

7. Literaturverzeichnis

- Akpan, A. & R. Morgan, (2002) Oral candidiasis. *Postgrad Med J* **78**: 455-459.
- Alarco, A. M., A. Marcil, J. Chen, B. Suter, D. Thomas & M. Whiteway, (2004) Immune-deficient *Drosophila melanogaster*: a model for the innate immune response to human fungal pathogens. *The Journal of Immunology* **172**: 5622-5628.
- Allison, D. B., X. Cui, G. P. Page & M. Sabripour, (2006) Microarray data analysis: from disarray to consolidation and consensus. *Nat Rev Genet* **7**: 55-65.
- Alonso-Monge, R., F. Navarro-García, E. Román, A. Negro, B. Eisman, C. Nombela & J. Pla, (2003) The Hog1 Mitogen-Activated Protein Kinase Is Essential in the Oxidative Stress Response and Chlamydospore Formation in *Candida albicans*. *Eukaryotic Cell* **2**: 351-361.
- Andes, D., J. Nett, P. Oschel, R. Albrecht, K. Marchillo & A. Pitula, (2004) Development and characterization of an in vivo central venous catheter *Candida albicans* biofilm model. *Infect Immun* **72**: 6023-6031.
- Atir-Lande, A., T. Gildor & D. Kornitzer, (2005) Role for the SCF CDC4 ubiquitin ligase in *Candida albicans* morphogenesis. *Mol Biol Cell* **16**: 2772-2785.
- Bahn, Y. & P. Sundstrom, (2001) *CAP1*, an adenylate cyclase-associated protein gene, regulates bud-hypha transitions, filamentous growth, and cyclic AMP levels and is required for virulence of *Candida albicans*. *Journal of Bacteriology* **183**: 3211-3223.
- Bailey, D. A., P. J. Feldmann, M. Bovey, N. A. Gow & A. J. Brown, (1996) The *Candida albicans* HYR1 gene, which is activated in response to hyphal development, belongs to a gene family encoding yeast cell wall proteins. *J Bacteriol* **178**: 5353-5360.
- Baillie, G. S. & L. J. Douglas, (1999) *Candida* biofilms and their susceptibility to antifungal agents. *Methods Enzymol* **310**: 644-656.
- Bain, J., C. Stubberfield & N. Gow, (2001) Ura-status-dependent adhesion of *Candida albicans* mutants. *FEMS Microbiology Letters* **204**: 323-328.
- Barelle, C. J., C. L. Priest, D. M. MacCallum, N. A. R. Gow, F. C. Odds & A. J. P. Brown, (2006) Niche-specific regulation of central metabolic pathways in a fungal pathogen. *Cellular Microbiology* **0**.
- Bastmeyer, M., H. B. Deising & C. Bechinger, (2002) Force exertion in fungal infection. *Annu Rev Biophys Biomol Struct* **31**: 321-341.
- Bennett, R. J. & A. D. Johnson, (2005) Mating in *Candida albicans* and the Search for a Sexual Cycle. *Annual Review of Microbiology* **59**: 233-255.
- Bensen, E., S. Martin, M. Li, J. Berman & D. Davis, (2004) Transcriptional profiling in *Candida albicans* reveals new adaptive responses to extracellular pH and functions for Rim101p. *Molecular Microbiology* **54**: 1335-1351.
- Birse, C. E., M. Y. Irwin, W. A. Fonzi & P. S. Sypherd, (1993) Cloning and characterization of ECE1, a gene expressed in association with cell elongation of the dimorphic pathogen *Candida albicans*. *Infect Immun* **61**: 3648-3655.
- Borges-Walmsley, M. I., D. Chen, X. Shu & A. R. Walmsley, (2002) The pathobiology of *Paracoccidioides brasiliensis*. *Trends Microbiol* **10**: 80-87.
- Borges-Walmsley, M. I. & A. R. Walmsley, (2000) cAMP signalling in pathogenic fungi: control of dimorphic switching and pathogenicity. *Trends Microbiol* **8**: 133-141.
- Boyce, K. J., M. Kretschmer & J. W. Kronstad, (2006) The *vtc4* gene influences polyphosphate storage, morphogenesis, and virulence in the maize pathogen *Ustilago maydis*. *Eukaryot Cell* **5**: 1399-1409.
- Brakhage, A. A., (2005) Systemic fungal infections caused by *Aspergillus* species: epidemiology, infection process and virulence determinants. *Curr Drug Targets* **6**: 875-886.
- Brand, A., D. MacCallum, A. Brown, N. Gow & F. Odds, (2004) Ectopic Expression of *URA3* Can Influence the Virulence Phenotypes and Proteome of *Candida albicans* but Can Be Overcome by Targeted Reintegration of *URA3* at the *RPS10* Locus. *Eukaryotic Cell* **3**: 900-909.
- Brennan, M., D. Y. Thomas, M. Whiteway & K. Kavanagh, (2002) Correlation between virulence of *Candida albicans* mutants in mice and *Galleria mellonella* larvae. *FEMS Immunol Med Microbiol* **34**: 153-157.
- Brown, D., Jr, A. Giusani, X. Chen & C. Kumamoto, (1999) Filamentous growth of *Candida albicans* in response to physical environmental cues and its regulation by the unique *CZF1* gene. *Molecular Microbiology* **34**: 651-662.

- Bryant, P. A., D. Venter, R. Robins-Browne & N. Curtis, (2004) Chips with everything: DNA microarrays in infectious diseases. *Lancet Infect Dis* **4**: 100-111.
