**All sessions in Peninsula I & II**

**(please note this is the usual room on the same floor as the hotel lobby near the entrance)**

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| **Thursday Afternoon, May 2, 2024**  |
| 16:00 -16:15 | Introduction and Welcometo Cabo XXXII | Ian Wilson and Andrej Šali |
| **16:15-17:20** | **Short Presentations (4 + 1 min.) by TSRI Graduate Students****(Chair: Keren Lasker, TSRI)** |
|  | Nathan Beutler | TSRI | Beyond binding: Unraveling the complex dance of antibodies with native CSP on Plasmodium sporozoites |
|  | André Nicolás León | TSRI | Mapping pediatric antibody responses to influenza hemagglutinin and neuraminidase |
|  | Daniel Lima Vilela Bader | TSRI | New targets for HIV vaccine design |
|  | Xiaohe Lin | TSRI | Computational and structural evaluation of the immune response for HIV vaccine design and development |
|  | Olivia Swanson | TSRI | Machine Learning method enhances immunogen development to escape local design minima |
|  | Colleen Maillie | TSRI | Engineering de novo transmembrane adaptor molecules for regulating Toll-like Receptor 4 |
|  | Michaela Medina | TSRI | Investigating mitochondrial membrane ultrastructure during chronic ER stress |
|  | David Lanster | TSRI | Rubisco directed evolution for efficient CO2 fixation |
|  | Ariana SulpizioAlthea Hansel-Harris | TSRITSRI | Elucidating ligand-dependent differences in STING activationIncorporation of experimental structural density in AutoDock improves success rate across docking applications and targets |
|  | Camille Rubel | TSRI | Electroreductive preparation of Ni(0) complexes |
|  | Jenna Tom | TSRI | Organization and dynamics in anionic biopolymer condensates across scales |
|  | Dominique Carey | TSRI | Mechanism of action of A205804 in endothelial cells |
| 17:20-17:35 | **Break** |  |  |
| **17:35-18:35** | **Short Presentations (4 + 1 min.) by UCSF Graduate Students and Postdocs** **(Chair: Keren Lasker, TSRI)** |

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|  | José Montaño | UCSF | Platforms to improve and profile covalent inhibitor selectivity |
|  | Jonathan San Felipe | UCSF | Developing a biophysical model for the Orf9b-Tom70 equilibrium |
|  | Leah Shaffer | UCSF | A multi-scale map of proteome organization from integration of protein interactions and images  |
|  | Lee Schnaider | UCSF | Probing the rules of protein structure, function and recognition through the de novo design of functional protein |
|  | Neelesh Soni | UCSF | Integrative modeling of the nuclear pore complex basket |
|  | Hayarpi Torosyan | UCSF | Capturing the dynamic activation of PI3Kα on membranes using cryo-EM |
|  | Maxwell Tucker | UCSF | Visualizing VCP/p97 recruitment to damaged lysosomes by cryo-electron tomography |
|  | Nicholas Young | UCSF | Dissecting quantitative protease drug resistance landscapes in high-throughput |
|  | Dominic GrisingherLieza ChanJonathan Sandoval | UCSFUCSFUCSF | Designing de novo proteins with two conformational statesVisualizing a therapeutic antibody engaging the Sotorasib-modified KRAS G12C MHC I complex by cryo-EMReconstitution and pharmacological disruption of chromatin-associated oncogenic condensates |
| 18:35  | **Break** |  |  |
| **18:50– 20:10** |  | **Condensates** | **(Chair: Howard Hang, TSRI)**  |
| 18:50 | Ashok Deniz | TSRI | Biophysics of condensates, single molecules to mesoscales |
| 19:10 | Keren Lasker | TSRI | Phase dependent binding  |
| 19:30 | Lisa Racki | TSRI | Polyphosphate condensates: drivers and passengers of bacterial chromatin dynamics |
| 19:50 | Danica Galonic Fujimori | UCSF | Reconstitution and pharmacological disruption of chromatin-associated oncogenic condensates |
| **20:30 – 22:30** | **Reception with Buffet**(open to all including guests)  |  | **Poolside (adult pool)** |

Keynote Lecture

 Innovation by Evolution: Bringing New Chemistry to Life

Frances H. Arnold

The most powerful design process ever invented is evolution: it generates incomparable functionality and works at all scales, from molecules to entire ecosystems. There is nothing like it in the world of human engineering. Humans have used evolution for biological design for thousands of years, choosing who mates with whom and who goes on to parent the next generation. We can now use evolution to explore the future of chemistry by engineering the catalysts of life, enzymes. I will describe how we can direct enzyme evolution to solve challenging chemical problems once thought to be out of reach of biology, and even of chemistry.

