

# POSTER SESSION 1

**Sunday, July 20**  
**Exhibit Hall**

## Poster Setup

Saturday, July 19 4:00 PM - 5:00 PM

## Poster Viewing Times

Saturday, July 19 5:00 PM - 9:00 PM

Sunday, July 20 7:30 AM - 6:00 PM

## Author Presentations 1:00 PM - 3:00 PM

Odd Boards 1:00 PM - 2:00 PM

Even Boards 2:00 PM - 3:00 PM

## Poster Removal

Sunday, July 20 6:00 PM - 6:30 PM

***IMPORTANT: Please remove posters promptly at 6:00 PM so authors for the next session can place their posters on the Board. We are not responsible for lost poster boards.***

<b>Sessions</b>	<b>Board Numbers</b>
Amyloids and Protein Misfolding .....	B1 – B21
Applications of Mass Spectrometry to Biological Problems .....	B22 – B30
Biochemistry and Structure of Channels .....	B31
Bioinformatics, Genomics, Proteomics .....	B32 – B40
Chromatography and Protein Purification .....	B41 – B50
Computational Biology .....	B51 – B58
Enzyme Kinetics and Mechanism .....	B59 – B65
Intracellular Trafficking and Secretion .....	B66 – B67
Membrane Proteins .....	B68 – B74
Molecular Machines: Function and Assembly .....	B75 – B80
New and Developing Methods .....	B81 – B90
Peptide Biochemistry and Protein-Peptide Interactions .....	B91 – B96
Post-translation Modification of Proteins .....	B97 – B105
Protein Design and Protein Engineering .....	B106 – B127
Protein Dynamics: Theory and Experiment .....	B128 – B135
Protein Folding: General Aspects .....	B136 – B145
Protein-Nucleic Acid Interactions .....	B146 – B153
Protein-Protein and Protein-Ligand Interactions .....	B154 – B169
Proteins as Drugs .....	B170 – B174
Single Molecule Studies .....	B175

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## Amyloids and Protein Misfolding

- 45 B1 **Aptamers Selected against Monomeric A $\beta$ 40 Recognize Other Amyloid Proteins** J. Summers, F. Rahimi, K. Murakami and G. Bitan. David Geffen Sch. of Med. at UCLA.
- 46 B2 **Limited Proteolysis of Lipid-Bound and Lipid-Free Apolipoprotein A-I Implicates the Lipid-Free State in Amyloidogenesis** S. Hilt, L. Roberts, J. Lagerstedt, M. Oda and J. Voss. California State Univ.-Sacramento, Göteborg Univ., Sweden, Children's Hosp. Oakland Res. Inst., CA and Univ. of California-Davis.
- 47 B3 **Peptide Nanostructure: Characterization, Controlled Assembly and Patterning** L. Adler-Abramovich and E. Gazit. Tel Aviv Univ.
- 48 B4 **A Potential Novel Compound for the Treatment of Alzheimer's Disease** A. Marom Frydman, M. Recther, I. Shefler, Y. Bram, D. E. Shalev and E. Gazit. Tel Aviv Univ. and Hebrew Univ. of Jerusalem.
- 49 B5 **Hitting the Trifecta: Single Mutation Restores Dimer Interface and Protein Stability and Delays Fibril Formation in an Amyloidogenic Protein** E. Baden, E. Randles, A. Aboagye, J. Thompson and M. Ramirez-Alvarado. Col. of Med., Mayo Clin.
- 50 B6 **A Specific Proline Switch as a Generic Mechanism in  $\beta_2$ m Amyloid Assembly** T. Eichner and S. E. Radford. Univ. of Leeds, U.K.
- 51 B7 **Overcoming the Conformational Barrier to Oligomerization in Beta-2 Microglobulin** M. Calabrese, C. Eakin, J. Wang and A. Miranker. Yale Univ.
- 52 B8 **Identifying the Determinants of Amyloid Formation: Characterization of Immunoglobulin Light Chain AL-103 Restorative Mutants** D. Rommelfanger, D. Martin, A. Aboagye, E. Randles, E. Baden and M. Ramirez-Alvarado. Mayo Clin. Col. of Med.
- 53 B9 **Structural Characterization of Fibrillar and Non-fibrillar Assemblies of PrP(106-126)** P. Walsh, K. Simonetti and S. Sharpe. Hosp. for Sick Children and Univ. of Toronto.
- 54 B10 **Peptide-Based Amyloid Aggregation Mitigation Inhibitors** C. Bett, J. Ngunjiri, M. Etienne, J. Garno and R. Hammer. LSU.
- 55 B11 **Effect of Ca<sup>2+</sup> Ions on the Formation of Amyloid  $\beta$ -Peptide Oligomers, Toxic Assemblies Associated with Alzheimer's Disease** A. Itkin, B. Bechinger, J-M. Ruysschaert and V. Raussens. Univ. Libre of Brussels and Univ. Louis Pasteur, Strasbourg.
- 56 B12 **Comparing the Fibril Formation Properties of Two Amyloidogenic Light Chain Proteins** D. Martin and M. Ramirez-Alvarado. Col. of Med., Mayo Clin.
- 57 B13 **Cryo-EM Structure of Amyloid Fibrils from Alzheimer's A $\beta$ (1-42) Peptide** R. Zhang, X. Hu, H. Khant, S. Ludtke, M. Schmid, J-M. Lee and W. Chiu. Baylor Col. of Med. and Washington Univ. in St. Louis.

- 58 B14 **Uncovering Order in Disorder: Exploring the Structural Heterogeneity of Elastin-Like and Amyloid-Like Peptides** S. Rauscher and R. Pomès. Univ. of Toronto and Hosp. for Sick Children.
- 59 B15 **Architecture of Sup35p Prion Filaments: The M-Domain Forms a Retractable Linker Connecting the Globular C-Domain to an Amyloid Fibril of Polymerized N-Domains** U. Baxa, N. Cheng, M. N. Simon, J. S. Wall and A. C. Steven. NIAMS, NIH and Brookhaven Natl. Lab.
- 60 B16 **Initiating Events in Superoxide Dismutase Fibrillation** M. Chattopadhyay, A. Durazo, S. H. Sohn, E. Gralla, C. Strong, J. Whitelegge and J. Valentine. UCLA, LG Electronics, Seoul and Cornell Col., IA.
- 61 B17 **Dramatic Enhancement of Lysozyme Fibrillogenesis by ATP** D. Morshedi, M. Nemat-Gorgani, A. Ebrahim-Habibi, A. Ghasemi and M. Sabbaghian. Univ. of Tehran and Natl. Res. Ctr. for Genet. Engin. and Biotechnol., Tehran and Stanford Univ.
- 62 B18 **Investigation of Conformational Change of Glutamate Dehydrogenase in the Presence of TFE.** M. Sabbaghian, M. Nemat-Gorgani, A. Ebrahim-Habibi, D. Morshedi, A. Ghasemi and H. Ramshini. Univ. of Tehran, Stanford Univ. and Natl. Inst. of Genetic Engin. and Biotechnol., Tehran.
- 63 B19 **Role of the Oligopeptide Repeat Domain of Sup35p in Prion Maintenance** J. Toombs and E. Ross. Colorado State Univ.
- 64 B20 **Zinc-Deficient Monomers Are Well-Populated Cu,Zn Superoxide Dismutase Unfolding Intermediates: Implications for Amyotrophic Lateral Sclerosis Pathogenesis** V. Mulligan, A. Kerman, S. Ho and A. Chakrabarty. Univ. of Toronto.
- 65 B21 **Chimeric Proteins As Models to Study the Mechanism of Aggregation Associated with Polyglutamine Expansions** N. Scarafone, P. Filée, M. Galleni, A. Matagne and M. Dumoulin. Univ. de Liège, Belgium.

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## Applications of Mass Spectrometry to Biological Problems

- 66 B22 **Identification of Outer Membrane Proteins of *Ornithobacterium rhinotracheale*** M. Zimmerli and L. Tabatabai. Iowa State Univ. and USDA, Ames.
- 67 B23 **Proteins to Peptides in Under an Hour: An Optimised Protein Digestion Protocol** M. Hibbs, M. Smyth, S. Jain, B. Hawkins and A. Theobald. GlaxoSmithKline, Harlow, U.K.
- 68 B24 **Tyrosine Phosphoproteomic Analysis of FGF7 (Keratinocyte Growth Factor) Signaling** Y. Luo, C. Yang and W. McKeenan. Texas A&M Hlth.Sci. Ctr.

- 69 B25 **Developing a Strategy for LC/MS Analysis of Glycopeptides Using  $\alpha$ 1-Acid Glycoprotein (AAG)** M. Ivancic, H. Gadgil, B. Halsall and M. Treuheit. Amgen Inc., Seattle and Univ. of Cincinnati.
- 70 B26 **Structural Separations by Ion Mobility-Mass Spectrometry: New Prospects for Complex Biological Systems** J. McLean, L. Fenn, M. Kliman, R. Gant, T. Kerr, S. Sundarapandian, A. Mahsut and J. Enders. Vanderbilt Univ.
- 71 B27 **Subtle Conformational Changes of the *Escherichia coli* Ribosomal Stalk Complex Probed by H/D Exchange ESMS** S. Deroo, Y. Gordiyenko, H. Videler and C. Robinson. Cambridge Univ.
- 72 B28 **HSP 18.1 from *Pisum sativum* Probed by MS/MS and ESMS Reveals Polydisperse Substrate Binding Behaviour** F. Stengel, A-J. Painter, N. Jaya, E. Basha, E. Vierling, C. Robinson and J. Benesch. Univ. of Cambridge and Univ. of Arizona.
- 73 B29 **The Surface Layer Proteome of the Archaeon *Methanosarcina mazei*** D. Leon-Rossell, P. Boonthung, U. Kim, J. A. Loo, R. P. Gunsalus and R. R. Ogorzalek Loo. UCLA and UCLA Sch. of Med.
- 74 B30 **High Throughput Quantitative Proteomics Reveals Age-Dependent Alterations in the Immune Response of Mice.** H. Smallwood, D. Lopez-Ferrer, D. Culley, L. Pasa-Tolic and T. Squier. Pacific Northwest Natl. Lab., Richland, WA.

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## Biochemistry and Structure of Channels

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- 75 B31 **Discovery and Mechanistic Study of Delta Subunit-Specific Modulators of GABA(A) Receptors** R. W. Lewis, J. Mabry, J. G. Polisar, B. Ganem and G. P. Hess. Cornell Univ.

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## Bioinformatics, Genomics, Proteomics

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- 76 B32 **Effective Mining of the Protein Data Bank** P. Rose, W. Townsend-Merino, W. Bluhm, J. Mulvaney, L. Xie, P. Bourne and H. Berman. UCSD and Rutgers, The State Univ. of New Jersey, Piscataway.
- 77 B33 **Midi-Scale Protein Sample Preparation for High Throughput Biophysical Characterization** R. Xiao, T. B. Acton, H. Janjua, M. Jiang, L. Mao, K. Hamilton, A. Reznikov, M. Maglaqui and G. T. Montelione. Rutgers Univ., Piscataway.
- 78 B34 **POOL: A New Machine Learning Methodology with Application to Functional Site Prediction in Proteins** M. J. Ondrechen, W. Tong and R. J. Williams. Northeastern Univ.

- 79 B35 **Comparative Proteomic Analysis of Expressed Proteins by *Helicobacter pylori* Under Oxidative Stress from Clinical Strains Isolated from Patients of Gastric Cancer and Duodenal Ulcer** T. S-H. Chiou, C-H. Huang, M-H. Chuang and M-S. Wu. Natl. Taiwan Univ. and Inst. of Biol. Chem., Acad. Sinica and Natl. Taiwan Univ. Hosp., Taipei.
- 80 B36 **CPSARST: An Efficient Circular Permutation Search Tool Applied to the Detection of Novel Protein Structural Relationships** P-C. Lyu and W-C. Lo. Natl. Tsing Hua Univ., Taiwan.
- 81 B37 **Studies on Hydrogenase Gene Clusters in *Thermococcus onnurineus* NA1 by Genome Analysis** H. S. Lee, S. G. Kang, J. K. Lim, S-J. Kim and J-H. Lee. KORDI, Ansan, South Korea.
- 82 B38 **Analysis of Reactive Cysteine Sites in Protein Sequence and Structure** M. B. Ward, W. H. Turckett, Jr., F. R. Salsbury, Jr., S. T. Knutson, A. W. Tsang, B. Center, C. M. Furdui, L. B. Poole and J. S. Fetrow. Wake Forest Univ. and Wake Forest Univ. Sch. of Med.
- 83 B39 **MolProbit: A Web Server for Validating Protein and Nucleic Acid Structures** V. Chen, I. Davis, J. Headd, D. Richardson and J. Richardson. Duke Univ. and Univ. of Washington.
- 84 B40 **Non-canonical Amino Acids in Proteome Analysis** J. Ngo and D. Tirrell. Caltech.

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## Chromatography and Protein Purification

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- 85 B41 **Purification of Tag-Free Recombinant Proteins Using the Profinity eXact™ Fusion-Tag System** L. Li, X. He, D. Yee, L. Woo, S. Petersen, M. Nguyen and W. Strong. Bio-Rad Labs., Hercules, CA.
- 86 B42 **Activation of c-Jun N-Terminal Kinase 3 by Mitogen-Activated Protein Kinase Kinase 4 and 7** Y. Wen, Y. Liu, K. Malakian, R. Kriz, M. Fennell, L. Resnick, M. Stahl and L. Lin. Wyeth Res.
- 87 B43 **Evaluation of PKA As a Structure Surrogate for PKC Theta** A. Killeen, R. Czerwinski, K. Malakian, A. Smith, Y. Liu, L. Mosyak, K. Svenson, M. Johnson, M. Siegel, D. Chaudhary, N. Brooijmans, R. Kriz, M. Stahl, L. Lin and Y. Wen. Wyeth, Cambridge, MA and Pearl River, NY.
- 88 B44 **Purification and Characterization of Recombinant  $\gamma$ Tryptase Expressed in Mammalian and Insect Cells** A. S.P. Tam, E. Presman, M. Cullivan, M. Siegel, M. Fleming, N. Wood, K. Kelleher, X. Zhong, R. Kriz, M. Stahl and L. Lin. Wyeth, Cambridge, MA and Pearl River, NY.
- 89 B45 **Purification and Characterization of NIMA-Related Kinase 2** M. Z.K. Tam-Suri, W. Duan, Y. Liu, G. Jin, M. Johnson, K. Parris, K. Kelleher, R. Kriz, M. Stahl, L. Lin and Y. Wen. Wyeth, Cambridge, MA and Pearl River, NY.

- 90 B46 **Characteristics of New Short Gel Filtration Columns** A. Heijbel, I. Salomonson, J. Zou, M. Carlsson and F. Lundstrom. GE Healthcare, Uppsala, Sweden.
- 91 B47 **A New Column Format for Process Development** A. Heijbel, M. Fasth, A. Karlsson, S. Lindqvist, R. Kurt-Fuentes and K. Stenklo. GE Healthcare, Uppsala, Sweden.
- 92 B48 **Structure-Function of Amoebiasin: A Natural Inhibitor of Cysteine Proteases** L. Casados and L. Brieba. Cinvestav, Irapuato, Mexico.
- 93 B49 **Chaparral Infusion (*Larrea tridentata*) Exhibits Haemagglutinating Activity** B. Fenton Navarro, R. Martínez Jardón, A. Vázquez Hernández, M. Carranza Salas, M. Luna Munoz, C. Arámburo de la Hoz and R. Arreguin Espinosa. Fac. of Med., UMSNH, Morelia, Natl. Med. Ctr. Siglo XXI, IMSS, Mexico City, UNAM-Juriquilla and UNAM, Mexico City.
- 94 B50 **Isolation and Purification of Histidine-Rich Metal Binding Protein from Chironomidae Larvae** I. K.W. Chong and J. W. Ho. The Chinese Univ. of Hong Kong.

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## Computational Biology

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- 95 B51 **Identification of Molecular Dynamics Using Raman Spectroscopy and Elastic Network-Based Modal Analysis** M. Kim, M-W. Hu, S. Raj and B. Kim. Sch. of Mech. Engin., Sungkyunkwan Univ., South Korea and Univ. of Massachusetts Amherst.
- 96 B52 **Predicting the Binding Specificity of Domain-Peptide Interactions** W. Wang. UCSD.
- 97 B53 **Generalized-Ensemble Simulations of a Peptide System** A. Mitsutake and Y. Okamoto. Keio Univ. and Nagoya Univ., Japan.
- 98 B54 **Structural-Thermodynamic Properties of Homologous Proteins** J. Wrabl and V. Hilser. Univ. of Texas Med. Branch.
- 99 B55 **Beyond Linus Pauling: Conformation Dependence of Ideal Geometry in Proteins** D. Berkholz, M. Shapovalov, R. Dunbrack, Jr. and P. A. Karplus. Oregon State Univ. and Fox Chase Cancer Ctr.
- 100 B56 **P-Found GRID: A Global Resource for Protein Folding and Unfolding Simulations** C. Silva, N. Loureiro-Ferreira, J. Brito, M. Swain, W. Dubitzky and R. M.M. Brito. Univ. of Coimbra, Portugal, Critical Software SA, Coimbra and Sch. of Biomed. Sci., Univ. of Ulster, U.K.
- 101 B57 **Key Residues in an Essential RNA Editing Ligase Anchor dsRNA to the Protein Surface and Facilitate dsRNA Ligation** J. Durrant, R. Amaro, R. Swift and J. A. McCammon. UCSD.
- 102 B58 **Conformational Isomerization of the mRNA Capping Enzyme** R. Swift and J. A. McCammon. UCSD.