- Bucher, O. & H. Wartenberg, (1997) *Cytologie, Histologie und mikroskopische Anatomie*. Verlag Hans Huber.
- Butler, D. K., O. All, J. Goffena, T. Loveless, T. Wilson & K. A. Toenjes, (2006) The GRR1 gene of *Candida albicans* is involved in the negative control of pseudohyphal morphogenesis. *Fungal Genet Biol* **43**: 573-582.
- Campoy, S., M. Jara, N. Busquets, A. M. Perez De Rozas, I. Badiola & J. Barbe, (2002) Role of the high-affinity zinc uptake znuABC system in *Salmonella enterica* serovar typhimurium virulence. *Infect Immun* **70**: 4721-4725.
- Cao, F., S. Lane, P. A. P. Raniga, Y. Lu, Z. Zhou, K. Ramon, J. Chen & H. Liu, (2005) The Flo8 Transcription Factor Is Essential for Hyphal Development and Virulence in *Candida albicans*. *Molecular Biology of the Cell*: E05-06-0502.
- Cao, F., S. Lane, P. P. Raniga, Y. Lu, Z. Zhou, K. Ramon, J. Chen & H. Liu, (2006) The Flo8 transcription factor is essential for hyphal development and virulence in *Candida albicans*. *Mol Biol Cell* **17**: 295-307.
- Chandra, J., P. Mukherjee, L. Hoyer, T. McCormick & M. Ghannoum, (2001) Biofilm Formation by the Fungal Pathogen *Candida albicans*: Development, Architecture, and Drug Resistance. *Journal of Bacteriology* **183**: 5385-5394.
- Charron, M. J., E. Read, S. R. Haut & C. A. Michels, (1989) Molecular evolution of the telomere-associated MAL loci of *Saccharomyces*. *Genetics* **122**: 307-316.
- Chauhan, N., J. P. Latge & R. Calderone, (2006) Signalling and oxidant adaptation in *Candida albicans* and *Aspergillus fumigatus*. *Nat Rev Microbiol* **4**: 435-444.
- Chen, H., M. Fujita, Q. Feng, J. Clardy & G. R. Fink, (2004) Tyrosol is a quorum-sensing molecule in *Candida albicans*. *Proc Natl Acad Sci U S A* **101**: 5048-5052.
- Chen, S. H., M. F. Stins, S. H. Huang, Y. H. Chen, K. J. Kwon-Chung, Y. Chang, K. S. Kim, K. Suzuki & A. Y. Jong, (2003) *Cryptococcus neoformans* induces alterations in the cytoskeleton of human brain microvascular endothelial cells. *J Med Microbiol* **52**: 961-970.
- Chen, Y. B., C. P. Yang, R. X. Li, R. Zeng & J. Q. Zhou, (2005) Def1p is involved in telomere maintenance in budding yeast. *J Biol Chem* **280**: 24784-24791.
- Chomczynski, P. & N. Sacchi, (1987) Single-step method of RNA isolation by acid guanidinium thiocyanate-phenol-chloroform extraction. *Anal Biochem* **162**: 156-159.
- Clohessy, P. A. & B. E. Golden, (1995) Calprotectin-mediated zinc chelation as a biostatic mechanism in host defence. *Scand J Immunol* **42**: 551-556.
- Cole, G., K. Seshan, M. Phaneuf & K. Lynn, (1991) Chlamyospore-like cells of *Candida albicans* in the gastrointestinal tract of infected, immunocompromised mice. *Canadian Journal of Microbiology* **37**: 637-646.
- Collins, D. M., R. P. Kawakami, B. M. Buddle, B. J. Wards & G. W. de Lisle, (2003) Different susceptibility of two animal species infected with isogenic mutants of *Mycobacterium bovis* identifies *phoT* as having roles in tuberculosis virulence and phosphate transport. *Microbiology* **149**: 3203-3212.
- Collins, H. L., (2003) The role of iron in infections with intracellular bacteria. *Immunol Lett* **85**: 193-195.
- Cossart, P. & P. J. Sansonetti, (2004) Bacterial invasion: the paradigms of enteroinvasive pathogens. *Science* **304**: 242-248.
- Csank, C., K. Schroppel, E. Leberer, D. Harcus, O. Mohamed, S. Meloche, D. Thomas & M. Whiteway, (1998) Roles of the *Candida albicans* mitogen-activated protein kinase homolog, Cek1p, in hyphal development and systemic candidiasis. *Infection and Immunity* **66**: 2713-2721.
- Davies, J. M., A. J. Stacey & C. A. Gilligan, (1999) *Candida albicans* hyphal invasion: thigmotropism or chemotropism? *FEMS Microbiol Lett* **171**: 245-249.
- Davis, D., (2003) Adaptation to environmental pH in *Candida albicans* and its relation to pathogenesis. *Current Genetics* **44**: 1-7.
- Davis, D., J. E. Edwards, Jr., A. P. Mitchell & A. S. Ibrahim, (2000a) *Candida albicans* RIM101 pH response pathway is required for host-pathogen interactions. *Infect Immun* **68**: 5953-5959.
- Davis, D., R. Wilson & A. Mitchell, (2000b) RIM101-dependent and-independent pathways govern pH responses in *Candida albicans*. *Molecular and Cellular Biology* **20**: 971-978.
