial Endowment Fund	\$1,417
Funding from Other Sources (Please List)	Biotechnology Impact Center Various Donors	\$95
		\$352,514

IIGB Forum
July 22, 2009: 3:00pm
Batchelor, Room 1104

–AGENDA–

I. Introduction - State of the IIGB Budget (N. Raikhel)

- A. Minimal Carry-forward
- B. Cash Reductions:
 - 08-09: IIGB \$18,388 + CEPCEB \$14,935 = \$33,323
 - 09-10: Unknown what we will have to pay
- C. Annual IIGB Operating Budget: ~\$25K

II. Recent New IIGB Systems/Technologies/Initiatives (G. Hicks)

- A. John Weger: IIGB Genomics Core Specialist
 - Primary responsibility: next-generation sequencing (Illumina Genome Analyzer II)
- B. Keen Hall Security System (eff. February 2009)
 - Programmed after-hour fob access (renewal each Sept)
- C. IIGB Facilities Services Billing Application (eff. July 2009)
 - Online reservations and service requests for all billable instruments
- D. Joint Business/Science Graduate Pilot Program (N. Raikhel)

III. Genomics Building Update (L. Walling)

Scheduled Move-in: start 9/2/09

IV. Discussions (N. Raikhel)

- A. Ways to Generate Collaborative Discoveries
 - Are our Core Facilities addressing cutting-edge needs or we are missing something? We need faculty input. If you do not attend the forum, please send constructive suggestions to Jocelyn.brimo@ucr.edu.
 - a. NIH/NSF High-End Instrumentation Grants
 - i. Illumina Genome Analyzer and Associated Data Management System (G. Hicks)
 - ii. Thermo LTQ Orbitrap Mass Spectrometer with Hyphenated HPLC System (Y. Wang, S.Pan)
 - iii. Olympus Spectral Confocal and Multiphoton Scanner (D. Carter)
 - b. Small Exploration Grants for Deep Sequencing
 - Goals of the grants, mechanisms of execution (with or without matching funds, etc).
 - It was decided that up to three grants for ~\$5k each would be offered to IIGB members from the IIGB/Genomics Core funds; additional funds would be sought from Illumina and New England Biolabs to increase grant allocations. The grants were ultimately offered at \$6200 each.**
- B. Bioinformatic Support for HT Sequencing after 6/30/10 (N. Raikhel)
 - Ideas discussed included incorporating programmer position support into proposal submissions and/or including support in large collaborative proposals.**
- C. Next IIGB Scientific Advisory Board?
 - What should be the main topic of the review? (Core Facilities reviewed in November, 2007.) If we decide to have an IIGB Scientific Advisory Board next year (2010), we need suggestions/names of people. **IIGB members were submit ideas to Jocelyn.**

V. Upcoming Events

October 16, 2009, 2-4pm: CEPCEB Award Ceremony [Inaugural Event in Genomics Auditorium!]

Noel Keen Special Lecturer: Joseph Ecker, Professor of Biology, The Salk Institute for Biological Studies, La Jolla, CA

VI. Next IIGB Forum

2010 IIGB Deep Sequencing Innovation Seed Grants

Program Scope

The program will fund a maximum of three one-year awards of up to \$6200 each from the IIGB Genomics Core to UCR researchers with the following overall goals:

1. Promote cutting-edge multi-disciplinary research in genomics (biology, engineering, chemistry, computer sciences, bioinformatics, etc) on the UCR campus to fulfill the IIGB mission of fostering research across campus.
2. As part of our mission, enhance the stature of IIGB as a recognized center for innovation, in this case, in the area of new deep sequencing technologies and applications.

Purpose of the grants

1. Provide seed money to assist in the exploration and development of innovative new technologies and applications for deep sequencing that can lead to preliminary data for successful extramural grant applications
2. Provide assistance for short-term projects to develop innovative new technologies and applications for deep sequencing that are of potentially of broad interest and will be disseminated to the UCR research community and beyond.
3. Promote multi-disciplinary research projects across the UCR campus
4. Promote strong collaborative research and publications with IIGB scientists to enhance Institute standing.

