

JOHN AITCHISON'S BIBLIOGRAPHY:

Updated: November 2009

A. PEER REVIEWED PUBLICATIONS

1. Nuttley, W. M., Aitchison, J. D. and Rachubinski, R. A. (1988) cDNA cloning and primary structure determination of the peroxisomal trifunctional enzyme hydratase-dehydrogenase-epimerase from the yeast *Candida tropicalis* pK233, *Gene*, 69: 171-180
2. Aitchison, J. D. and Rachubinski, R. A. (1990) In vivo import of *Candida tropicalis* hydratase-dehydrogenase-epimerase into peroxisomes of *Candida albicans*, *Curr Genet*, 17: 481-486
3. Aitchison, J. D., Murray, W. W. and Rachubinski, R. A. (1991) The carboxyl-terminal tripeptide Ala-Lys-Ile is essential for targeting *Candida tropicalis* trifunctional enzyme to yeast peroxisomes, *J Biol Chem*, 266: 23197-23203
4. Aitchison, J. D., Sloots, J. A., Nuttley, W. M. and Rachubinski, R. A. (1991) Sequence of the gene encoding *Candida tropicalis* peroxisomal trifunctional enzyme, *Gene*, 105: 135-136
5. Sloots, J. A., Aitchison, J. D. and Rachubinski, R. A. (1991) Glucose-responsive and oleic acid-responsive elements in the gene encoding the peroxisomal trifunctional enzyme of *Candida tropicalis*, *Gene*, 105: 129-134
6. Aitchison, J. D., Nuttley, W. M., Szilard, R. K., Brade, A. M., Glover, J. R. and Rachubinski, R. A. (1992) Peroxisome biogenesis in yeast, *Mol Microbiol*, 6: 3455-3460
7. Aitchison, J. D., Szilard, R. K., Nuttley, W. M. and Rachubinski, R. A. (1992) Antibodies directed against a yeast carboxyl-terminal peroxisomal targeting signal specifically recognize peroxisomal proteins from various yeasts, *Yeast*, 8: 721-734
8. Nuttley, W. M., Brade, A.M., Gaillardin, C., Eitzen, G.A., Glover, J.R., Aitchison, J.D., Rachubinski, R.A. (1993) Rapid identification and characterization of peroxisomal assembly mutants in *Yarrowia lipolytica*, *Yeast*, 9: 507-517
9. Nuttley, W. M., Brade, A. M., Eitzen, G. A., Veenhuis, M., Aitchison, J. D., Szilard, R. K., Glover, J. R. and Rachubinski, R. A. (1994) PAY4, a gene required for peroxisome assembly in the yeast *Yarrowia lipolytica*, encodes a novel member of a family of putative ATPases, *J Biol Chem*, 269: 556-566
10. Aitchison, J. D., Blobel, G. and Rout, M. P. (1995) Nup120p: a yeast nucleoporin required for NPC distribution and mRNA transport, *J Cell Biol*, 131: 1659-1675
11. Aitchison, J. D., Rout, M. P., Marelli, M., Blobel, G. and Wozniak, R. W. (1995) Two novel related yeast nucleoporins Nup170p and Nup157p: complementation with the vertebrate homologue

Nup155p and functional interactions with the yeast nuclear pore-membrane protein Pom152p, *J Cell Biol*, 131: 1133-1148