- de Repentigny, L., D. Lewandowski & P. Jolicoeur, (2004) Immunopathogenesis of oropharyngeal candidiasis in human immunodeficiency virus infection. *Clin Microbiol Rev* **17**: 729-759, table of contents.

- Dennison, P. M. J., M. Ramsdale, C. L. Manson & A. J. P. Brown, (2005) Gene disruption in *Candida albicans* using a synthetic, codon-optimised Cre-loxP system. *Fungal Genetics and Biology* **42**: 737.
- Ding, Y. H., N. Y. Liu, Z. S. Tang, J. Liu & W. C. Yang, (2006) Arabidopsis GLUTAMINE-RICH PROTEIN23 is essential for early embryogenesis and encodes a novel nuclear PPR motif protein that interacts with RNA polymerase II subunit III. *Plant Cell* **18**: 815-830.
- Dolan, J. W., A. C. Bell, B. Hube, M. Schaller, T. F. Warner & E. Balish, (2004) *Candida albicans* PLD I activity is required for full virulence. *Med Mycol* **42**: 439-447.
- Douglas, L., (2003) *Candida* biofilms and their role in infection. *Trends in Microbiology* **11**: 30-36.
- Duenwald, M. L., S. Jagadish, F. Giorgini, P. J. Muchowski & S. Lindquist, (2006) A network of protein interactions determines polyglutamine toxicity. *Proc Natl Acad Sci U S A* **103**: 11051-11056.
- Eisendle, M., H. Oberegger, R. Buttinger, P. Illmer & H. Haas, (2004) Biosynthesis and uptake of siderophores is controlled by the PacC-mediated ambient-pH Regulatory system in *Aspergillus nidulans*. *Eukaryot Cell* **3**: 561-563.
- Elahi, S., G. Pang, R. B. Ashman & R. Clancy, (2001) Nitric oxide-enhanced resistance to oral candidiasis. *Immunology* **104**: 447-454.
- Ellepola, A. N. & L. P. Samaranayake, (1998) The effect of limited exposure to antimycotics on the relative cell-surface hydrophobicity and the adhesion of oral *Candida albicans* to buccal epithelial cells. *Arch Oral Biol* **43**: 879-887.
- Ellepola, A. N. & L. P. Samaranayake, (2000) Oral candidal infections and antimycotics. *Crit Rev Oral Biol Med* **11**: 172-198.
- Enjalbert, B. & M. Whiteway, (2005) Release from Quorum-Sensing Molecules Triggers Hyphal Formation during *Candida albicans* Resumption of Growth. *Eukaryotic Cell* **4**: 1203-1210.
- Ernst, J., (2000) Transcriptional factors in *Candida albicans* - environmental control of morphogenesis. *Microbiology* **146**: 1763-1774.
- Falkow, S., (1988) Molecular Koch's postulates applied to microbial pathogenicity. *Rev Infect Dis* **10 Suppl 2**: S274-276.
- Fan, J., V. Chaturvedi & S. H. Shen, (2002) Identification and phylogenetic analysis of a glucose transporter gene family from the human pathogenic yeast *Candida albicans*. *J Mol Evol* **55**: 336-346.
- Fang, F. C., S. J. Libby, M. E. Castor & A. M. Fung, (2005) Isocitrate lyase (*AceA*) is required for *Salmonella* persistence but not for acute lethal infection in mice. *Infect Immun* **73**: 2547-2549.
- Farah, C. S., T. Gotjamanos, G. J. Seymour & R. B. Ashman, (2002) Cytokines in the oral mucosa of mice infected with *Candida albicans*. *Oral Microbiol Immunol* **17**: 375-378.
- Felk, A., M. Kretschmar, A. Albrecht, M. Schaller, D. Sanglard, T. Nichterlein, D. Sanglard, H. Korting, W. Schäfer & B. Hube, (2002) *Candida albicans* Hyphal Formation and the Expression of the Efg1-Regulated Proteinases Sap4 to Sap6 Are Required for the Invasion of Parenchymal Organs. *Infection and Immunity* **70**: 3689-3700.
- Fidel, P. L., Jr., (2006) *Candida*-host interactions in HIV disease: relationships in oropharyngeal candidiasis. *Adv Dent Res* **19**: 80-84.
- Filler, S., J. Swerdloff, C. Hobbs & P. Luckett, (1995) Penetration and damage of endothelial cells by *Candida albicans*. *Infection and Immunity* **63**: 976-983.
- Fonzi, W. & M. Irwin, (1993) Isogenic strain construction and gene mapping in *Candida albicans*. *Genetics* **134**: 717-728.
- Fradin, C., M. Kretschmar, T. Nichterlein, C. Gaillardin, C. d'Enfert & B. Hube, (2003) Stage-specific gene expression of *Candida albicans* in human blood. *Molecular Microbiology* **47**: 1523-1543.
- Freiman, R. N. & R. Tjian, (2002) Neurodegeneration. A glutamine-rich trail leads to transcription factors. *Science* **296**: 2149-2150.
- Gillum, A., E. Tsay & D. Kirsch, (1984) Isolation of the *Candida albicans* gene for orotidine-5'-phosphate decarboxylase by complementation of *S. cerevisiae* *ura3* and *E. coli* *pyrF* mutations. *Molecular and General Genetics* **198**: 179-182.
- Giusani, A. D., M. Vinces & C. A. Kumamoto, (2002) Invasive filamentous growth of *Candida albicans* is promoted by Czf1p-dependent relief of Efg1p-mediated repression. *Genetics* **160**: 1749-1753.