Details

1. Proposals must utilize IIGB Illumina sequencing instrumentation and services within the Genomics Core, but can include elements from other IIGB Cores (Bioinformatics, Microscopy or Proteomics). Where possible, we would encourage applicants to fully utilize IIGB resources.
2. Multi-disciplinary proposals are strongly encouraged. For example, collaborations between biologists and chemists, engineers, bioinformaticians, computer scientists, or scientists from other disciplines are encouraged.
3. Proposals should aim toward relatively broad applications that will benefit as diverse a group of UCR laboratories as possible.
4. Proposals for a continuation of ongoing projects or aspects of projects already funded will not be considered.
5. Successful project innovations will be made available publically through publication and more directly with the UCR community via the IIGB web site or other mechanisms.
6. Intellectual and technical contributions to funded projects by IIGB and Genomics Core personnel must be acknowledged in any publications. The funding source must be noted in acknowledgements.
7. The Genomics Core of IIGB will fund up to three proposals for up to \$6200 each.
8. All grant funds MUST be spent during within one year from the start date. All remaining funds will revert to the IIGB Genomics Core.
9. A final report of results and a budget summary (form to be provided) from each funded project is due within 30 days of the end of funding. The report should be no more than three pages.
10. Through the generosity of New England Biolabs, awarded projects will receive a 50% discount on NEBNext library kits purchased through grant funding.

Application Process

1. For consideration, PIs should submit a two-page proposal providing background, significance and experimental plan. The significance should consider the innovation both scientifically and to the UCR research community as well as a statement of how the project will lead to future funding. A brief budget should be included outlining the cost of the proposal including allocations to IIGB facilities.

2. Proposals will be reviewed by the IIGB (Academic Administrator, the Director of Bioinformatics) and an independent reviewer from the UCR campus.
3. Proposals will be selected based upon:
 - a. the scientific merit and novelty of the innovation or application.
 - b. the interdisciplinary nature of the proposed work.
 - c. the value of the proposed work to the UCR and border research communities.
 - d. the potential for success
4. Preference will be given to applications that:
 - a. propose novel innovations or applications of deep sequencing.
 - b. are strongly interdisciplinary and promote the inclusion of scientists in disciplines other than biology.
 - c. include PIs who are early in their careers.
5. A person may be designated as PI for one grant only. There is no limit for designation as co-PI.
6. Applications should be forwarded to Guille Vallejo (guilleb@ucr.edu) until the **due date of November 1, 2009**. After review, applicants will be notified of decisions by mid-November. Funding for projects will begin Jan 1, 2010 and end Dec 31, 2010.

Acknowledgements: IIGB funds were augmented by generous donations from Illumina (\$1500) and NEB (\$2000 plus significant reagent discounts).

IIGB INSTRUMENTATION FACILITY TOURS:

FY08/09	Genomics	Proteomics	Microscopy	Bioinformatics	Attendees		
July	2	2	1	1	Assistant Professor Candidates, Copernicus Program Students		
August	1	1	1	0	Copernicus Program Students		
September							
October	1	1	1	0	Faculty Visiting Professor		
November	0	0	0	0			
December	0	0	0	0			
January	0	0	0	0			
February	8	8	8	8	Biophysics and Structural Biology Faculty Interviews, Graduate Students, Visiting Professors		
March	6	6	6	5	Graduate Students, Undergraduate Student, High School Students, Faculty Candidate		
April	1	1	1	1	Visiting Professor		
May	0	0	0	0			
June	2	0	1	0	Microbiology Students, REU Students		
Total	21	19	19	15			

CEPCEB/IGERT/IIGB (2008-09)

Location: Science Library, Room 240; *1104 Batchelor Hall

Time: 12:10 pm Every Friday

CDVR (2008-09)

Location: Science Library, Room 240

Time: 12:10pm Every Thursday

GGB (2008-09)

