Molecular Chaperones & the Heat Shock Response

Session 1 CHAPERONE BIOCHEMISTRY AND PROTEIN FOLDING

WEDNESDAY 5/3/2006, 7:30 PM

E. Craig

#	lname	Title	Talk Length
1	Craig	Following the evolution of generalist, specialist and "degenerate" Hsp70s	25
2	Deuerling	Ribosome-associated chaperones and their role in protein folding	25
3	Ullers	Trigger factor antagonizes both SecB and DnaK/DnaJ chaperone functions during cold adaptation	12
4	Martinez-Hackert	Structure of trigger factor in complex with a substrate—Insights into the action of a chaperone	12
5	Hammarstrom	An unfolding machine in action—Stretching by the chaperonin GroEL of the substrate protein core	12
6	Rye	Unfolding compaction and release of substrate proteins by GroEL	12
7	Stirling	Phosducin-like proteins as modulators of CCT	12
8	Regini	α-crystallin as a chaperone, structural studies using X-ray and neutron scattering	12

Session 2 QUALITY CONTROL AND PROTEIN TRAFFICKING

THURSDAY 5/4/2006, 9:00 AM

W. Neupert

#	lname	Title	Talk Length
9	Neupert	Protein trafficking to mitochondria and the roles of chaperones	25
10	Rutkowski	Selective posttranscriptional and posttranslational attenuation of gene expression produces adaptation to ER stress	12
11	Hollien	A new role for Ire1 in the metazoan unfolded protein response	12
12	Williams	Potent in vitro chaperone functions of calnexin under physiological conditions of the ER lumen	12
13	Fass	Reductive activation required for catalysis of disulfide bond formation by Ero1	12
14	Sevier	Cellular regulation of disulfide bond formation	12
15	Mkrtchian	ERp29, a broad specificity escort chaperone/secretion factor is required for tumor	12

Session 3 POSTER SESSION I

THURSDAY 5/4/2006, 2:00 PM

#	lname	Title	Talk Length
16	Ahner	A genomic yeast screen identifies small heat shock proteins as regulators of CFTR degradation	

17	Akai	Analysis of XBP1 splicing mechanism with improved ER stress-indicators
18	Ali	Crystal structure of the Hsp90-nucleotide-Sba1 closed chaperone complex
19	Anckar	Specificity determinants in SUMO-mediated negative regulation of heat shock
20	Andersson	A novel Clp proteolytic core in the cyanobacterium *Synechococcus*
21	Lederkremer	PERK-dependent recruitment of ER-associated degradation and unfolded protein response machineries to the ER quality control compartment
22	Lukacs	Quality control mechanism of CFTR at post-Golgi compartments
23	Beatrix	Structure of the human NAC domain—Implications for NACs mode of function
24	Bernardini	Stress response activation by 50hz sinusoidal magnetic fields in porcine aortic endothelial cells
25	Birch	Two analogs of cobalamin protect endothelial cells against homocysteine induced oxidative stress
26	Breiman	The *Arabidopsis* heat stress induced co-chaperones Rof1 and Rof2 (FKBPs) are developmentally regulated and interact witth HSP90 and novel proteins
27	Bross	The c.297G>C (Val98Ile) variation in the human *HPS60* gene is associated with hereditary spastic paraplegia SPG13, and affects folding of chaperonin substrates
28	Bublik	hGTSE-1 protein can modulate the cellular response to stress by regulating the stability of the cyclin-dependent kinase inhibitor $p21^{CIP1/WAF1}$ in an Hsp90-
29	Burch	Modification and reorganization of the cytoprotective chaperone Hsp27 during HSV-1 infection
30	Catlett	Sgt1 is an Hsp90 adaptor co-chaperone
31	Chadli	GCUNC-45 is a novel regulator for the progesterone receptor/Hsp90 chaperoning
32	Vierling	Quaternary structure and substrate interactions of small heat shock proteins probed by mass spectrometry
33	Chien	Tripeptide motifs in ClpXP mediated protein degradation
34	Chien	Inhibition of amylin fibril formation by chaperones
35	Christensen	Genetic models of chronic neuronal degeneration causing hereditary spastic paraplegia—Production and characterization of an animal model for Hsp60
36	Shapira	Revisiting the chaperone mediated assembly of Rubisco—Exposure of a hidden RRM blocks LSU translation
37	Coulstock	Mechanism of human Hsp90 ATPase activity and regulation by co-chaperones
38	Cox	FKBP52 phosphorylation—A potential mechanism for regulating steroid hormone receptor signaling pathways
39	Cullinan	The role of Hsp90 in the evolution of chronic myelogenous leukemia
40	Daugaard	Heat shock protein (Hsp) 70-2 cooperate lens epithelium derived growth factor (LEDGF/p75) in cancer cell survival