- Glick, M. & M. Siegel, (1999) Viral and fungal infections of the oral cavity in immunocompetent patients. *Infectious Disease Clinics of North America* **13**: 817-831.

- Gola, S., R. Martin, A. Walther, A. Dunkler & J. Wendland, (2003) New modules for PCR-based gene targeting in *Candida albicans*: rapid and efficient gene targeting using 100 bp of flanking homology region. *Yeast* **20**: 1339-1347.
- Gow, N., A. Brown & F. Odds, (2002) Fungal morphogenesis and host invasion. *Current Opinion in Microbiology* **5**: 366-371.
- Gow, N. A., Y. Knox, C. A. Munro & W. D. Thompson, (2003) Infection of chick chorioallantoic membrane (CAM) as a model for invasive hyphal growth and pathogenesis of *Candida albicans*. *Med Mycol* **41**: 331-338.
- Green, C., G. Cheng, J. Chandra, P. Mukherjee, M. Ghannoum & L. Hoyer, (2004) RT-PCR detection of *Candida albicans* ALS gene expression in the reconstituted human epithelium (RHE) model of oral candidiasis and in model biofilms. *Microbiology* **150**: 267-275.
- Greenspan, D., E. Komaroff, M. Redford, J. A. Phelan, M. Navazesh, M. E. Alves, H. Kamrath, R. Mulligan, C. E. Barr & J. S. Greenspan, (2000) Oral mucosal lesions and HIV viral load in the Women's Interagency HIV Study (WIHS). *J Acquir Immune Defic Syndr* **25**: 44-50.
- Grifantini, R., E. Bartolini, A. Muzzi, M. Draghi, E. Frigimelica, J. Berger, F. Randazzo & G. Grandi, (2002) Gene expression profile in *Neisseria meningitidis* and *Neisseria lactamica* upon host-cell contact: from basic research to vaccine development. *Ann N Y Acad Sci* **975**: 202-216.
- Guglielmi, K. M., E. M. Johnson, T. Stehle & T. S. Dermody, (2006) Attachment and cell entry of mammalian orthoreovirus. *Curr Top Microbiol Immunol* **309**: 1-38.
- Harcus, D., A. Nantel, A. Marcil, T. Rigby & M. Whiteway, (2004) Transcription profiling of cyclic AMP signaling in *Candida albicans*. *Molecular Biology of the Cell* **15**: 4490-4499.
- Heitman, J., S. G. Filler, J. E. Edwards Jr & A. P. Mitchell, (2006) *Molecular Principles of Fungal Pathogenesis*. ASM press.
- Helmerhorst, E. J., R. F. Troxler & F. G. Oppenheim, (2001) The human salivary peptide histatin 5 exerts its antifungal activity through the formation of reactive oxygen species. *Proc Natl Acad Sci U S A* **98**: 14637-14642.
- Hoch, H., R. Staples, B. Whitehead, J. Comeau & E. Wolf, (1987) Signaling for Growth Orientation and Cell Differentiation by Surface Topography in *Uromyces*. *Science*: 1659-1662.
- Hoffman, C. S. & F. Winston, (1987) A ten-minute DNA preparation from yeast efficiently releases autonomous plasmids for transformation of *Escherichia coli*. *Gene* **57**: 267-272.
- Hogan, D. A. & R. Kolter, (2002) *Pseudomonas-Candida* interactions: an ecological role for virulence factors. *Science* **296**: 2229-2232.
- Holmes, A. R., B. M. Bandara & R. D. Cannon, (2002) Saliva promotes *Candida albicans* adherence to human epithelial cells. *J Dent Res* **81**: 28-32.
- Hornby, J. M., E. C. Jensen, A. D. Lisec, J. J. Tasto, B. Jahnke, R. Shoemaker, P. Dussault & K. W. Nickerson, (2001) Quorum sensing in the dimorphic fungus *Candida albicans* is mediated by farnesol. *Appl Environ Microbiol* **67**: 2982-2992.
- Howlett, J. A. & C. A. Squier, (1980) *Candida albicans* ultrastructure: colonization and invasion of oral epithelium. *Infect Immun* **29**: 252-260.
- Hoyer, L., (2001) The ALS gene family of *Candida albicans*. *Trends in Microbiology* **9**: 176-180.
- Hromatka, B. S., S. M. Noble & A. D. Johnson, (2005) Transcriptional Response of *C. albicans* to Nitric Oxide and the Role of the *YHB1* Gene in Nitrosative Stress and Virulence. *Molecular Biology of the Cell*: E05-05-0435.
- Hubbard, M., D. Markie & R. Poulter, (1986) Isolation and morphological characterization of a mycelial mutant of *Candida albicans*. *Journal of Bacteriology* **165**: 61-65.
- Hube, B., D. Hess, C. A. Baker, M. Schaller, W. Schafer & J. W. Dolan, (2001) The role and relevance of phospholipase D1 during growth and dimorphism of *Candida albicans*. *Microbiology* **147**: 879-889.
- Hube, B. & J. Naglik, (2001) Extracellular Hydrolases. In: *Candida and Candidiasis*. R. Calderone (ed). Washington, DC: ASM Press, pp. 107-122.
- Hube, B., F. Stehr, M. Bossenz, A. Mazur, M. Kretschmar & W. Schäfer, (2000) Secreted lipases of *Candida albicans*: cloning, characterisation and expression analysis of a new gene family with at least ten members. *Archives of Microbiology* **174**: 362-374.
