27th Enzyme Mechanisms Conference

January 2 - 6, 2022

Loews Ventana Canyon

Tucson, AZ

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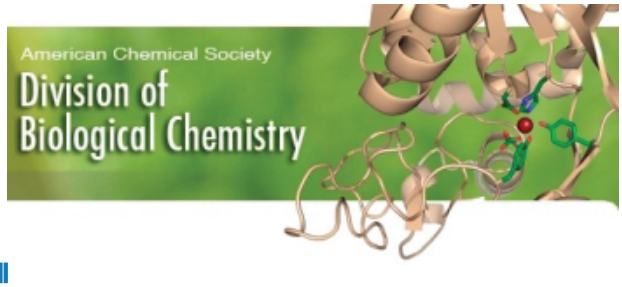

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About

The Enzyme Mechanisms Conferences have brought together academic and industrial scientists to discuss new ideas at the forefront of mechanistic enzymology. The goal is to foster collegial interactions among chemists and biochemists who seek to understand the chemical basis for enzymatic catalysis and regulation of enzyme action, and those who apply that knowledge for practical applications.

The EMC has been held biennially since it was found-ed in 1969 by Tom Bruice, Bill Jencks, and Myron Bender. Over the past 53 years, the conference has provided an outstanding forum for the presentation and discussion of the most exciting advances in our under-standing of the mechanisms of enzyme action and their application to pharmaceutical design and action and to plant health.

53 years of EMC

1969 Bill Jencks, New Orleans
1971 Tom Bruice, Santa Barbara
1973 Paul Boyer, Los Angeles
1975 Al Mildvan, San Juan
1977 Joe Coleman, Tucson
1979 George Kenyon, La Jolla
1981 Perry Frey, Sanibel Island
1983 Judith Klinman, Asilomar
1985 Gene Cordes, Tarpon Springs
1987 Tony Fink, Asilomar
1989 Paul Bartlett, St. Pete
1991 Joe Villafranca, San Diego
1993 John Gerlt, Key Largo
1995 Dale Poulter, Scottsdale
1997 John Kozarich, Naples
1999 Richard Armstrong, Napa
2001 Vern Schramm, Marco Island
2003 Frank Raushel, Galveston
2005 JoAnne Stubbe, Asilomar
2007 Chris Whitman, St. Pete
2009 Karen Allen, Tucson
2011 John Richard and Tina Amyes, St. Pete
2013 Tom Meek, San Diego
2015 Ken and JoAnn Johnson, Galveston
2017 Richard Silverman, St. Pete
2019 Vahe Bandarian, New Orleans
2022 Wilfred van der Donk, Tucson

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General information

Registration and Conference Check-in: The registration desk in the *Lobby* will be open Sunday January 2nd from 3:00 pm to 5:30 pm, and on Monday January 3rd from 7:30 am to 8:30 am and from 10:15-10:45 am. The desk is located in the area immediately to your left when you enter the main entrance of the lobby from the circle drive. If you are unable to obtain your registration materials during these times, please see Wilfred van der Donk (or email vddonk@illinois.edu).

Masks: Following CDC recommendations, attendees will be asked to wear face masks indoors at the conference events, which take place in a separate wing of the resort.

Badges: Conferees and registered guests are kindly asked to wear their badge at all times while attending the scientific sessions and social functions.

Opening Reception: The conference Welcome and Opening Reception will be held on Sunday January 2nd from 6:00 pm to 8:00 pm at Bill's Grill (in the event of rain, the reception will be in the *Catalina Ballroom*, adjacent to the meeting space *Foyer*). Conferees and registered guests are welcome to attend.

Lecture Sessions: The nine scientific sessions will be held in combined *Ballrooms B* and *C*.

Poster sessions: Poster sessions will be held in *Ballroom A* and the conference *Foyer*, 3:00 – 5:00 pm on Monday and Tuesday. Posters will be on display throughout the conference. A cash bar will be available. Presenters of ODD numbered posters should be available to discuss their posters on Monday. Presenters of EVEN numbered posters should be available to discuss their posters on Tuesday. Posters may be mounted on Monday morning and should be removed by Tuesday midnight.

