Riverside Postdoctoral Association

EARLY CAREER SCIENTIST

STEM I HUMANITIES

ANNUAL SYMPOSIUM, 2026

FULL PROGRAM

JUNE 17TH, 2026

GENOMICS AUDITORIUM

Riverside Postdoctoral Association

2026 EARLY CAREER SCIENTIST SYMPOSIUM
FULL PROGRAM

8:30 AM. REGISTRATION

9:00 AM. OPENING REMARKS
DR. SALMA E. REYES-GARCÍA, PRESIDENT, RPA

9:10-10:00 AM. FIRST KEYNOTE TALK
MONITOR: DR. SALMA E. REYES GARCIA

DR. KARTHIKEYAN CHANDRASEGARAN, DEPT. OF ENTOMOLOGY
"INSECTS, IMAGES, AND INSTRUCTION: AI APPLICATIONS IN ENTOMOLOGY RESEARCH AND TEACHING"

10:00-11:20 AM. FIRST ORAL PRESENTATION SESSION
CHAIR: DR. POL SARKAR & DR. MANAS KINRA

10:00 AM. MAKAYLA DREW, DEPT OF BOTANY AND PLANT SCIENCES
"INVESTIGATING TANGLED1-MEDIATED DIVISION PLANE POSITIONING USING A HOMOLOGY-BASED FUNCTIONAL APPROACH"

10:20 AM. DR. JIAHUI HU, DEPT OF ENVIRONMENTAL SCIENCES
"REDUCING PFAS MOBILITY AND PLANT UPTAKE IN AGRICULTURAL SOILS VIA BIOCHAR AMENDMENT"

10:40 AM. DR. LAUREN LEVITT, XCITE
"THE SEX WORKER COUNTERPUBLIC SPHERE: SEX WORKER ONLINE JOURNALISM"

11:00 AM. MARÍA ABIZANDA, DEPT. OF ENGLISH
"WHY SCIENTISTS SHOULD READ CRIME FICTION: LITERATURE AS A LABORATORY FOR SCIENTIFIC ETHICS"

11:20-11:40 AM. COFFEE BREAK

1:40-12:20 PM. SECOND KEYNOTE TALK
MONITOR: DR. VINCENT CERBANTEZ-BUENO

DR. ELIZABETH ROWEN, DEPT. OF ENTOMOLOGY
"A MULTI-PRONGED APPROACH TO DUNG BEETLE CONSERVATION IN LIVESTOCK AGRICULTURE"

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12:20-1:20 PM. PANEL ON CAREERS AND PROFESSIONAL DEVELOPMENT
MODERATOR: DR. FERNANDA GÓMEZ MÉNDEZ

- **DR. VLAD SIRBU.** LECTURER, UNIVERSITY OF CALIFORNIA, RIVERSIDE, PROGRAM COORDINATOR, DEPARTMENT OF UNDERGRADUATE EDUCATION.
- **DR. AMANCIO DE SOUZA.** ACADEMIC COORDINATOR - METABOLOMICS CORE FACILITY, UNIVERSITY OF CALIFORNIA, RIVERSIDE
- **DR. ALBERT NGUYEN.** TECHNICAL SERVICE ADVISOR AT JBT MAREL

1:20-2:20 PM. LUNCH AND INFORMAL NETWORKING

2:20- 3:40 PM. SECOND ORAL PRESENTATION SESSION
CHAIR: DR. DEREK NEWBERGER

2:20 PM. DR. ARMAN GARCIA, DEPT. OF CHEMISTRY & BIOCHEMISTRY
"PFAS: DETECTION, EXTRACTION, AND MOLECULAR SENSING VIA SIMPLE CATIONIC MACROCYCLES"

2:40 PM. DR. RATTAPOL PHANDTHONG, DEPARTMENT OF MOLECULAR CELL AND SYSTEMS BIOLOGY
"ELECTRONIC CIGARETTE AEROSOLS INDUCE PROGRESSIVE PATHOLOGICAL REMODELING IN A STEM CELL DERIVED HUMAN AIRWAY TISSUE MODEL"

3:00 PM. PRAKRITI SINGH, DEPT. OF CHEMISTRY
"HUMIDITY-DRIVEN EVOLUTION OF AQUEOUS BROWN CARBON AEROSOL PARTICLES"

3:20 PM. DR. LEONHARD WINTER, DEPT. OF CHEMISTRY
"THE SURFACE CHEMISTRY OF ATOMIC LAYER DEPOSITION"

3:40-4:40 PM. COFFEE BREAK & POSTER SESSION
CHAIR: DR. INAIARA DA SOUSA

5:00 PM. AWARD CEREMONY AND CLOSING REMARKS BY DR. LIDIA KOS

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MEET OUR KEYNOTE SPEAKERS

DR. KARTHIKEYAN CHANDRASEGARAN, DEPT. OF ENTOMOLOGY, UCR

DR. CHANDRASEGARAN IS AN EVOLUTIONARY ECOLOGIST AND MOSQUITO BIOLOGIST WHOSE RESEARCH EXPLORES HOW ENVIRONMENTAL CONDITIONS SHAPE MOSQUITO TRAITS, BEHAVIOR, AND DISEASE TRANSMISSION. HIS WORK INTEGRATES ECOLOGY, EVOLUTION, BEHAVIOR, AND GENOMICS TO UNDERSTAND HOW MOSQUITOES RESPOND TO CHANGING ENVIRONMENTS AND HOW THESE RESPONSES INFLUENCE THEIR CAPACITY TO TRANSMIT PATHOGENS. HIS RESEARCH SPANS TOPICS INCLUDING MOSQUITO ECOLOGY, LIFE-HISTORY VARIATION, INVASION BIOLOGY, BEHAVIORAL PLASTICITY, AND VECTOR-BORNE DISEASE DYNAMICS.