12. Eitzen, G. A., Aitchison, J. D., Szilard, R. K., Veenhuis, M., Nuttley, W. M. and Rachubinski, R. A. (1995) The *Yarrowia lipolytica* gene PAY2 encodes a 42-kDa peroxisomal integral membrane protein essential for matrix protein import and peroxisome enlargement but not for peroxisome membrane proliferation, *J Biol Chem*, 270: 1429-1436
13. Aitchison, J. D., Blobel, G. and Rout, M. P. (1996) Kap104p: a karyopherin involved in the nuclear transport of messenger RNA binding proteins, *Science*, 274: 624-627
14. Rout, M. P., Blobel, G. and Aitchison, J. D. (1997) A distinct nuclear import pathway used by ribosomal proteins, *Cell*, 89: 715-725
15. Marelli, M., Aitchison, J. D. and Wozniak, R. W. (1998) Specific binding of the karyopherin Kap121p to a subunit of the nuclear pore complex containing Nup53p, Nup59p, and Nup170p, *J Cell Biol*, 143: 1813-1830
16. Mitchell, D. M., Zhou, M., Pariyarath, R., Wang, H., Aitchison, J. D., Ginsberg, H. N. and Fisher, E. A. (1998) Apoprotein B100 has a prolonged interaction with the translocon during which its lipidation and translocation change from dependence on the microsomal triglyceride transfer protein to independence, *Proc Natl Acad Sci U S A*, 95: 14733-14738
17. Wozniak, R. W., Rout, M. P. and Aitchison, J. D. (1998) Karyopherins and kissing cousins, *Trends Cell Biol*, 8: 184-188
18. Lee, D. C. and Aitchison, J. D. (1999) Kap104p-mediated nuclear import. Nuclear localization signals in mRNA-binding proteins and the role of Ran and Rna, *J Biol Chem*, 274: 29031-29037
19. Wylie, D. R., Glover, R. G. and Aitchison, J. D. (1999) Optic flow input to the hippocampal formation from the accessory optic system, *J Neurosci*, 19: 5514-5527
20. Aitchison, J. D. and Rout, M. P. (2000) The road to ribosomes. Filling potholes in the export pathway, *J Cell Biol*, 151: F23-26
21. Rout, M. P. and Aitchison, J. D. (2000) Pore relations: nuclear pore complexes and nucleocytoplasmic exchange, *Essays Biochem*, 36: 75-88
22. Rout, M. P., Aitchison, J. D., Suprpto, A., Hjertaas, K., Zhao, Y. and Chait, B. T. (2000) The yeast nuclear pore complex: composition, architecture, and transport mechanism, *J Cell Biol*, 148: 635-651
23. Dilworth, D. J., Suprpto, A., Padovan, J. C., Chait, B. T., Wozniak, R. W., Rout, M. P. and Aitchison, J. D. (2001) Nup2p dynamically associates with the distal regions of the yeast nuclear pore complex, *J Cell Biol*, 153: 1465-1478

24. Iouk, T. L., Aitchison, J. D., Maguire, S. and Wozniak, R. W. (2001) Rrb1p, a yeast nuclear WD-repeat protein involved in the regulation of ribosome biosynthesis, *Mol Cell Biol*, 21: 1260-1271
25. Marelli, M., Dilworth, D. J., Wozniak, R. W. and Aitchison, J. D. (2001) The dynamics of karyopherin-mediated nuclear transport, *Biochem Cell Biol*, 79: 603-612
26. Marelli, M., Lusk, C. P., Chan, H., Aitchison, J. D. and Wozniak, R. W. (2001) A link between the synthesis of nucleoporins and the biogenesis of the nuclear envelope, *J Cell Biol*, 153: 709-724
27. Pariyarath, R., Wang, H., Aitchison, J. D., Ginsberg, H. N., Welch, W. J., Johnson, A. E. and Fisher, E. A. (2001) Co-translational interactions of apoprotein B with the ribosome and translocon during lipoprotein assembly or targeting to the proteasome, *J Biol Chem*, 276: 541-550
28. Rout, M. P. and Aitchison, J. D. (2001) The nuclear pore complex as a transport machine, *J Biol Chem*, 276: 16593-16596
29. Aitchison, J. D. and Rout, M. P. (2002) A tense time for the nuclear envelope, *Cell*, 108: 301-304
30. Leslie, D. M., Grill, B., Rout, M. P., Wozniak, R. W. and Aitchison, J. D. (2002) Kap121p-mediated nuclear import is required for mating and cellular differentiation in yeast, *Mol Cell Biol*, 22: 2544-2555
31. Lusk, C. P., Makhnevych, T., Marelli, M., Aitchison, J. D. and Wozniak, R. W. (2002) Karyopherins in nuclear pore biogenesis: a role for Kap121p in the assembly of Nup53p into nuclear pore complexes, *J Cell Biol*, 159: 267-278
32. Smith, J. J., Marelli, M., Christmas, R. H., Vizeacoumar, F. J., Dilworth, D. J., Ideker, T., Galitski, T., Dimitrov, K., Rachubinski, R. A. and Aitchison, J. D. (2002) Transcriptome profiling to identify genes involved in peroxisome assembly and function, *J Cell Biol*, 158: 259-271
33. Yi, E. C., Marelli, M., Lee, H., Purvine, S. O., Aebersold, R., Aitchison, J. D., and Goodlett, D. R. (2002) Approaching complete peroxisome characterization by gas-phase fractionation, *Electrophoresis*, 23: 3205-3216
34. Aitchison, J., and Schwikowski, B (2003) Systems biology and elephants, *Nature Cell Biology*, 5: 285
35. Aitchison, J. D. and Galitski, T. (2003) Inventories to insights, *J Cell Biol*, 161: 465-469
36. Makhnevych, T., Lusk, C. P., Anderson, A. M., Aitchison, J. D. and Wozniak, R. W. (2003) Cell cycle regulated transport controlled by alterations in the nuclear pore complex, *Cell*, 115: 813-823
37. Rout, M. P., Aitchison, J. D., Magnasco, M. O. and Chait, B. T. (2003) Virtual gating and nuclear transport: the hole picture, *Trends Cell Biol*, 13: 622-628