Breakfast: A full breakfast will be available for conferees and registered guests outside on the *Cascade Terrace* beginning at 7:30 am on Monday, Tuesday, and Wednesday. Conferees and registered guests can take their food inside the *Cascade Lounge* if temperatures are considered too low (in the event of rain, the breakfast will be in the *Catalina Ballroom*, adjacent to the *Foyer*).

Lunch: A boxed lunch and drink will be provided to conferees and guests on Wednesday between the morning and afternoon sessions. The boxes will be available in the *Foyer* and conferees and guests are welcome to eat at various locations including the *Cascade Terrace, Lounge,* or their guest rooms.

Closing Banquet: The closing banquet will be held on Wednesday from 6:00 – 9:00 pm in *Ballrooms B* and *C.* Cocktails and light hors d'oeuvres will be served from 6:00 pm in the *Foyer*, followed by dinner at 7:00 pm. Conferees and registered guests are welcome to attend. Please use the seating that you indicated on the conference poll (low density or normal density).

Registered guests: Registered guests are invited to the opening reception, breakfasts, coffee breaks, lunch on Wednesday, and the closing banquet.

Join us on Twitter: @27thEMC and tag us at **#EMC22**

Agenda EMC 2022

Sunday, January 2

6:00-8:00 pm **Opening Reception** – Bill's Grill (Canyon Café if rain)

Monday, January 3

7:30-8:25 am Breakfast – Catalina Ballroom
Sponsored in part by Incyte

Session 1 – Carbohydrate and Nucleotide Enzymology – Salon B/C
Chair – Robert Cicchillo (Corteva Agriscience)

8:25 Welcome
8:30 Karen Allen (Boston University)
Structure-guided insight into function, mechanism and evolution in bacterial glycoconjugate synthesis
9:05 Danica Fujimori (University of California at San Francisco) *virtual*
Insights into molecular basis of antibiotic resistance through directed evolution of an rRNA methylating enzyme
9:40 Hung-wen Liu (University of Texas)
Mechanistic and evolutionary insights from the redox interchangeability of two homologous twitch radical SAM enzymes
10:15-10:45 Coffee Break – Grand Ballroom Foyer
Sponsored in part by Janssen Pharmaceutica

Session 2 – Defense Mechanisms in Diverse Settings – Salon B/C
Chair – Amy Weeks (University of Wisconsin)

10:45 Sarah O'Connor (Max Planck Institute) *virtual*
Harnessing the chemistry of plant natural product biosynthesis
11:20 Tyler Grove (Albert Einstein College of Medicine)
Viperin: a genome encoded pharma company
11:55 Drake Mellott (Agios)
Drug discovery and kinetics in *Mycobacterium tuberculosis* and SARS-CoV-2
12:30 Lunch (not provided)

3:00-5:00 **Poster session** (Odd numbered posters; cash bar)
Grand Ballroom Foyer and Salon A
Supported in part by a grant from Genentech, a member of the Roche Group

Session 3 – Metallobiochemistry and the Microbiome – Salon B/C
Chair – Kylie Allen (Virginia Tech)

7:00 Emily Balskus (Harvard University)
Enzyme discovery in microbes and microbiomes
7:35 Rachelle Copeland (Codexis) *virtual*
Production of ethylene and other platform chemicals by an unusual iron- and 2-(oxo)glutarate-dependent oxygenase
8:10 Poster talk: Kenichi Yokoyama (Duke University)
Cryptic phosphorylation-mediated divergent biosynthesis of high-carbon nucleoside antifungal antibiotics
8:25 Steven Mansoorabadi (Auburn University)
C-ing is believing: characterization of a novel heme oxygenase from *Paracoccus denitrificans*

Tuesday, January 4

7:30-8:30 am Breakfast – Cascade Terrace or Lounge (Catalina Ballroom if cold/rain)
Supported in part by Corteva Agriscience