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## Enzyme Kinetics and Mechanism

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- 103 B59 **Site-Directed Mutagenesis Study of the Role of Ser252 of *Saccharomyces cerevisiae* Phosphoenolpyruvate Carboxykinase in Catalysis** E. Cardemil, D. Castillo, A. Herrera, M. Vivero and A. M. Jabalquinto. Univ. of Santiago, Chile.
- 104 B60 **Toward Accurate Prediction of Natural Substrates: Family-Based Protease Specificity Profiling** B. Ratnikov, P. Cieplak, J. Pierce, A. Eroshkin, S. Shiryaev, A. Strongin and J. Smith. Burnham Inst. for Med. Res., La Jolla.
- 105 B61 **Enhancement of Phosphotriesterase Stereoselectivity by Directed Evolution** P-C. Tsai, Y. Li, Y. Fan, Y-Q. Gao and F. M. Raushel. Texas A&M Univ.
- 106 B62 **Activation Profiles and Regulatory Cascades of the Human Kallikrein-Related Peptidases** H. Yoon, G. Laxmikanthan, J. Lee, S. Blaber, A. Rodriguez, J. Kogot and M. Blaber. Florida State Univ.
- 107 B63 **Towards Understanding the Effects of Ionic Liquids on a Flavocytochrome Activity** S. Y. Lee, J. H. Han, Y-G. Kim and S. Lee. Sungkyunkwan Univ., South Korea.
- 108 B64 **Role of K226, E53 and Y61 in the Reaction Catalyzed by *Bacillus stearothermophilus* Serine Hydroxymethyltransferase** S. Bhavani, V. Rajaram, P. Kaul, V. Prakash, N. Appaji Rao, M.R.N. Murthy and H.S. Savithri. C.F.T.R.I, Mysore, India and Indian Inst. of Sci., Bangalore.
- 109 B65 **The Autolytic Regulation of Human Kallikrein-Related Peptidase 6 Is Negative Feedback Inhibition** S. Blaber, H. Yoon, I. Scarisbrick, M. Juliano and M. Blaber. Florida State Univ., Mayo Clin. and Fed. Univ. of Sao Paulo.

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## Intracellular Trafficking and Secretion

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- 110 B66 **Structural Biochemistry of SRP/ Receptor Assembly and Activation** D. Freymann, P. Focia and J. Coon V. Northwestern Univ.
- 111 B67 **Signal Peptide Interactions with the Functionally Active and Open Form of SecA** J. L. Maki and L. M. Gierasch. Univ. of Massachusetts Amherst.

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## Membrane Proteins

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- 112 B68 **Synthesis and Evaluation of in Vitro Aldose Reductase Inhibitory Activity of Some Novel 3'-Flavonyl-2,4-Thiazolidinedione-N-3-Acetic Acid Compounds** N. Das-Evcimen and O. Bozdog-Dundar. Ankara Univ., Turkey.

- 113 B69 **Structural and Functional Studies of the Rhomboid Intramembrane Peptidase from *H. influenzae*** M. J. Lemieux, J. Lamoureux, M. Mak, S. Fischer, J. K. Rainey, T. Reddy and M. James. Univ. of Alberta and Dalhousie Univ., Canada.
- 114 B70 **Characterization of DAD1: A Subunit of Human Oligosaccharyltransferase** B. Sayania and S. Mohanty. Auburn Univ.
- 115 B71 **Evidence Supports a Two-Faced Helix Model for Oligomerization of the Bacterial Small Multidrug Resistance Protein Hsmr** B. Poulsen, A. Rath and C. M. Deber. Univ. of Toronto and Hosp. for Sick Children.
- 116 B72 **Overexpression, Purification and Characterization of the C-Terminal Domain of Stt3p, a Subunit of Yeast Oligosaccharyl Transferase** C. Huang and S. Mohanty. Auburn Univ.
- 117 B73 **Cell-Free Study of Yop Membrane Protein Complexes Solubilized in Nanolipoprotein Particles** J. Cappuccio, C. Blanchette, E. Arroyo, T. Sulchek, B. Segelke, B. Chromy, P. Hoeprich and M. Coleman. Lawrence Livermore Natl. Lab.
- 118 B74 **Site-Directed Mutagenesis of Microsomal Prostaglandin E Synthase-1: NMR Characterization of the Role of Y117 in Glutathione Activation** R. Davis and K-H. Ruan. Univ. of Texas-Hosuton and Univ. of Houston.

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## Molecular Machines: Function and Assembly

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- 119 B75 **Allostery in Signaling through MAP2Ks** E. Goldsmith, X. Min, R. Akella and J. Humphreys. Univ Texas Southwestern Med Ctr. and Amgen Inc.
- 120 B76 **Activation of GTP Hydrolysis and Its Coupling to Ribosomal Translocation by Bacterial Translation Factor EF-G** K. Wilson, R. Nechifor, M. Muarataliev, B. Nguyen and M. Desrosiers. Univ. of Alberta.
- 121 B77 **Yeast Rpl12p Affects the Translation of a Selected Group of mRNAs** M. Tam and G-H. Young. Inst. of Molec. Biol., Acad. Sinica, Taipei.
- 122 B78 **Structure of the Motor Subunit and Translocation Model for EcoR124I Restriction-Modification Complex** M. Lapkouski, S. Panjekar, P. Janscak, I. Kuta-Smatanova, J. Carey, R. Ettrich and E. Csefalvay. Inst. of Syst. Biol. and Ecol., Acad. of Sci. of Czech Republic, Univ. of South Bohemia, Czech Republic, EMBL Hamburg, Univ. of Zürich and Princeton Univ.
- 123 B79 **Deoxycytidylate Deaminase: Beyond a Simple Case of Protein Assembly and Disassembly** X. Wu, S. Ye, L. Wei, W. Yan and Z. Rao. Med. Sch., Tsinghua Univ., China.
- 124 B80 **The Allosteric Role of Light Chains in the Assembly of the Cargo Attachment Complex of Cytoplasmic Dynein** J. Hall and E. Barbar. Oregon State Univ.

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## New and Developing Methods

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- 125 B81 **Development of Efficient Methods for Chemoselective Modification of Cysteine-Containing Peptides and Proteins in Aqueous Medium** H. Y.F. Shiu, M. K. Wong and C. M. Che. Univ. of Hong Kong.
- 126 B82 **N-Terminal Modification of Peptides and Proteins Using an Alkyne-Linked Ketene** O-Y. Chan, M. K. Wong and C. M. Che. Univ. of Hong Kong, China.
- 127 B83 **Protein Folding Shape Alignment — New Approach for Protein Structural Comparison** J. Yang. MicrotechNano, Indianapolis.
- 128 B84 **Development of Transition Metal Catalysis for Selective Modification of Peptides and Proteins** M. K. Wong, W. K. Chan, C. M. Ho and C. M. Che. The Hong Kong Polytech Univ. and Univ. of Hong Kong.
- 129 B85 **Toxic Protein Cloning and Expression** C. Li. Expression Technologies Inc., San Diego.
- 130 B86 **The SoloVPE (Variable Pathlength Extension), a Powerful New Approach for Biological Spectroscopy** D. McCaslin, I-T. Shih and M. Salerno. Univ. of Wisconsin-Madison and C Technologies Inc., Bridgewater, NJ.
- 131 B87 **Protein Identification with Sub-micron Spatial Resolution** R. Rakhit, K. Hadley and A. Chakrabarty. Univ. of Toronto.
- 132 B88 **Probing Intracellular Osmolyte Concentrations in PC12 Cell Models Using NMR Spectroscopy** W. Elam, V. Hilser and D. Bolen. Univ. of Texas Med. Branch.
- 133 B89 **Fluorescence of Intracellular 1-Anilino-8-Naphthalenesulfonate Reports on Protein Folding Status in Living Cells and Model Organisms** K. C. Hadley, M. J. Borrelli, J. R. Lepock, A. S. Manoukian and A. Chakrabarty. Univ. of Toronto and Univ. of Arkansas for Med. Sci.
- 134 B90 **Demonstration of an Oxidative Protein Surface Mapping Method Using Electrochemically-Generated Hydroxyl Radicals to Probe Higher Order Structure** C. McClintock, S. Dai, V. Kertesz and R. Hettich. UT-ORNL Genome Sci. & Technol. Prog. and Oak Ridge Natl. Lab.

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## Peptide Biochemistry and Protein-Peptide Interactions

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- 135 B91 **Interactions of Disulfide-Deficient Analogs of Mu-Conotoxin KIIIA with Voltage-Gated Sodium Channels: Stability-Activity Relationships** T. Han, M. Zhang, A. Walewska, D. Yoshikami, B. Olivera and G. Bulaj. Univ. of Utah.
- 136 B92 **Characterization of Interactions for High-Affinity S100-Binding Peptide Hybrid Molecules by NMR Spectroscopy** A. Rezvanpour, J. M. Phillips and G. S. Shaw. Univ. of Western Ontario.

- 137 B93 **Reversing the Specificity of Miniature Protein Ligands for EVH1 Domains** J. Holtzman and A. Schepartz. Yale Univ.
- 138 B94 **Chemical and Genetic Wrappers for Improved Molecular Display** J. Lamboy, P. Tam, L. Lee, P. Jackson, S. Avrantinis and G. Weiss. Univ. of California-Irvine.
- 139 B95 **Neutrophil Priming with Transmembrane Peptides Derived from Formyl Peptide Receptor Subtypes** D. Sugiyama, S. Osada, I. Fujita, Y. Hamasaki and H. Kodama. Saga Univ., Japan.
- 140 B96 **Structural Studies of an Environmentally Sensitive Peptide Analog Bound to Class II Major Histocompatibility Complex** T. Nguyen, P. Venkatraman, M. Sainlos, O. Bilsel, S. Chitta, B. Imperiali and L. Stern. Univ. of Massachusetts Med. Sch. and MIT.

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## Post-translation Modification of Proteins

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- 141 B97 **Predicting Reversibly Oxidized Cysteine Thiols from Protein Structures** J. Momand, R. Sanchez, M. Riddle and J. Woo. California State Univ.-Los Angeles.
- 142 B98 **Characterization of Tissue Protein Palmitoylation with Thiol-Ester Affinity Chromatography and Protein Mass Spectrometry** T. Bonacci, R. Higgs, M. Knierman, J. Hale, J. Gutierrez and D. Bredt. Eli Lilly and Co., Greenfield and Indianapolis.
- 143 B99 **Mechanism of PKA Phosphorylation by PDK1: A Chimeric Active Site Model** A. Kornev, R. Romano and S. Taylor. HHMI and UCSD.
- 144 B100 **Biosynthesis of Folded Cyclotides Inside Living Bacterial Cells: A Convenient Route for Generation of Genetically-Encoded Cyclotide-Based Libraries** J. Camarero and J. Austin. Lawrence Livermore Natl. Lab.
- 145 B101 **Several HIV Protease Inhibitors Inhibit the Metalloprotease ZmpSte24 and Lead to Prelamin A Accumulation in Cells** S. Hudon, C. Coffinier, E. Farber, C. Nobumori, R. Lee, J. Miner, L. Fong, S. Young and C. Hrycyna. Purdue Univ., UCLA David Geffen Sch. of Med. and Washington Univ. Sch. of Med.
- 146 B102 **Isoprenylcysteine Carboxyl Methyltransferase As a Molecular Target for Cancer Chemotherapeutics** H. Hodges-Loaiza, J. Donelson, J. Song, R. Gibbs and C. Hrycyna. Purdue Univ.
- 147 B103 **Influence of Bis-Histidyl Coordination on Covalent Heme Adduct Formation in the 2/2 Hemoglobin from *Synechocystis* sp. PCC 6803** H. Nothnagel and J. Lecomte. Johns Hopkins Univ.
- 148 B104 **Exploiting the Substrate Tolerance of Farnesyltransferase for Site-Selective Protein Derivatization** U. Nguyen, Z. Guo, J. Gomis, H. Waldmann, R. S. Goody and K. Alexandrov. Max Planck Inst. for Molec. Physiol., Dortmund.

- 149 B105 **Validation of Small, Unannotated Open Reading Frames As Encoded Substrates for Microcin B17-Like Thiazole/Oxazole Synthetase Complexes** A. Markley, D. Mitchell, S. Lee and J. Dixon. UCSD and HHMI, Chevy Chase, MD.

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## Protein Design and Protein Engineering

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- 150 B106 **Cassette Mutagenesis via Yeast Homologous Recombination** N. Pirakitikulr, P. Peralta Yahya and V. Cornish. Columbia Univ.
- 151 B107 **Co-expression of  $\alpha$ - and Circularly Permuted  $\beta$ -Globins Yields a Heterodimer That Exhibits Biphasic Ligand Binding Kinetics** A. Asmundson, A. van der Walde, D. Lin and S. Anthony-Cahill. Western Washington Univ.
- 152 B108 **The Hybrid Protein BlaPChBD As a Versatile Tool to Study Protein/Ligand Interactions** M. Vandevenne, P. Filée, G. Gaspard, N. Yilmaz, F. Giannotta, J.-M. Frère and M. Galleni. Univ. de Liège and ProGenesis s.a., Liège, Belgium.
- 153 B109 **Characterization and Optimization of a Chemical Complementation Selection for Directed Enzyme Evolution** L. Wingler and V. Cornish. Columbia Univ.
- 154 B110 **Cyanovirin-N Oligomers Show Enhanced HIV Neutralization** J. R. Keeffe, J. Yong, P. Peiris and S. L. Mayo. Caltech.
- 155 B111 **Developing a High Throughput Functional Screen for Nerve Agent Catalytic Butyrylcholinesterase Variants** N. Barakat, M. Macdonald, K. Okolotowicz, B. Wang, J. Cashman and J. Zhang. Human BioMolecular Res. Inst., San Diego.
- 156 B112 **Deciphering the T1 Site in Azurin by Incorporation of Nonproteinogenic Amino Acids** K. Clark, W. van der Donk and Y. Lu. Univ. of Illinois at Champaign-Urbana.
- 157 B113 **Design and Characterization of an Allosteric Switch Based on Mutually Exclusive Folding** K. Hart, T. Young and S. Marqusee. Univ. of California, Berkeley.
- 158 B114 **Engineering Interleukin-2 for Potent Stimulation of T-Cell Growth and Function** S. Gai, E. Higham, J. Chen and K. D. Wittrup. MIT.
- 159 B115 **A Novel Tetrameric DsRed Variant for Use in Whole-Cell Imaging** R. Strack, D. Strongin, D. Bhattacharyya, W. Tao, A. Berman, H. Broxmeyer, R. Keenan and B. Glick. Univ. of Chicago and Indiana Univ. Sch. of Med.

- 160 B116 **Directed Evolution of a Protein Container via Encapsulation of a Toxic Enzyme** B. Wörsdörfer, K. Woycechowsky and D. Hilvert. ETH Zurich.
- 161 B117 **Aglycosylated IgG Variants That Engage Activating Fc Receptors** S. Sazinsky, R. Ott, N. Silver, B. Tidor, J. Ravetch and K. D. Wittrup. MIT and Rockefeller Univ.
- 162 B118 **Designing the World's Shortest Gene** V. Patsalo, D. Papamichail, S. S. Skiena and D. Green. Stony Brook Univ. and Univ. of Miami.
- 163 B119 **Computational Design and Experimental Validation of Thermophilic Proteins** J. Feng and G. Marshall. Washington Univ. in St. Louis.
- 164 B120 **Modifying the Spectral Properties of a Red Fluorescent Protein** R. A. Chica, B. D. Allen and S. L. Mayo. Caltech.
- 165 B121 **Increasing the Throughput of Protein Stability Determination** A. Nisthal, B. D. Allen and S. L. Mayo. Caltech.
- 166 B122 **Crystallographic Confirmation of an Inactive Computationally Designed Enzyme Active Site** H. Privett, L. Thomas and S. L. Mayo. Caltech.
- 167 B123 **Engineering a Fragment of the Hepatocyte Growth Factor as a Met Receptor Antagonist** D. Jones II and J. Cochran. Stanford Univ.
- 168 B124 **The Plasticity of Surface Residues in Engrailed Homeodomain** S. Mayo and C. Vizcarra. Caltech.
- 169 B125 **A Calcium-Sensing Switch Based on Alternate Frame Protein Folding** M. M. Stratton, D. M. Mitrea and S. N. Loh. SUNY Upstate Med. Univ.
- 170 B126 **Identification of Substrates with Improved Cleavage Kinetics for Membrane Type-1 Matrix Metalloproteinase Using Cellular Libraries of Peptide Substrates** A. Jabaiah, K. Boulware and P. Daugherty. Univ. of California-Santa Barbara and Caltech.
- 171 B127 **Regulation of Toxic Enzymes through a Novel Alternate Frame Folding Mechanism** D. M. Mitrea, L. Wood and S. N. Loh. SUNY Upstate Med. Univ.

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## Protein Dynamics: Theory and Experiment

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- 172 B128 **Residual Structure within the Disordered C-Terminal Segment of p21(Waf1/Cip1/Sdi1) and Its Implications for Molecular Recognition** V. Venkatachalam, M-K. Yoon, A. Huang, J. Chou and C. Stultz. MIT, Korea Adv. Inst. of Sci. and Technol., Daejeon and Harvard Med. Sch.
- 173 B129 **Surface Electrostatic Contributions to Thermodynamic Stability of Hyperthermophilic Protein *Thermococcus celer* L30e** T. H. Yu, C. F. Lee and K. B. Wong. The Chinese Univ. of Hong Kong.