AT UCR, HE LEADS THE TRAIT-RESPONSIVE INSECT BEHAVIOR AND ECOLOGY, OR TRIBE-LAB, WHERE HIS TEAM COMBINES EXPERIMENTAL, COMPUTATIONAL, AND MOLECULAR APPROACHES TO UNDERSTAND HOW ENVIRONMENTAL VARIATION INFLUENCES MOSQUITO BEHAVIOR AND POPULATION DYNAMICS. THE ULTIMATE GOAL OF THIS WORK IS TO GENERATE NEW INSIGHTS THAT CAN IMPROVE STRATEGIES FOR MANAGING MOSQUITO POPULATIONS AND REDUCING THE BURDEN OF MOSQUITO-BORNE DISEASES WORLDWIDE.

TALK TITLE: “TITLE: INSECTS, IMAGES, AND INSTRUCTION: AI APPLICATIONS IN ENTOMOLOGY RESEARCH AND TEACHING”

SUMMARY

ARTIFICIAL INTELLIGENCE IS RESHAPING BOTH ENTOMOLOGY RESEARCH AND TEACHING. THIS TALK WILL HIGHLIGHT HOW AI CAN BE USED TO AUTOMATE INSECT TRAIT MEASUREMENTS FROM IMAGES AND HOW GENERATIVE AI CAN SUPPORT ASSESSMENT DESIGN, STUDENT LEARNING, AND PEDAGOGICAL INNOVATION IN ENTOMOLOGY.

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MEET OUR KEYNOTE SPEAKERS

DR. ELIZABETH ROWEN, DEPT. OF ENTOMOLOGY, UCR

DR. ROWEN IS AN INSECT ECOLOGIST WHOSE RESEARCH FOCUSES ON THE COMPLEX INTERACTIONS AMONG PLANTS, INSECTS, AND SOILS IN AGRICULTURAL SYSTEMS. HER WORK SEEKS TO UNDERSTAND HOW ECOLOGICAL PROCESSES AND AGRICULTURAL MANAGEMENT SHAPE SPECIES INTERACTIONS. HER GROUP INVESTIGATES HOW HOW AGRICULTURAL MANAGEMENT AFFECTS DETRITIVOROUS, HERBIVOROUS, AND PREDACIOUS INSECTS, PLANTS, AND THEIR INTERACTIONS. AT UC RIVERSIDE, DR. ROWEN LEADS A DYNAMIC RESEARCH PROGRAM THAT CONTRIBUTES NOT ONLY TO FUNDAMENTAL ECOLOGICAL THEORY BUT ALSO TO PRACTICAL CHALLENGES IN AGRICULTURE, CONSERVATION, AND SUSTAINABLE PEST MANAGEMENT.

TALK TITLE: “A MULTI-PRONGED APPROACH TO DUNG BEETLE CONSERVATION IN LIVESTOCK AGRICULTURE”

SUMMARY

DR. ROWEN WILL BE DISCUSSING A FEW PROJECTS FROM HER LAB THAT HAVE ASSESSED THREATS TO DUNG BEETLES AND METHODS FOR "TURNING UP THE TAP" ON DUNG BEETLE POPULATIONS.

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LIST OF ABSTRACTS- ORAL PRESENTATIONS

MAKAYLA DREW, BOTANY AND PLANT SCIENCES

"INVESTIGATING TANGLED1-MEDIATED DIVISION PLANE POSITIONING USING A HOMOLOGY-BASED FUNCTIONAL APPROACH"

DIVISION PLANE POSITIONING IS THE PROCESS WHERE A DIVIDING PLANT CELL BUILDS A NEW CELL WALL ALONG A DEFINED PLANE.SEVERAL PROTEINS, INCLUDING THE MICROTUBULE-BINDING PROTEIN TANGLED1(TAN1), MARK THIS SITE AND GUIDE PHRAGMOPLAST EXPANSION TOWARD IT IN CYTOKINESIS. DIVERGENT PHENOTYPES IN TAN1 MUTANTS BETWEEN Z. MAYS AND A. THALIANA INDICATE FUNCTIONAL DIVERGENCE THAT CAN BE LEVERAGED TO INVESTIGATE MECHANISMS OF TAN1 LOCALIZATION AND FUNCTION. PRELIMINARY ANALYSES OF TAN1 HOMOLOGS FROM BRYOPHYTE, TRACHEOPHYTE, AND ANGIOSPERM SPECIES EXPRESSED HETEROLOGOUSLY IN A. THALIANA, SHOW CONSERVED AND DIVERGENT LOCALIZATION PATTERNS DURING MITOSIS. INTERACTION BETWEEN KNOWN TAN1 INTERACTORS AND THE ABILITY TO RESTORE DIVISION PLANE POSITIONING IN A DIVISION PLANE MUTANT ALSO SHOW PATTERNS OF CONSERVATION AND DIVERGENCE BETWEEN HOMOLOGS. THESE ANALYSES PROVIDE INSIGHTS INTO VARIATION IN TAN1 FUNCTION AND LOCALIZATION TO FURTHER DISSECT TAN1-MEDIATED DIVISION PLANE POSITIONING ACROSS LAND PLANTS.