Session 4 – New Roles for Old Cofactors – Salon B/C
Chair – Kristin Koutmou (University of Michigan)

8:30 Katherine Ryan (University of British Columbia) *virtual*
Pyridoxal phosphate-dependent reactions in natural products biosynthesis
9:05 Founders Award lecture
Antonio Del Rio Flores (University of California at Berkeley)
Biosynthesis of triacsin featuring an N-hydroxytriazene pharmacophore
9:40 Tributes by John Gerlt (*virtual*), Don Hilvert (*virtual*), Danica Fujimori (*virtual*), Tom Meek, and Chris Whitman.
10:15-10:45 Coffee break – Grand Ballroom Foyer
Sponsored in part by Biogen

Session 5 – Posttranslational Modifications – Salon B/C
Chair – Mark Walker (University of New Mexico)

10:45 Vahe Bandarian (University of Utah)
Discovery and mechanistic studies of radical SAM RiPP maturases
11:20 Douglas Mitchell (University of Illinois)
Thioamidation of peptide backbones
11:55 Albert Bowers (University of North Carolina)
Improving enzymatic efficiency through designer incorporation of a substrate recognition domain
12:30 Lunch (not provided)

3:00-5:00 **Poster session II** (Even numbered posters; cash bar)
Grand Ballroom Foyer and Salon A
Supported in part by a grant from Gilead

Session 6 – Tools, Machines, and Engineering – Salon B/C
Chair – Andrew Buller (University of Wisconsin)

7:00 Ruben Gonzalez, Jr. (Columbia University) *virtual*
From fluctuations to function: The role of structural dynamics in the mechanism and regulation of translation
7:35 John McIntosh (Merck) *virtual*
Biocatalytic synthesis of nucleoside and nucleotide therapeutics
8:10 Poster talk: Jennifer Bridwell-Rabb (University of Michigan)
Design principles for Rieske oxygenase chemistry
8:25 Dan Herschlag (Stanford University) *virtual*
New tools for new and old questions in enzymology

Wednesday, January 5

7:30-8:30 am Breakfast – Cascade Terrace or Lounge (Catalina Ballroom if cold/rain)

Session 7 – Natural Product Biosynthesis – Salon B/C
Chair – Vinayak Agarwal (Georgia Tech University)
8:30 Bradley Moore (Scripps Institution of Oceanography and UCSD)
New terpene synthase lineages discovered from the ocean

9:05 Bo Li (University of North Carolina)
Biosynthesis of fluopsin C, a copper-containing antibiotic from *Pseudomonas aeruginosa*
9:40 Poster talk Takayoshi Awakawa (University of Tokyo) *virtual*
β-NAD as a building block in natural product biosynthesis
9:55 Poster talk Anushree Mondal (Texas A&M University)
A remarkable suicide enzyme in thiamin pyrimidine biosynthesis in yeast
10:10-10:45 Coffee break Grand Ballroom Foyer
Sponsored in part by a grant from Abbvie

Session 8 – Enzymes in Cell Biology – Salon B/C
Chair – Jeffrey Rudolf (University of Florida)

10:45 Benjamin Cravatt (Scripps Research) *virtual*
Activity-based proteomics – ligand and target discovery on a global scale
11:20 Ruma Banerjee (University of Michigan) *virtual*
Sulfide signaling and complex II reversal using fumarate as a terminal electron acceptor
11:55 Tina Iverson (Vanderbilt University)
Alternatively assembled SDHA subunit of mitochondrial complex II in protein maturation and catalytic regulation
12:30-2:00 Box Lunch – Grand Ballroom Foyer or take outside or to room
Supported in part by Merck

Session 9 – Everything We Love about Enzymes – Salon B/C
Chair – Chi Ting (Brandeis University)

2:00 Poster talk: Johannes Rudolph (University of Colorado)
A self-modifying enzyme gets a friend: the convoluted enzymology of PARP1 and HPF1
2:15 Donald Hilvert (ETH Zürich) *virtual*
Design and evolution of artificial metalloenzymes
2:50 Dorothee Kern (Brandeis University) *virtual*
Time travel to the past and future – evolution of energy landscapes for enzyme catalysis
3:25 Frank Raushel (Texas A&M University)
Biosynthesis of the capsular polysaccharide from *Campylobacter jejuni*

