

Published literature highlighting Dualsystems' protein interaction discovery systems

DUALmembrane system

cDNA library screens

cDNA library	Bait	Reference
Human		
Human adult brain NubG-x	APP, APLP	Matsuda et al., 2005
Human adult brain x-NubG	APP, APLP	Matsuda et al., 2005
	ErbB3	Thaminy et al., 2003
Hela cells NubG-x	HPV 16E6	Regan et al., 2008
	BAP31	Wang et al., 2004
A1.RAG ^{null} T cells NubG-x	MS4A proteins	Howie et al., 2009
Mouse		
Mouse adult brain NubG-x	DAT dopamine transporter	Egaña et al., 2009
Mouse outer hair cells NubG-x	Cadherin 23 Prestin	Sengupta et al., 2009 Zheng et al., 2009
Rat		
Neonatal rat cardiomyocytes NubG-x	Maxi-K channel β 1-subunit	Bautista et al., 2009
Caenorhabditis elegans		
C. elegans whole adult NubG-x	KASH, UNC-84	McGee et al., 2009
Saccharomyces cerevisiae		
S. cerevisiae NubG-x	YCF1	Paumi et al., 2008

Bautista *et al.* Circ. Res. 104: 1364 - 1372 (2009) Hypoxia Inducible Factor-2 Stabilization and Maxi-K+ Channel β 1-Subunit Gene Repression by Hypoxia in Cardiac Myocytes: Role in Preconditioning.

Egaña *et al.* J. Neurosci., 29: 4592 - 4604. (2009) Physical and Functional Interaction between the Dopamine Transporter and the Synaptic Vesicle Protein Synaptogyrin-3.

Howie *et al.* Journal of Immunology 183:4197-4204 (2009) MS4A4B Is a GITR-Associated Membrane Adapter, Expressed by Regulatory T Cells, Which Modulates T Cell Activation.

Matsuda, S. *et al.* J. Biol. Chem. 280:28912-28916 (2005) The familial dementia BRI2 gene binds the Alzheimer's gene APP and inhibits Abeta production.

McGee *et al.* J. Cell Sci., 122: 2895 - 2905 (2009) KDP-1 is a nuclear envelope KASH protein required for cell-cycle progression.

Paumi *et al.* J. Biol. Chem. 283:27079-27088 (2008) Negative regulation of the yeast ABC transporter YCF1P by phosphorylation within its N-terminal extension.

Regan *et al.* J.Virol. 82(20):10042-51 (2008) Bap31 is a novel target of the human papillomavirus E5 protein.

Sengupta *et al.* JBC 284: 20121 - 20129 (2009) EHD4 and CDH23 are interacting partners in cochlear hair cells.

Thaminy *et al.* Genome Research 13:1744-53 (2003) Identification of Novel ErbB3-interacting Factors Using the Split-Ubiquitin Membrane Yeast Two-Hybrid System.

Wang *et al.* Mol. Cell Biol. 24(7):2767-78 (2004) The yeast split-ubiquitin membrane protein two-hybrid screen identifies BAP31 as a regulator of the turnover of endoplasmic reticulum-associated protein tyrosine phosphatase-like B.

Zheng *et al.* BMC Genomics 10: 127 (2009) Identifying components of the hair-cell interactome involved in cochlear amplification.