41	Dickey	The impact of chaperones on non-aggregated tau clearance
42	Naylor	Chaperonin 10 regulates the dynamics of the response to TLR ligation
43	Gewirth	Structure of the GRP94 N- and middle domains
44	Endo	The ER stress pathway involving CHOP, is activated in the lung of LPS-treated mice
45	Reem	DAP1—A new ER stress response partner of BiP
46	Eriksen	Tau clearance through protein degradation pathways
47	Sorensen	The Hace1 E3 ligase is a stress-related tumor suppressor that reduces ER stress through elimination of misfolded proteins
48	Fang	Mechanism of glucocorticoid receptor—Hsp90 interactions
49	Felts	Different cochaperones are required to enable Hsp90-dependent folding of steroid receptors and protein kinases in vitro
50	Urano	WFS1 is a novel negative regulator of ER stress signaling and regulates apoptosis through WIND
51	Galadari	Akt degradation is an important determinant of L929 cell death following heat stress
52	Ganea	Protection of α-crystalline chaperone activity by SOS molecules against modifying
53	Garg	Hsp90 is a peptide translocator in the MHC class I antigen presentation pathway
54	Ben-Zvi	Progressive disruption of cellular protein folding in models of polyglutamine
55	Goeckeler	The ATPase activity of the yeast Hsp110 molecular chaperone, Sse1p, is not peptide-stimulated
56	Gotoh	Molecular mechanisms and pathological roles of the ER stress-CHOP pathway
57	Graner	Characterization of the Hsp70 co-chaperone HspBP1 in brain tumors
58	Grimminger	Regulation of Hsp104p by its co-chaperone the cyclophilin Cpr6p
59	Knowlton	Extracellular Hsp60—Role of lipid rafts and exosomes in Hsp60 secretion
60	Hansen	Decreased transcript levels of the Lon and ClpP protease genes in cultured cells from patients with hereditary spastic paraplegia (SPG13) caused by a mutation in the *HSP60* gene
61	Haslbeck	Hsp20.2, a small heat shock protein from *A. fulgidus* is a highly dynamic oligomer
62	Nakai	Decision of death or life by heat shock transcription factor 1
63	Heikkila	Analysis of the expression and function of Hsp27 and Hsp30 in *X. laevis* embryos
64	Hoffmann	Trigger Factor forms a protective shield for nascent polypeptides at the ribosome
65	Elguindi	Membrane protein Htj1 is a transcription factor activated by endoplasmic reticulum stress and a novel transducer of the UPR
66	Jin	Insights into the mechanisms underlying the neurodegenerative disease observed in *hsf-1*-deficient mice

#	lname	Title	Talk Length
67	Inoue	Fragmentation of Sup35 amyloid fibers	
68	Inouye	Modulation of Il-6 gene expression by heat shock transcription factor 1	
69	Takayama	BAG3 regulates cell motility	
70	Johnson	In vivo interaction of Hsp90 with co-chaperones and potential client proteins	

Session 4 CELLULAR RESPONSE TO STRESS

THURSDAY 5/4/2006, 7:30 PM

A. Horwich

#	lname	Title	Talk Length
71	Horwich	GroEL-GroES-mediated protein folding	25
72	Jakob	The chaperone Hsp33—Activation by stress-induced domain unfolding	25
73	Barral	Real-time observation of trigger factor function on translating ribosomes	12
74	Zuiderweg	The structural basis of interdomain communication of the Hsp70 chaperones in	12
75	Morano	The Sse1/Hsp110 molecular chaperone—An essential modulator of Hsp70 function	12
76	Nicchitta	A stress sensor function for GRP94—Adenine nucleotides as repressors of GRP94 molecular chaperone function	12
77	Tsai	Visualizing the ATP-driven conformational changes in ClpB	12
78	Mogk	M-domain mediated activity control of the AAA+ chaperone ClpB	12