DR. JIAHUI HU, ENVIRONMENTAL SCIENCES

"REDUCING PFAS MOBILITY AND PLANT UPTAKE IN AGRICULTURAL SOILS VIA BIOCHAR AMENDMENT"

PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) ARE PERSISTENT CHEMICALS THAT THREATEN HUMAN HEALTH. BIOCHAR AMENDMENT REPRESENTS A PROMISING IN-SITU STRATEGY FOR PFAS MITIGATION, YET ITS PERFORMANCE UNDER REALISTIC FIELD CONDITIONS REMAINS POORLY UNDERSTOOD. HERE, WE EVALUATED PFAS FATE IN SOIL–PLANT–LEACHATE SYSTEMS UNDER IRRIGATION WATER- AND BIOSOLIDS-DERIVED CONTAMINATION SETTINGS. PINEWOOD BIOCHAR (PBC) SIGNIFICANTLY ($P = 0.05$) REDUCED PFAS LEACHING AND PLANT UPTAKE MORE SO THAN SLUDGE-DERIVED BIOCHAR (SBC), DRIVEN BY ITS HIGHER POINT OF ZERO CHARGE, C/H AND C/O RATIOS, AND SURFACE AREA, WITH THE STRONGEST MITIGATION OBSERVED FOR PFHXS AND PFOA. AIR OXIDATION AND IRON OXIDE MODIFICATION OF PBC FURTHER SUPPRESSED SHORT-CHAIN PFAS ACCUMULATION IN PLANTS. AMONG THE TESTED MATERIALS, AIR-OXIDIZED PBC EXHIBITED THE HIGHEST MITIGATION EFFICIENCY, REDUCING LEAF BIOCONCENTRATION FACTORS OF PFHXS AND PFOA BY 1328 AND 285-FOLD, RESPECTIVELY, AND SUPPRESSING PFBA ACCUMULATION BY 150-FOLD, ATTRIBUTABLE TO ENHANCED SURFACE AREA, ELECTROSTATIC ATTRACTION, AND HYDROGEN BONDING INTERACTIONS. THIS WORK PROVIDES MECHANISTIC INSIGHT FOR TARGETED BIOCHAR DEPLOYMENT IN PFAS-IMPACTED AGROECOSYSTEMS..

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LIST OF ABSTRACTS- ORAL PRESENTATIONS

DR. LAUREN LEVITT, XCITE

"THE SEX WORKER COUNTERPUBLIC SPHERE: SEX WORKER ONLINE JOURNALISM"

THROUGH TEXTUAL ANALYSIS OF 36 ENGLISH-LANGUAGE ARTICLES BY EIGHT PREDOMINANTLY U.S.-BASED SEX WORKER JOURNALISTS PUBLISHED BETWEEN 2014 AND 2025 ACROSS 19 ONLINE PLATFORMS, THIS PAPER EXAMINES HOW SEX WORKER JOURNALISTS SEEK TO INFLUENCE PUBLIC OPINION AROUND SEX WORK AND ONLINE PLATFORMS AS THEY RELATE TO REGULATION, CRIMINALIZATION, AND LABOR RIGHTS. SEX WORKERS REPORT ON U.S. FEDERAL LEGISLATION INCLUDING THE STOP ENABLING SEX TRAFFICKERS ACT (SESTA) AND THE ALLOW STATES AND VICTIMS TO FIGHT ONLINE SEX TRAFFICKING ACT (FOSTA) AND THE ENABLING ABUSIVE AND RAMPANT NEGLECT OF INTERACTIVE TECHNOLOGIES (EARN IT) ACT, ARGUING THAT THESE LAWS FURTHER CRIMINALIZE SEX WORK AND UNDERMINE THE LABOR RIGHTS OF SEX WORKERS. IN THE PROCESS, THEY CHALLENGE NEGATIVE MEDIA FRAMES OF SEX WORK AND BUILD SEX WORKER COMMUNITY AND EXPERTISE BY DEVELOPING ALTERNATIVE MODES OF ADDRESS, ARTICULATING ALTERNATIVE VIEWPOINTS BASED ON THEIR LIVED EXPERIENCE IN THE SEX TRADES, AND INTERVIEWING SEX WORKERS AND SEX WORKER ORGANIZERS ALONGSIDE POLITICIANS AND OTHER PROGRESSIVE ORGANIZERS. THIS ADDITIONALLY SUPPORTS COALITION BUILDING BETWEEN THE SEX WORKERS' RIGHTS MOVEMENT AND OTHER MOVEMENTS FOR SOCIAL JUSTICE.