Pairwise interaction assays

Proteins assayed for interaction	Reference	Proteins assayed for interaction	Reference
Human		Apple (<i>Malus domestica</i>)	
AKAP, Rab proteins, RGS domains	Eggers <i>et al.</i> , 2009	SUT1, SOT6, sucrose/sorbitol transporters	Fan <i>et al.</i> , 2009
Renal transporters, PDZ domain proteins	Gisler <i>et al.</i> , 2008	Caenorhabditis elegans	
SPTa, SPTb, Serine palmitoyltransferases	Han <i>et al.</i> , 2009	Unc-83, Unc-84	McGee <i>et al.</i> , 2006
Synaptophysins	Felkl <i>et al.</i> , 2008	Yarrowia lipolytica	
Prestin	Zheng <i>et al.</i> , 2006	Pex3 proteins, peroxisomal biogenesis	Chang <i>et al.</i> , 2009
Arabidopsis thaliana		Cryptococcus neoformans	
CESA proteins, cellulose synthase pathway	Timmers <i>et al.</i> , 2009	Gpr4 / GPCRs	Xue <i>et al.</i> , 2006
Stt7 kinase	Lemeille <i>et al.</i> , 2009	Saccharomyces cerevisiae	
Photosystem II	Peng, L. <i>et al.</i> , 2006	Erg28p	Mo <i>et al.</i> , 2004
GCR1, GPA1 (GPCRs)	Pandey and Assmann, 2004		Mo <i>et al.</i> , 2005
Medicago truncatula		Sec62	Chavan <i>et al.</i> , 2005
Remorin proteins, Nod factors	Lefebvre <i>et al.</i> , 2010	Cyanobacterium Synechocystis PCC 6803	
<i>C. reinhardtii</i>		HCF136/YCF48, photosystem II complex	
Cytochrome b	Saint-Marcoux <i>et al.</i> , 2009	Tomato bushy stunt virus	
Rice (<i>Oryza sativa</i>)		p33 replication protein, Cdc34	
Aluminium toxicity factors, STAR1, STAR2	Huang <i>et al.</i> , 2009		

Chang *et al.* J. Cell Biol. 187:233-46 (2009) Pex3 peroxisome biogenesis proteins function in peroxisome inheritance as class V myosin receptors.

Chavan *et al.* J. Biol. Chem. 280: 22917-22924 (2005) Subunits of the translocon interact with components of the oligosaccharyl transferase complex.

Eggers *et al.* J. Biol. Chem. 284: 32869 - 32880 (2009) D-AKAP2 Interacts with Rab4 and Rab11 through Its RGS Domains and Regulates Transferrin Receptor Recycling.

Fan *et al.* Plant Physiol. 150:1880-1901 (2009) Apple Sucrose Transporter SUT1 and Sorbitol Transporter SOT6 Interact with Cytochrome b5 to Regulate Their Affinity for Substrate Sugars.

Felkl *et al.* Neuroscience 156:344-352 (2008) Interaction assays in yeast and cultured cells confirm known and identify novel partners of the synaptic vesicle protein synaptophysin.

Gisler *et al.* Mol. Cell. Proteomics 7: 1362 – 1377 (2008) Monitoring Protein-Protein Interactions between the Mammalian Integral Membrane Transporters and PDZ-interacting Partners Using a Modified Split-ubiquitin Membrane Yeast Two-hybrid System.

Han *et al.* PNAS, 106: 8186 - 8191 (2009) Identification of small subunits of mammalian serine palmitoyltransferase that confer distinct acyl-CoA substrate specificities.

Huang *et al.* Plant Cell 21: 655 - 667 (2009) A Bacterial-Type ABC Transporter Is Involved in Aluminum Tolerance in Rice.

Komenda *et al.* JBC 283:33 (2008) The Cyanobacterial Homologue of HCF 136/YCF48 Is a Component of an Early Photosystem II Assembly Complex and Is Important for Both the Efficient Assembly and Repair of Photosystem II in Synechocystis sp. PCC 6803.

Lefebvre *et al.* PNAS, 107:2343 - 2348 (2010) A remorin protein interacts with symbiotic receptors and regulates bacterial infection.

Lemeille *et al.* PLoS Biol. 7(3): e1000045 (2009) Analysis of the Chloroplast Protein Kinase Stt7 during State Transitions.

Li *et al.* J. Virol. 82:6911-26 (2008) Cdc34p ubiquitin-conjugating enzyme is a component of the tombusvirus replicase complex and ubiquitinates p33 replication protein.

McGee *et al.* Mol. Biol. Cell 17:1790-801 (2006) UNC-83 IS a KASH protein required for nuclear migration and is recruited to the outer nuclear membrane by a physical interaction with the SUN protein UNC-84.

Mo *et al.* Biochim. Biophys. Acta 1686:30-6 (2004) The ERG28-encoded protein, Erg28p, interacts with both the sterol C-4 demethylation enzyme complex as well as the late biosynthetic protein, the C-24 sterol methyltransferase (Erg6p).