- 174 B130 **Large Domain Motions on Molecular Dynamics Simulations of Periplasmic Binding Proteins** D. Silva-Manzano, L. Domínguez-Ramírez and A. Sosa-Peinado. Fac. of Med., UNAM, Mexico City.
- 175 B131 **Denaturant and Osmolyte Effects on the Stabilities and Structures of Unfolded States of Proteins Are Accurately Predicted Using the Molecular Transfer Model** E. O'Brien, G. Ziv, G. Haran, B. Brooks and D. Thirumalai. Univ. of Maryland College Park, NHLBI, NIH and Weizmann Inst., Rehovot.
- 176 B132 **Charge-Charge Interactions Contribute More to Protein Stability at High Temperature** C. H. Chan and K. B. Wong. The Chinese Univ. of Hong Kong.
- 177 B133 **A Molecular Dynamics Study of the Effect of 2,2,2-Trifluoroethanol on  $\kappa$ -Hefutoxin1 and Its Three Mutant Forms** M. Ghobeh and M. Amininasab. Univ. Col. of Sci., Univ. of Tehran.
- 178 B134 **Backbone and Side-Chain Dynamics of RNase H in Theory and Experiment** N. Trbovic, J. Cho, M. Rance and A. Palmer. Columbia Univ. and Univ. of Cincinnati.
- 179 B135 **Protein Dynamics Studies Give Insight Into the Evolution of a Thioredoxin Homolog** A. Hall, P. A. Karplus, L. Poole and E. Barbar. Oregon State Univ. and Wake Forest Univ. Sch. of Med.

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## Protein Folding: General Aspects

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- 180 B136 **Structural Isoforms of an IgG2 Monoclonal Antibody Exhibit Differences in Their Biochemical and Biophysical Stability** L. Jones, J. Kim, L. Taylor, S. Coulibaly and B. Bailey. Amgen, Seattle.
- 181 B137 **Intrinsic Disorder within the Cholera Toxin Enzymatic Domain Links Retrotranslocation to Activation** G. Legge. Univ. of Houston.
- 182 B138 **Chaperone Co-expression to Improve Soluble Recombinant Protein Kinase Production in *Escherichia coli*** A. Haacke, M. Geiser, G. Fendrich and P. Ramage. Novartis Insts. for BioMed. Res., Basel.
- 183 B139 **Folding and Secretion of the *E. coli* Pet Autotransporter** J. Renn, M. Junker and P. Clark. Univ. of Notre Dame.
- 184 B140 **Unfolded Monomeric Intermediates Upon Cold and Heat Denaturation of the Dimeric Phosphofructokinase-2 from *E. coli*** J. Babul, M. Baez and C. Wilson. Univ. of Chile.
- 185 B141 **Structural Insights into the ATP-Driven Mechanism of Hsp70 Chaperone Activity** Q. Liu and W. Hendrickson. Columbia Univ.
- 186 B142 **Thermal Denaturation of Ubiquitin Monitored by Pressure Perturbation Calorimetry** G. Rayan and A. Tsamaloukas. Univ. of Toronto.

- 187 B143 **Switching Open and Close of a Subdomain in Collagen Triple Helix** Y. Xu, K. Xu, I. Abramova, M. Kirchner and I. Nowak. Hunter Col. of CUNY.
- 188 B144 **Loss of Protein Function in Vivo Resulting from the Introduction of Short Aggregation-Prone Nonpolar Amino Acid Sequences** W. Ingram and M. Cordes. Univ. of Arizona.
- 189 B145 **On the Volume Change of Beta-Lactoglobulin Dimerization** R. L. Belote and P. C. Kahn. Rutgers Univ.

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## Protein-Nucleic Acid Interactions

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- 190 B146 **Expression of Recombinant Mitochondrial RNA Polymerase from *Trypanosoma cruzi*** A. Zarate and L. Briebe. Cinvestav Campus Guanajuato, Mexico.
- 191 B147 **Biochemical Characterization of a DNA Ligase I from *Entamoeba histolytica*** C. Cardona and L. Briebe. Cinvestav, Irapuato, Mexico.
- 192 B148 **Structure of the SARS Coronavirus Nucleocapsid Protein RNA-Binding Dimerization Domain Suggests a Mechanism for Helical Packaging of Viral RNA** T-H. Huang, C. Chang, C-Y. Chen, C-D. Hsiao and S-C. Sue. Inst. of Biomed. Sci. and Inst. of Molec. Biol., Acad. Sinica, Taipei.
- 193 B149 **Kinetic Mechanism for Single Stranded DNA Binding and Translocation by *S. cerevisiae* ISW2** C. Fischer and D. Fitzgerald. Univ. of Kansas and RedBiotec, Schlieren, Switzerland.
- 194 B150 **Reassembly of the Z-DNA Binding Protein from Two Subdomains Assisted by Antiparallel Leucine Zippers** H. J. Park, S. Lee and Y-G. Kim. Sungkyunkwan Univ., South Korea.
- 195 B151 **Cooperativity, Crosslinking and Supercoiling in the Interaction of AGT with DNA** M. Fried, C. Adams and M. Melikishvili. Univ. of Kentucky.
- 196 B152 **Tandem Nuclease Domains Work Together in Tudor-SN to Capture RNA in RNA Editing and Interference** H. S. Yuan, C-L. Li and W-C. Chu. Inst. of Molec. Biol., Acad. Sinica, Taipei and Yang Ming Univ., Taiwan.
- 197 B153 **Characterization of the Ferric Uptake Regulator from Various Bacterial Species** S. Herskovic, J. Schneider, J. Becherer and S. Mills. Univ. of San Diego.

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## Protein-Protein and Protein-Ligand Interactions

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- 198 B154 **Energy Landscape of Single Molecule Flexible Protein-Protein Recognition** J. Wang. SUNY at Stony Brook.

- 199 B155 **pH-Dependent Regulation of the Structural and Functional Properties of Human Prolactin** M. Hodsdon, M. C. Tettamanzi and C. Keeler. Yale Univ.
- 200 B156 **Structural and Biochemical Characterization of the Tight-Binding SHV-1: BLIPE73M Mutant Complex** M. Hanes, K. Reynolds, A. Antczak, J. Berger, R. Bonomo, J. Kirsch and T. Handel. Sch. of Pharm., UCSD, Univ. of California, Berkeley and Louis Stokes VA Med. Ctr., Cleveland.
- 201 B157 **The Growth Inhibitor TOE1 Interacts with p53 and Modulates Its Transactivation** I. de Belle, M. Latterich and S. Sperandio. CHUL, Quebec and Univ. of Montreal Fac. of Pharm.
- 202 B158 **A General Method for Systems-Level Mapping of Protein-Protein Interactions and Topologies** J. Bruce, H. Zhang, X. Tang, G. Munske, N. Tolic and G. Anderson. Washington State Univ. and Pacific Northwest Natl. Lab., Richland, WA.
- 203 B159 **On the Roll of the Hinge Region of the LAO-Binding Protein in the Affinity for Its Ligands** A. Sosa-Peinado and A. Viguera-Ceballos. UNAM Fac. of Med., Mexico City.
- 204 B160 **Intrinsically Disordered Proteins Do Not Necessarily Fold on Their Interacting Partners** A. Sigalov, W. Kim, M. Andersson, V. Orekhov and L. Stern. Univ. of Massachusetts Med. Sch. and Göteborg Univ., Sweden.
- 205 B161 **Binding Site Determination of Endogenous Neurosteroids to the GluR2 S1S2 Domain: Analysis by Hydrogen/Deuterium Exchange Mass Spectrometry** R. Raabe and L. Gentile. Univ. of Richmond.
- 206 B162 **Using Protein Dynamics As a Proxy for Conformational Entropy** J. Wand, M. Marlow, K. Frederick and K. Valentine. Univ. of Pennsylvania.
- 207 B163 **Structural Correlation on Alpha Spectrin Isoform Subunit Association Affinity at the Tetramerization Region** L. Fung, C. Antoniou, Q. Li and Y. Song. Univ. of Illinois at Chicago.
- 208 B164 **Characterization of the 800 kDa Macromolecular eIF3 Complex Using Ion Mobility Mass Spectrometry** J. Leary, M. Schenauer, A. Andaya and R. Stefanescu. Univ. of California-Davis.
- 209 B165 **Analyses of Mlc-IIBGlc Interaction and a Plausible Molecular Mechanism of Mlc Inactivation by Membrane Sequestration** S-S. Cha. KORDI, Ansan, South Korea.
- 210 B166 **Ultra-High Resolution X-Ray Crystallography in Molecular Docking** Y. Chen and B. Shoichet. UCSF.
- 211 B167 **Tubulin Binding Competition between Porphyrins and Well-Characterized Ligands** J. Belcher, S. Sansone and L. Brancalione. Univ. of Texas at San Antonio.
- 212 B168 **The Binding of Presenilin to Nicastrin in the Gamma Secretase Complex** M. Rocha, C. Franko and L. Gentile. Univ. of Richmond.

213 B169 **Differential Regulation of the NMDA NR2 Subunit by Endogenous Neurosteroids** M. Pham, J. Kim and L. Gentile. Univ. of Richmond.

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## Proteins as Drugs

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214 B170 **Activation of Inhibitors by Sortase Triggers Irreversible Modification of the Active Site** R. Wu, A. W. Maresso, J. W. Kern, R. Zhang, D. M. Missiakas, M. E. Duban, O. Schneewind and A. Joachimiak. Argonne Natl. Lab., Univ. of Chicago and Chicago State Univ.

215 B171 **Influence of Phospholipid Headgroup on the Conformation of a Pro-apoptotic Peptide That Targets Adipose Tissue for Destruction** B. Salzameda, C. Sandoval and L. Plesniak. Univ. of San Diego and Univ. of Colorado at Boulder.

216 B172 **The CNGRC Motif for Targeting Tumor Vasculature for Apoptosis** E. Regan, C. Sandoval and L. Plesniak. Univ. of San Diego and Univ. of Colorado at Boulder.

217 B173 **Selective Biosynthesis of a Vascular Protector, Prostacyclin in Therapeutic Cells Using Newly Engineered Enzyme** A. Mohite, S-P. So, T. Ly Le, C. Wijaya and K-H. Ruan. Univ. of Houston Col. of Pharm.

218 B174 **Trojan Peptides: A New Class of Polypharmacologic Compounds** J. G. Rodriguez Plaza, A. Villalon Rojas and G. Del Rio. UNAM, Mexico City.

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## Single Molecule Studies

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219 B175 **Probing Residual Structure in Denatured Proteins by Single Molecule FRET and Mutation** M. Jager, S. Yao, E. Nir, O. Bakajin and S. Weiss. UCLA and Lawrence Livermore Natl. Lab.

# Poster Session 2

Monday, July 21

Exhibit Hall

## Poster Setup

Sunday, July 20 6:30 PM - 7:00 PM

## Poster Viewing Times

Sunday, July 20 7:00 PM - 9:00 PM

Monday, July 21 7:30 AM - 6:00 PM

## Author Presentations 1:00 PM - 3:00 PM

Odd Boards 1:00 PM - 2:00 PM

Even Boards 2:00 PM - 3:00 PM

## Poster Removal

Monday, July 21 6:00 PM - 6:30 PM

***IMPORTANT: Please remove posters promptly at 6:00 PM so authors for the next session can place their posters on the Board. We are not responsible for lost poster boards.***

Sessions	Board Numbers
Amyloids and Protein Misfolding .....	B1 – B13
Applications of Mass Spectrometry to Biological Problems .....	B14 – B22
Bioinformatics, Genomics, Proteomics .....	B23 – B32
Chromatography and Protein Purification .....	B33 – B43
Enzyme Kinetics and Mechanism .....	B44 – B50
Imaging/Biosensors .....	B51 - B55
Peptide Biochemistry and Protein-Peptide Interactions .....	B56 – B61
Protein Dynamics: Theory and Experiment .....	B62– B69
Protein Folding: General Aspects .....	B70 – B79
Protein Folding: Mechanisms .....	B80 – B85
Protein Networks .....	B86 – B91
Protein-Nucleic Acid Interactions .....	B92 – B99
Protein Structure Prediction .....	B100 - B102
Protein Structure/Function Studies .....	B103 – B142
Protein-Based Biomaterials .....	B143 – B144
Protein-Protein and Protein-Ligand Interactions .....	B145 – B162
Receptors, Signaling and Signal Transduction .....	B163 – B174
Therapeutic Protein Formulation and Process Development .....	B175 – B179

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## Amyloids and Protein Misfolding

- 220 B1 **Polyglutamine Aggregation Studied by Small-Angle Neutron Scattering** C. Stanley and V. Berthelier. Oak Ridge Natl. Lab. and Grad. Sch. of Med., Univ. of Tennessee Med. Ctr.
- 221 B2 **A Protective Role for Lipid Raft Cholesterol against Amyloid-Induced Membrane Damage in Human Neuroblastoma Cells** C. Cecchi, A. Pensalfini, G. Liguri, C. Bernacchioni, A. Relini, D. Nichino, A. Gliozzi and M. Stefani. Univ. of Florence and Univ. of Genoa.
- 222 B3 **A Novel Evaluation Scheme for Antiprion Activity: Application to in Silico Screening** H. Nakamura, J. Hosokawa-Muto, Y. O. Kamatari and K. Kuwata. Gifu Univ., Japan.
- 223 B4 **Membrane Insertion Mode of Prion Protein Regulated by Disulfide Bond** J. Shin, J. Y. Shin and D-H. Kweon. Sungkyunkwan Univ., South Korea.
- 224 B5 **Elucidation of Amyloid  $\beta$ -Protein Oligomerization Pathway in Alzheimer's Disease** E. Pang, M. Condron, C. Rosensweig, R. O. Loo, J. A. Loo and D. Teplow. UCLA and David Geffen Sch. of Med. at UCLA.
- 225 B6 **A Kinetic Study of the Aggregation of Human- $\gamma$ C-Crystallin** S. Petty, A. Trojanowski, D. Goulet, Y. Wang and J. King. Col. of the Holy Cross, MA and MIT.
- 226 B7 **Oligomeric Intermediates in the Aggregation of Cu,Zn Superoxide Dismutase** I. Senal and J. Cohlberg. California State Univ.-Long Beach.
- 227 B8 **Specific Oligomeric Assemblies of Amyloid  $\beta$ -Peptide Formed by Interaction with Anionic Phospholipids.** R. Sarroukh, E. Cerf, J-M. Ruyschaert and V. Raussens. Univ. Libre of Brussels.
- 228 B9 **Molecular Approaches for Immunotherapy and -Diagnosis of Alzheimer's Disease Based on Epitope-Specific Serum Anti- $\beta$ -Amyloid Antibodies** M. Przybylski, R. Stefanescu, M. Manea, I. Perdivara, C. Cozma, A. Moise and G. Paraschiv. Univ. of Konstanz, Germany.
- 229 B10 **A Mechanism for Preventing Prion Diseases Revealed by NMR- and Fluorescence Spectroscopy of a PrP:scF<sub>v</sub> Complex** S. Schwarzinger, C. Mangels, P. Weigelmeier, K. Schweimer and P. Roesch. Univ. Bayreuth, Germany.
- 230 B11 **Hydrogen-Deuterium Exchange Deep UV Resonance Raman Spectroscopy for Structural Characterization of Amyloid Fibril Core** I. Lednev, M. Xu and V. Shahsilov. Univ. at Albany, SUNY.
- 231 B12 **Designing a Protein Based Inhibitor of Amyloid  $\beta$  Fibrils** A. Apte and J. Love. San Diego State Univ.
- 232 B13 **The  $\beta$ -Sheet Breaker Peptides Inhibit Fibrillation and Reduce Neurotoxicity of  $\alpha$ -Synuclein** H. Im, Y-S. Kim and H-J. Koo. Sejong Univ., South Korea.

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## Applications of Mass Spectrometry to Biological Problems

- 233 B14 **A Study of the Assembly and Disassembly Pathways of Non-covalent Homo-oligomer Complexes Using Ion Mobility Mass Spectrometry** E. Boeri Erba, T. Pukala and C. Robinson. Univ. of Cambridge.
- 234 B15 **Mass Spectrometry Reveals the Stoichiometry of Multimeric Membrane Complexes** N. Barrera and C. Robinson. Univ. of Cambridge.
- 235 B16 **Data Annotation Workflows Applied to the Characterization of Human Cerebrospinal Fluid** R. G. Biringir, Z. Hao, M. G. Harrington and A. F.R. Hühmer. Thermo Fisher Scientific, San Jose and Huntington Med. Res. Insts., Pasadena.
- 236 B17 **Rapid and Robust Chip-Based Nano-LC/MS Analysis of Recombinant Monoclonal Antibodies** D. Lin and H. Liu. Agilent Technologies Inc. and Genentech.
- 237 B18 **Investigation of the Structure and Connectivity of the Anaphase-Promoting Complex** J. McLean and K. Gould. HHMI and Vanderbilt Univ. Sch. of Med.
- 238 B19 **Determining Presence of Low-Abundance Microorganisms in Mixed Populations Using Proteome Equalization Technology** C. Van Sant, A. Ngunjiri, B. Cargile, J. Bundy and M. Bunger. RTI International, Research Triangle Park.
- 239 B20 **Screening for ATP-Citrate Lyase Inhibitors Using Mass Spectrometry** E. Peterson, K. Morgenstern, B. Grubinska, W. LaMarr and C. Ozbal. Amgen Inc., Cambridge, MA and Biotrove Inc., Woburn, MA.
- 240 B21 **Membrane Proteomic Profiling of CML and AML Tumor Cells Via Lipid-Based Protein Immobilization Technology** N. Padliya, X. Zhang, L. Kang, V. Voskinarian-Berse, M. Heidarani, M. Bhatia, W. Hofgartner and R. Hariri. Celgene Cellular Therapeutics, Warren, NJ.
- 241 B22 **Characterizing Native Folds of Homologous Large Size Proteins with Differential Labeling and High Performance MS** S. Dai, C. McClintock and R. Hettich. Oak Ridge Natl. Lab.