Location: Science Library, Room 240, *1104 Batchelor Hall

Time: 12:10 pm Fridays

DATE	SPEAKER	TITLE	HOST
July '08			
(Friday)	4	Holiday	
(Friday) **Internal Speakers	11	Kei Iida Botany & Plant Sciences	<i>"Computational Analysis of Alternative mRNA splicing and small RNAs in Arabidopsis"</i> Jian- Kang Zhu
(Friday) **Internal Speaker	18	Rescheduled to August 08, 2008	
(Friday) **Internal Speaker	25	Prasanna Bhat Botany & Plant Sciences	<i>" A High Throughput Method to Assign Genes to Barley Chromosomes, Arms and BAC Clones"</i> Tim Close
August '08			
(Friday) **Internal Speaker	1	Amanda Ferreira - Thesis Botany and Plant Sciences	<i>"Functional Characterization of LOB-Domain Genes in Plant Development"</i> Patricia Springer
(Friday) ** Internal Speaker	8	Tongda Xu Botany & Plant Sciences	<i>" Auxin Activates Cellular Interdigitation via a Novel Rho Gtpase-Dependent Cell Surface-based Signaling Pathway"</i> Zhenbiao Yang
(Friday) **Internal Speaker	15	Julian Pena Castro Botany & Plant Science	<i>"Functional characterization in Arabidopsis of rice transcription factors (SUB1) mediating submergence tolerance"</i> Julia Bailey-Serres
(Friday) **Internal Speaker	22	REU Patty Springer	TBA
(Friday) **Internal Speakers	29	Takeshi Fukao Botany & Plant Sciences	<i>"Waterproof Rice: Sub1A-dependent hormonal regulation confers submergence tolerance to rice"</i> Julia Bailey Serres
Sept '08			
(Friday)	5		
(Friday) ** Internal Speaker	12	Victor Rodgers Department of Bioengineering	<i>'Crowded Proteins + Proton Pumping = Rapid Membrane Flux: A Theoretical Case for Venus Flytrap Behavior"</i> Victor Rodgers
(Friday) **Internal Speaker	19	Vanitharani Ramachandran Botany & Plant Sciences Department	<i>"Degradation of microRNAs by a family of exoribonucleases in Arabidopsis."</i> Xuemei Chen
(Friday)	26		
Oct '08			
IGERT (Friday)	3-5	IGERT RETREAT	
(Friday) **Internal Speaker	10	Karine LeRoch Assistant Professor Department of Cell Biology & Neuroscience University of California, Riverside	<i>"Mapping chromatin structure and nucleosome fluctuation by massive parallel sequencing: A genomic-based approach to understand the malaria parasite infection cycle"</i> Karine LeRoch

DATE	SPEAKER	TITLE	HOST
CEPCEB (Friday) CANCELLED	17 Guri Giaever Assistant Professor Dept of Pharmaceutical Sciences and Dept of Molecular Genetics University of Toronto	CANCELLED	Sean Cutler
(Friday)	24 NO SEMINAR		
Friday) **Internal Speaker	31 Sean Cutler Assistant Professor Dept of Botany and Plant Sciences University of California, Riverside	<i>"Abscisic acid inhibits type 2C protein phosphatases via PYR1, a START-family ABA receptor"</i>	Sean Cutler
Nov '08			
(Friday)	7		
IGERT (Friday)	14 Nicholas Provart University of Toronto	<i>Raising the BAR for Arabidopsis Research: Using Large-scale Data Sets for Hypothesis Generation</i>	Sean Cutler
(Friday)	21 Antje Heese Research Assistant Professor University of Missouri-Columbia Department of Biochemistry	<i>Vesicular trafficking in plant innate immunity</i>	Natasha Raikhel
	28		
Dec '08			
(Friday)	5 Magnus Nordborg Molecular & Computational Biology University of Southern California	Cancelled	Natasha Raikhel
IGERT (Friday)	12 Jacqueline Shanks Professor Iowa State University	<i>Phytochemical Engineering Combining Chemical Reaction Engineering with Plant Science</i>	Cindy Larive Kayla Kaiser
GGB **Internal Speaker	22 Maxim Bazhenov University of California, Riverside	<i>Role of extracellular potassium dynamics in cortical epileptogenesis</i>	Anand Ray
GGB (Tuesday) ** Internal Speaker	26 Francis Sladek University of California, Riverside	<i>HNF-4 New Ways to look at an old nuclear receptor</i>	Joint with Biochemistry
June '09			
CEPCEB (Friday)	5 Adrienne Roeder California Institute of Technology, Pasadena	<i>Timing of cell division determines the relative cell size pattern in Arabidopsis</i>	Venu Reddy
IGERT	12 Alan Saghatelian Harvard University Chemistry Department	<i>"A Peptidomics Approach to Identify Peptidase Substrates"</i>	Sean Cutler
CEPCEB (Friday)	19 Pankaj Dhonukshe Biology Department Utrecht University	<i>Cell polarity in plants: linking single cell mechanics to multicellular patterning".</i>	Zhenbiao Yang
CEPCEB (Friday) **Internal	26 Betty Lord Symposium -	No Seminar	Natasha Raikhel

LEGEND:

CEPCEB (BPSC 252) Seminars: Special Topics on Botany

IGERT Seminars

CDVR Seminars

IIGB Seminars

GGB Seminars