Mo *et al.* J. Lipid Res. 46: 1991-1998 (2005) Erg28p is a key protein in the yeast sterol biosynthetic enzyme complex.

Pandey and Assmann. Plant Cell 16:1616-32 (2004) The Arabidopsis putative G protein-coupled receptor GCR1 interacts with the G protein alpha subunit GPA1 and regulates abscisic acid signaling.

Peng, L. *et al.* Plant Cell 18:955-969 (2006) Low PSII Accumulation Is Involved in Efficient Assembly of Photosystem II in Arabidopsis thaliana.
 Saint-Marcoux *et al.* J. Cell Biol. 185:1195-207 (2009) Biogenesis of cytochrome b6 in photosynthetic membranes

Timmers *et al.* FEBS Letters 583: 978-982 (2009) Interactions between membrane-bound cellulose synthases involved in the synthesis of the secondary cell wall.

Xue, C. *et al.* Mol. Biol. Cell 17:667-679 (2006) G Protein-coupled Receptor Gpr4 Senses Amino Acids and Activates the cAMP-PKA Pathway in *Cryptococcus neoformans*.

Zheng, J. *et al.* J. Biol. Chem. 281:19916-19924 (2006) Analysis of the oligomeric structure of the motor protein prestin.



DUALhybrid (yeast two-hybrid) system

cDNA library screens

cDNA library	Bait	Reference
Human		
Normalized human universal	Cockayne syndrome group B protein	Aamann <i>et al.</i> , 2010
Human adult brain	SLITRK1 XRCC4	Kajiwara <i>et al.</i> , 2009a Ahnesorg <i>et al.</i> , 2006
Fetal human brain	Fe65 CCM3	Kajiwara <i>et al.</i> , 2009b Voss <i>et al.</i> , 2007
Human peripheral blood	Memo	Meira <i>et al.</i> , 2009
Human adult whole lymph node	Fat10	Hipp <i>et al.</i> , 2004
Mouse		
Mouse adult brain	Fe65 PTPRZ1	Kajiwara <i>et al.</i> , 2009b Buxbaum <i>et al.</i> , 2007
Mouse embryonic brain	Calsyntenin-1	Konecna <i>et al.</i> , 2006
Zebrafish		
Whole adult zebrafish	FAM53B	Thermes <i>et al.</i> , 2006

Aamann *et al.* FASEB J. 10.1096/fj.09-147991 (2010) Cockayne syndrome group B protein promotes mitochondrial DNA stability by supporting the DNA repair association with the mitochondrial membrane.

Ahnesorg *et al.* Cell 124(2):301-313 (2006) XLF Interacts with the XRCC4-DNA Ligase IV Complex to Promote DNA Nonhomologous End-Joining.

Buxbaum *et al.* Mol. Psychiatry. Apr 17 (2007) Molecular dissection of NRG1-ERBB4 signaling implicates PTPRZ1 as a potential schizophrenia susceptibility gene.

Hipp *et al.* J. Biol. Chem. 279 (16):16503-16510 (2004) NEDD8 Ultimate Buster-1L Interacts with the Ubiquitin-like Protein FAT10 and Accelerates Its Degradation.

Kajiwara *et al.* Biol Psychiatry. 66(10):918-25 (2009)a SLITRK1 binds 14-3-3 and regulates neurite outgrowth in a phosphorylation-dependent manner.

Kajiwara *et al.* PLOS one 4(4):e5071, 1-17 (2009)b FE65 Binds Teashirt, Inhibiting Expression of the Primate- Specific Caspase-4.

Konecna *et al.* Mol. Biol. Cell 17:3651-3663 (2006) Calsyntenin-1 Docks Vesicular Cargo to Kinesin-1.

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Thermes *et al.* Development 133:1881 - 1890 (2006) Medaka simplet (FAM53B) belongs to a family of novel vertebrate genes controlling cell proliferation.

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Pairwise interaction assays

Mutations in the LRRK2 Roc-COR tandem domain link Parkinson's disease to Wnt signalling pathways. Sancho *et al.* Hum. Mol. Genet. 18:3955 - 3968 (2009)