- Hube, B., C. Turver, F. Odds, H. Eiffert, G. Boulnois, H. Kochel & R. Ruchel, (1991) [Identification, cloning and characterization of the gene for the secretory aspartate protease of *Candida albicans*]. *Mycoses* **34 Suppl 1**: 59-61.
- Hudson, D., Q. Sciascia, R. Sanders, G. Norris, P. Edwards, P. Sullivan & P. Farley, (2004) Identification of the dialysable serum inducer of germ-tube formation in *Candida albicans*. *Microbiology* **150**: 3041-3049.

- Hung, D. T., J. Zhu, D. Sturtevant & J. J. Mekalanos, (2006) Bile acids stimulate biofilm formation in *Vibrio cholerae*. *Mol Microbiol* **59**: 193-201.
- Jabra-Rizk, M. A., W. A. Falkler & T. F. Meiller, (2004) Fungal biofilms and drug resistance. *Emerg Infect Dis* **10**: 14-19.
- Jenkinson, H. F. & R. J. Lamont, (2005) Oral microbial communities in sickness and in health. *Trends Microbiol* **13**: 589-595.
- Jitsurong, S., S. Kiamsiri & N. Pattararangrong, (1993) New milk medium for germ tube and chlamydoconidia production by *Candida albicans*. *Mycopathologia* **123**: 95-98.
- Jones, T., N. Federspiel, H. Chibana, J. Dungan, S. Kalman, B. Magee, G. Newport, Y. Thorstenson, N. Agabian, P. Magee, R. Davis & S. Scherer, (2004) The diploid genome sequence of *Candida albicans*. *Proceedings of the National Academy of Sciences, USA* **101**: 7329-7334.
- Kadosh, D. & A. Johnson, (2005) Induction of the *Candida albicans* Filamentous Growth Program by Relief of Transcriptional Repression: A Genome-wide Analysis. *Molecular Biology of the Cell* **16**: 2903-2912.
- Kendall, H. K., H. R. Haase, H. Li, Y. Xiao & P. M. Bartold, (2000) Nitric oxide synthase type-II is synthesized by human gingival tissue and cultured human gingival fibroblasts. *J Periodontal Res* **35**: 194-200.
- Kendall, H. K., R. I. Marshall & P. M. Bartold, (2001) Nitric oxide and tissue destruction. *Oral Dis* **7**: 2-10.
- Kerr, J. R., G. W. Taylor, A. Rutman, N. Hoiby, P. J. Cole & R. Wilson, (1999) *Pseudomonas aeruginosa* pyocyanin and 1-hydroxyphenazine inhibit fungal growth. *J Clin Pathol* **52**: 385-387.
- Khalaf, R. & R. Zitomer, (2001) The DNA binding protein Rfg1 is a repressor of filamentation in *Candida albicans*. *Genetics* **157**: 1503-1512.
- Khan, Z. U., S. Ahmad, E. Mokaddas & R. Chandy, (2004) Tobacco agar, a new medium for differentiating *Candida dubliniensis* from *Candida albicans*. *J Clin Microbiol* **42**: 4796-4798.
- Kikuchi, H., S. Kim, K. Watanabe & M. Watarai, (2006) *Brucella abortus*-alanyl-D-alanine carboxypeptidase contributes to its intracellular replication and resistance against nitric oxide. *FEMS Microbiol Lett* **259**: 120-125.
- Kim, S., K. Watanabe, T. Shirahata & M. Watarai, (2004) Zinc uptake system (*znuA* locus) of *Brucella abortus* is essential for intracellular survival and virulence in mice. *J Vet Med Sci* **66**: 1059-1063.
- Klengel, T., W.-J. Liang, J. Chaloupka, C. Ruoff, K. Schroppel, J. R. Naglik, S. E. Eckert, E. G. Mogensen, K. Haynes & M. F. Tuite, (2005) Fungal Adenylyl Cyclase Integrates CO₂ Sensing with cAMP Signaling and Virulence. *Current Biology* **15**: 2021.
- Kohler, J. & G. Fink, (1996) *Candida albicans* strains heterozygous and homozygous for mutations in mitogen-activated protein kinase signaling components have defects in hyphal development. *Proceedings of the National Academy of Sciences, USA* **93**: 13223-13228.
- Kornitzer, D. & A. Ciechanover, (2000) Modes of regulation of ubiquitin-mediated protein degradation. *J Cell Physiol* **182**: 1-11.
- Korting, H., B. Hube, S. Oberbauer, E. Januschke, G. Hamm, A. Albrecht, C. Borelli & M. Schaller, (2003) Reduced expression of the hyphal-independent *Candida albicans* proteinase genes *SAP1* and *SAP3* in the *efg1* mutant is associated with attenuated virulence during infection of oral epithelium. *Journal of Medical Microbiology* **52**: 623-632.
- Krcmery, V. & A. J. Barnes, (2002) Non-*albicans* *Candida* spp. causing fungaemia: pathogenicity and antifungal resistance. *J Hosp Infect* **50**: 243-260.
- Kruppa, M. & R. Calderone, (2006) Two-component signal transduction in human fungal pathogens. *FEMS Yeast Res* **6**: 149-159.
- Kruppa, M., B. P. Krom, N. Chauhan, A. V. Bambach, R. L. Cihlar & R. A. Calderone, (2004) The two-component signal transduction protein Chk1p regulates quorum sensing in *Candida albicans*. *Eukaryot Cell* **3**: 1062-1065.