38. Steiner-Mosonyi, M., Leslie, D. M., Dehghani, H., Aitchison, J. D. and Mangroo, D. (2003) Utp8p is an essential intranuclear component of the nuclear tRNA export machinery of *Saccharomyces cerevisiae*, *J Biol Chem*, 278: 32236-32245
39. Sydorsky, Y., Dilworth, D. J., Yi, E. C., Goodlett, D. R., Wozniak, R. W. and Aitchison, J. D. (2003) Intersection of the Kap123p-mediated nuclear import and ribosome export pathways, *Mol Cell Biol*, 23: 2042-2054
40. Tam, Y. Y., Torres-Guzman, J. C., Vizeacoumar, F. J., Smith, J. J., Marelli, M., Aitchison, J. D. and Rachubinski, R. A. (2003) Pex11-related proteins in peroxisome dynamics: a role for the novel peroxin Pex27p in controlling peroxisome size and number in *Saccharomyces cerevisiae*, *Mol Biol Cell*, 14: 4089-4102
41. Vizeacoumar, F. J., Torres-Guzman, J. C., Tam, Y. Y., Aitchison, J. D. and Rachubinski, R. A. (2003) YHR150w and YDR479c encode peroxisomal integral membrane proteins involved in the regulation of peroxisome number, size, and distribution in *Saccharomyces cerevisiae*, *J Cell Biol*, 161: 321-332
42. Lausted, C., Dahl, T., Warren, C., King, K., Smith, K., Johnson, M., Saleem, R., Aitchison, J., Hood, L. and Lasky, S. R. (2004) POSaM: a fast, flexible, open-source, inkjet oligonucleotide synthesizer and microarrayer, *Genome Biol*, 5: R58
43. Leslie, D. M., Zhang, W., Timney, B. L., Chait, B. T., Rout, M. P., Wozniak, R. W. and Aitchison, J. D. (2004) Characterization of karyopherin cargoes reveals unique mechanisms of Kap121p-mediated nuclear import, *Mol Cell Biol*, 24: 8487-8503
44. Marelli, M., Smith, J. J., Jung, S., Yi, E., Nesvizhskii, A. I., Christmas, R. H., Saleem, R. A., Tam, Y. Y., Fagarasanu, A., Goodlett, D. R., Aebersold, R., Rachubinski, R. A. and Aitchison, J. D. (2004) Quantitative mass spectrometry reveals a role for the GTPase Rho1p in actin organization on the peroxisome membrane, *J Cell Biol*, 167: 1099-1112
45. Vizeacoumar, F. J., Torres-Guzman, J. C., Bouard, D., Aitchison, J. D. and Rachubinski, R. A. (2004) Pex30p, Pex31p, and Pex32p form a family of peroxisomal integral membrane proteins regulating peroxisome size and number in *Saccharomyces cerevisiae*, *Mol Biol Cell*, 15: 665-677
46. Dilworth, D. J., Tackett, A. J., Rogers, R. S., Yi, E. C., Christmas, R. H., Smith, J. J., Siegel, A. F., Chait, B. T., Wozniak, R. W. and Aitchison, J. D. (2005) The mobile nucleoporin Nup2p and chromatin-bound Prp20p function in endogenous NPC-mediated transcriptional control, *J Cell Biol*, 171: 955-965
47. Fagarasanu, M., Fagarasanu, A., Tam, Y. Y., Aitchison, J. D. and Rachubinski, R. A. (2005) Inp1p is a peroxisomal membrane protein required for peroxisome inheritance in *Saccharomyces cerevisiae*, *J Cell Biol*, 169: 765-775