MARÍA ABIZANDA, DEPT. OF ENGLISH

"WHY SCIENTISTS SHOULD READ CRIME FICTION: LITERATURE AS A LABORATORY FOR SCIENTIFIC ETHICS"

MY DOCTORAL THESIS ASKS A PROVOCATIVE QUESTION: WHAT IF THE BEST SITE FOR TESTING SCIENTIFIC ETHICS IS NOT A LABORATORY BUT THE CRIME NOVEL? AS THE FOURTH INDUSTRIAL REVOLUTION ACCELERATES, BREAKTHROUGHS IN AI, GENOMICS, BIOTECHNOLOGY, AND SURVEILLANCE ARE OUTSTRIPPING OUR ESTABLISHED LEGAL AND ETHICAL FRAMEWORKS. MY RESEARCH INVESTIGATES CRIME FICTION AS AN INTERDISCIPLINARY LABORATORY - A ""THIRD SPACE"" WHERE THE SOCIAL AND MORAL CONSEQUENCES OF INNOVATION ARE STRESS-TESTED BEFORE THEY REACH REALITY.

THIS STUDY FOCUSES ON BIOTECH MYSTERIES THAT EXPLORE NEAR-FUTURE RISKS. BY EXAMINING NARRATIVES WHERE CLONING DESTABILIZES LEGAL PERSONHOOD OR CORPORATE INTERESTS TURN DNA INTO A PROPRIETARY ASSET, THIS RESEARCH IDENTIFIES POTENTIAL SOCIAL CASCADE FAILURES. RESULTS DEMONSTRATE THAT WHILE SCIENTIFIC RHETORIC PROMISES ENHANCEMENT, FICTIONAL SCENARIOS REVEAL HIDDEN DANGERS SUCH AS NEW FORMS OF CORPORATE EXPLOITATION, LOSS OF PRIVACY, AND DEEPENING OF SOCIAL INEQUALITIES.

FINDINGS SUGGEST LITERATURE IS A KEY ANALYTICAL TOOL FOR RESEARCHERS. FOR EARLY-CAREER SCIENTISTS, THESE NOVELS HELP ANTICIPATE REAL-WORLD IMPACTS OF EMERGING TECHNOLOGIES. BY EMBEDDING INNOVATION IN ETHICAL AND SOCIAL CONTEXTS, CRIME FICTION SUPPORTS MORE RESPONSIBLE, EQUITABLE, AND INCLUSIVE SCIENTIFIC FUTURES.

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LIST OF ABSTRACTS- ORAL PRESENTATIONS

DR. ARMAN GARCIA, CHEMISTRY AND BIOCHEMISTRY

"PFAS: DETECTION, EXTRACTION, AND MOLECULAR SENSING VIA SIMPLE CATIONIC MACROCYCLES"

PER- AND POLY-FLUOROALKYL SUBSTANCES (PFAS) ARE PARTICULARLY HARMFUL COMPOUNDS THAT HAVE BEEN MEASURED IN WATER AT ALARMING LEVELS, WITH BROADER APPLICATIONS IN CONSUMER GOODS. PFAS EXHIBIT STRONG CHEMICAL STABILITY, AND IN LOW LEVELS HAVE NEGATIVE IMPACTS ON HUMAN HEALTH. MODERN APPROACHES TO DETECT THESE "FOREVER CHEMICALS" IS CHALLENGING, OFTEN NEEDING COMPLEX INSTRUMENTS THAT EACH HAVE LIMITATIONS AND VARIED SENSITIVITY. IN ADDITION, REMOVING PFAS FROM WATER REQUIRES HIGH SELECTIVITY OVER OTHER COMMON ANIONS FOUND IN WATER AND BIOFLUIDS. TO OVERCOME THESE CHALLENGES, SIMPLE CATIONIC MACROCYCLES HAVE BEEN SYNTHESIZED THAT ARE CAPABLE OF BINDING PFAS IN WATER. THESE IMIDAZOLIUM-BASED RECEPTORS HAVE VARIED CHEMICAL STRUCTURES THAT IMPACT BINDING TOWARDS VARIOUS PFAS. THIS PROJECT DEMONSTRATES THE UNIQUE CAPABILITIES OF THIS RECEPTOR SYSTEM, SUCH AS NOVEL AGGREGATE BASED BINDING MECHANISM, STRONG EXTRACTION FROM WATER, LOW NANOMOLAR DETECTION, AND HIGH SELECTIVITY IN COMPLEX BIOFLUIDS.