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## Bioinformatics, Genomics, Proteomics

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- 242 B23 **Discovery of a Widely Distributed Toxin Biosynthetic Gene Cluster** D. Mitchell, S. Lee, A. Markley, M. Hensler, M. Pence, V. Nizet and J. Dixon. UCSD and Skaggs Sch. of Pharm. and Pharmaceut. Sci., UCSD.
- 243 B24 **Cloning of Sarco/Endoplasmic Reticulum Type Calcium ATPase (SERCA2) from Malaria Mosquito *Anopheles gambiae*** A. Mandal, S. Chakraborty, T. Fleming, R. Flowers, P. Mandal, E. Meleshkevitch and D. Boudko. Edward Waters Col., Mountain State Univ. and Rosalind Franklin Univ. of Med. and Sci.
- 244 B25 **Analysis of the Membranome of Breast Cancer Cell Lines by Comparative Shotgun Proteomics Identifies Tumor-Associated Antigens** L. Stansberry, E. Durr, M. Miller, T. Toner, D. Nahas, J. Joyce and L. Schultz. Merck & Co.
- 245 B26 **A Rapid and Robust Dye-Metal Based Colorimetric Protein Assay** B. Antharavally, A. Mallia, P. Rangaraj, B. Benton, P. Haney and P. Bell. Thermo Fisher Scientific, Rockford, IL.
- 246 B27 **New DyLight™ Fluorescent Dyes for Protein Labeling and Immunoassay Procedures** B. Dworecki, S. Desai, M. Stanaitis, K. Albers, S. Shiflett and P. Bell. Thermo Fisher Scientific, Rockford, IL.
- 247 B28 **Determining Components of Mixed Populations Using Stable Isotope Labeling Proteomics** A. Ngunjiri, B. Cargile, J. Bundy and M. Bunger. RTI International, Durham, NC.
- 248 B29 **Complete Model of Human Telomerase Reverse Transcriptase (TERT): Large-Scale Modeling of Protein Interactions** M. Kurcinski, A. Kloczkowski, A. Kolinski and R. Jernigan. Iowa State Univ. and Univ. of Warsaw.
- 249 B30 **Automated Method for Finding Expressed Proteins from Novel or Incorrectly Annotated Genes Using Mass Spectrometry** R. Day, T. Fridman, N. Verberkmoes, L. Hauser, D. Hyatt and A. Gorin. Oak Ridge Natl. Lab. and Joint Inst. for Computational Sci.
- 250 B31 **Correlation between Amino Acid Preferences and Patterns of Residue Packing in Globular Proteins** K. Tomii. Natl. Inst. of Adv. Indust. Sci. and Technol., Koto-ku, Japan.
- 251 B32 **Proteogenomics of Human Gut Microbiome** R. Hettich, A. Russell, N. VerBerkmoes, M. Shah and M. Rosenquist. Oak Ridge Natl. Lab and Swedish Univ. of Agr. Sci., Uppsala.

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## Chromatography and Protein Purification

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- 252 B33 **Extracellular Secretion and Purification of the ER Microsomal Enzyme H6PDH and Implication for Physical Interaction with 11β-HSD1** W. Stochaj, X. Zhong, Y-L. Zhang, Z. Gjoka, Y. Li, J. Tobin, D. Erbe, V. Suri, R. Kriz and M. Stahl. Wyeth Res., Cambridge, MA.
- 253 B34 **Characterization and Monitoring of Partial Molecules Present in Antibodies Using Non-reduced Capillary Electrophoresis Sodium Dodecyl Sulfate** L. Taylor, J. Kim, L. Jones and B. Bailey. Amgen Inc., Seattle.
- 254 B35 **Simple Purification of MBP- and Strep(II)-Tagged Proteins** A. Karlsson, M. Carlsson and A. Heijbel. Protein Separations, Uppsala, Sweden.
- 255 B36 **Automated Purification of Dual-Tagged Proteins** T. Granér, A. Andersson, A. Bergh, M. Carlsson, I. Erlandsson, J. Flensburg, M. Galin, A. Jonsson, A. Karlsson, S. Nyholm-Westin and J. Simon. GE Healthcare, Uppsala, Sweden.
- 256 B37 **Ultra-Fast Separations of Peptides and Proteins Using Large Pore, Sub-Two Micron Columns** R. Nguyen, S. Anderson and I. Chappell. Grace Davison Discovery Sci., Hesperia, CA and Carnforth, UK.
- 257 B38 **Vydac MS RP-HPLC Columns Provide Unique Selectivity and High Recovery for Peptide and Protein Separations** R. Nguyen and I. Clark. Grace Davison Discovery Sci., Hesperia, CA.
- 258 B39 **Parallel Enrichment of Histidine-Tagged and GST-Tagged Proteins from Crude Extracts** M. Fath, E. Willmann, J. Lundqvist, H. Hedlund, R. Bhikhabhai and L. Haneskog. GE Healthcare, Uppsala, Sweden and Tecan Schweiz AG, Männedorf, Switzerland.
- 259 B40 **Rapid Affinity Isolation of Tag-Free Recombinant Proteins Directly from Bacterial Lysate Using an Automated Chromatography System** J. Siino, A. Harbers, S. Petersen and M. Urban. Bio-Rad Labs. Inc., Hercules, CA.
- 260 B41 **High Performance SEC Columns for Protein Analysis** K. Tseng and Y. Okada. Shodex, New York and Showa Denko, KK, Kawasaki, Japan.
- 261 B42 **Production of E1, E2 and E3 Proteins for the Ubiquitin-Ligase Screening Platform** H. Chen, J. Tang, L. Epstein, P. Andrews and P. Rose. Amgen Inc., Cambridge, MA.
- 262 B43 **Novel Protein Purification System and Expression Strains** G. Larson, V. Dhodda, E. Steinmetz, S. Hermanson, D. Mead, K. Jefferson, T. Meyer and P. Brumm. Lucigen Inc., Middletown, WI and Neoclone, Madison, WI.

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## Enzyme Kinetics and Mechanism

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- 263 B44 **Controlling Catalysis-Associated Conformational Changes in GlmU for Structure-Based Drug Discovery** I. Mochalkin. Pfizer Inc.
- 264 B45 **Phosphoprotein Phosphatase Activity of Bacterial Phytase appA2** A. Ullah, K. Sethumadhavan and E. Mullaney. USDA, New Orleans.
- 265 B46 **Characterizing the Ability of Factor XIIIa to Bind and React with Glutamine-Containing Peptide Substrates Based on the  $\alpha$ 2-Antiplasmin Sequence** P. Doiphode, D. Cleary and M. Maurer. Univ. of Louisville.
- 266 B47 **Examining the Effects of Introducing Fibrinogen A $\alpha$  Character into the Factor XIII Activation Peptide Sequence** M. Jadhav, G. Isetti, T. Trumbo and M. Maurer. Univ. of Louisville.
- 267 B48 **Assessment of Substrate Binding with a Semi-active Mutant of Rice BGLu1** J. Ketudat Cairns and W. Chuenchor. Schs. of Chem. and Biochem., Suranaree Univ. of Technol., Thailand.
- 268 B49 **Biochemical Characterization of Recombinant Hepatitis C Virus Non-structural Protein 4B** A. A. Thompson, A. Zou, J. Yan, R. Duggal, W. Hao, D. Molina, C. N. Cronin and P. A. Wells. Pfizer Inc., San Diego.
- 269 B50 **Interaction of Catalytically Inactive Acetylcholinesterase Mutants with Trifluoroacetophenone Transition State Analogue** N. Barakat, Z. Radic and P. Taylor. Skaggs Sch. of Pharm. and Pharmaceut. Sci., UCSD.

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## Imaging/Biosensors

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- 270 B51 **Live Cell Imaging of Protein Domain Conformations and Association Using Fluorescent Small-Molecule Dyes** R. Dexter, D. Fried, N. Luedtke and A. Schepartz. Yale Univ.
- 271 B52 **A Bacterial Band-Pass Filter for Enzymatic Activity — Bacterial Growth Patterning** T. Sohka, R. Heins, R. Phelan, J. Greisler, C. Townsend and M. Ostermeier. Johns Hopkins Univ.
- 272 B53 **Covalent Tags for in Vivo Protein Labeling** S. Gallagher and V. Cornish. Columbia Univ.
- 273 B54 **Surface Recognition and Fluorescence Sensing of Histone by Dansyl-Appended Artificial Receptors** O. Hayashida and N. Ogawa. Kyushu Univ. and PRESTO JST, Tokyo.
- 274 B55 **Crystal Structure of an Extremely Thermostable Cholesterol Oxidase from a Mesophilic Organism** A. Ohtaki, K. Newton, N. Doukyu and M. Sagermann. Univ. of California-Santa Barbara and Toyo Univ., Japan.

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## Peptide Biochemistry and Protein-Peptide Interactions

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- 275 B56 **Biosynthesis and Characterization of Fluorinated Histone Acetyltransferases** J. Montclare, N. Voloshchuk and A. Zhu. Polytech Univ., Brooklyn and SUNY Downstate Med. Ctr.
- 276 B57 **Characterization of the Fe65 and APP Interaction** M. Mulvihill, M. Guttman and E. Komives. UCSD.
- 277 B58 **Ion-Channel Formation of Peptides with Electrostatic Interhelical Interactions** H. Kodama, J. Taira, T. Suga, S. Osada and M. Jelokhani-Niaraki. Saga Univ., Japan and Wilfrid Laurier Univ., Canada.
- 278 B59 **Rapid Production of a Protease-Directed Peptide Library** K. Olson, K. Huber and J. A. Hardy. Univ. of Massachusetts Amherst.
- 279 B60 **A Study of the Stability of Noncovalent Complexes by Ion Mobility Mass Spectrometry** A. Woods, S. Jackson, T. Egan and J. A. Schultz. NIDA, NIH, Baltimore and Ionwerks Inc., Houston.
- 280 B61 **Prediction and Validation of Novel A-Kinase Anchoring Proteins** W. McLaughlin, T. Hou, S. Taylor and W. Wang. UCSD and HHMI.

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## Protein Dynamics: Theory and Experiment

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- 281 B62 **Allosteric Activation of Hexameric Arginine Repressor: A Molecular Dynamics Study** R. Ettrich, R. Strawn, M. Melicherik, T. Stockner and J. Carey. Inst. of Syst. Biol. and Ecol., Acad. of Sci. of Czech Republic, Univ. of South Bohemia, Czech Republic, Princeton Univ. and Austrian Res. Ctrs. GmbH, Seibersdorf.
- 282 B63 **Molecular Allostery in DNA Mismatch Recognition by MutS and Homologs** M. Feig, S. Mukherjee and S. Law. Michigan State Univ.
- 283 B64 **Evolution of Enzyme Fold: Linking Protein Dynamics and Catalysis** P. Agarwal. Oak Ridge Natl. Lab.
- 284 B65 **Normal Mode Analysis Explains Breathing Motion of Proteins Observed by Wide Angle X-Ray Solution Scattering** L. Makowski and S. Park. Argonne Natl. Lab., IL.
- 285 B66 **The Low-Lying Excited States: From Identification to Drug Discovery** Y. O. Kamatari and K. Kuwata. Gifu Univ., Japan.
- 286 B67 **Backbone Dynamics Studies of Circularly Permuted Myoglobins** L. Dettinger, J. Hall, A. Fielder and S. Anthony-Cahill. Western Washington Univ.

- 287 B68 **Characterizing Intrinsically Disordered FG-Nucleoporins Using Molecular Dynamics** J. Phillips, S. Newsam, E. Y. Lau, V. V. Krishnan, M. Rexach and M. Colvin. Schs. of Engin. and Natural Sci., Univ. of California-Merced, Lawrence Livermore Natl. Lab., Univ. of California-Davis, California State Univ.-Fresno and Univ. of California-Santa Cruz.
- 288 B69 **Finding Local Disorder in the Native State Ensemble of Adenylate Kinase** T. Schrank, D. Bolen and V. Hilser. Univ. of Texas Med. Branch.

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## Protein Folding: General Aspects

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- 289 B70 **Membrane Protein Folding: Mutation-Sensitive Conformations of an Extracellular Loop in CFTR** V. Nadeau, M. Glibowicka and C. M. Deber. Univ. of Toronto and Hosp. for Sick Children.
- 290 B71 **pKa Value Determination of Fragments As a Model for the Unfolded State of Protein GB1** S. Lindman, M. Bauer and S. Linse. Lund Univ., Sweden.
- 291 B72 **Off-Pathway Folding Intermediates: A Common Feature in the Folding Landscape of CheY-Like Proteins** S. V. Kathuria, R. D. Hills, Jr., L. A. Wallace, C. L. Brooks III and C. R. Matthews. UMass Med Sch., The Scripps Res. Inst. and Univ. of Michigan.
- 292 B73 **A Twin Basin Folding Funnel in GFP** B. Andrews, S. Gosavi, J. Finke, J. Onuchic and P. Jennings. UCSD and Oakland Univ., MI.
- 293 B74 **Spatial Confinement and Segmental Motions of a Ribosome-Bound Nascent Protein** J. Ellis, P. Culviner and S. Cavagnero. Univ. of Wisconsin-Madison.
- 294 B75 **Analysis of the Conformational Stability and Structure of a Moderately Thermophilic Ribonuclease H1 from *C. tepidum*: Comparison with Thermophilic and Mesophilic Homologs** K. Ratcliff and S. Marqusee. Univ. of California, Berkeley.
- 295 B76 **Exploring IκBα Folding by Consensus Mutation** I. DeVries, D. Ferreira and E. Komives. UCSD.
- 296 B77 **Structural Features of Peptides Derived from Intrinsically Disordered Regions of Proteins** D. Landfried, R. Davis, R. Romesberg and J. Lecomte. Johns Hopkins Univ., American Univ. and Penn State.
- 297 B78 **Unleashing Protein Assembly by Truncation of Structural Gatekeepers** E. Haglund, K. Saraboji, J. Lind, M. Lindberg, L. Mäler, D. Logan and M. Oliveberg. Stockholm Univ. and Lund Univ., Sweden.
- 298 B79 **Absorbance at 230 nm: A Structural Probe for High-Throughput Determination of Protein Stability** P-F. Liu and C. Park. Purdue Univ.

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## Protein Folding: Mechanisms

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- 299 B80 **Using Kinetic Rules to Design Highly Specific Peptides Targeted at Activator Protein-1** J. Mason, U. Hagemann and K. Arndt. Univ. of Essex, U.K. and Univ. of Freiburg, Germany.
- 300 B81 **Folding Studies of Lysozyme from Bacteriophage Lambda** A. Di Paolo, D. Balbeur, C. Redfield and A. Matagne. Univ. of Liège, Belgium and Univ. of Oxford.
- 301 B82 **Partial Unfolding of the α2 Chain in Type I Collagen As a Mechanism for Collagen Degradation** P. Nerenberg and C. Stultz. MIT.
- 302 B83 **Configuration Entropy Modulates the Mechanical Stability of Protein GB1** H-C. Wang. Univ. of British Columbia.
- 303 B84 **Analysis of the Structure and Stability of the H2A-H2B Dimeric Folding Intermediate** P. Guyett and L. Gloss. Sch. of Molec. Biosci., Washington State Univ.
- 304 B85 **Mechanisms of Linear Repeat Protein Folding** L. Itzhaki, A. Lowe, R. Hutton, D. Serquera-Peyro, N. Werbeck, M. Tsytlonok, V. Chellamuthu and P. Rowling. Cambridge Univ.

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## Protein Networks

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- 305 B86 **Exploring Energy Landscapes of Cellular Networks** J. Wang. SUNY at Stony Brook.
- 306 B87 **Integrative Proteomic Analysis of Human Mitochondrial Protein Functional Network in Normal and Dysfunctional States** J. Jeon, J-S. Yang, J. Kim, H-J. Nam, S. Park, Y. Kim and S. Kim. POSTECH, Pohang and Kyung Hee Univ., South Korea.
- 307 B88 **How Do Reactive Metabolites Kill Cells? The Functional Proteomics of Xenobiotic Electrophiles** R. Hanzlik, Y. Koen and J. Fang. Univ. of Kansas.
- 308 B89 **The Database of Interacting Proteins** R. Nelson, L. Salwinski, S. Abbani, W. Yu and D. Eisenberg. UCLA.
- 309 B90 **Protein Folding Topology from Conformation Networks** S. Gnanakaran, E. Ravasz and Z. Toroczkai. Los Alamos Natl. Labs., Beth Israel Deaconess Med. Ctr., Harvard Med. Sch. and Univ. of Notre Dame.
- 310 B91 **Promiscuity and Specificity in a Designed Coiled-Coil Proteome** A. W. Reinke and A. E. Keating. MIT.