Closing Banquet
6:00-7:00 pm **Reception with hors-d'oeuvres** – Grand Ballroom Foyer
7:00 **Banquet** – Grand Ballroom B/C
Audio and Visual costs are *supported in part by Pfizer*

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POSTERS

P1	**A non-functional halogenase masquerades as an aromatizing dehydratase in pyoluteorin polyketide biosynthesis** Dongqi Yi, Vinayak Agarwal
P2	**Structural and mechanistic basis for the neofunctionalization of coumarin synthase from a BAHD acyltransferase progenitor** Colin Y. Kim, Andrew J. Mitchell, Claire E. Albright, Michael Gutierrez, Christopher M. Glinkerman, Jing-Ke Weng
P3	**Biochemical characterization of the class D radical SAM methylase in tetrahydromethanopterin biosynthesis** Justin McKinney, Taylan Tunckanat, Kylie Allen
~~**P4**~~	**β-NAD as a building block in natural product biosynthesis** Takayoshi Awakawa, Lena Barra, Kohei Shirai, Zhijuan Hu, Ikuro Abe **(withdrawn)**
P5	**Discovery and characterization of a bioactive class II lantibiotic from proteobacteria** Richard S. Ayikpoe, Chengyou Shi, Huimin Zhao, Wilfred A. van der Donk
P6	**Unraveling the catalytic potency of glucose-6-phosphate dehydrogenase** Hannah R. Aziz, Trey Barlow, Larry D. Byers
P7	**Understanding lasso peptide orientation and substrate recognition residues in the active site of lasso peptide cyclases** Susanna E. Barrett, Thomas A. Pires, Douglas A. Mitchell
P8	**Kinetic control of endogenous ligation to molybdenum in Complex Iron-Sulfur Molydoenzyme (CISM) family** Partha Basu, Breeanna Mintmier, Jennifer McGarry
P9	**FastRiPPs: bringing genome mining predictions to fruition** Alexander J. Battiste, Chengyou Shi, Sangeetha Ramesh, Lonnie A. Harris, Douglas A. Mitchell
P10	**NMR-guided directed evolution** Sagar Bhattacharya, Eleanor Margheritis, Katsuya Takahashi, Alona Kulesha, Areetha D'Souza, Inhye Kim, Jennifer H. Yoon, Jeremy R. H. Tame, Alexander N. Volkov, Olga V. Makhlynets, Ivan V. Korendovych
P11	**Newly evolved diesterase activity in the PHP-family of phosphatases** Preston Garner, Andrew N. Bigley
P12	**Implementation of gatekeeping by ketosynthases (KSs) to produce a pair of epimers in engineered pentaketide synthases** Ramesh Bista, Adrian Keatinge-Clay
P13	**Studying novel vulnerabilities of cell wall biosynthesis in *Mycobacterium tuberculosis*** Ronnie Bourland, James Sacchettini
P14	**Structural basis for an enzymatic Friedel–Crafts alkylation in cylindrocyclophane biosynthesis** Nathaniel R. Braffman, Terry B. Ruskoski, C. Denise Okafor, Amie K. Boal, Emily P. Balskus
P15	**Design principles for Rieske oxygenase chemistry** Jianxin Liu, Jiayi Tian, Jennifer Bridwell-Rabb
P16	**Characterization of the putative Δ^1- pyrroline-5-carboxylate reductase from *Sinorhizobium melloti*** Xeroxa Joshi, Agnidipta Ghosh, Steve Almo, Nathan A. Bruender
P17	**Chemoproteomic profiling of cofactor-dependent enzymes in *Clostridioides difficile*** Katelyn A. Bustin, Megan L. Matthews
P18	**Differential regulation of SIRT5 activity by small molecules** Alyson Curry, Stacia Rymarchyk, Song Zheng, Yana Cen