DR. RATTAPOL PHANDTHONG, DEPARTMENT OF MOLECULAR CELL AND SYSTEMS BIOLOGY

"ELECTRONIC CIGARETTE AEROSOLS INDUCE PROGRESSIVE PATHOLOGICAL REMODELING IN A STEM CELL DERIVED HUMAN AIRWAY TISSUE MODEL"

HEALTHY AIRWAYS USE MUCUS TO TRAP INHALED PARTICLES AND CILIA TO CLEAR THEM. EXCESS MUCUS, CILIA LOSS, AND SQUAMOUS METAPLASIA IMPAIR THIS DEFENSE. SQUAMOUS METAPLASIA IS CLINICALLY RELEVANT BECAUSE IT IS LINKED TO AIRWAY DISEASE AND CANCER RISK. THIS STUDY USED A HUMAN AIRWAY TISSUE MODEL DERIVED FROM AIRWAY STEM CELLS TO EXAMINE HOW EXTENDED ELECTRONIC CIGARETTE (EC) AEROSOL EXPOSURE CHANGES AIRWAY STRUCTURE. TISSUES WERE EXPOSED DAILY TO LOW PUFF NUMBERS OF AEROSOLS FROM TWO FDA AUTHORIZED EC DEVICES, NJOY ACE AND VUSE ALTO, FOR 3 WEEKS. MUCUS MARKER, CILIA COVERAGE, TISSUE THICKNESS, NUCLEAR SHAPE, AND SQUAMOUS MARKER WERE MEASURED. RESPONSES WERE COMPARED ACROSS FIVE DONORS. REPEATED EXPOSURE CAUSED PROGRESSIVE REMODELING. MUCUS PRODUCTION INCREASED EARLY BUT DECLINED BY WEEK THREE UNDER HIGHER EXPOSURE. CILIA LOSS AND INCREASED SQUAMOUS MARKER EXPRESSION APPEARED WITHIN ONE WEEK AND WORSENED WITH CONTINUED EXPOSURE. RESPONSES VARIED AMONG DONORS, BUT MOST DEVELOPED SEVERE REMODELING. DIFFERENT EC PRODUCTS PRODUCED DISTINCT REMODELING RESPONSES. AFTER EXPOSURE STOPPED, TISSUES PARTIALLY RECOVERED. THESE FINDINGS ESTABLISH A HUMAN RELEVANT MODEL ALIGNED WITH FDA NEW APPROACH METHODOLOGY GOALS FOR ASSESSING VAPING RELATED AIRWAY INJURY AND MALADAPTIVE AIRWAY REMODELING.

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LIST OF ABSTRACTS- ORAL PRESENTATIONS

PRAKRITI SINGH, DEPT. OF CHEMISTRY

"HUMIDITY-DRIVEN EVOLUTION OF AQUEOUS BROWN CARBON AEROSOL PARTICLES"

BROWN CARBON AEROSOLS ARE LIGHT-ABSORBING ORGANIC PARTICLES THAT CAN AFFECT VISIBILITY, AIR QUALITY, AND CLIMATE. THEY CAN BE EMITTED DIRECTLY FROM BIOMASS BURNING OR FORM SECONDARILY THROUGH AQUEOUS-PHASE REACTIONS IN CLOUD DROPLETS, FOG, AND WET AEROSOL PARTICLES. HOWEVER, THEIR WATER UPTAKE, PHASE STATE, AND OPTICAL PROPERTIES CAN CHANGE WITH RELATIVE HUMIDITY AND AGING, MAKING THEIR ATMOSPHERIC IMPACTS DIFFICULT TO PREDICT. HERE, WE STUDY AQUEOUS BROWN CARBON FORMED FROM METHYLGLYOXAL AND GLYCINE, A MODEL CARBONYL–AMINE SYSTEM. INDIVIDUAL PARTICLES ARE LEVITATED IN A LINEAR QUADRUPOLE ELECTRODYNAMIC BALANCE AND EXPOSED TO CONTROLLED HUMIDITY CONDITIONS. MIE RESONANCE SPECTROSCOPY AND ELECTROSTATIC ANALYSIS ARE USED TO TRACK PARTICLE SIZE, HYGROSCOPIC GROWTH, PHASE BEHAVIOR, WATER TRANSPORT, AND LIGHT ABSORPTION. OUR RESULTS SHOW THAT AGING AND HUMIDITY STRONGLY INFLUENCE PARTICLE BEHAVIOR. METHYLGLYOXAL–GLYCINE PARTICLES SHOW ALTERED HYGROSCOPIC GROWTH, SUPPRESSED CRYSTALLIZATION DURING DRYING, DIFFUSION LIMITATIONS AT LOW HUMIDITY, AND RH-DEPENDENT ABSORPTION THAT IS STRONGEST AT INTERMEDIATE HUMIDITY. THESE FINDINGS SHOW THAT BROWN CARBON PARTICLES ARE DYNAMIC SYSTEMS WHOSE ATMOSPHERIC EFFECTS DEPEND ON COMPOSITION, HUMIDITY EXPOSURE, AND PARTICLE HISTORY.