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## Protein-Nucleic Acid Interactions

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- 311 B92 **Single Strand DNA Sequence Recognition at Telomere Ends** C. Dy and M. Horvath. Univ. of Utah.
- 312 B93 **Determination of the Activation Energy for Intermolecular Protein Translocation between Specific Sites on Different DNA Molecules** D. Sahu and J. Iwahara. Univ. of Texas Med. Branch.
- 313 B94 **AGCT: A Geometrical Approach to DNA Substrate Modeling** F. Reza and J. Tian. Duke Univ.
- 314 B95 **Self-Association and Folding Properties of HIV-1 Rev Protein Mutants** M. Marenchino, D. Armbruster and M. Hennig. Med. Univ. of South Carolina.
- 315 B96 **Mutants of AGT That Affect DNA Binding Affinity and Cooperativity** C. Adams and M. Fried. Univ. of Kentucky.
- 316 B97 **Sequence- and Structure-Specific DNA Base-Flipping by AGT** M. Melikishvili and M. Fried. Univ. of Kentucky.
- 317 B98 **The Transition State of Protein-DNA Recognition** D. Ferreiro, I. Sanchez and G. de Prat Gay. Inst. Leloir, Buenos Aires.
- 318 B99 **Thermostabilization of D-Glucose/D-Galactose-Binding Protein** T. J. Amiss, D. B. Sherman and E. M. Gill. Becton Dickinson Technologies, Research Triangle Park and Univ. of Wisconsin-Madison.

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## Protein Structure Prediction

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- 319 B100 **Protein Secondary Structure Packing in Discretized Conformational Space** K-Z. Yue. Conformational Search Solutions, Palo Alto.
- 320 B101 **Structure of the N-Terminal Extracellular Loop of Arabinofuranosyltransferase from *Corynebacterium diphtheriae*, a Zn-Binding Strand-Swapped LNS Domain Dimer** C. Hatzos, K. Tan, J. Abdullah and A. Joachimiak. Argonne Natl. Lab., IL.
- 321 B102 **Simulations with Implicit and Explicit Solvent Dramatically Affect Near-Native Protein Structure Refinement** G. Chopra, C. Summa and M. Levitt. Stanford Univ. and Univ. of New Orleans.

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## Protein Structure/Function Studies

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- 322 B103 **Functional Domains Identification of Human Coronavirus 229E Nucleocapsid Protein** M-H. Hou. Chung-Hsing Univ., Taiwan.
- 323 B104 **The Structure of the S110C Mutant of C-C Bond Hydrolase MhpC** J. Burakorn, M. Montgomery, A. Coker, N. Wright, S. Wood and J. Cooper. Univ. of Southampton Sch. of Biol. Sci., U.K.

- 324 B105 **Towards a Structural Mechanism for H-NOX/Nitric Oxide Dependent Signal Transduction** W. K. Erbil. Univ. of California, Berkeley.
- 325 B106 **Biochemical and Functional Characterization of Proteins Involved in the Regulation of the Flowering-Time Gene, *FLC*** J. Risk, R. Macknight and C. Day. Univ. of Otago, New Zealand.
- 326 B107  **$\beta\gamma$ -Crystallins: A Universal Calcium-Binding Superfamily** P. Aravind, A. Mishra, S. K. Suman, Y. Sharma and R. Sankaranarayanan. Ctr. for Cellular and Molec. Biol., Hyderabad, India.
- 327 B108 **Mechanisms Regulating Function of the FMN Subdomain in Nitric Oxide Synthases** R. Ilagan, K. Aulak, C. Hemman, R. Hille and D. Stuehr. Cleveland Clin. Fndn., The Ohio State Univ. and Univ. of California-Riverside.
- 328 B109 **Copper Binding, Oxidation and Oxygen Reduction in the Multicopper Oxidase CueO** S. Singh, S. Franke, A. Weichsel, S. Roberts, C. Rensing and W. R. Montfort. Univ. of Arizona and Skidmore Col.
- 329 B110 **Significance of  $\alpha$ -Crystallin Heteropolymer with Respect to Its Molecular Chaperone Function** P. N.B.S. Srinivas, P. Y. Reddy, A. Narahari, M. J. Swamy and G. B. Reddy. Natl. Inst. of Nutr., Hyderabad and Univ. of Hyderabad, India.
- 330 B111 **Biophysical Properties Suggest Caspase-6 Is an Executioner Caspase** S. Vaidya, E. Velazquez and J. A. Hardy. Univ. of Massachusetts Amherst.
- 331 B112 **Towards a Structural Mechanism for H-NOX/Nitric Oxide-Dependent Signal Transduction** W. K. Erbil, M. S. Price, J. G. Pelton, D. E. Wemmer and M. A. Marletta. Univ. of California, Berkeley.
- 332 B113 **Determination of the Key Residues in the EP3 eLP2 That Interact with PGE2, Using Integrated Constrained Peptide and NMR Experiments** A. Chillar, J. Wu and K. H. Ruan. Col. of Pharm., Univ. of Houston.
- 333 B114 **Exploration of Specific Binding Site Residues for the UBA Domain of E2-25K Via NMR Spectroscopy** R. Wilson, J. Flatt, E. Meehan and P. Twigg. Univ. of Alabama in Huntsville.
- 334 B115 **Expression and Purification of Human Brain-Derived Neurotrophin Factor: Preparation of a <sup>13</sup>C/<sup>15</sup>N Labeled Sample for NMR Analysis** T. Vartanian and K. Crowhurst. California State Univ.-Northridge.
- 335 B116 **The Molecular Basis of Fragile X Syndrome: Structure of the KH1-KH2 Domains of the Fragile X Mental Retardation Protein** R. Valverde and L. Regan. Yale Univ.
- 336 B117 **NMR Spectroscopy Study of Structural and Dynamic Consequences of Ionization of Internal Groups in Proteins** M. Chimenti, C. Castaneda, D. Isom, A. Majumdar and B. Garcia-Moreno. Johns Hopkins Univ. and Duke Univ.
- 337 B118 **Structural Characterization of the PQBP-1 Active Site** A. Elliott, R. Wilson, E. Meehan and P. Twigg. Univ. of Alabama in Huntsville.

- 338 B119 **Structural Basis for the Specificity of Inositol Phosphate Kinase Inhibitors** V. Gosein and G. J. Miller. McGill Univ.
- 339 B120 **Heme-Assisted S-Nitrosation at the Proximal Cysteine in *Cimex* Nitrophorin** H. Badgandi, A. Weichsel, J. T. Hazzard, G. Tollin and W. R. Montfort. Univ. of Arizona.
- 340 B121 **Crystal Structure of the Human GINS Complex** H. S. Lim, J. M. Choi, W. J. Bae, Y. H. Cho, J. S. Kim and Y. Cho. POSTECH, South Korea.
- 341 B122 **Crystallographic Studies on HIV-1 Protease Inhibitors Designed for Irreversible Covalent Binding to Catalytic Aspartate Residues** F. Olajuyigbe, N. Demitri, S. Geremia, J. Ajele, J. Wuerges, L. Randaccio, P. Campaner and F. Benedetti. Univ. of Trieste, Italy and Fed. Univ. of Technol., Nigeria.
- 342 B123 **Biophysical Characterization of a PDZ Domain Containing Human Brain Protein** M. Banerjee and S. Mohanty. Auburn Univ.
- 343 B124 **Structure and Kinetics of S-Nitrosogluthathione Reductase from *Arabidopsis thaliana* and Humans** J. Crotty, M. Grieving, G. Wildner, U. Lee, S. Brettschneider, J. Brailey, A. Weichsel, E. Vierling and W. R. Montfort. Univ. of Arizona.
- 344 B125 **Cell-Mediated Fibronectin Unfolding** E. Gee, D. Ingber and C. Stultz. Harvard Univ., Children's Hosp. and Harvard Med. Sch. and MIT.
- 345 B126 **The Crystal Structures of Rice BGlul E176Q Mutant in Complexes with Oligosaccharides Reveal Substrate Recognition and Dynamics** W. Chuenchor, S. Pengthaisong, R. Robinson, J. Yuvaniyama and J. Ketudat Cairns. Schs. of Biochem. and Chem., Suranaree Univ. of Technol., Thailand, Inst. of Molec. and Cell Biol., Singapore and Mahidol Univ. Fac. of Sci., Thailand.
- 346 B127 **Bruno Protein Contains an Expanded RNA Recognition Motif** A. Lyon, B. Reveal, P. Macdonald and D. Hoffman. Univ. of Texas at Austin.
- 347 B128 **Understanding the Recognition of DNA by CSL: From Energetics to Structure** D. Friedmann and R. Kovall. Univ. of Cincinnati Col. of Med.
- 348 B129 **Anion Binding in Ni-SOD: Lessons from X-Ray Crystallography** A. I. Guce, R. Herbst, K. C. Ryan, M. J. Maroney and S. C. Garman. Univ. of Massachusetts Amherst.
- 349 B130 **Role of Caspase-7 L2' Loop in Active Site Formation and Allosteric Inhibition** W. Witkowski and J. A. Hardy. Univ. of Massachusetts Amherst.
- 350 B131 **Characterization of CSL-MINT Repression Complexes** D. Friedmann, Z. Yuan and R. Kovall. Univ. of Cincinnati Col. of Med.
- 351 B132 **NMR Characterization of the Hemoglobin from the Cyanobacterium *Synechococcus* sp. PCC 7002** M. Pond, D. Vuletich, C. Falzone and J. Lecomte. Johns Hopkins Univ. and Univ. of Alberta.
- 352 B133 **All 3 Domains of Cry1A Toxins Insert into Insect Brush Border Membranes** M. Nair and D. Dean. The Ohio State Univ.
- 353 B134 **The N-Terminal Precursor Region of Preinterleukin-1 $\beta$  Modulates the Activity of the Mature C-Terminal Region** K. Hailey, S. Li, M. Roy, V. Woods, Jr. and P. Jennings. UCSD.
- 354 B135 **A Novel Disulfide Bond in the SH2 Domain of the C-Terminal Src Kinase Controls Catalytic Activity** J. Mills, P. Whitford, J. Onuchic, J. Adams and P. Jennings. UCSD.
- 355 B136 **Crystal Structure of Spermidine/Spermine N1-Acetyltransferase in Complex with Spermine Provides Insights into Substrate Binding and Catalysis** E. Montemayor and D. Hoffman. Univ. of Texas at Austin.
- 356 B137 **Structural and Functional Studies of the Grb10/14 RA and PH Domains** R. Depetris, J. Wu and S. Hubbard. NYU.
- 357 B138 **Crystal Structure of TIGAR and Implications in Tumor Cell Metabolism Regulation** H. Li and G. Jogl. Brown Univ.
- 358 B139 **The N-Terminal Domain of *Escherichia coli* RecA Binds Double-Stranded DNA and Promotes Strand Exchange** C-D. Lee and T-F. Wang. Inst. of Biol. Chem., Acad. Sinica, Taipei.
- 359 B140 **Modification of  $\alpha$ -Chymotrypsin with Citraconic Anhydride: Changes in Structure and Stability** A. Ghasemi, M. Nemat-Gorgani, D. Morshedi, M. Sabbaghian, A. Ebrahim-Habibi, M. Evini and H. Ramshini. Univ. of Tehran, Stanford Univ. and Natl. Inst. of Genetic Engin. and Biotechnol., Tehran.
- 360 B141 **Assessment of P-Glycoprotein-Mediated Multidrug Resistance Reversal Activity of Newly Synthesized Dihydropyridines in Breast Cancer Cells Using Flow Cytometry** L. Bazargan, E. Azizi, A. Shafiee, M. Amini, L. Navidpour, S. Fouladdel and S. Karoubi. Fac. of Pharm., Tehran Univ. of Med. Sci. and Tehran Univ.
- 361 B142 **Structural Investigation of Topological Rearrangement in the Lipocalin Family** C. Roessler and M. Cordes. Univ. of Arizona.

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## Protein-Based Biomaterials

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- 362 B143 **Biologically Inspired Nanomanufacturing Using a Cu(II) ATPase** S. Jayakanthan, A. Muscat, M. Mansuripur and M. McEvoy. Univ. of Arizona.
- 363 B144 **Characterization of a dITPase from the Hyperthermophilic Archaeon *Thermococcus onnurineus* NA1 and Its Application in PCR Amplification** S. G. Kang, Y-J. Kim, Y-G. Ryu, H. S. Lee, Y. Cho and J-H. Lee. KORDI, Ansan and Sungkyunkwan Univ., South Korea.

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## Protein-Protein and Protein-Ligand Interactions

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- 364 B145 **Atomic Orientations in the Direct and Water Mediated Interactions** T. Z. Lwin and D. Bashford. St. Jude Children's Res. Hosp.
- 365 B146 **Virulence Factor Sortase A in *Staphylococcus aureus* Is a Dimeric Protein** J. Zhu, C. Lu, M. Standland and Z. Zhang. Univ. of Texas at Austin and Nanjing Univ., China.
- 366 B147 **In Vitro Studies of Interactions between Redox Enzyme Maturation Proteins and N-Terminal/Leader Peptides of Substrates for the *Escherichia coli* Twin-Arginine Translocation System** C. Chan, K. Rommens and R. Turner. Univ. of Calgary, Canada.
- 367 B148 **Characterizing the Effects of Ionic Strength on the Structures of Calcium-Free S100 Proteins** N. Marlatt, B. Boys, L. Konermann and G. S. Shaw. Univ. of Western Ontario.
- 368 B149 **Understanding and Enhancing Carbohydrate Binding by the Anti-viral Lectin Cyanovirin-N** Y. Fujimoto and D. Green. Stony Brook Univ.
- 369 B150 **Kinetic Analysis of the Effects of N-Glycans and the IgA1 Tailpiece on IgA1- Fc $\alpha$ RI Interactions** M. Gomes and A. Herr. Univ. of Cincinnati.
- 370 B151 **Crystal Structures of an Anthrax Neutralizing Antibody Family, and of Protective Antigen Domain 4 Complexed with a High Affinity Neutralizing Antibody** C. Leysath, A. Monzingo, J. Maynard, J. Robertus, B. Iverson and G. Georgiou. Univ. of Texas at Austin.
- 371 B152 **Interaction between Serine Acetyltransferase and O-Acetylserine Sulfhydrylase: Kinetics and Design of Potential Bactericides** E. Salsi, A. Amadasi, A. Bayden, B. Campanini, S. Bettati, G. Kellog, P. Cozzini, P. Cook and A. Mozzarelli. Univ. of Parma, Virginia Commonwealth Univ. and Univ. of Oklahoma.
- 372 B153 **Energetics of Drug Inhibition of Purine Nucleoside Phosphorylase, a Multi-substrate Enzyme** N. Todorova and F. Schwarz. Univ. of Maryland and UMBI/NIST, Rockville.
- 373 B154 **Structural and Dynamic Characterization of Native State Fluctuations in the RT Loop of Src Homology Domain-3** L. Chen, S. Zhang and V. Hilser. Univ. of Texas Med. Branch.
- 374 B155 **A C-Terminal TonB Derivative of *Escherichia coli* Binds the Periplasmic Binding Protein FhuD** D. M. Carter, J. C. Deme, M. A. Hancock and J. W. Coulton. McGill Univ.
- 375 B156 **Interactions between Periplasmic Iron-Binding Protein FhuD of *Escherichia coli* and a Derivative of the Energy Transducer TonB That Lacks Its Proline-Rich Region** J. C. Deme, D. M. Carter, M. A. Hancock and J. W. Coulton. McGill Univ.

- 376 B157 **Sequence and Structure Determinant of G-Alpha Function** N. Carrascal, J. Han and D. Green. Stony Brook Univ.
- 377 B158 **The Unusual Copper Binding Site of CusF: Why Would a Tryptophan Be So Significant in Copper Binding?** I. R. Loftin, N. J. Blackburn and M. McEvoy. Univ. of Arizona and OGI Sch. of Sci. and Engin., Beaverton.
- 378 B159 **Solution Structure of the Novel Itk SH3/Itk SH2 Binary Complex** A. Severin, B. Fulton and A. Andreotti. Iowa State Univ.
- 379 B160 **Differential Interaction between Mouse Cytomegalovirus M152 Glycoprotein and NKG2D Ligand RAE-1** L. Zhi, J. Mans, M. Paskow, A. Balbo, P. Brown, P. Schuck, S. Jonjic, K. Natarajan and D. Margulies. NIAID, NIH, Univ. of Witwatersrand, South Africa, Cornell Univ., NIBIB, NIH and Univ. of Rijeka Fac. of Med., Croatia.
- 380 B161 **Secondary Structure-Assisted Interaction between Human Frizzled and Dishevelled, and Their Subtype-Specificity** C. Punchedewa and N. Fujii. St. Jude Children's Res. Hosp.
- 381 B162 **Biochemical and Biophysical Characterization of Interactions between p27 and Cdk4/cyclin D** L. Ou, L. Xiao and R. Kriwacki. St. Jude Children's Res. Hosp.

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## Receptors, Signaling and Signal Transduction

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- 382 B163 ***Ganoderma lucidum* Recombinant LZ-8 Protein Interaction with TCR and Mediation of Protein Kinase-Dependent Signal Transduction in the Regulation of IL-2 within T Cells** H-Y. Hsu. Natl. Yang-Ming Univ., Taiwan.
- 383 B164 **The Involvement of Mitochondrial Polarization and ROS Generation in Taiwan Cobra Cardiotoxin-Induced Apoptotic Death of Human Neuroblastoma SK-N-SH Cells** K-C. Chen and L-S. Chang. Natl. Sun Yat-Sen Univ., Taiwan.
- 384 B165 **Reactive Oxygen Species and p38 Mitogen-Activated Protein Kinase Induce Apoptotic Death of U937 Cells in Response to *Naja nigricollis* Toxin  $\gamma$**  W-H. Liu and L-S. Chang. Natl. Sun Yat-Sen Univ., Taiwan.
- 385 B166 **Allostery in Recombinant Soluble Guanylyl Cyclase from *Manduca sexta*** X. Hu, A. Weichsel, J. Brailey, S. Roberts, C. Feng, J. T. Hazzard, G. Tollin and W. R. Montfort. Univ. of Arizona and Col. of Pharm., Univ. of New Mexico.
- 386 B167 **The Mechanisms of Allostery and Membrane Attachment in Ras GTPases** A. Gorfe, B. Grant and J. A. McCammon. UCSD.
- 387 B168 **Integrin Cytoplasmic Peptides Can Block Integrin Activation But Can Not Reverse Integrin-Ligand Engagement** X. Li and T. A. Haas. Univ. of Saskatchewan.