POSTERS

~~**P19**~~	**Solution NMR studies of the *Shewanella woodyi* H-NOX protein in the presence and absence of soluble guanylyl cyclase stimulator IWP-051** Cheng-Yu Chen, Woonghee Lee, William R. Montfort **(withdrawn)**
P20	**Mapping the catalytic conformations of an asymmetric assembly-line polyketide synthase module** Dillon P. Cogan, Kaiming Zhang, Xiuyuan Li, Shanshan Li, Grigore D. Pintilie, Soung-Hun Roh, Charles S. Craik, Wah Chiu, Chaitan Khosla
~~**P21**~~	**Engineering proteins: from directed evolution to design & machine learning** Rachelle Copeland, et al. **(withdrawn)**
P22	**Hidden resources in bacterial proteomes fuel metabolic innovation** Shelley D. Copley, Karl A. Widney, S. Della Fixsen
P23	**Kinetic and structural basis for SARS-CoV-2 RNA replication and inhibition by Remdesivir** Tyler L. Dangerfield, Kenneth A. Johnson
~~**P24**~~	**PEARL mediated pyrroloiminoquinone biosynthesis: a novel pathway to aromatic amines** Page N. Daniels, Hyunji Lee, Chi P. Ting, Lingyang Zhu, Wilfred van der Donk **(withdrawn)**
P25	**Biosynthesis of triacsin featuring an N-hydroxytriazene pharmacophore** Antonio Del Rio Flores, Frederick F. Twigg, Yongle Du, Wenlong Cai, Daniel Q. Aguirre, Michio Sato, Moriel J. Dror, Maanasa Narayanamoorthy, Jiaxin Geng, Nicholas A. Zill, Rui Zhai, Wenjun Zhang
P26	**Kinetic analysis of cyclization reactions performed by substrate tolerant ProcM** Emily Desormeaux, Wilfred van der Donk
P27	**A bioinformatics workflow for the discovery of new ribosomal peptide-modifying enzymes** Shravan R. Dommaraju, Kimberly K.O. Walden, May R. Berenbaum, Douglas A. Mitchell
P28	**Towards spectroscopically consistent models of intermediates in radical S-adenosyl-L-methionine enzyme catalysis** Patrick H. Donnan, Steven O. Mansoorabadi
P29	**Biocatalytic synthesis of non-standard amino acids by a decarboxylative aldol reaction** Jonathan M. Ellis, Meghan E. Campbell, Prasanth Kumar, Eric P. Geunes, Craig A. Bingman, Andrew R. Buller
P30	**Coordinating structural changes in the two-component alkanesulfonate monooxygenase enzymes** Helen C. Aloh, Shruti Somai, Holly R. Ellis
P31	**Characterization of the enzymes involved in arabinose biosynthesis in the capsular polysaccharide of *Campylobacter jejuni*** Max Errickson, Frank M. Raushel
P32	**High-throughput discovery of class III lanthipeptides** Sara M. Eslami, Max A. Simon, Chengyou Shi, Huimin Zhao, Wilfred van der Donk
P33	**The role of conformational change in adenylate kinase-catalyzed phosphoryl transfer** Patrick L. Fernandez, John P. Richard
P34	**Unravelling the enzymatic mechanism of isocitrate lyase from *Mycobacterium tuberculosis* using kinetic isotope effects** K.G Shamin Fernando, Andrew S. Murkin
P35	**The kinetics and inhibition of dihydropyrimidine dehydrogenase** Dariush C. Forouzesh, Brett A. Beaupre, Arseniy Butrin, Dali Liu, Graham R. Moran
P36	**Kinetic and HDX-MS characterization of ATPase function in the SufBC2D Fe-S scaffold complex from *E. coli*** Yu Wang, Patrick A. Frantom
P37	**Mechanism-guided development of enzymatic tools for chemoselective C-terminal modification** Clara L. Frazier, Amy M. Weeks