48. Hwang, D., Rust, A. G., Ramsey, S., Smith, J. J., Leslie, D. M., Weston, A. D., de Atauri, P., Aitchison, J. D., Hood, L., Siegel, A. F. and Bolouri, H. (2005) A data integration methodology for systems biology, *Proc Natl Acad Sci U S A*, 102: 17296-17301
49. Hwang, D., Smith, J. J., Leslie, D. M., Weston, A. D., Rust, A. G., Ramsey, S., de Atauri, P., Siegel, A. F., Bolouri, H., Aitchison, J. D. and Hood, L. (2005) A data integration methodology for systems biology: experimental verification, *Proc Natl Acad Sci U S A*, 102: 17302-17307
50. Scott, R. J., Lusk, C. P., Dilworth, D. J., Aitchison, J. D. and Wozniak, R. W. (2005) Interactions between Mad1p and the nuclear transport machinery in the yeast *Saccharomyces cerevisiae*, *Mol Biol Cell*, 16: 4362-4374
51. Sydorsky, Y., Dilworth, D. J., Halloran, B., Yi, E. C., Makhnevych, T., Wozniak, R. W. and Aitchison, J. D. (2005) Nop53p is a novel nucleolar 60S ribosomal subunit biogenesis protein, *Biochem J*, 388: 819-826
52. Tackett, A. J., Dilworth, D. J., Davey, M. J., O'Donnell, M., Aitchison, J. D., Rout, M. P. and Chait, B. T. (2005) Proteomic and genomic characterization of chromatin complexes at a boundary, *J Cell Biol*, 169: 35-47
53. Fagarasanu, A., Fagarasanu, M., Eitzen, G. A., Aitchison, J. D. and Rachubinski, R. A. (2006) The peroxisomal membrane protein Inp2p is the peroxisome-specific receptor for the myosin V motor Myo2p of *Saccharomyces cerevisiae*, *Dev Cell*, 10: 587-600
54. Kowalewska, J., Smith, K. D., Hudkins, K. L., Chang, A., Fogo, A. B., Houghton, D., Leslie, D., Aitchison, J., Nicosia, R. F. and Alpers, C. E. (2006) Membranous glomerulopathy with spherules: an uncommon variant with obscure pathogenesis, *Am J Kidney Dis*, 47: 983-992
55. Leslie, D. M., Timney, B., Rout, M. P. and Aitchison, J. D. (2006) Studying nuclear protein import in yeast, *Methods*, 39: 291-308
56. Niemistö, A., Selinummi, J., Saleem, R., Shmulevich, I., Aitchison, J.D., Yli-Harja, O. (2006) Extraction of the Number of Peroxisomes in Yeast Cells by Automated Image Analysis *28th IEEE EMBS Annual International Conference*, New York, NY
57. Orrell, D., Ramsey, S., Marelli, M., Smith, J.J., Petersen, T.W., de Atauri, P., Aitchison, J.D., Bolouri, H. (2006) Feedback control of stochastic noise in the yeast galactose utilization pathway, *Physica D*, 217: 64-76
58. Pedrioli, P. G., Raught, B., Zhang, X.D., Rogers, R., Aitchison, J.D., Matunis, M., Aebersold, R. (2006) Automated identification of SUMOylation sites using mass spectrometry and SUMOn pattern recognition software, *Nat Methods*, 3: 533-539