DR. LEONHARD WINTER, DEPT. OF CHEMISTRY

"THE SURFACE CHEMISTRY OF ATOMIC LAYER DEPOSITION"

SEMICONDUCTOR CHIPS ARE THE BACKBONE OF OUR EVERYDAY LIVES IN THE 21ST CENTURY. MODERN CHIPS OFTEN CONSIST OF MORE THAN 30 DIFFERENT MATERIALS, WHICH NEED TO BE DEPOSITED IN THE CORRECT PLACE, THE RIGHT THICKNESS, AND WITH THE REQUIRED CHEMICAL PURITY. ATOMIC LAYER DEPOSITION (ALD) IS ONE OF THE MOST IMPORTANT TECHNIQUES THAT ARE USED FOR THIN FILM DEPOSITION IN THE SEMICONDUCTOR INDUSTRY. IT CAN DEPOSIT HIGH-QUALITY FILMS WITH EXCELLENT CONFORMALITY AND CONTROL OVER THE FILM THICKNESS. THIS IS ACHIEVED BY SPLITTING THE DEPOSITION INTO TWO COMPLEMENTARY SURFACE REACTIONS, WHICH ARE SEQUENTIALLY APPLIED IN SO-CALLED ALD CYCLES. A METAL OXIDE, FOR EXAMPLE, CAN BE DEPOSITED BY ALTERNATING THE DOSING OF A METAL PRECURSOR AND AN OXYGEN CO-REACTANT. IDEALLY, A SINGLE ATOMIC LAYER IS ADDED WITH EACH ALD CYCLE. THE FILM GROWTH IS HEREBY CONTROLLED BY THE CHEMISTRY ON THE SUBSTRATE SURFACE, WHICH CAN BE STUDIED BY SPECIALIZED SURFACE-SENSITIVE TECHNIQUES. IN THE ZAERA GROUP, WE USE X-RAY PHOTOELECTRON SPECTROSCOPY, REFLECTION ABSORPTION INFRARED SPECTROSCOPY AND TEMPERATURE-PROGRAMMED DESORPTION. IN THIS TALK, I WILL EXPLAIN HOW WE USE THESE TECHNIQUES TO UNDERSTAND IMPORTANT CHEMICAL DETAILS CRUCIAL FOR ALD.

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MEET OUR PANELISTS

DR. VLAD SIRBU, LECTURER, UNIVERSITY OF CALIFORNIA, RIVERSIDE, PROGRAM COORDINATOR, DEPARTMENT OF UNDERGRADUATE EDUCATION.

DR. VLAD SIRBU IS AN INTERDISCIPLINARY SCHOLAR SPECIALIZING IN EUROPEAN, GERMAN AND EAST ASIAN STUDIES. BEFORE EARNING HIS PHD IN COMPARATIVE LITERATURES AT UNIVERSITY OF CALIFORNIA, RIVERSIDE, HE RESEARCHED IN CHINA (FUDAN UNIVERSITY AND TONGJI UNIVERSITY, SHANGHAI), SPAIN (UNIVERSITY OF VALENCIA AND UNIVERSITY OF SALAMANCA), GERMANY (PHILIPPS UNIVERSITY, MARBURG), AND ROMANIA (BABES BOLYAI UNIVERSITY). HIS SCHOLARLY CONTRIBUTIONS INCLUDE THE FIRST QUANTITATIVE STUDY ON EAST ASIAN HORROR FILMS (2015), EXPLORATIONS OF WESTERN TOYS IN POST-COMMUNIST CONTEXTS (2025), INTERTEXTUALITIES IN NEO-VICTORIAN MEDIA (2026), AND COMPARATIVE ANIMAL STUDIES (2027). CURRENTLY, HE IS INVOLVED IN CAMPUS INNOVATION AND ADVOCATES FOR STUDENT AGENCY ACROSS A MULTITUDE OF STUDENT-CENTERED ORGANIZATIONS AT UCR.

DR. AMANCIO JOSE DE SOUZA, ACADEMIC COORDINATOR - METABOLOMICS CORE FACILITY, UNIVERSITY OF CALIFORNIA, RIVERSIDE

DR. DE SOUZA BEGAN HIS CAREER IN AGRONOMY IN BRAZIL, WORKING IN PLANT VIROLOGY, SOIL CHEMISTRY, AND AGRICULTURAL BUSINESSES, WHERE HE DEVELOPED STRONG MANAGEMENT AND ENTREPRENEURIAL SKILLS. HE LATER COMPLETED GRADUATE TRAINING AT THE UNIVERSITY OF SAO PAULO, MICHIGAN STATE UNIVERSITY, AND UNIVERSITY OF CALIFORNIA, BERKELEY, EARNING A PHD IN PLANT BIOLOGY FOCUSED ON PLANT CELL WALL BIOLOGY. HIS RESEARCH EXPERTISE SPANS GENETICS, MOLECULAR BIOLOGY, BIOCHEMISTRY, ANALYTICAL CHEMISTRY, AND METABOLOMICS. AFTER POSTDOCTORAL TRAINING AT UNIVERSITY OF CALIFORNIA, DAVIS AND UNIVERSITY OF CALIFORNIA, RIVERSIDE, HE RETURNED TO BRAZIL AS A PROFESSOR AND RESEARCH COORDINATOR, WHERE HE EXPANDED TEACHING, MENTORING, AND METABOLOMICS INITIATIVES. IN 2021, HE REJOINED UNIVERSITY OF CALIFORNIA, RIVERSIDE AS COORDINATOR OF THE METABOLOMICS CORE FACILITY, SUPPORTING INTERDISCIPLINARY RESEARCH THROUGH METABOLOMICS AND ANALYTICAL SCIENCE.