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| **Friday Morning, May 3, 2024 Biophysics and Biology of Cellular Processes I** **(Chair: Robert Stroud, UCSF)** |
| 08:30 | Helen Berman  | UCSF | New resources for nucleic acid structural biology |
| 08:50 | Megan Ken | TSRI | The role of RNA structural dynamics in cellular function and antiviral drug development |
| 09:10 | Gabriel Lander | TSRI | How are DNA microhomologies positioned for double-strand break repair? |
| 09:30 | James Williamson | TSRI | Global perturbation analysis of ribosome assembly |
| 09:50 | **Break** |  |  |
| **Friday Morning, May 3, 2024 Keynote Lecture****(Introduction: Ahmed Badran, TSRI)** |
| 10:10 11:10 | Frances H. ArnoldQuestions & Discussion | CalTech | Innovation by evolution: bringing new chemistry to life |
| 11:25 | **Break** |  |  |
| **Friday Morning, May 3, 2024 Biophysics and Biology of Cellular Processes II** **(Chair: Robert Stroud, UCSF)** |
| 11:40 | Danielle Grotjahn | TSRI | Stress-dependent mitochondrial remodeling across scales |
| 12:00 | Luke Wiseman | TSRI | Stress responsive regulation of cellular physiology |
| 12:20 | Daniel Southworth | UCSF | Conformational states and allosteric control mechanisms of AAA+ unfoldase machines |
| 12:40-16:00 | **Break** |  |  |
| **Friday Afternoon, May 3, 2024 Chemistry and Biology** **(Chair: Travis Young, Calibr-Skaggs)** |
| 16:00 | Ahmed Badran | TSRI | Improving the chemistry of photosynthetic carbon capture |
| 16:20 | Luke Lairson  | TSRI | A potent and cell type selective RIPK2-dependent small molecule prodrug for the treatment of brain cancers |
| 16:40 | James Fraser  | UCSF | Deep mutational scanning to identify kinase inhibitor resistance mechanisms |
| 17:00 | Sumit Chanda | TSRI | HIV-host interactions  |
| **17:20** | **Group photo** |  | Main lobby steps to pools |
| 17:50 | Philip Dawson | TSRI | Building macromolecule conjugates using a different solid phase |
| 18:10 | Michael Erb | TSRI | Organization and dynamics in anionic biopolymer condensates across scales |
| 18:3018:50 | Shannon MillerGiordano Lippi | TSRITSRI | Next-generation technologies for in vivo genome editingBeyond transcription - Neuronal mechanisms of gene expression |
| 19:10 | Margaux Pinney | UCSF | Dissecting the adaptive landscape of enzyme catalysis in high-throughput |
| *20:00 – 22:30 Sponsors Dinner, by invitation only – El Agave* |
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| **Saturday Morning, May 4, 2024 Integrative Computational and Structural Biology** **(Chair:Allison Williams, UCSF)** |
| 08:3008:50 | Andrej ŠaliTrey Ideker  | UCSFUCSD | Integrative modelingDigital tumors for precision oncology |
| 09:10 | Stefano Forli | TSRI | "Boil em, mash em, stick em in a stew". Cosolvent molecular dynamics for characterization and discovery of protein binding sites |
| 09:3009:50 | Tanja KortemmeWilliam Degrado | UCSFUCSF | De novo design of dynamic proteins guided by deep learningProtein design |
| 10:10 | **Break** |  |  |
|  **Microbial Pathogens and Immune System** **(Chair: Mark Yeager, The Frost Institute)** |
| 10:30 | Kristian Andersen  | TSRI | Virus evolution at scale |
| 10:50 | Andrew Ward | TSRI | Rational vaccine design |
| 11:10 | Raphael Park | TSRI | In situ characterization of Mycobacteria for combating tuberculosis |
| 11:30 | Howard Hang | TSRI | Chemical dissection of microbiota mechanisms |
| 11:5012:10 | James PaulsonBalyn Zaro | TSRIUCSF | Targeting siglecs to induce immune toleranceYou are what you eat: The consequence of phagocytosis on the macrophage cell surface |
| 12:30-16:00  | **Break** |  |  |
|  **Saturday Afternoon, May 4, 2024 Structural Biology and Biophysics**  **(Chair: Helen Berman, UCSF)**  |
| 16:00 | Mark DelCampo | Rigaku | A novel method for the observation and characterization of the 3D structure of monoclonal antibodies, capsids, and other therapeutic biomolecules: Electron density topography |
| 16:2016:40  | Jawahar SudhamsuAllison Williams | GenentechUCSF | Disulfide constrained Fabs overcome target size limitation for high-resolution single particle cryoEMPenetrating bacterial defenses by attacking the cell wall-degrading machinery to disrupt bacterial metabolism |
| 17:00 | Arthur Olson | Scripps | Extended Reality (XR) for structural molecular biology |
| 17:20 | **Break** |  |  |
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|  **Saturday Afternoon, May 4, 2024 Membrane Proteins** **(Chair: Andrew Ward, TSRI)**  |
| 17:40 | Mark Yeager | Frost Institute | CryoEM structures of full-length integrin αIIbβ3 in native lipids |
| 18:00 | Daniel Minor Jr. | UCSF | K2P channel function and chemical biology |
| 18:20 | Robert Stroud | UCSF | New approaches to drug discovery against transporters in TB |
| 18:40 | Marco Mravic | TSRI | Computational design of membrane protein molecular recognition |
| 19:00 | David Millar | TSRI | Conformational dynamics of chemokine receptors |
| **Sunday Morning, May 5, 2024 Therapeutics, Signaling & Activation****(Chair: Luke Lairson, TSRI)**  |
| 08:30 | Dillon Flood | Elsie Biotech | Design, delivery, and development of RNA therapeutics for precision treatment of CNS disorders |
| 08:50 | Kyle Knouse | Elsie Biotech | Structure activity relationship of oligonucleotide therapeutics |
| 09:1009:30  | Travis YoungBeyza Bulutoglu  | Calibr-SkaggsGenentech | Immunotherapy - Bench to bedsideStabilized IL-18 cytokine for cancer immunotherapy |
| 09:50 | **Break** |  |  |
| 10:10 | J. Michael Sauder | Lilly | Discovery & structural biology of the first oral small molecule inhibitor of Lipoprotein(a) formation |
| 10:30 | Xinxin Gao | Genentech | A disulfide constrained peptide platform to identify ZNRF3 antagonists for Wnt signaling activation |
| 10:50 | Natalia Jura | UCSF | Unlocking the mechanisms of HER/ERBB receptor tyrosine kinase activation and signaling |
| 11:10 | Andrej Šali & Ian Wilson | Closing Remarks  |

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