Session 5 CHAPERONE FUNCTION IN DISEASE AND DEVELOPMENT

FRIDAY 5/5/2006, 9:00 AM

F.U. Hartl

#	lname	Title	Talk Length
79	Hartl	Cytotoxicity of protein misfolding and its modulation by molecular chaperones	25
80	Lee	Oxidative stress-dependent functional switching of yeast 2-Cys Prxs from a peroxidase to a molecular chaperone function	25
81	Houry	MoxR AAA+ ATPase—A novel family of molecular chaperones	12
82	Hager	Molecular chaperones function as steroid receptor mobility factors	12
83	Smith	FKBP co-chaperones and steroid receptor function	12
84	Vaughan	Structure and assembly of Hsp90-Cdc37-protein kinase complexes	12
85	Freeman	The p23 and Hsp90 molecular chaperones mediate telomerase dynamics	12
86	Dillin	Insulin-like signaling couples the aging process and toxic protein aggregation by regulating opposite detoxification activities	12

#	lname	Title	Talk Length
87	Kanzaki	Functional analysis of group II chaperonin using subunit-linkage mutants	
88	Kim	Molecular chaperones regulating cellular toxicity of α-synuclein in yeast	
89	Kirstein	Adaptor protein controlled oligomerization activates the AAA+ protein ClpC	
90	deHaseth	Mutational study of σ32, the *E. coli* heat shock σ factor—The role of a conserved histidine in region 2.3	
91	Krantz	Single-particle dynamics of Hsc70 mediated clathrin uncoating	
92	Krojer	The protease state of the heat-shock protein DegP from *E. coli*	
93	Kumar	Directed evolution of functional GroELs from *M. tuberculosis* GroELs—Phenotypic and sequence analysis of the mutants	
94	Lachapelle	The ability of Hsp70 to inhibit apoptosis is impaired in cells heat-shocked under acidic conditions	
95	Lee	Structural and functional switching of a human 2-Cys peroxiredoxin by oxidative stress enhances HeLa cell resistance to H_2O_2-induced cell death	
96	Vierling	S-nitrosoglutathione reductase (GSNOR) is required for the development of thermotolerance in *Arabidopsis*	
97	Lev	Generation of novel TCR-like antibodies reveals the presence of an antigenic peptide pool depended on molecular chaperones	
98	Lin	Hsp60 localizes to lipid rafts in a rat model of heart failure	
99	Liu	VIPP1 forms rod-shaped supercomplexes that are disassembled by the chloroplast Hsp70B-CDJ2-CGE1 chaperone machinery	
100	Lum	Peptide binding to the molecular chaperone Hsp104	
101	Stirling	Prefoldin—A flexible molecular clamp with essential functions in a multicellular	
102	Madan	Triggering of productive protein folding by GroEL	
103	Voos	Proteomic analysis of mitochondrial protein turnover—Identification of novel substrate proteins of the matrix protease Pim1	
104	Mandal	Quality control of protein kinases by Cdc37 is independent of the ubiquitin/proteasome pathway	
105	Martin	Rebuilding the ClpX unfoldase reveals operating principles for other AAA+ motor	
106	McClellan	Genome-wide screens uncover the essential cellular functions and substrates of	
107	McFall	The expansion of the Hsp70 network function in *C. elegans*	
108	McNally	Functional divergence between the multiple GroEL proteins of chlamydiae	