- 388 B169 **Zipper-Interacting Protein Kinase: Inferring Function in Smooth Muscle Contractility by Identifying Bona Fide Substrates** L. Moffat, L. Baxter, M. Walsh and J. MacDonald. Univ. of Calgary, Canada.
- 389 B170 **Reaction of Hydrogen Sulfide with Oxidized Glyceraldehyde-3-Phosphate Dehydrogenase: Characterization and Implications of the Persulfide Product** N. E. Franco and J. M. Fukuto. UCLA and UCLA Sch. of Med.
- 390 B171 **The First Crystal Structure of Cyclic GMP-Dependent Protein Kinase I $\beta$  Dimerization Domain Reveals the Molecular Features of an Extended Leucine/Isoleucine Zipper** C. Kim, E. Smith-Nguyen, D. Casteel, B. Sankaran, G. Spraggon, R. Pilz and S. Taylor. UCSD, Lawrence Berkeley Natl. Lab. and Genomics Inst. of Novartis Res. Fndn.
- 391 B172 **Agonist Induced Conformational Changes in Bovine Rhodopsin: Insight into Activation of G-Protein Coupled Receptors** N. Vaidehi, S. Bhattacharya and S. Hall. Beckman Res. Inst. of City of Hope.
- 392 B173 **Function and NMR Structure of the C-Terminal Domain of G $\alpha_q$  Bound to the Purified Human Thromboxane A2 Receptor** J. Wu, V. Cerventes and K-H. Ruan. Univ. of Houston/Univ. of Texas Grad. Sch. of Biomed. Sci. at Houston and Col. of Pharm., Univ. of Houston.
- 393 B174 **Regulatory Feedback in cAMP Signaling: Mapping Interactions between Phosphodiesterases and Protein Kinase A by Amide Hydrogen/Deuterium Exchange Mass Spectrometry** G. Anand, Y. Gao and S. M. Balakrishnan. Natl. Univ. of Singapore.

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## Therapeutic Protein Formulation and Process Development

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- 394 B175 **Custom Aggregation by Cross-Linking of RhPDGF-BB into High Molecular Weight Multimers** V. Kery, A. Thompson, J. Bonomo, D. VanderMuelen, K. Shockley and L. Snel. Biomimetic Therapeutics, Franklin, TN.
- 395 B176 **A High Throughput Investigation of the Effects of Excipient/Protein Interaction Properties on Protein Stability Using Rapid Measurement of Protein Stability, Refolding and Unfolding in Microwell Plates** M. Rose and P. Dalby. University Col. London.
- 396 B177 **Adsorption Properties of a Fusion Protein to a PVDF Filter Membrane** N. Luksha, L. Li, A. Kantor and N. Warne. Wyeth BioPharma, Andover, MA.
- 397 B178 **Engineering Infectious Bursal Disease Virus VP2-Formed Subviral Particle with a High Capsid Stability** S-Y. Lai and M-Y. Wang. Central Taiwan Univ. of Sci. and Technol. and Natl. Chung Hsing Univ., Taiwan.
- 398 B179 **Protein Characterization by Light Scattering** J. Li, R. Ramachander, Y. Jiang and L. Narhi. Amgen Inc.

# POSTER SESSION 3

**Tuesday, July 22**

**Exhibit Hall**

## **Poster Setup**

Monday, July 21 6:30 PM – 7:00 PM

## **Poster Viewing Times**

Monday, July 21 7:00 PM – 9:00 PM

Tuesday, July 22 7:30 AM – 3:30 PM

## **Author Presentations 1:00 – 3:00 PM**

Odd Boards 1:00 PM-2:00 PM

Even Boards 2:00 PM-3:00 PM

## **Poster Removal**

Tuesday, July 22 3:30 PM-4:00 PM

***IMPORTANT: Please remove posters promptly at 3:30 PM.***

<b>Sessions</b>	<b>Board Numbers</b>
Amyloids and Protein Misfolding .....	B1 – B14
Computational Biology .....	B15 – B22
Membrane Proteins .....	B23 – B30
Molecular Machines: Function and Assembly .....	B31 – B36
New and Developing Methods .....	B37 – B49
Protein Chips .....	B50 – B51
Protein Design and Protein Engineering .....	B52 – B81
Protein Dynamics: Theory and Experiment .....	B82 – B87
Protein Folding: General Aspects .....	B88 – B99
Protein Folding: Mechanisms .....	B100 – B105
Protein Quality Control .....	B106
Protein Structure/Function Studies .....	B107 – B165
Protein-Protein and Protein-Ligand Interactions .....	B166 – B183
Systems Biology .....	B184 – B185

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## Amyloids and Protein Misfolding

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- 399 B1 **Pathway to Amyloid from an Intrinsically Disordered Prion at Single Molecule Resolution** S. Mukhopadhyay, R. Krishnan, E. Lemke, S. Lindquist and A. Deniz. The Scripps Res. Inst., Whitehead Inst. for Biomed. Res., Cambridge, MA and MIT, HHMI.
- 400 B2 **Relationship of Different Biophysical and Amyloid Formation Characteristics of Two Immunoglobulin Light Chain Proteins with Their Secretion Properties in Yeast Cells** J. He and M. Ramirez-Alvarado. Mayo Clin.
- 401 B3 **Profiling the Role of Hsp90 in Alpha-Synuclein Folding** S. Falsone, K. Zangger, R. Cappai and A. J. Kungl. Univ. of Graz, Austria, Univ. of Melbourne and ProtAffin Biotechnol. AG, Graz.
- 402 B4 **Structural Characterization of Conformational Variants of A $\beta$  (1-40) Amyloid Fibrils** R. Kodali, S. Chemuru and R. Wetzel. Univ. of Pittsburgh.
- 403 B5 **Mechanism of Membrane Damage by Human Islet Amyloid Polypeptide in Type 2 Diabetes Mellitus** L. Khemtournian, M. Engel, A. Killian and J. Höpener. Utrecht Univ. and Univ. Med. Ctr., Utrecht, The Netherlands.
- 404 B6 **Systematic Analysis of Nucleation-Dependent Polymerisation Reveals New Insights into the Mechanism of Amyloid Self-Assembly** W-F. Xue and S. E. Radford. Univ. of Leeds, U.K.
- 405 B7 **Stability and Amyloid Fibril Formation Influenced by External Factors for a Cardiac Light Chain Protein** L. Sikkink, E. Randles, J. Thompson and M. Ramirez-Alvarado. Col. of Med., Mayo Clin.
- 406 B8 **Specific Spectral Features for A $\beta$  40 and A $\beta$  42 Oligomers Structurally Distinguish Them from Amyloid Fibrils** E. Cerf, R. Sarroukh, A. Itkin, S. Tamamizu-Kato, S. Derclaye, Y. Dufrene, J-M. Ruyschaert, E. Goormaghtigh, V. Narayanaswami and V. Raussens. Univ. Libre of Brussels, Children's Hosp. Oakland Res. Inst. and Catholic Univ. of Louvain, Belgium.
- 407 B9 **Effect of Huntingtin Aggregation Species on Neuronal Cell Death Using Live Cell Imaging** Y. Porat, C. A. Ross and M. A. Piorier. Johns Hopkins Univ. Sch. of Med.
- 408 B10 **Fibrillar Oligomers of Amyloid Beta Peptides: Distinct Species Related to Diffuse Amyloid Plaques** L. Breydo, J. Wu, S. Rasool, Y. Kuznetsov and C. Glabe. Univ. of California-Irvine.
- 409 B11 **Peptide Ligands That Target the Cooperative Network in the Prion Protein Stimulate Scapie Formation** S. Whitten, C. Soto and V. Hilser. Univ. of Texas Med. Branch.
- 410 B12 **Origin of Conductance Increases in Membranes Exposed to Soluble Amyloid  $\beta$  Oligomers** F. Heinrich, R. Budvytyte, G. Valincius, D. J. Vandarah, Y. Sokolov, J. E. Hall and M. Loesche. Carnegie Mellon Univ., NIST, Gaithersburg, MD, Inst. of Biochem., Vilnius, Lithuania and Univ. of California-Irvine.

- 411 B13 **An A $\beta$ 40 Mutant Forms a New Amyloid-Like Aggregate and Is Able to Attenuate the Cytotoxicity of A $\beta$  40** T-Y. Liao, E. S-H. Chang, T-S. Lim, W-S. Fann and R. P-Y. Chen. Inst. of Biol. Chem. and Inst. of Atomic and Molec. Sci., Acad. Sinica, Taipei and Tunghai Univ., Taiwan.
- 412 B14 **Amyloid-Beta 40 Monomer Alters the Fibrils and Oligomers Population of Amyloid-Beta 42 by Stabilizing the Oligomers of Amyloid-Beta 42** Y-J. Chang and Y-R. Chen. Genomics Res. Ctr., Acad. Sinica, Taipei.

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## Computational Biology

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- 413 B15 **Virtual Ligand Screening Using Comparative Models of Proteins** H. Fan, A. Sali and B. Shoichet. UCSF.
- 414 B16 **Damped-Dynamics Flexible Fitting** J. Kovacs, M. Yeager and R. Abagyan. The Scripps Res. Inst.
- 415 B17 **Mechanism of Sliding Clamp Opening by the Eukaryotic Clamp Loader Replication Factor C I** Ivanov, J. Tainer and J. A. McCammon. UCSD and The Scripps Res. Inst.
- 416 B18 **Understanding Evolutionary Changes in Protein Stability with eScape** J. Gu and V. Hilser. Univ. of Texas Med. Branch.
- 417 B19 **Evaluation of Configurational Entropy Methods from Peptide Folding-Unfolding Simulation** D. Li, R. Bruschweiler and S. Huo. Florida State Univ. and Clark Univ.
- 418 B20 **Denatured State Energy Landscapes of a Protein Structural Database Reveal the Energetic Determinants of a Framework Model for Folding** S. Wang, J. Gu, S. Larson, S. Whitten and V. Hilser. Univ. of Texas Med. Branch and Univ. of Texas Hlth. Sci. Ctr. at San Antonio.
- 419 B21 **Hierarchical Conformational Sampling for Last Mile Protein Structure Prediction** C. Snow. Caltech.
- 420 B22 **Determining the Impact of Ensemble Redistribution on Molecular Recognition** V. Hilser. Univ. of Texas Med. Branch.

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## Membrane Proteins

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- 421 B23 **Modeling the T-Cell Receptor Complex within the Membrane** J. Donald, D. Kulp and W. DeGrado. Univ. of Pennsylvania Sch. of Med.
- 422 B24 **Rapid HPLC and LC-MS Methods for the Analysis of p14 Fusion-Associated Small Transmembrane Protein** R. Nguyen, R. de Antueno and R. Duncan. Grace Davison Discovery Sci., Hesperia, CA and Dalhousie Univ., Canada.
- 423 B25 **Inversion of Transmembrane Segment Orientation at the Translocon during Membrane Protein Biogenesis** B. Hou and A. Johnson. Texas A&M Hlth.Sci. Ctr.

- 424 B26 **The Interaction between Cholesterol and Surfactant Protein C on Model Lung Surfactant Membranes: A Thermodynamic, Spectroscopic and Functional Study** L. Gomez-Gil, J. Perez-Gil and E. Goormaghtigh. Univ. Libre of Brussels and Univ. Complutense of Madrid.
- 425 B27 **Quantitative Proteomic Comparison of Detergent-Free and Detergent-Resistant Membranes from Neonatal Mouse Brain** M. Li, B. Wakim, B. Halligan, S. Patel and H. Yu. Med. Col. of Wisconsin and Clement J. Zablocki VA Med. Ctr.
- 426 B28 **Molecular Design of the Carbenicillin Hyper-Resistance AcrB Multidrug Exporter in *Escherichia coli*** A. Iwata, N. Kobayashi, S. Murakami and A. Yamaguti. Osaka Univ. and Grad. Sch. of Biosci. and Biotechnol., Tokyo Inst. of Technol.
- 427 B29 **Insertion of Membrane Proteins into Discoidal Membranes Using a Cell-Free Protein Expression Approach** F. Katzen, J. Fletcher, J-P. Yang, S. Vasu, T. Peterson, J. Cappuccio, C. Blanchette, T. Sulchek, B. Chromy, P. Hoepflich, M. Coleman and W. Kudlicki. Invitrogen Corp., Carlsbad and Lawrence Livermore Natl. Lab.
- 428 B30 **E153Q: The Possible Master Key for Unlocking Open Probability of Inward Rectifier Potassium Channel Kir2.1** F. Farinelli, D. Prusak, T. Wood and M. Correia. Univ. of Texas Med. Branch.

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## Molecular Machines: Function and Assembly

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- 429 B31 **Structure of an Influenza Virus Hemagglutinin Pre-fusion Intermediate** K. Lee and H. Tsuruta. The Scripps Res. Inst. and Stanford Univ.
- 430 B32 **CryoEM Structure and Conformational Dynamics of *Methanococcus maripaludis* Chaperonin** J. Zhang, N. Douglas, S. Reissmann, J. Frydman and W. Chiu. Baylor Col. of Med., Stanford Univ. and Max Planck Inst. for Terrestrial Microbiol., Marburg.
- 431 B33 **The Bacteriophage T4 DNA Packaging Motor** S. Sun, K. Kondabagil, B. Draper, T. Alam, V. Bowman, Z. Zhang, S. Hegde, A. Fokine, M. Rossmann and V. Rao. Purdue Univ. and The Catholic Univ. of America.
- 432 B34 **Investigating the Mechanochemistry of a Viral DNA Packaging Motor through Molecular Modeling** J. Yu, J. Moffitt, C. Hetherington, A. Karunakaran, C. Bustamante and G. Oster. Univ. of California, Berkeley.
- 433 B35 **The ATPase Activity of the Cyanobacterial Clock Protein KaiC** K. Terauchi, Y. Kitayama, T. Nishiwaki and T. Kondo. Nagoya Univ. and CREST, JST, Nagoya, Japan.
- 434 B36 **Regulating Assembly of the Mitochondrial Fission Machinery** B. Hill, S. Casares-Atienza, M. Koppenol, J. Lees, L. Picton, F. Tan and R. Wells. Johns Hopkins Univ.

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## New and Developing Methods

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- 435 B37 **Faster High-Fidelity Site-Directed Mutagenesis Method** V. Zhang and H. Hogrefe. Agilent, La Jolla.
- 436 B38 **Use of *Thermus thermophilus* Proteins as a Fusion Partner to Enhance Expression-Level and Solubility of Target Proteins Derived from Primate Lentiviruses (HIV/SIV)** N. Kondo, A. Ebihara, H. Ru, S. Kuramitsu, A. Iwamoto and Z. Matsuda. Univ. of Tokyo, Inst. of Biophys., Chinese Acad. of Sci., Beijing and RIKEN SPring-8 Ctr., Hyogo, Japan.
- 437 B39 **The Ligand Interaction Scan Method for Functional Analysis of Novel Proteins** O. Erster, M. Eisenstein, R. Seger and M. Liscovitch. Weizmann Inst., Rehovot.
- 438 B40 **Crystal Structure of Synthetic Human MCP-1** T. Raguse, A. Teplyakov, G. Obmolova, G. Gilliland and M. Kruszynski. Centocor R&D Inc., Radnor, PA.
- 439 B41 **pET Expression and Purification Strategies Combine with Rapid Gateway Cloning Technology in Gateway® Nova DEST™ Vectors** K. Kramer, C. Rockwell, J. G. Reich and R. Novy. EMD Chemicals, Madison, WI.
- 440 B42 **Novel Transfection Reagent for Difficult to Transfect Cell Lines** S. De Laura, K. Loomis-Rogers, F. Bruggink and S. Hayes. EMD Chemicals, Madison, WI.
- 441 B43 **Dual-Purpose Insect Expression Vectors Facilitate Both Rapid Expression Screening and Baculovirus Generation** A. Zilberman, K. Loomis, C. Rockwell, H. Sternard and B. Novy. EMD Novagen, Madison, WI.
- 442 B44 **Protein Analysis in Rat Serum by Ultra-Fast IEC HPLC Column** K. Tseng and Y. Fusho. Shodex, New York.
- 443 B45 **Rapid Conversion of NSE ELISA to Diffraction-Based Immunoassay** W. Hu, G. Bernstein, J. F. Houle, K. Dickerson and P. Smith. Axela, Toronto.
- 444 B46 **Rapid Synthesis and Kinetic Analysis of Protein Arrays Using Label-Free KX Array™ Technology** N. Ramachandran and M. Cicirelli. Plexera Bioscience, Bothell, WA.
- 445 B47 **Enhanced X-Ray Micro-Diffraction Capabilities by the General Medicine and Cancer Institute Collaborative Access Team (GM/CA-CAT) at the Advanced Photon Source** M. Becker, R. Benn, S. Corcoran, R. Fischetti, M. Hilgart, O. Makarov, C. Ogata, S. Pothineni, R. Sanishvili, J. L. Smith, S. Stepanov, V. Nagarajan, S. Xu and D. Yoder. Argonne Natl. Lab., IL and Univ. of Michigan.
- 446 B48 **Evaluation of Thermo Scientific Pierce® High Sensitivity Streptavidin-HRP Conjugate in Immunoassay Applications** M. Stanaitis, S. Desai and P. Rangaraj. Thermo Fisher Scientific Inc., Rockford, IL.
- 447 B49 **Solution Scattering Reveals Allosteric Regulation between the Catalytic and Regulatory Domains of Src** S. Yang and B. Roux. Univ. of Chicago.