- Kumamoto, C., (2002) *Candida* biofilms. *Current Opinion in Microbiology* **5**: 608-611.
- Kumamoto, C. A. & M. D. Vences, (2005a) Alternative *Candida albicans* Lifestyles: Growth on Surfaces. *Annual Review of Microbiology* **59**: 113-133.
- Kumamoto, C. A. & M. D. Vences, (2005b) Contributions of hyphae and hypha-co-regulated genes to *Candida albicans* virulence. *Cellular Microbiology* **7**: 1546-1554.
- Kunkl, A., L. Mortara, M. T. Valle, D. Fenoglio, M. P. Terranova, A. M. Megiovanni, A. Alessandrini, G. Li Pira, G. Mazzarello, V. Del Bono, A. Canessa, D. Bassetti & F. Manca, (1998)

- Recognition of antigenic clusters of *Candida albicans* by T lymphocytes from human immunodeficiency virus-infected persons. *J Infect Dis* **178**: 488-496.
- Kunze, D., D. MacCallum, F. C. Odds & B. Hube, (2007) Multiple functions of *DOA1* in *C. albicans*. *Microbiology submitted*.
- Kunze, D., I. Melzer, D. Bennett, D. Sanglard, D. MacCallum, J. Norskau, D. C. Coleman, F. C. Odds, W. Schafer & B. Hube, (2005) Functional analysis of the phospholipase C gene *CaPLC1* and two unusual phospholipase C genes, *CaPLC2* and *CaPLC3*, of *Candida albicans*. *Microbiology* **151**: 3381-3394.
- Lamb, T. M. & A. P. Mitchell, (2003) The transcription factor Rim101p governs ion tolerance and cell differentiation by direct repression of the regulatory genes *NRG1* and *SMP1* in *Saccharomyces cerevisiae*. *Mol Cell Biol* **23**: 677-686.
- Lamb, T. M., W. Xu, A. Diamond & A. P. Mitchell, (2001) Alkaline response genes of *Saccharomyces cerevisiae* and their relationship to the RIM101 pathway. *J Biol Chem* **276**: 1850-1856.
- Lan, C.-Y., G. Newport, L. Murillo, T. Jones, S. Scherer, R. Davis & N. Agabian, (2002) Metabolic specialization associated with phenotypic switching in *Candida albicans*. *Proceedings of the National Academy of Sciences, USA* **99**: 14907-14912.
- Lane, S., C. Birse, S. Zhou, R. Matson & H. Liu, (2001a) DNA array studies demonstrate convergent regulation of virulence factors by *Cph1*, *Cph2*, and *Efg1* in *Candida albicans*. *The Journal of Biological Chemistry* **276**: 48988-48996.
- Lane, S., S. Zhou, T. Pan, Q. Dai & H. Liu, (2001b) The Basic Helix-Loop-Helix Transcription Factor *Cph2* Regulates Hyphal Development in *Candida albicans* Partly via *Tec1*. *Molecular and Cellular Biology* **21**: 6418-6428.
- Lee, K., H. Buckley & C. Campbell, (1975) An amino acid liquid synthetic medium for the development of mycelial and yeast forms of *Candida albicans*. *Sabouraudia* **13**: 148-153.
- Leigh, J. E., M. Barousse, R. K. Swoboda, T. Myers, S. Hager, N. A. Wolf, J. L. Cutright, J. Thompson, J. D. Sobel & P. L. Fidel, Jr., (2001) *Candida*-specific systemic cell-mediated immune reactivities in human immunodeficiency virus-positive persons with mucosal candidiasis. *J Infect Dis* **183**: 277-285.
- Leigh, J. E., K. M. McNulty & P. L. Fidel, Jr., (2006) Characterization of the immune status of CD8+ T cells in oral lesions of human immunodeficiency virus-infected persons with oropharyngeal candidiasis. *Clin Vaccine Immunol* **13**: 678-683.
- Leigh, J. E., K. Shetty & P. L. Fidel, Jr., (2004) Oral opportunistic infections in HIV-positive individuals: review and role of mucosal immunity. *AIDS Patient Care STDS* **18**: 443-456.
- Leigh, J. E., C. Steele, F. L. Wormley, Jr., W. Luo, R. A. Clark, W. Gallaher & P. L. Fidel, Jr., (1998) Th1/Th2 cytokine expression in saliva of HIV-positive and HIV-negative individuals: a pilot study in HIV-positive individuals with oropharyngeal candidiasis. *J Acquir Immune Defic Syndr Hum Retrovirol* **19**: 373-380.
- Lewandowski, D., M. Marquis, F. Aumont, A. C. Lussier-Morin, M. Raymond, S. Senechal, Z. Hanna, P. Jolicoeur & L. de Repentigny, (2006) Altered CD4+ T cell phenotype and function determine the susceptibility to mucosal candidiasis in transgenic mice expressing HIV-1. *The Journal of Immunology* **177**: 479-491.
- Li, F. & S. P. Palecek, (2003) *EAP1*, a *Candida albicans* gene involved in binding human epithelial cells. *Eukaryot Cell* **2**: 1266-1273.
- Li, W. J., Y. M. Wang, X. D. Zheng, Q. M. Shi, T. T. Zhang, C. Bai, D. Li, J. L. Sang & Y. Wang, (2006) The F-box protein *Grr1* regulates the stability of *Ccn1*, *Cln3* and *Hof1* and cell morphogenesis in *Candida albicans*. *Mol Microbiol* **62**: 212-226.