59. Ramsey, S. A., Smith, J. J., Orrell, D., Marelli, M., Petersen, T. W., de Atauri, P., Bolouri, H. and Aitchison, J. D. (2006) Dual feedback loops in the GAL regulon suppress cellular heterogeneity in yeast, *Nat Genet*, 38: 1082-1087
60. Saleem, R. A., Smith, J. J. and Aitchison, J. D. (2006) Proteomics of the peroxisome, *Biochim Biophys Acta*, 1763: 1541-1551
61. Smith, J. J., Sydorsky, Y., Marelli, M., Hwang, D., Bolouri, H., Rachubinski, R. A. and Aitchison, J. D. (2006) Expression and functional profiling reveal distinct gene classes involved in fatty acid metabolism, *Mol Syst Biol*, 2: 2006 0009
62. Taverna, S. D., Ilin, S., Rogers, R. S., Tanny, J. C., Lavender, H., Li, H., Baker, L., Boyle, J., Blair, L. P., Chait, B. T., Patel, D. J., Aitchison, J. D., Tackett, A. J. and Allis, C. D. (2006) Yng1 PHD finger binding to H3 trimethylated at K4 promotes NuA3 HAT activity at K14 of H3 and transcription at a subset of targeted ORFs, *Mol Cell*, 24: 785-796
63. Vizeacoumar, F. J., Vreden, W. N., Aitchison, J. D. and Rachubinski, R. A. (2006) Pex19p binds Pex30p and Pex32p at regions required for their peroxisomal localization but separate from their peroxisomal targeting signals, *J Biol Chem*, 281: 14805-14812
64. Vizeacoumar, F. J., Vreden, W. N., Fagarasanu, M., Eitzen, G. A., Aitchison, J. D. and Rachubinski, R. A. (2006) The dynamin-like protein Vps1p of the yeast *Saccharomyces cerevisiae* associates with peroxisomes in a Pex19p-dependent manner, *J Biol Chem*, 281: 12817-12823
65. Aitchison, J. D. and Wozniak, R. W. (2007) Cell biology: pore puzzle, *Nature*, 450: 621-622
66. Makhnevych, T., Ptak, C., Lusk, C. P., Aitchison, J. D. and Wozniak, R. W. (2007) The role of karyopherins in the regulated sumoylation of septins, *J Cell Biol*, 177: 39-49
67. Niemistö, A., Korpelainen, T., Saleem, R., Yli-Haja, O., Aitchison, J.D., Shmulevich, I. (2007) A K-Means Segmentation Method for Finding 2-D Object Areas Based on 3-D Image Stacks Obtained by Confocal Microscopy *29th International Conference of the IEEE Engineering in Medicine and Biology Society in conjunction with the Biennial Conference of the French Society of Biological and Medical Engineering*, Lyon, France
68. J. Selinummi, A. Niemistö, R. Saleem, G. W. Carter, J. Aitchison, O. Yli-Harja, I. Shmulevich, and J. Boyle. (2007) A Case Study on 3-D Reconstruction and Shape Description of Peroxisomes in Yeast, *IEEE International Conference on Signal Processing and Communication (ICSPC07)*, Dubai, United Arab Emirates (UAE)
69. Oeffinger, M., Wei, K. E., Rogers, R., DeGrasse, J. A., Chait, B. T., Aitchison, J. D. and Rout, M. P. (2007) Comprehensive analysis of diverse ribonucleoprotein complexes, *Nat Methods*, 4: 951-956