ALBERT NGUYEN , TECHNICAL SERVICE ADVISOR AT JBT MAREL

DR. ALBERT NGUYEN, IS A TECHNICAL SERVICE ADVISOR AT JBT MAREL SPECIALIZING IN POSTHARVEST FUNGICIDE APPLICATION SYSTEMS FOR THE CITRUS INDUSTRY IN CALIFORNIA. HE EARNED HIS PHD IN PLANT PATHOLOGY FROM THE UNIVERSITY OF CALIFORNIA, RIVERSIDE, WHERE HIS RESEARCH FOCUSED ON CITRUS POSTHARVEST FUNGICIDE APPLICATION DEVELOPMENT AND FUNGICIDE RESISTANCE. HE ALSO HOLDS AN MS IN BIOLOGY FROM UC SAN DIEGO AND IS A LICENSED AGRICULTURAL PEST CONTROL ADVISOR IN CALIFORNIA AND ARIZONA.

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LIST OF POSTER PRESENTATIONS

1. **WITHDRAWN!**

2. **DR. DAIKI FUJINAGA, DEPT. OF ENTOMOLOGY.** A MODULAR TRANSGENIC PLATFORM FOR CRISPR AND GAL4-UAS APPLICATIONS IN THE YELLOW FEVER MOSQUITO.

3. **DR. TIFANY VOLLE, DEPT. OF EVOLUTION, ECOLOGY AND ORGANISMAL BIOLOGY.** THE NOT-SO-QUIET FLIGHT OF GREAT GREY OWLS.

4. **DR. TERESA UBINA, DEPT. OF BIOMEDICAL SCIENCES.** A NOVEL FLPO RECOMBINASE MOUSE LINE TO TARGET A SUBSET OF REACTIVE ASTROCYTES.

5. **DR. ARZU ULU, DEPT. OF BIOMEDICAL SCIENCES.** FACTORS CONTRIBUTING TO BRADYZOITE-TO-BRADYZOITE REPLICATION FOLLOWING TOXOPLASMA GONDII CYST RECRUDESCENCE IN MURINE PRIMARY ASTROCYTES.

6. **DR. YIFAN YAO, DEPT. OF CHEMISTRY.** REAL-TIME ELECTRON AND ION DYNAMICS INDUCED BY ELECTRON IRRADIATION IN REAL-TIME TIME-DEPENDENT DENSITY FUNCTIONAL THEORY.

7. **YUNG-SIAN FANG, A. GARY ANDERSON GRADUATE SCHOOL OF MANAGEMENT, UNIVERSITY OF CALIFORNIA, RIVERSIDE.** AI-ASSISTED SUPPLY CHAIN MONITORING FOR OPERATIONS DECISION SUPPORT: A SIMULATION-BASED STUDY ON VISIBILITY, RISK DETECTION, AND BENCHMARK PERFORMANCE.

8. **AZURE FISHER, DEPT. OF ENVIRONMENTAL SCIENCES.** FINE SCALE STATISTICAL MODELING OF AMBIENT POLLUTION ATTRIBUTED TO LAND USE CHANGE AND WAREHOUSE INTENSIFICATION IN THE INLAND EMPIRE.

9. **SASWATI PRIYADARSHINI, DEPT. OF CHEMICAL AND ENVIRONMENTAL ENGINEERING.** ADVANCING SODIUM-METAL BATTERY INTERFACIAL ANALYSIS THROUGH OPERANDO SURFACE-ENHANCED RAMAN SPECTROSCOPY.

10. **PRATYASHA MISHRA, DEPT. OF BIOCHEMISTRY.** OSCILLATION-DRIVEN SELECTIVITY IN P38A MAPK SIGNALING PATHWAYS.

11. **CHASE BROWN, DEPT. MATHEMATICS.** DISTRIBUTION OF ACTIVE RODS IN 3D ELLIPTICAL MICROCHANNELS.

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LIST OF POSTER PRESENTATIONS

12. **DR. CARISSA GILLILAND, DEPT. OF MICROBIOLOGY AND PLANT PATHOLOGY/ENTOMOLOGY.** THE ROLE OF SRNAS IN GENE REGULATION IN TINY GENOMES

13. **DR. DEREK NEWBERGER, DEPT. OF PLANT PATHOLOGY AND MICROBIOLOGY.** GROWTH AND PHOTOSYNTHETIC RESPONSES OF CITRUS CULTIVARS IN CONTROLLED-ENVIRONMENT CONDITIONS TO ARTIFICIAL LIGHT AND ELEVATED CO_2.

14. **DR. JITHIN THOMAS, DEPT. OF CHEMISTRY.** HIGHLY STABLE MN(V)-NITRIDO AND NITROGEN-ATOM TRANSFER REACTIVITY WITHIN A DE NOVO PROTEIN.