109	Merz	The C-terminal domain of *E. coli* trigger factor represents the central module of its chaperone activity
110	Christians	Search for Hsf1 oocyte-specific target genes
111	Meyer	Domain analysis of Jjj1—A cytosolic j-protein in *S. cerevisiae*
112	Miller	Phenotypes of mice and cells that are null for the p23 co-chaperone
113	Miller	A role for the unfolded protein response in rescuing defects associated with an aberrant ABC transporter
114	Millson	MAP kinase clients of the Hsp90 chaperone system
115	Mivechi	Genetic interplay between heat shock transcription factor Hsf1 and p53 tumor suppressor gene during tumorigenesis
116	Miot	Toward the in vitro reconstitution of the Cpx system, an extracytoplasmic stress response pathway of *E. coli*
117	Cashikar	Genes essential for thermotolerance in yeast
118	Mok	Tumoricidal activity in the partially folded-protein-lipid complex HAMLET—Structural characterization and its molecular basis of transport into cells
119	Mokranjac	Import motor of the mitochondrial Tim23 complex
120	Morris	Structure/function studies on the mammalian small heat shock protein Hsp25—The role of the C-terminal extension
121	Nair	Coordinating protein folding with Hsp90 ATPase cycle
122	Nakatsukasa	Reconstitution and chaperone requirements for the ubiquitination of misfolded multispanning ER-membrane proteins
123	Naylor	Chaperonin 10 has an immunomodulatory activity independent of its essential chaperone function
124	Neuwald	Statistical evidence for specific DNA clamp loading mechanisms in replication factor C chaperone-like AAA+ ATPase
125	Noma	Transmission of phenotypic trait of yeast prion in single living cells
126	Ohtaki	Role of N-terminal residues of *Pyrococcus* prefoldin in the interaction with substrate and chaperonin
127	orton	Altered regulation of HSF1 and the neuronal heat shock response
128	Osherovich	DAF-2 and TOR modulate misfolded protein toxicity
129	Argon	The essential functions of GRP94 in muscle differentiation and protection from apoptosis are due to its regulation of insulin-like growth factor secretion
130	Ron	Co-translational degradation protects the stressed endoplasmic reticulum from misfolded client protein overload
131	Bedard	Menin is a regulator of the stress response in *D. melanogaster*

132	Wolf	The cytoplasmic Hsp70-chaperone machinery subjects misfolded and EF import incompetent proteins to degradation via the ubiquitin-proteasome system	
133	Tatu	Heat shock protein 90 controls development of *P. falciparum* during intra-erythrocytic cycle	
134	Bar-Nun	ATPases in endoplasmic reticulum-associated protein degradation	
135	Raden	A systems biology approach to understanding the early secretory pathway	
136	Ran	Analysis of defects in Hsp90 chaperone complex interaction with mutant *MAL*-activator proteins	
137	Rasouly	Induction of σ^{32} at low temperatures is sufficient to induce thermotolerance in *E. coli*	
138	Retzlaff	Segmental and structural contribution of the N-terminal domain of Hsp90 to its intrinsic ATPase activity	
139	Ricketson	Regulation of nuclear and cytoplasmic localization of apo-glucocorticoid receptors by Hsp90	
140	Riggs	Genetic analysis of FKBP52 function in steroid hormone signaling	
141	Roos-Mattjus	Regulation of HSF2 stability and DNA-binding activity by HSF1	
142	Van Wijk	Reduction of the non-catalytic ClpR2 protease subunit of *A. thaliana* disrupts plastid biogenesis and up-regulates soluble chaperones and membrane proteases	
143	Ryoo	*Xbp1* splicing and the unfolded protein response is activated as a protective mechanism in the *Drosophila* model for autosomal dominant retinitis pigmentosa	

Session 7 REGULATION OF THE STRESS RESPONSE

FRIDAY 5/5/2006, 7:30 PM

R. Morimoto

#	lname	Title	Talk Length
144	Morimoto	*C. elegans* systems analysis of misfolded protein stress	25
145	Nudler	RNA-mediated response to heat shock in mammalian cells	25
146	Sarge	Bookmarking of the Hsp90, Hsp27, and c-fos promotors by Hsf2 during mitosis and its role in modulating constitutive expression of these genes	12
147	Frydman	The substrate spectrum of the chaperonin TRiC/CCT revealed by genomic	12
148	Matts	Structural features that modulate the interaction of Hsp90 and Cdc37 with protein	12
149	Gleiter	Directed evolution to eliminate rate limiting steps in folding pathways in vivo	12
150	Kohno	The ER stress-sensory mechanism by transmembrane protein Ire1—Dimerization of Ire1 is not sufficient for its activation	12
151	Haynes	Genetic analysis of regulated mitochondrial chaperone gene expression	12