POSTERS

P38	**Mechanistic studies of a skatole-forming glycyl radical enzyme** Beverly Fu, Azadeh Nazemi, Benjamin J. Levin, Zhongyue Yang, Heather J. Kulik, Emily P. Balskus
P39	**Mechanistic investigation of a prenyltransferase with unusual non-natural substrate** Anuran K. Gayen, Gavin J. Williams
P40	**Biotin catabolism: identification of the catabolic operon and in-vitro reconstitution of the pathway** Avick Kumar Ghosh, Dmytro Fedeseyenko, Xiaohong Jian, Saad Naseem, Tadhg P. Begley
P41	**The mode of action of the two-peptide enterococcal toxin cytolysin** Constantin Giurgiu, Imran R. Rahman, Wilfred A. van der Donk
P42	**Does a positively charged residue at position 266 in some enzymes from the enolase superfamily determine epimerase activity?** Dat Truong, Rebecca Skouby, Susan Fults, Reethu Bayana, John Janak, Jamison Huddleston, Dakota Brock, Jean-Phillipe Pellois, Mingzhao Zhu, Kenneth Hull, Daniel Romo, Frank Raushel, Margy Glasner
P43	**Stereoselective hydrolysis of organophosphorus compounds** Kyle Glockzin, Frank Raushel
P44	**Characterization of adenine phosphoribosyltransferase (APRT) activity in *Trypanosoma brucei brucei*: only one of the two isoforms is kinetically active** Kayla Glockzin, Thomas D. Meek, Ardala Katzfuss
P45	**Substrate-assisted oxyanion stabilization via $n\rightarrow\pi^*$ interactions** Brian Gold, Mark M. Feliciano
P46	**Catalytic mechanism of *M. tuberculosis* indole-3-glycerol phosphate synthase** Nina M. Goodey, Sarah Cho, Oshane Thomas, Maryum Bhatti, Hedda Booter, Cinthya Moran, Natalie Jefferson, Ashley Reyes, Patryja Marin, Savannah Van Den Berg, Katherine Margolis, David W. Konas
P47	**Mössbauer and EPR studies of novel iron-sulfur clusters** Jikun Li, Lucia P. Tormo, Maria T. Pellicer, Luis Rubio, Yisong Guo
P48	**Discovery and characterization of the lasso peptide chlorolassin** Lonnie A. Harris, Kyle E. Shelton, Xiao Rui Guo, Adam J. DiCaprio, Douglas A. Mitchell
P49	**Capturing an elusive conformational change: substrate and pK_a dependence on conformational dynamics of Heptosyltransferase I** Bakar A. Hassan, Jozafina Milicaj, Joy Cote, Carlos A. Ramirez-Mondragon, Yuk Y. Sham, Erika Taylor
P50	**Reconstitution and mechanistic investigations on flavoenzyme CmoJ in a cysteine salvage pathway from S-alkylated cysteines** Sohan Hazra, Dhananjay Bhandari, Tadhg P. Begley
P51	**How *cis*-acyltransferase assembly-line ketosynthases gatekeep for processed polyketide intermediates** Melissa Hirsch, Brendan Fitzgerald, Adrian Keatinge-Clay
P52	**Molecular basis of C–S bond cleavage in the glycyl radical enzyme isethionate sulfite-lyase** Stephania M. Irwin, Christopher D. Dawson, Lindsey R.F. Backman, Chip Le, Jennifer X. Wang, Vyshnavi Vennelakanti, Zhongyue Yang, Heather J. Kulik, Catherine L. Drennan, Emily P. Balskus
P53	**Structural and Kinetic Characterization of a Nitro-Forming Flavin Dependent Monooxygenase, CreE** Sydney Johnson, Pablo Sobrado
P54	**Kinetic basis for high fidelity DNA replication and exonuclease proofreading by T7 DNA polymerase** Tyler Dangerfield, Kenneth Johnson
P55	**Inhibition of isoleucyl-*t*RNA synthetase by the hybrid antibiotic thiomarinol** Rachel A. Johnson, Andrew N. Chan, Ryan D. Ward, Caylie A. McGlade, Breanne M. Hatfield, Jason M. Peters, Bo Li