- Liu, H., (2002) Co-regulation of pathogenesis with dimorphism and phenotypic switching in *Candida albicans*, a commensal and a pathogen. *International Journal of Medical Microbiology* **292**: 299-311.
- Liu, H., J. Kohler & G. R. Fink, (1994) Suppression of hyphal formation in *Candida albicans* by mutation of a STE12 homolog. *Science* **266**: 1723-1726.
- Lo, H., J. Kohler, B. DiDomenico, D. Loebenberg, A. Cacciapuoti & G. Fink, (1997) Nonfilamentous *C. albicans* mutants are avirulent. *Cell* **90**: 939-949.
- Lopes Bezerra, L. M. & S. G. Filler, (2004) Interactions of *Aspergillus fumigatus* with endothelial cells: internalization, injury, and stimulation of tissue factor activity. *Blood* **103**: 2143-2149.
- Lorenz, M., J. Bender & G. Fink, (2004) Transcriptional Response of *Candida albicans* upon Internalization by Macrophages. *Eukaryotic Cell* **3**: 1076-1087.
- Lorenz, M. & G. Fink, (2002) Life and Death in a Macrophage: Role of the Glyoxylate Cycle in Virulence. *Eukaryotic Cell* **1**: 657-662.

- Lucas, R. L., C. P. Lostroh, C. C. DiRusso, M. P. Spector, B. L. Wanner & C. A. Lee, (2000) Multiple factors independently regulate *hilA* and invasion gene expression in *Salmonella enterica* serovar typhimurium. *J Bacteriol* **182**: 1872-1882.
- Lulloff, S. J., B. L. Hahn & P. G. Sohnle, (2004) Fungal susceptibility to zinc deprivation. *J Lab Clin Med* **144**: 208-214.
- Magee, P., L. Bowdin & J. Staudinger, (1992) Comparison of molecular typing methods for *Candida albicans*. *Journal of Clinical Microbiology* **30**: 2674-2679.
- Maidan, M. M., L. De Rop, J. Serneels, S. Exler, S. Rupp, H. Tournu, J. M. Thevelein & P. Van Dijck, (2005) The G protein-coupled receptor Gpr1 and the Galpha protein Gpa2 act through the cAMP-protein kinase A pathway to induce morphogenesis in *Candida albicans*. *Mol Biol Cell* **16**: 1971-1986.
- Mans, J. J., R. J. Lamont & M. Handfield, (2006) Microarray analysis of human epithelial cell responses to bacterial interaction. *Infect Disord Drug Targets* **6**: 299-309.
- Marchler-Bauer, A., J. B. Anderson, P. F. Cherukuri, C. DeWeese-Scott, L. Y. Geer, M. Gwadz, S. He, D. I. Hurwitz, J. D. Jackson, Z. Ke, C. J. Lanczycki, C. A. Liebert, C. Liu, F. Lu, G. H. Marchler, M. Mullokandov, B. A. Shoemaker, V. Simonyan, J. S. Song, P. A. Thiessen, R. A. Yamashita, J. J. Yin, D. Zhang & S. H. Bryant, (2005) CDD: a Conserved Domain Database for protein classification. *Nucleic Acids Res* **33**: D192-196.
- Martin, S. W., L. M. Douglas & J. B. Konopka, (2005) Cell Cycle Dynamics and Quorum Sensing in *Candida albicans* Chlamydospores Are Distinct from Budding and Hyphal Growth. *Eukaryotic Cell* **4**: 1191-1202.
- Mattia, E., G. Carruba, L. Angiolella & A. Cassone, (1982) Induction of germ tube formation by N-acetyl-D-glucosamine in *Candida albicans*: uptake of inducer and germinative response. *J Bacteriol* **152**: 555-562.
- Mavor, A., S. Thewes & B. Hube, (2005) Systemic fungal infections caused by *Candida* species: epidemiology, infection process and virulence attributes. *Current Drug Targets* **6**: 863-874.
- McCullough & Savage, (2005) Oral candidosis and the therapeutic use of antifungal agents in dentistry. *Australian Dental Journal* **50**: 39-39.
- McNulty, K. M., J. Plianrunsi, J. E. Leigh, D. Mercante & P. L. Fidel, Jr., (2005) Characterization of CD8+ T cells and microenvironment in oral lesions of human immunodeficiency virus-infected persons with oropharyngeal candidiasis. *Infect Immun* **73**: 3659-3667.
- Mendes-Giannini, M. J., S. A. Hanna, J. L. da Silva, P. F. Andreotti, L. R. Vincenzi, G. Benard, H. L. Lenzi & C. P. Soares, (2004) Invasion of epithelial mammalian cells by *Paracoccidioides brasiliensis* leads to cytoskeletal rearrangement and apoptosis of the host cell. *Microbes Infect* **6**: 882-891.
- Mendes-Giannini, M. J., C. P. Soares, J. L. da Silva & P. F. Andreotti, (2005) Interaction of pathogenic fungi with host cells: Molecular and cellular approaches. *FEMS Immunol Med Microbiol* **45**: 383-394.
- Merson-Davies, L. A. & F. C. Odds, (1989) A morphology index for characterization of cell shape in *Candida albicans*. *J Gen Microbiol* **135**: 3143-3152.
- Miller, R. A. & B. E. Britigan, (1997) Role of oxidants in microbial pathophysiology. *Clin Microbiol Rev* **10**: 1-18.