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## Protein Chips

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448 B50 **Protein Microarrays: On-Chip Purification and Identification of *Streptococcus pneumoniae* Antigens in Humans** K. Kwon, C. Grose, T. Mitchell, G. Pandya, R. Pieper, R. Fleischmann and S. Peterson. J. Craig Venter Inst., Rockville, MD and Univ. of Glasgow.

449 B51 **Label-Free Analysis of Protein Arrays** V. Kodoyianni. GWC Technologies Inc., Madison, WI.

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## Protein Design and Protein Engineering

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450 B52 **Computational Design of Zn-Hydrolases with Altered Substrate Specificities** H. Wijma and H. Hellinga. Duke Univ. Med. Ctr.

451 B53 **Engineering Cystine-Knot Peptides for Binding Proteins in the Vasculature** A. Silverman, A. Levin, J. Lahti, R. Kimura and J. Cochran. Stanford Univ.

452 B54 **Computational Design of DNA-Binding Proteins** H. Kono, M. Imanishi, S. Negi, K. Tatsutani and Y. Sugiura. JAEA, Kyoto, PRESTO, JST, Tokyo, Kyoto Univ., Japan and Doshisha Women's Col., Japan.

453 B55 **A Method for High-Throughput Construction of Bacterial Protein Expression Vector and Its Application for Cell Biology** H. Hiroaki, N. Goda, T. Tenno, T. Tanaka and M. Shirakawa. Grad. Sch. of Med., Kobe Univ., CREST Japan Sci. and Technol. Corp., Kawaguchi, Grad. Sch. of Material Sci., Nagoya Inst. of Technol. and Grad. Sch. of Engin., Kyoto Univ.

454 B56 **Asymmetry in a Linked Dimeric  $\beta$ -Barrel Yields a Stable Oligomer That Resembles Amyloid Intermediates** M. Dellarole, D. Cicero and G. de Prat Gay. Fndn. Inst. Leloir, Buenos Aires and Univ. of Rome "Tor Vergata".

455 B57 **Exploring the Conformational Dynamics in Caspase-1 with Immuno-Traps** J. Gao, S. Sidhu and J. Wells. UCSF and Genentech Inc.

456 B58 **Crystal Structure of the Engineered Domain of Human Fibronectin Reveals a Novel Domain Swapping Mechanism** E. Pozharski, F. St John, P. Cheng, K. D. Wittrup and D. Lipovsek. Univ. of Maryland Baltimore and MIT.

457 B59 **Dynamic Rotamer Libraries for Use in Dezymer Protein Design Calculations** A. Bhattacharya and H. Hellinga. Duke Univ.

458 B60 **An Engineered Protease That Cleaves Specifically after Sulfated Tyrosine** N. Varadarajan, B. Iverson and G. Georgiou. Univ. of Texas at Austin.

459 B61 **Catalytic  $\beta$ -Peptides** M. Mueller, W. Pomerantz, M. Windsor, S. Gellman and D. Hilvert. ETH Zurich and Univ. of Wisconsin-Madison.

460 B62 **Effect of Side Chain Length and Helix Asymmetry on Intrahelical Ion Pairing** R. Cheng and P. Girinath. Univ. at Buffalo, SUNY.

461 B63 **Engineering Ultra-Stable Affinity Reagents Based on Top7** C. Boschek and C. Baird. Pacific Northwest Natl. Lab., Richland, WA.

462 B64 **Stabilizing Proteins by Library-Based Consensus Design** C. Jäckel and D. Hilvert. ETH Zurich.

463 B65 **Sweet Entanglement: Multivalent Binding to gp120 Is Crucial for the Anti-HIV Activity of Cyanovirin** G. Ghirlanda, R. Fromme, Z. Katiliene and P. Fromme. Arizona State Univ.

464 B66 **Protein Writing** R. Hughes, C. Cox, C. Layton and H. Hellinga. Duke Univ. Med. Ctr.

465 B67 **A General Method for Dealing with Specificity in Computational Protein Design – Engineering Specific Human-bZIP Binding Partners** G. Grigoryan, A. W. Reinke and A. E. Keating. MIT and Univ. of Pennsylvania.

466 B68 **Rapid Screening of Computationally Designed Protein-Protein and Protein-Peptide Interactions** C. Layton. Duke Univ.

467 B69 **Directed Mutagenesis and Selection** V. Mondol, P. Peralta Yahya, J. Bronson and V. Cornish. Columbia Univ.

468 B70 **Expression and Characterization of a Computationally Designed Laccase-Like Enzyme** G. Szilvay, D. Glykys, P. Tortosa, M. Suarez, A. Jaramillo and S. Banta. Columbia Univ. and Ecole Polytech, Palaiseau, France.

469 B71 **Designing Allosteric Proteins for the Assembly of Responsive Biomaterials** M. Sagermann, R. Chapleau, E. DeLorimier and M. Lei. Univ. of California-Santa Barbara.

470 B72 **Dynamic Combinatorial Strategies for Maximizing Protein Folding Stability** M. Case and S. Banerjee. Univ. of Vermont.

471 B73 **Interactions of Bile Acids and Proteins** S. Robic, K. Linscott and V. Dimitrova. Agnes Scott Col., GA.

472 B74 **Combinatorial Synthesis of Coding Sequences to Parse Protein Sequence Space** J. Drummond and D. Maillat. Indiana Univ.

473 B75 **Consensus and Covariation in the Statistical Design of Dimeric Enzymes** T. Magliery, B. Sullivan and V. Durani. The Ohio State Univ.

474 B76 **High-Throughput Design of Novel Restriction Endonucleases** J. Tian. Duke Univ.

475 B77 **Rationally Designed Dominant-Negative CXCL8 Mutants Are Active in Vivo** V. Wabitsch, A. Rek, H. Potzinger, H-J. Anders, M. Teixeira and A. J. Kungl. ProtAffin Biotechnologie AG, Graz, Austria, Univ. of Munich Clin. and Fed. Univ. of Minas Gerais, Brazil.

476 B78 **Recombinant Monobiotinylated Human Renin and Prorenin for Drug Discovery** R. Heinrikson, J. Haineault, P. Zaworski, J. Wheeler and M. Deibel. Proteos Inc., Kalamazoo.

477 B79 **Design of a Sequence-Enabled DNA Methylase for Site-Specific DNA Methylation in Vivo** W. Nomura and C. F. Barbas III. Tokyo Med. and Dental Univ., Japan and The Scripps Res. Inst.

- 478 B80 **Combining in Vivo and in Silico Screening for Protein Stability** N. Barakat and N. Barakat. San Diego State Univ.
- 479 B81 **Exchanging Lysines and Arginines on the Protein Surface Can Dramatically Affect Protein Solubility** K. Phillips, A. Watters and D. Baker. The Methodist Hosp., Houston, UCSF and Univ. of Washington.

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## Protein Dynamics: Theory and Experiment

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- 480 B82 **Exploring the Functional Dynamics of P-Loop NTPases** B. Grant, A. Gorfe and J. A. McCammon. UCSD and Howard Hughes Med. Inst.
- 481 B83 **Effect of Crystal Packing on Protein Dynamics via Normal Mode Analysis** P. Narang and O. Miyashita. Univ. of Arizona.
- 482 B84 **Impact of Dimerization on the Role of the Dynamic Domains of Glutamate Racemase in Catalysis** S. Mehboob, L. Guo, W. Fu, T. Yau, K. Truong and M. Johnson. Univ. of Illinois at Chicago and Argonne Natl. Lab., IL.
- 483 B85 **Functional Consequences of Localized Frustration in Native Proteins** D. Ferreira, J. Hegler, E. Komives and P. Wolynes. UCSD.
- 484 B86 **Bio3d: An R Package for the Comparative Analysis of Protein Structures** A. Rodrigues, B. Grant and J. A. McCammon. Salk Inst. and UCSD.
- 485 B87 **Structural Evaluation of the Effects of in Silico Disulfide Bonds Eliminations on  $\kappa$ -Hefutoxin1 through Molecular Dynamics Simulations** M. Heidary, F. Jazayeri, M. Ghobeh, M. Amininasab and E. Elahi. Univ. of Tehran.

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## Protein Folding: General Aspects

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- 486 B88 **A Logical OR Redundancy within the Asx-Pro-Asx-Gly Type I  $\beta$ -Turn Motif** J. Lee, V. Dubey, L. Longo and M. Blaber. Col. of Med., Florida State Univ.
- 487 B89 **Investigation of the Origins of Thermostability Using Directed Evolution** K. Tripp and S. Marqusee. Univ. of California, Berkeley.
- 488 B90 **Direct Evidence for Deprotonation of a Lysine Side-Chain Buried in the Hydrophobic Core of a Protein** Y. Takayama, C. Castaneda, M. Chimenti, B. Garcia-Moreno E. and J. Iwahara. Univ. of Texas Med. Branch and Johns Hopkins Univ.
- 489 B91 **Mechanism of Acid-Induced Unfolding of Human Serum Albumin** P. Salahuddin. Aligarh Muslim Univ., India.
- 490 B92 **Structural Analysis of Folding Intermediates for a TIM Barrel Protein, Indole-3-Glycerol Phosphate Synthase, by Hydrogen Exchange Mass Spectrometry and Its Implication on the Role of ILV Clusters in Protein Folding** Z. Gu, M. K. Rao, J. M. Finke and C. R. Matthews. Univ. of Massachusetts Med. Sch. and Oakland Univ., MI.

- 491 B93 **Calculation of the Site-Specific Stability and Energy Spectrum of Helical Hairpin Peptides Using Extended Helix Coil Theory** J. Osterhout. Univ. of Arizona.
- 492 B94 **Characterization of a Monomeric Mutant from Triosephosphate Isomerase from *T. cruzi*** F. Zárate-Pérez, M. E. Chánez-Cárdenas and E. Vázquez-Contreras. UNAM, Natl. Inst. of Neurol. and Neurosurg. and Univ. Autónoma Metropolitana Cuajimalpa, Mexico City.
- 493 B95 **Novel Small-Molecule Additives to Refold Proteins — A Simultaneous and Systematic Evaluation** J. Bruinsma, J. L. Rane, J. G. Reich, A. P. Weis and P. A. Leland. EMD Chemicals Inc., Madison, WI.
- 494 B96 **Two State or Not Two State: Origins of Barriers and Barrierless Folding in BBL** S. Cho, P. Weinkam and P. Wolynes. Univ. of Maryland College Park and UCSD.
- 495 B97 **Folding Dependence of a Mitochondrial Precursor Protein on Elements of Its Primary Sequence** M. T. Villar and A. Artigues. Kansas Univ. Med. Ctr.
- 496 B98 **Real-Time NMR Kinetic Studies Provide Global and Residue-Specific Information on the Non-cooperative Unfolding of the  $\beta$ -Trefoil Protein, Interleukin-1 $\beta$**  M. Roy and P. Jennings. UCSD.
- 497 B99 **A Strategy for Efficient Site-Specific FRET-Dye Labeling of Ubiquitin** W-P. Kao, L-L. Yang, J. C-K. Lin, W-S. Fann and R. P-Y. Chen. Inst. of Biol. Chem. and Inst. Of Atomic and Molec. Sci., Acad. Sinica, Taipei.

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## Protein Folding: Mechanisms

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- 498 B100 **Real-Time Observation of the Amyloid  $\beta$ (1-40) Fibril Propagation Revealed by Total Internal Reflection Fluorescence Microscopy** H. Yagi, T. Ban, D. Ozawa, K. Morigaki, H. Naiki and Y. Goto. Osaka Univ., Natl. Inst. of Adv. Indust. Sci. and Technol., Ikeda and Univ. of Fukui, Japan.
- 499 B101 **Generic Substrate Interactions, Protein Folding and Complex Biogenesis of the Chaperone Trigger Factor** E. Martinez-Hackert and W. Hendrickson. Columbia Univ.
- 500 B102 **Fibril Formation by the Eukaryotic Histones, H3 and H4: Insights into Protein Folding** T. Topping and L. Gloss. Sch. of Molec. Biosci., Washington State Univ.
- 501 B103 **The Effect of Glycosylation on Protein Folding** Y. Levy. Weizmann Inst. of Sci., Rehovot.
- 502 B104 **Folding of Elongated Proteins — Conventional or Anomalous?** Y. Levy. Weizmann Inst. of Sci., Rehovot.
- 503 B105 **ATP-Dependent Conformational Change Mechanism of Group II Chaperonins Elucidated Using Chaperonin Complexes Containing Mutant Subunits in the Ordered Fashion** M. Yohda, T. Kanzaki, R. Iizuka, K. Takahashi, R. Masuda, M. Sahlan, K. Maki and K. Kuwajima. Tokyo Univ. of Agr. and Technol., Grad. Sch. of Pharmaceut. Sci., Univ. of Tokyo, Okazaki Inst. for Integrative Biosci. and Nagoya Univ., Japan.

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## Protein Quality Control

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504 B106 **Functional Interaction between SIK2 and p97/VCP Regulates ER-Associated Protein Degradation** W-H. Chen, J-Y. Huang, S-Y. Liu and S-C. Lee. Natl. Taiwan Univ.

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## Protein Structure/Function Studies

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505 B107 **Structure-Function Relationship of the Periplasmic Domain of the Sensor Kinase BvgS of *Bordetella pertussis*** J. Herrou, R. Antoine, C. Bompard, C. Locht and F. Jacob-Dubuisson. INSERM U629, Inst. Pasteur de Lille and CNRS, Univ. de Lille.

506 B108 **A Helical String of Alternately Connected Two Three-Helix Bundles for the 1.1-Megadalton Cell Wall-Associated Protein Ehb from *Staphylococcus aureus*** Y. Tanaka, S. Sakamoto, M. Kuroda, S. Goda, Y-G. Gao, K. Tsumoto, Y. Hiragi, M. Yao, N. Watanabe and I. Tanaka. Hokkaido Univ., Univ. of Tokyo, Natl. Inst. of Infect. Dis., Tokyo, Nagasaki Univ. and Kansai Med. Univ., Japan.

507 B109 **Disulfide Bridge Deletion or Addition in *Escherichia coli* Phytase Has Catalytic Effects Beyond Cause by Changes in Protein Stability** J. Weaver, D. Ripoll and X. G. Lei. Cornell Univ.

508 B110 **Structure-Function of the CSL-Hairless Complex: An Investigation of the Repressive Side of Notch Signalling** A. Russell and R. Kovall. Univ. of Cincinnati.

509 B111 **Structural Research on Ribosomal S6 Kinase 1** Z. Wan. Inidana Univ.

510 B112 **Structures and Functions of Enzymes in Plant Natural Product Biosynthesis** X. Wang, H. Shao, L. Li, L. L. Escamilla-Trevino, Z. Chang, L. Modolo, J. W. Blount, X. He, R. A. Dixon and Z. Pan. The Samuel Roberts Noble Fndn., OK and Univ. of Mississippi.

511 B113 **Mechanism of Allosteric Inhibition of N-Acetyl-L-Glutamate Synthase by Arginine** N. Allewell, L. Min, Z. Jin, M. Tuchman and D. Shi. Univ. of Maryland College Park, Children's Natl. Med. Ctr. and Argonne Natl. Lab., IL.

512 B114 **Computational Analysis of Structure/Function Relations in Antimicrobial Peptides Purothionins: Unveiling a Mechanism for Membrane Permeabilization Activity** S. Oard. LSU AgCtr.

513 B115 **Crystal Structures of the 70-kDa Heat Shock Proteins in Domain Disjoining Conformation** C-D. Hsiao, Y-W. Chang and C. Wang. Inst. of Molec. Biol., Acad. Sinica, Taipei.

514 B116 **A Search for Synthetic Peptides That Inhibit SNARE-Mediated Membrane Fusion** Y. S. Yang, J. M. Oh, Y. Seong and D-H. Kweon. Sungkyunkwan Univ., South Korea.

515 B117 **Crystal Structures of Ligand Bound Starch Binding Domain of *Rhizopus oryzae* Glucoamylase Reveal an Amylosic Binding Model** Y-J. Sun. Natl. Tsing Hua Univ., Taiwan.

516 B118 **Structural and Functional Analysis of Est25: A Metagenome-Derived Esterase** D. H. Kim, S. B. Kim and Y. W. Ryu. Ajou Univ., South Korea.

517 B119 **Complete Sequence Perturbation Analysis of Enzymatic Functions and Thermal Stability: A Case of Dihydrofolate Reductase** A. Yokota, H. Takahashi, G. Sarara, C. Yamane, Y. Aruga, T. Takenawa, M. Arai and M. Iwakura. Natl. Inst. of Adv. Indust. Sci. and Technol., Tsukuba, Japan.

518 B120 **Low Molecular Weight Crystallin Peptides Found in Aged Human Lenses Can Accelerate Lens Aging and Cataract Formation** P. Santhoshkumar, R. Kannan and K. Sharma. Univ. of Missouri-Columbia.

519 B121 **Steric Origins of Heme Deformation in Nitrophorin 2, a Nitric Oxide Transport Protein from the Kissing Bug** A. Weichsel, R. E. Berry, F. A. Walker and W. R. Montfort. Univ. of Arizona.