Session 8 CHAPERONES AND PROTEOLYSIS

SATURDAY 5/6/2006, 9:00 AM

B. Sauer

#	lname	Title	Talk Length
152	Sauer	ClpXP and hslUV—Old dogs, new tricks?	25
153	Langer	Substrate recognition by AAA proteases within mitochondria	25
154	Hill	Activating the proteasome	25
155	Smith	Regulation of the 20S proteasome by the ATPase ring complex	12
156	Tian	A conserved proteasomal processing mechanism regulates the activity of transcription factors Cubitus interruptus and NF-κB	12
157	Christianson	A complex containing the ubiquitin ligase Hrd1 mediates ERAD of the AMPA receptor subunit GluR1	12
158	Waksmonski	Sse1p, an Hsp110, contributes to ApoB stabilization	12
159	Epstein	The UNC-45 chaperone regulates myosin assembly and degradation—(A model for muscle wasting)	12

Session 9 POSTER SESSION III

SATURDAY 5/6/2006, 2:00 PM

#	lname	Title	Talk Length
160	Sahi	Global analysis of cytosolic J-protein function in *S. cerevisiae*	
161	SAKURAI	Immaturity of microtubule networks in αB-crystallin antisense C2C12 mouse myoblast cells	
162	Santos	Protein disulfide isomerase (PDI)/NAD(P)H oxidase interaction is a pathway bridging the unfolded protein reaction (UPR) to oxidative stress in vascular smooth muscle cells (VSMC)	
163	Schroder	The unfolded protein response represses differentiation through the *RPD3-SIN3* histone deacetylase	
164	Schroda	Are heat shock factors involved in counteracting transgene silencing in *Chlamydomonas*?	
165	Scroggins	Regulatory acetylation site of Hsp90 and characterization of mutations	
166	Shenhar	Expression of heat shock proteins in *E. coli* is affected by the mRNA chaperone	
167	Sjögren	New insights into the chloroplast Clp-protease of higher plants—Oligomeric structure and substrate identification	
168	Smith	Effect of sulforaphane on heat shock protein mediated apoptosis in colon cancer	
169	Snyman	Salicylic acid potentiates heat-induced Hsp70 accumulation through the activation in Hsf-DNA binding in tomato seedlings	

170	Spiess	Identification of substrate binding sites in eukaryotic chaperonin TriC/CCT reveals novel mode of binding
171	Stahl	Structural and functional role of chaperones in duck HBV polymerase activation
172	Stankowski	Interaction between Hsp70 and ChiP leads to protection against cell death
173	Steed	Small-molecule inhibitors of Hsp90 display selectivity between Hsp90 client
174	Strbuncelj	The prefoldin chaperone complex mediates the stable propagation of Sup35 forms
175	Sun	Chaperone displacement from mutant cystic fibrosis transmembrane conductance regulator (CFTR) restores its biogenesis and function in human airway epithelial
176	Takaki	Ciliary dyskinesia in mice deficient for heat shock transcription factor 1
177	Niwa	Direct involvement of NF-κB in transcription of the UPR target genes
178	Tanaka	From conformation to phenotype—The physical basis of prion strain diversity
179	Hayer-Hartl	Mechanism of accelerated protein folding by GroEL/GroES chaperonin
180	Tani	A novel membrane protein recognizing the C-terminal diversity among heat shock protein 70
181	Terada	Differential roles of cytosolic type I DnaJ homologs in mammals
182	Tessarz	Conserved and novel functions of the AAA+ chaperone Hsp104
183	Thibault	Specificity in substrate and cofactor recognition by the N-terminal domain of the chaperone ClpX
184	Tipton	Chaperone-mediated prion amplification
185	Travers	Coevolutionary analysis identifies putative functional amino acid residues within Hsp70, Hsp90 and hop
186	Needham	Primate chaperones Hsc70 (constitutive) and Hsp70 (induced) differ functionally in supporting growth and prion propagation
187	Tveten	Rescue of the low density lipoprotein receptor 2A mutant G544V by 4-phenylbutyrate
188	Uryu	Convergence of Hsp90 with ubiquitin in filamentous α-synuclein inclusions of α-synucleinapathies
189	Vabulas	Protein synthesis upon acute nutrient restriction relies on proteasome function
190	Vang	Prediction of aggregation propensity for actin variants in congenital myopathies
191	Vembar	Peptide affinity and Hsp40 J-domain interaction differentially affect BiP function
192	Virador	Differential BAG3 binding and behavior of Hsp70 as Hsp27 in breast cancer cells
193	Voisine	Identification of chaperone networks in *C. elegans*
194	Wendler	Comparison of hexameric structures of full-length and ΔN variants of Hsp104 by
195	Wilkinson	HSV-1 infection disrupts the ATR-dependent DNA damage response through sequestration of repair factors into virus-induced chaperone-enriched nuclear