70. Ratushny, A. V., Ramsey, S.A., Roda, O., Smith, J.J., and Aitchison, J.D. (2007) Modeling the dynamic behavior of an oleate-responsive gene regulatory network in *Saccharomyces cerevisiae* *The Eighth International Conference on Systems Biology*, Longbeach, CA
71. Smith, J. J., Ramsey, S. A., Marelli, M., Marzolf, B., Hwang, D., Saleem, R. A., Rachubinski, R. A. and Aitchison, J. D. (2007) Transcriptional responses to fatty acid are coordinated by combinatorial control, *Mol Syst Biol*, 3: 115
72. Gradolatto, A., Rogers, R. S., Lavender, H., Taverna, S. D., Allis, C. D., Aitchison, J. D. and Tackett, A. J. (2008) *Saccharomyces cerevisiae* Yta7 regulates histone gene expression, *Genetics*, 179: 291-304
73. Hood, L., Rowen, L., Galas, D. J. and Aitchison, J. D. (2008) Systems biology at the Institute for Systems Biology, *Brief Funct Genomic Proteomic*, 7: 239-248
74. Marelli, M., Nesvizhskii, A. I. and Aitchison, J. D. (2008) Identifying bona fide components of an organelle by isotope-coded labeling of subcellular fractions : an example in peroxisomes, *Methods Mol Biol*, 432: 357-371
75. Ratushny, A. V., Ramsey, S. A., Roda, O., Wan, Y., Smith, J. J. and Aitchison, J. D. (2008) Control of transcriptional variability by overlapping feed-forward regulatory motifs, *Biophys J*, 95: 3715-3723
76. Saleem, R. A., Knoblach, B., Mast, F. D., Smith, J. J., Boyle, J., Dobson, C. M., Long-O'Donnell, R., Rachubinski, R. A. and Aitchison, J. D. (2008) Genome-wide analysis of signaling networks regulating fatty acid-induced gene expression and organelle biogenesis, *J Cell Biol*, 181: 281-292
77. Smith, J. J. and Aitchison, J. D. (2009) Regulation of peroxisome dynamics, *Curr Opin Cell Biol*. Feb;21(1):119-26. Epub 2009 Jan 31. Review
78. Wan, Y., Saleem, R. A., Ratushny, A. V., Roda, O., Smith, J. J., Lin, C. H., Chiang, J. H. and Aitchison, J. D. (2009) Role of the histone variant H2A.Z/Htz1p in TBP recruitment, chromatin dynamics, and regulated expression of oleate-responsive genes, *Mol Cell Biol*, 29: 2346-2358, PMID: PMC2668375
79. Fagarasanu A, Mast FD, Knoblach B, Jin Y, Brunner MJ, Logan MR, Glover JN, Eitzen GA, Aitchison JD, Weisman LS, Rachubinski RA. *J Cell Biol*. 2009 Aug 24;186(4):541-54. Epub 2009 Aug 17. PMID: 19687257 [PubMed - in process]
80. Gradolatto, A., Smart, S. K., Byrum, S., Blair, L. P., Rogers, R. S., Kolar, E. A., Lavender, H., Larson, S. K., Aitchison, J. D., Taverna, S. D. and Tackett, A. J. (2009) A noncanonical bromodomain in the AAA ATPase protein Yta7 directs chromosomal positioning and barrier chromatin activity, *Mol Cell Biol*, 29: 4604-4611

81. Ptak, C., Anderson, A. M., Scott, R. J., Vosse, D. V., Rogers, R. S., Sydorsky, Y., Aitchison, J. D. and Wozniak, R. W. (2009) A Role for the Karyopherin Kap123p in Microtubule Stability, *Traffic*, :2009 Aug 22. Epub ahead of print
82. Saleem RA, Aitchison JD. (2009) Quantitative Phosphoproteomics in Fatty Acid Stimulated *Saccharomyces cerevisiae*. *J Vis Exp*. 2009 Oct 12;(32). pii: 1474. doi: 10.3791/1474.

MANUSCRIPTS SUBMITTED

In Press

Shmulevich, I and Aitchison, JD., Deterministic and Stochastic Models of Genetic Regulatory Networks. 2009, Meth. Enzymol. *in press*

Submitted

Jung, S., Marelli, M., Rachubinski, R.A., Goodlett, D.R., Aitchison, J.D. Dynamic Subcellular Relocalization of Gpd1p in Response to Cell Stress.

Sekedat, M.D, Fenyo, D., Rogers, R.S., Tackett, A.J., Aitchison, J.D., Chait, B.T., GINS Motion Reveals Replication Fork Progression is Remarkably Uniform Throughout the Yeast Genome

Wan, Y., Smith, J.J., Aitchison, J.D. Histone Chaperone Chz1p Regulates Telomeric Anti-silencing by Modulating H2B Ubiquitination at Telomeric Chromatin

Saleem, R.A., Rogers, R.S., Ratushny, A.V., Dilworth, D.J., Shannon, P.T., Shteynberg, D., Moritz, R.L.,

Nesvizhskii, A.I. Rachubinski, R.A., Aitchison, J.D. Integrated Phosphoproteomic Analysis Reveals Conservation of Scale-Free Properties in a Nutrient-Responsive Signaling Network

B. BOOK CHAPTERS:

Aitchison, J. D., and Rout, M. P. (2001) in *The Encyclopedia of Genetics* (Brenner, S., and Miller, J. H., eds), pp. 1352-1356, Academic Press