15. **JOSEPH AKOLGO, DEPT. OF ENTOMOLOGY.** SALT RESIDUE INFLUENCES OVIPOSITION BEHAVIOR IN AEDES AEGYPTI.

16. **DR. REUBEN FRANKLIN, DEPT. OF BIOCHEMISTRY.** CHAPERONING THE EPIGENETIC DANCE: HISTONE CHAPERONES SUSTAIN MYELOID LINEAGE FIDELITY.

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WITH CLOSING REMARKS FROM:

DR. LIDIA KOS
VICE PROVOST AND DEAN OF GRADUATE STUDIES

BORN IN BRAZIL, DR. KOS RECEIVED A BACHELOR'S DEGREE IN BIOLOGY FROM UNIVERSIDADE FEDERAL DO RIO DE JANEIRO AND A PH.D. IN NEUROBIOLOGY FROM UC BERKELEY. SHE WAS A FOGARTY FELLOW AT THE NATIONAL INSTITUTES OF HEALTH, WHERE SHE DID POSTDOCTORAL STUDIES. IN 2023 SHE JOINED UCR TO LEAD THE GRADUATE DIVISION, WHICH OVERSEES GRADUATE STUDENT RECRUITMENT, ADMISSIONS, ACADEMIC AFFAIRS, EMPLOYMENT, AND MENTORING. THE DIVISION PROVIDES A RANGE OF SERVICES TO SUPPORT GRADUATE STUDENTS FROM THE BEGINNING OF THEIR GRADUATE CAREER, THROUGH THE DURATION OF THEIR PROGRAM AND BEYOND.

HER RESEARCH FOCUSES ON THE DEVELOPMENT AND PATHOGENESIS OF PIGMENT CELLS. SHE HAS EXTENSIVE EXPERIENCE TEACHING UNDERGRADUATE AND GRADUATE STUDENTS IN CELL, DEVELOPMENTAL AND MOLECULAR BIOLOGY, AND HAS MENTORED NUMEROUS UNDERGRADUATE AND GRADUATE STUDENTS AS WELL AS POSTDOCTORAL FELLOWS IN HER LABORATORY.

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SPECIAL THANKS TO OUR JUDGES

DR. MORGAN THOMPSON
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DR. RODOLFO TORRES

VICE CHANCELLOR FOR RESEARCH AND ECONOMIC DEVELOPMENT (VCRED)

RODOLFO H. TORRES IS THE VICE CHANCELLOR FOR RESEARCH AND ECONOMIC DEVELOPMENT (VCRED) AND A DISTINGUISHED PROFESSOR OF MATHEMATICS AT THE UNIVERSITY OF CALIFORNIA, RIVERSIDE. AS VC RED HE PROVIDES A BROAD VISION AND EXECUTIVE LEADERSHIP FOR CAMPUS-WIDE RESEARCH INITIATIVES AND IS RESPONSIBLE FOR INSPIRING AND MANAGING A DIVERSE PORTFOLIO OF RESEARCH AND CREATIVE ACTIVITY, AS WELL AS ECONOMIC DEVELOPMENT ACTIVITIES IN COORDINATION WITH THE REGION, STATE, AND OTHER EXTERNAL PARTNERS.

DR. TORRES CAME TO UCR AFTER 23 YEARS AT THE UNIVERSITY OF KANSAS WHERE HE WAS A UNIVERSITY DISTINGUISHED PROFESSOR OF MATHEMATICS. HE HELD LEADERSHIP ROLES WITH THE FACULTY SENATE AND LATER ON TOOK ADMINISTRATIVE POSITIONS INCLUDING ASSOCIATE VICE CHANCELLOR AND INTERIM VICE CHANCELLOR OF RESEARCH AND PRESIDENT OF THE UNIVERSITY OF KANSAS CENTER FOR RESEARCH.

AFTER COMPLETING HIS UNDERGRADUATE STUDIES AT THE UNIVERSIDAD NACIONAL DE ROSARIO, IN HIS NATIVE ARGENTINA, TORRES CAME TO THE U.S. TO EARN HIS DOCTORATE FROM WASHINGTON UNIVERSITY IN ST. LOUIS, AND COMPLETED POSTDOCTORAL STUDIES AT NEW YORK UNIVERSITY AND THE UNIVERSITY OF MICHIGAN.

DR. TORRES' RESEARCH INTERESTS INCLUDE HARMONIC ANALYSES, WHICH INVOLVES FINDING PATTERNS IN COMPLICATED DATA AND HELPING SOLVE MATHEMATICAL EQUATIONS, AS WELL AS ANALYZING SIGNALS AND IMAGES SUCH AS THE COLORATION OF BIRDS.

HIS RESEARCH HAS BEEN SUPPORTED BY GRANTS FROM THE NSF AND HE'S BEEN INVITED TO SPEAK AND TEACH SHORT COURSES AROUND THE WORLD. TORRES HAS ALSO RECEIVED SEVERAL AWARDS AND HONORS FOR HIS COMMITMENT TO RESEARCH, INNOVATION, AND HIGHER EDUCATION.

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