520 B122 **Expression and Characterization of Full-Length and Truncated Soluble Guanylate Cyclase from *Homo sapiens* and *Manduca sexta*, and the Search for the YC-1 Binding Site** B. Fritz, X. Hu, A. Weichsel, J. Brailey, S. Roberts and W. R. Montfort. Univ. of Arizona.

521 B123 **Structure and Function of Human Histone Chaperone CIA/ASF1 Complexed with Double Bromodomain from TFIID** Y. Akai, N. Adachi, Y. Hayashi, M. Eitoku, N. Sano, M. Tanokura, M. Horikoshi and T. Senda. Grad. Sch. of Agr. and Life Sci., Univ. of Tokyo, JBIC and AIST, Japan Biol. Info. Res. Ctr., Tokyo.

522 B124 **Molecular Cloning and Characterization of the Tomato Multicystatin Expressed in *E. coli*** S-Y. Lai, W-H. Chi, M-Y. Wang and J-W. Wu. Central Taiwan Univ. of Sci. and Technol. and Natl. Chung Hsing Univ., Taiwan.

523 B125 **Structure of Protochlorophyllide Reductase Reveals a Mechanism for Greening in the Dark** G. Kurisu, N. Muraki, J. Nomata, T. Shiba and Y. Fujita. Univ. of Tokyo and Grad. Sch. of Bioagr. Sci., Nagoya Univ., Japan.

524 B126 **A 1.0 Angstrom Crystal Structure Reveals Potential Target Epitopes in a *Francisella tularensis* Type IV Pilin Homologue** T. Wood, A. Arvai, C. Hitomi and J. Tainer. Walter Reed Army Med. Ctr. and The Scripps Res. Inst.

525 B127 **Structural Characterization of Intrinsically Disordered TC-1 Using NMR Spectroscopy** W-Y. Choy, C. Gall, S. Mokhtarzada, H. Xu, A. Brickenden and X. Ai. Univ. of Western Ontario.

526 B128 **Chemical Cross-Linking between Alpha Subunits of Poly(Ethylene) Glycol-Conjugated Hemoglobin Inhibits Haptoglobin Binding** S. Spann, A. Malavalli, K. Vandegriff, H. Jan and R. Winslow. Sangart Inc., San Diego.

- 527 B129 **Hydrodynamic Particle Size and Colloidal Osmotic Pressure and the Extent of Poly(Ethylene) Glycol Conjugation to Hemoglobin** H. Jan, A. Malavalli, K. Vandegriff and R. Winslow. Sangart Inc., San Diego.
- 528 B130 **Tyr218 and Ser262 Pull Down the Lid of the Metallo-Beta-Lactamase IMP-1** P. Oelschlaeger and J. Pleiss. California State Polytech Univ., Pomona and Univ. of Stuttgart, Germany.
- 529 B131 **Calmodulin Mediated Estrogen Receptor Alpha Activation and Antiestrogen Resistance** R. Bieber Urbauer, C. Jolly, S. Johnson, J. Galdo, M. Cross, M. Elliott, M. Nooromid and J. Urbauer. Univ. of Georgia.
- 530 B132 **Physical and Structural Basis for pH Dependence of Transcription Regulation by the Anti-Sigma Factor AsiA** J. Urbauer, B. Crane and R. Bieber Urbauer. Univ. of Georgia.
- 531 B133 **Oxidative Inhibition of *S. cerevisiae* S-Formylglutathione Hydrolase** P. M. Legler and C. B. Millard. Walter Reed Army Inst. of Res.
- 532 B134 **Identification of Fe-N Vibration Linked to pH Lability of the 2Fe-2S Cluster of MitoNEET, an Outer Mitochondrial Membrane Protein** M. Paddock, T. Tirrell, E. Abresch, C. Chang, A. Conlan, R. Nechushtai, J. Kim and P. Jennings. UCSD and Hebrew Univ. of Jerusalem.
- 533 B135 **Identification of Interacting Regions within the Coiled Coil of the *Escherichia coli* Structural Maintenance of Chromosomes Protein MukB** M. Oakley, Y. Li, C. Weitzel and R. Arnold. Indiana Univ.
- 534 B136 **X-Ray Crystal Structures of Polyphosphate Kinases from *Pseudomonas aeruginosa* and *Sinorhizobium meliloti*** J. Osipiuk, B. Nocek, E. Evdokimova, A. Savchenko, A. Edwards, A. Yakunin and A. Joachimiak. Argonne Natl. Lab., IL, Univ. of Toronto and Univ. of Chicago.
- 535 B137 **Modulation of Src Recognition and Signaling through Substrate Docking Interactions** M. Jamros, J. Shaffer, J. Adams and P. Jennings. UCSD.
- 536 B138 **Alanine Scanning Mutagenesis of the Conserved Residues of the ADP-Dependent Phosphofructokinase PH1645 from *Pyrococcus horikoshii*, a Ribokinase Superfamily Member** V. Guixé, F. Merino, A. Caniuguir, G. Brown, S. Kochinyan and A. Yakunin. Univ. of Chile and Univ. of Toronto.
- 537 B139 **MitoNEET, an 2Fe-2S Outer Mitochondrial Membrane Protein, As a Fusion Protein with Superfolder GFP, Allowing Isotopic Labeling and Structural Characterization** A. Schoenfish, M. Paddock, M. Roy, E. Abresch, R. Nechustai and P. Jennings. UCSD and Hebrew Univ. of Jerusalem.
- 538 B140 **Spectral Diversity of Fluorescent Proteins from the Anthozoan *Corynactis californica*** R. Keenan, C. Schnitzler, A. Matysik, M. Downing, R. Strack, R. McCord, L. Christianson and S. Haddock. Univ. of Chicago and Monterey Bay Aquarium Res. Inst.
- 539 B141 **Crystal Structure and NMR Studies of FK506-Binding Domain of *Plasmodium falciparum* FKBP35 in Complex with FK506** H. S. Yoon, M. Kotaka, H. Ye, R. Alag and J. Lescar. Nanyang Technol. Univ., Singapore.
- 540 B142 **Regulating the DNA-Binding Activity of Transcription Enhancer Factor-1** S. Veeraraghavan, A. Anbanandam and D. Albarado. Univ. of Texas-Houston Med. Sch.
- 541 B143 **Preparation of Biologically Active Resistin by Refolding from *E. coli* Inclusion Bodies** T. Malia, A. Baker, J. Nemeth-Seay, A. Mathur, G. Obmolova, J. Carton and T. Ort. Centocor Inc., Radnor, PA.
- 542 B144 **Loss of Type IV Collagen Alpha 5 and Alpha 6 Chains in Labial Salivary Gland from Patients with Sjögrens Syndrome** P. Poduval. Inst. of Biomed., Helsinki.
- 543 B145 **Conserved Cysteine Residues of BchB Is Essential for the BchN-BchB Complex Formation and the Activity of Dark-Operative Protochlorophyllide Reductase** Y. Fujita, J. Nomata, K. Ebata, N. Muraki and G. Kurisu. Grad. Sch. of Bioagr. Sci. and Sch. of Agr., Nagoya Univ. and Univ. of Tokyo.
- 544 B146 **Assessing the Potential Correlation between Protein Stability and Function** Y. Ly and J. Love. San Diego State Univ.
- 545 B147 **Physicochemical Changes in Phosphorylase Kinase Induced by Its Activators** W. Liu, T. Priddy and G. Carlson. Univ. of Kansas Med. Ctr. and Univ. of Kansas.
- 546 B148 **One Protein, Two Structures: Structural and Biophysical Characterization of *Pseudomonas aeruginosa* AnkB** J. Wilson, B. Homoelle, D. Hassett and R. Kovall. Univ. of Cincinnati Col. of Med. and St. Xavier H.S., Cincinnati.
- 547 B149 **Molecular Basis of D-AKAP2 Binding to PKA Regulatory Subunits** G. Sarma, F. Kinderman, S. von Daake, C. Kim and S. Taylor. HHMI, UCSD.
- 548 B150 **Structural Basis for Recognition of Reelin by Its Neuronal Receptor** N. Yasui, T. Nogi and J. Takagi. Osaka Univ.
- 549 B151 **Effects of Phenolic Compounds on SNARE Complex Assembly and SNARE-Driven Neurotransmitter Release** J. M. Oh, Y. S. Yang, Y. Seong and D-H. Kweon. Sungkyunkwan Univ., South Korea.
- 550 B152 **Improved Sequence-Based Prediction of Protein Secondary Structures by Combining Vacuum-Ultraviolet Circular Dichroism Spectroscopy with Neural Network** K. Matsuo, H. Watanabe and K. Gekko. Hiroshima Univ.
- 551 B153 **Cloning and Biochemical Characterisation of the *Haemophilus influenzae* N-Acetylhexosaminidase, an Enzyme Belonging to the Glycosyl Hydrolase Family 3** F. Chang-Pi-Hin, J. Pratten, M. Wilson and S. Nair. UCL Eastman Dent. Inst., London.

552 B154 **Towards Structural Information from CCR4/NOT Complex, a Global Transcription Regulator** F. Nasertorabi, C. Carolis and D. Suck. European Molec. Biol. Lab., Heidelberg.

553 B155 **Structure-Function Studies on *B. anthracis* N5-Carboxyaminoimidazole Ribonucleotide Mutase (PurE), a Critical Purine Biosynthesis Pathway Enzyme** A. Mahajan, S. Mehboob and M. Johnson. Univ. of Illinois at Chicago.

554 B156 **C-Terminal Truncations and Site-Directed Mutations Enhance Thermostability and Chaperone-Like Activity of Alpha B-Crystallin, a Major Small Heat Shock Protein of Animal Eye Lenses** J-H. Liao, S-H. Wu, J-S. Lee and T. S-H. Chiou. Inst. of Biol. Chem., Acad. Sinica, Taipei, Chang-Gung Mem. Hosp., Taipei and Natl.Taiwan Univ.

555 B157 **The Transition between Lipid-Free and Lipid-Bound Conformations of ApoA-I Is Controlled by Residues 1-23** J. Case, S. Randall, T. Postiglione, J. Lagerstedt and L. Roberts. California State Univ.-Sacramento and Göteborg Univ., Sweden.

556 B158 **The Interplay of Ligand Binding and Phosphorylation in the Regulation of Dynein Light Chain LC8** G. Benison, P. A. Karplus and E. Barbar. Oregon State Univ.

557 B159 **Histone Chaperone CIA/ASF1 Can Split the Histone (H3-H4)<sub>2</sub> Tetramer into Two H3-H4 Dimers** R. Natsume, M. Eitoku, Y. Akai, N. Sano, M. Horikoshi and T. Senda. Japan Biol. Informatics Consortium, Tokyo, Univ. of Tokyo and Natl. Inst. of Adv. Indust. Sci. and Technol., Tokyo.

558 B160 **Functional and Structural Characterization of Growth Factor-Induced Dimers of the Epidermal Growth Factor Receptor in Detergent Micelles and Phospholipid Bilayer Nanodiscs** M. Grey, L-Z. Mi, N. Nishida, T. Walz, C. Lu and T. Springer. Harvard Med. Sch.

559 B161 **Homodimeric Crossover Structure of the Human GCSF-Receptor Signaling Complex** T. Tamada, E. Honjo, Y. Maeda and R. Kuroki. Japan Atomic Energy Agcy., Ibaraki and Kirin Pharma Co. Ltd., Gunma, Japan.

560 B162 **Insights into the Sequence/Structure Relationship of the Linker Domain of the Cip/Kip Family of Cyclin-Dependent Kinase Regulators** S. Otieno and R. Kriwacki. St. Jude Children's Res. Hosp.

561 B163 **Extracting Protein Function Using Structural Differences** S. Gosavi, P. Jennings and J. Onuchic. UCSD.

562 B164 **An AGC-Specific Insert in PKA Conveys Signal Relay of Substrate Binding and Catalysis** J. Yang, J. Wu, M. Deal and S. Talyor. UCSD and HHMI.

563 B165 **Using Mass Spectrometry to Elucidate the Structure of Bacteriophage T4 Helicase Dda** L. Blair, A. Tackett and K. Raney. Univ. of Arkansas for Med. Sci.

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## Protein-Protein and Protein-Ligand Interactions

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564 B166 **Characterizing the Binding of Cu(II) to Amyloid Beta Using Isothermal Titration Calorimetry** L. Hong, W. Bush, L. Hatcher and J. Simon. Duke Univ.

565 B167 **In Vivo Incorporation of NMR-Active Unnatural Amino Acids into Proteins** B. Geierstanger, S. Cellitti, D. Jones, L. Lagpacan, X. Hao, Q. Zhang, H. Hu, S. Brittain, A. Brinker, J. Caldwell, A. Brock, Y. Ryu, T. Uno and P. G. Schultz. Genomics Inst. of Novartis Res. Fndn. and The Scripps Res. Inst.

566 B168 **Prothrombin GLA Domain Helps Protect Coagulation Factor Va from Proteolytic Inactivation by Activated Protein C** S. Yegneswaran, P. Nguyen, A. Gale and J. Griffin. The Scripps Res. Inst.

567 B169 **Characterization of a T-Cell-Expressed IgV Receptor, TIGIT, As a PVR Family Co-receptor That Binds and Modulates PVR** K. Harden, I. Tom, L. Gonzalez, H. Clark, X. Yu, J. Grogan and D. Eaton. Genentech Inc.

568 B170 **SepF Stabilizes FtsZ Protofilaments, Induces Bundling of FtsZ Protofilaments and Reduces GTPase Activity of FtsZ** J. K. Singh, R. D. Makde, V. Kumar and D. Panda. Sch. of Biosci. and Bioengin., IIT Bombay, India and Bhabha Atomic Res. Ctr., Mumbai.

569 B171 **A Novel Peptide Library Screen to Characterize Kinase Substrate Docking Site Motifs** D. Sheridan, Y. Kong, S. Parker, K. Dalby and B. Turk. Yale Univ. Sch. of Med. and Col. of Pharm., Univ. of Texas at Austin.

570 B172 **Isothermal Titration Calorimetry with 200 Microliters of Sample: Complete Binding Parameter Determination for Drug Discovery and Development** V. Frasca, R. O'Brien, W. Peters, M. Brandts, R. Brown and E. Reese. MicroCal, Northampton, MA.

571 B173 **Mapping the Interface between ApoE and LRP** M. Guttman, J. Ostrem, H. Prieto, J. Croy and E. Komives. UCSD.

572 B174 **An Active Functional Role for the Membrane-Fusion Component of a Bacterial Metal Efflux Complex** I. Bagai, N. J. Blackburn and M. McEvoy. Univ. of Arizona and Oregon Hlth. & Sci. Univ., Beaverton.

573 B175 **Identification of Novel Calmodulin Binding Proteins** M. Bauer, S. Linse, D. Cahill and D. O'Connell. Lund Univ., Sweden and University Col. Dublin.

574 B176 **Ala-Scanning of the Inhibitory Region of Cardiac Muscle Regulatory Protein, Troponin I** M. Kobayashi, S. Schwartz and T. Kobayashi. Univ. of Illinois at Chicago.

575 B177 **Crystal Structure of the Trimeric Complex of Interleukin-13, IL-13 Receptor  $\alpha$ 1 and the Binding Domain of the Inhibitory Antibody Fab13.2** K. Parris, J. Dumas, M. Kasaian, A. Tam, T. Cook, L. Tchistiakov, X-Y. Tan, K. Marquette, J. Wilhelm, L. Lin and L. Mosyak. Wyeth Res.

576 B178 **Human Papillomavirus E7 Oncoprotein Interacts with Its Own Transcriptional Repressor and Removes It from Solution** C. Smal, L. Alonso and G. de Prat Gay. Fndn. Inst. Leloir, Buenos Aires.

577 B179 **Deubiquitinating Enzymes As Therapeutic Targets: Identification of Small Molecule Inhibitors of Fanconi Anemia-BRCA DNA Damage Repair Pathway** K. Ray, A. Case, K. Ganapathi, R. Stein and A. D'Andrea. Dana Farber Cancer Inst. and Brigham and Women's Hosp., Harvard Med. Sch.

578 B180 **Structure-Based Discovery of Small Molecules That Modulate Kinase Activity by Disrupting Subunit Interaction: Application to CK2** I. Kufareva, B. Laudet, C. Cochet and R. Abagyan. The Scripps Res. Inst. and CEA, Grenoble.

579 B181 **Characterization of a Series of Novel Peptidic Exosite Binders to Human BACE-1** M. Witmer, J. Tredup, C. Mapelli, V. Lee, D. Riexinger, M. Kornacker, W. Metzler and R. Copeland. Bristol-Myers Squibb R&D, Princeton and Pennington, NJ.

580 B182 **Botulinum Neurotoxin Type A Contains Hsc70 Binding Determinants** P. M. Legler and C. B. Millard. Walter Reed Army Inst. of Res.

581 B183 ***Saccharomyces cerevisiae* Yta7 Regulates Histone Gene Expression** A. Gradolatto, R. S. Rogers, H. Lavender, S. D. Taverna, C. D. Allis, J. D. Aitchison and A. Tackett. Univ. of Arkansas for Med. Sci., Inst. for Systems Biology, Seattle and Rockefeller Univ.

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## Systems Biology

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582 B184 **Detecting Aggregation-Prone Elements Using Peptide Arrays** J. Bui, A. Cavalli, C. Dobson and J. Gsponer. Univ. of Cambridge and MRC Lab. of Molec. Biol., Cambridge.

583 B185 **A Label-Free Protein Microarray for Hepatotoxicity** C. Lausted, Z. Hu and L. Hood. Inst. for Systems Biol., Seattle.