POSTERS

P56	**A new elimination mechanism for DXPS: C2-C3 cleavage of phosphoketose donors** Melanie L. Johnston, Caren L. Freel Meyers
P57	**A conserved histidine residue is required for a functional fold-switch mechanism in retaining GT-B glycosyltransferases** Ramesh Karki, Patrick Frantom
P58	**The step-by-step processes of protein conformational changes and DNA strand separation are coupled to high fidelity DNA recognition** Olivia Konttinen, Jason Carmody, Norbert Reich
P59	**Mechanistic elucidation of the RiPP-modifying rSAM enzyme TvgB reveals large kinetic isotope effect** Anastasiia Kostenko, John Latham
P60	**Molecular level consequences of mRNA uridine modifications on translation** Daniel E. Eyler, Meredith K. Purchal, Monika K. Franco, Mehmet Tardu, Zahra Batooll, Monika Z. Wu, Bijoyta Roy, Yury S. Polinakov, Markos Koutmos, Kristin S. Koutmou
P61	**Characterizing the molecular basis of the allosteric activation of pyruvate carboxylase by acetyl CoA** Amanda J. Laseke, Yumeng Lui, Martin St. Maurice, Jeremy R. Lohman, Aaron Benjamin, Trevor J. Boram
~~**P62**~~	**Substrate sequence controls regioselectivity of lanthionine formation by ProcM** Tung Le, Kevin Jeanne Dit Fouque, Miguel Santos-Fernandez, Claudio D. Navo, Gonzalo Jiménez-Osés, Raymond Sarksian, Francisco Alberto Fernandez-Lima, Wilfred A. van der Donk **(withdrawn)**
P63	**Mechanistic investigations of a peptide aminoacyl-tRNA ligase** Hyunji Lee, Wilfred A. van der Donk
P64	**An interprotein Co-S coordination complex in the B_{12}-trafficking pathway** Zhu Li, Romila Mascarenhas, Umar T. Twahir, Albert Kallon, Madeline Yaw, Markos Koutmos, Kurt Warncke, Ruma Banerjee
P65	**Mechanistic studies on dehydration of class V lanthipeptides** Haoqian Lainey Liang, Olga Genilloud, Wilfred A. van der Donk
P66	**Prochlorosin mode of action** B. Alexis Lower, Wilfred A. van der Donk
P67	**Role of protein-protein interactions in mediating the antiviral activity of Viperin** Srijoni R. Majhi, Victor Rivera-Santana, Ayesha M. Patel, Timothy J. Grunkemeyer, Soumi Ghosh, Neil G. Marsh
P68	**Enzymatic decarboxylation of aromatic substrates – a novel role for flavins** Prathamesh Datar, Neil G. Marsh
P69	**Elucidating the biosynthetic pathway for resiniferatoxin from *Euphorbia resinifera*** Jason O. Matos, Colin Y. Kim, Ido Dinnar, Jennifer Sherk, Jing-Ke Weng
P70	**Substrate multiplexed protein engineering facilitates promiscuous biocatalytic synthesis** Allwin D. McDonald, Peyton M. Higgins, Andrew R. Buller
P71	**L-enduracididine biosynthesis from a toxic cyanobacteria: mechanistic investigation of a unique PLP-dependent cyclase** Jennifer L. Cordoza, Linnea R. Blaustein, Shaun M. K. McKinnie
P72	**Questions of reaction specificity in the hydroxylating and desaturating L-Arg oxidases** Trevor R. Melkonian, Nemanja Vuksanovic, Nicholas R. Silvaggi
P73	**The radical-S-adenosylmethionine enzyme, HnrB, catalyzes the formation of a His-Arg cyclophane on the precursor peptide, HnrA** Aigera Mendauletova, John Latham