196	Willmund	Interaction between the chloroplast Hsp90 and Hsp70 chaperone systems
197	Schroda	The N-terminal domain of the chloroplast GrpE homolog CGE1 is required for dimerization and cochaperone function in vivo
198	Gestwicki	Small molecule agonists of heat shock protein (HSP) 70
199	Wright	The yeast Hsp40 chaperone Ydj1p plays a role in the PKC pathway and cell wall
200	Wu	Curing of yeast prions by guanidine inactivation of Hsp104 does not require cell
201	Xiao	Swa2p/auxilin domain requirements for co-chaperoning Hsp70 clathrin uncoating activity in vivo
202	Xu	Strap—A heat shock-responsive transcriptional co-factor
203	Yaglom	Heat shock protein Hsp72 functions in cancer cells in avoiding p53-dependent and p53-independent senescence
204	Yamagishi	Importance of the phenylic hydroxyl group of sodium salicylate derivatives for the induction of heat shock response
205	Yang	Association with Hsp90 inhibits Cbl-mediated downregulation of mutant EGF
206	Yohda	Small heat shock protein protects denatured proteins from aggregation through transient interaction in the dissociated state
207	Yoshida	The modular structure of pXBP1(U), a negative feedback regulator of mammalian unfolded protein response, encoded in XBP1 pre-mRNA
208	Young	Systematic analysis of molecular chaperone interactions within the endoplasmic reticulum of *S. cerevisiae*
209	Younger	Recognition of folding defects in CFTRΔF508 at sequential quality control checkpoints by the ER membrane-localized ubiquitin ligase RMA1 and cytosolic CHIP
210	Zako	Localization of the prefoldin interaction sites in the hyperthermophilic group II chaperonin and correlation between affinity and protein transfer rate between them
211	Zavialov	Resolving the energy paradox of chaperone/usher-mediated fiber assembly
212	Zhang	Chaperoned ubiquitylation—Structure of the CHIP E3 ubiquitin ligase and a CHIP-Uev1a complex
213	Zhang	The thiol oxidoreductase ERp57 promotes rapid disulfide formation in MHC class I molecules
214	Back	The structure of an unfolded protein response sensor reveals a novel dimerization interface required for IRE1 and PERK activation

Session 10 DISEASES OF PROTEIN MISFOLDING

SUNDAY 5/7/2006, 9:00 AM

J. Kelly

#	lname	Title	Talk Length
215	Soto	Prion protein misfolding and the mechanism of neurodegeneration	25
216	Eisenberg	Structural studies of amyloid	25

217	Kelly	Constitutive amyloidogenicity becomes toxic with aging	25
218	Masison	Hsp104 mutations that overcome impairment of yeast prions by Hsp70 uncover role for conserved domain in prion propagation	12
219	Serio	Hsp104 remodels existing prion complexes in vivo	12
220	Taguchi	Direct observation of amyloid fibril growth using a total internal reflection fluorescent microscopy	12
221	Viswanathan	Role of *C. elegans sir-2.1* and prion-like glutamine/asparagine-rich proteins in ER-stress and life span regulation	12
222	Zaarur	Targeting heat shock response to sensitize cancer cells to proteasome and Hsp90 inhibitors	12