POSTERS

P74	**3,4-Dihydroxy-2-butanone-4-phosphate synthase (RibB) of riboflavin biosynthesis uses an unusual fragmentation model** Nikola Kenjic, Kathleen M. Meneely, Graham R. Moran, Audrey L. Lamb
P75	**Complete reconstitution of narbonolide by BioBrick-like PKS module assembly in *E. coli*** Takeshi Miyazawa, Adrian T. Keatinge-Clay
P76	**A remarkable suicide enzyme in thiamin pyrimidine biosynthesis in yeast** Anushree Mondal, Rung-Yi Lai, Dmytro Fedoseyenko, Nitai Giri, Tadhg P. Begley
P77	**Mechanistic investigation of copper-dependent peptide cyclases** Lisa S. Mydy, Roland D. Kersten
P78	**In vitro biosynthesis of diverse pyridine-based macrocyclic peptides by a two-site recognition pathway** Dinh T. Nguyen, Tung T. Le, Andrew J. Rice, Graham A. Hudson, Douglas A. Mitchell, Wilfred A. van der Donk
P79	**Structural basis of the stereoselective formation of the spirooxindole ring in the biosynthesis of citrinadins** Zhiwen Liu, Fanglong Zhao, Xue Gao (as presented by Qiuyue Nie)
P80	**Discovery of enzymatic Alder-ene reaction and origins of catalytic selectivity** Masao Ohashi, Cooper S. Jamieson, Yujuan Cai, Thomas B. Kakule, Jiahai Zhou, Kendall N. Houk, Yi Tang
P81	**Thermodynamic analyses of flavoenzyme half-reactions pinpoints the alterations of reactivities of flavin and substrate by active sites** Bruce A. Palfey
P82	**Mechanistic study of a radical SAM GTP 3',8-cyclase MoaA in molybdenum cofactor biosynthetic pathway** Haoran Pang, Edward A. Lilla, Pan Zhang, Lindsey M. Walker, Du Zhang, Thomas P. Shields, Lincoln G. Scott, Weitao Yang, Alexey Silakov, Sean J. Elliott, Kenichi Yokoyama
P83	**Enzymatic-inhibitor activity characterization of MTAN through distinct mutants** Lauv Patel, Tripti Shukla, and Shanzhi Wang
P84	**Structure and properties of M379A mutant tyrosine phenol-lyase** Robert S. Phillips, Benjamin Jones, Sarah Nash
P85	**1,2,4-Triazine natural products: biosynthesis investigations and genome mining of an interesting structural class of compounds** Khaled H. Almabruk, Michael K. Fenwick, Savannah F. Justen, Brenda T. Shaffer, Qing Yang, James Cherry, Joyce E. Loper, Tadhg Begley, Steven E. Ealick, Benjamin Philmus
P86	**A synthesis of techniques for the discovery of novel radical SAM chemistry** Timothy Precord, Douglas Mitchell
P87	**Bioinformatics-guided expansion and discovery of graspetides** Sangeetha Ramesh, Xiaorui Guo, Adam J. DiCaprio, Ashley M. De Lio, Lonnie A. Harris, Bryce L. Kille, Taras V. Pogorelov, Douglas A. Mitchell
P88	**Engineering the pikromycin synthase using updated module boundaries** Katherine Ray, Joshua Lutgens, Ramesh Bista, Melissa Hirsch, Jie Zhang, Takeshi Miyazawa, Ronak Desai, Adrian Keatinge-Clay
P89	**Mechanistic understanding of a formal [4+2]-heterocyclase involved in pyritide biosynthesis** Andrew J. Rice, Jarrett M. Pelton, Albert A. Bowers, Douglas A. Mitchell
P90	**Computational insights into C-riboside biosynthesis** Nigel G. J. Richards, James J. P. Stewart, Wenbo Li, Sisi Gao, Ashish Radadiya, James H. Naismith

POSTERS

P91	**Functional characterization of enzymes required for biosynthesis of the glucuronamide moiety found in the capsular polysaccharide of *Campylobacter jejuni*** Alexander S. Riegert, Frank M. Raushel
P92	**On-going kinetic studies of 2,4'-dihydroxyacetophenone dioxygenase (DAD)** Kenneth M. Roberts, Faith A. Oladejo
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