- Millon, L., C. Drobacheff, R. Piarroux, M. Monod, G. Reboux, R. Laurent & D. Meillet, (2001) Longitudinal study of anti-*Candida albicans* mucosal immunity against aspartic proteinases in HIV-infected patients. *J Acquir Immune Defic Syndr* **26**: 137-144.
- Miwa, T., Y. Takagi, M. Shinozaki, C. W. Yun, W. A. Schell, J. R. Perfect, H. Kumagai & H. Tamaki, (2004) Gpr1, a putative G-protein-coupled receptor, regulates morphogenesis and hypha formation in the pathogenic fungus *Candida albicans*. *Eukaryot Cell* **3**: 919-931.
- Money, N., (2001) *The Mycota VIII*. Berlin, Springer-Verlag.
- Monge, R. A., E. Roman, C. Nombela & J. Pla, (2006) The MAP kinase signal transduction network in *Candida albicans*. *Microbiology* **152**: 905-912.
- Moreira, D. & C. R. Paula, (2006) Vulvovaginal candidiasis. *Int J Gynaecol Obstet* **92**: 266-267.
- Murad, A., P. Lee, I. Broadbent, C. Barelle & A. Brown, (2000) Clp10, an efficient and convenient integrating vector for *Candida albicans*. *Yeast* **16**: 325-327.
- Murad, A. M., P. Leng, M. Straffon, J. Wishart, S. Macaskill, D. MacCallum, N. Schnell, D. Talibi, D. Marechal, F. Tekaiia, C. d'Enfert, C. Gaillardin, F. C. Odds & A. J. Brown, (2001) NRG1 represses yeast-hypha morphogenesis and hypha-specific gene expression in *Candida albicans*. *Embo J* **20**: 4742-4752.

- Myers, T. A., J. E. Leigh, A. R. Arribas, S. Hager, R. Clark, E. Lilly & P. L. Fidel, Jr., (2003) Immunohistochemical evaluation of T cells in oral lesions from human immunodeficiency virus-positive persons with oropharyngeal candidiasis. *Infect Immun* **71**: 956-963.
- Naglik, J., S. Challacombe & B. Hube, (2003a) *Candida albicans* Secreted Aspartyl Proteinases in Virulence and Pathogenesis. *Microbiology and Molecular Biology Reviews* **67**: 400-428.
- Naglik, J. R., G. Newport, T. C. White, L. L. Fernandes-Naglik, J. S. Greenspan, D. Greenspan, S. P. Sweet, S. J. Challacombe & N. Agabian, (1999) *In vivo* analysis of secreted aspartyl proteinase expression in human oral candidiasis. *Infection and Immunity* **67**: 2482-2490.
- Naglik, J. R., C. A. Rodgers, P. J. Shirlaw, J. L. Dobbie, L. L. Fernandes-Naglik, D. Greenspan, N. Agabian & S. J. Challacombe, (2003b) Differential expression of *Candida albicans* secreted aspartyl proteinase and phospholipase B genes in humans correlates with active oral and vaginal infections. *J Infect Dis* **188**: 469-479.
- Nagy, K., I. Szoke, I. Sonkodi, E. Nagy, A. Mari, G. Szolnoky & H. N. Newman, (2000) Inhibition of microflora associated with oral malignancy. *Oral Oncol* **36**: 32-36.
- Nantel, A., D. Dignard, C. Bachewich, D. Marcus, A. Marcil, A. Bouin, C. Sensen, H. Hogues, M. van het Hoog, P. Gordon, T. Rigby, F. Benoit, D. Tessier, D. Thomas & M. Whiteway, (2002) Transcription Profiling of *Candida albicans* Cells Undergoing the Yeast-to-Hyphal Transition. *Molecular Biology of the Cell* **13**: 3452-3465.
- Nemecek, J. C., M. Wuthrich & B. S. Klein, (2006) Global control of dimorphism and virulence in fungi. *Science* **312**: 583-588.
- Netea, M. G., J. W. Meer, I. Verschuere & B. J. Kullberg, (2002) CD40/CD40 ligand interactions in the host defense against disseminated *Candida albicans* infection: the role of macrophage-derived nitric oxide. *Eur J Immunol* **32**: 1455-1463.
- Nett, J. & D. Andes, (2006) *Candida albicans* biofilm development, modeling a host-pathogen interaction. *Curr Opin Microbiol* **9**: 340-345.
- Nickerson, K. W., A. L. Atkin & J. M. Hornby, (2006) Quorum sensing in dimorphic fungi: farnesol and beyond. *Appl Environ Microbiol* **72**: 3805-3813.
- Nikawa, H., L. P. Samaranayake, J. Tenovuo, K. M. Pang & T. Hamada, (1993) The fungicidal effect of human lactoferrin on *Candida albicans* and *Candida krusei*. *Arch Oral Biol* **38**: 1057-1063.
- Nikolov, D. B. & S. K. Burley, (1997) RNA polymerase II transcription initiation: a structural view. *Proc Natl Acad Sci U S A* **94**: 15-22.
- Nittler, M. P., D. Hocking-Murray, C. K. Foo & A. Sil, (2005) Identification of *Histoplasma capsulatum* transcripts induced in response to reactive nitrogen species. *Mol Biol Cell* **16**: 4792-4813.
- Nobile, C., V. Bruno, M. Richard, D. Davis & A. Mitchell, (2003) Genetic control of chlamydospore formation in *Candida albicans*. *Microbiology* **149**: 3629-3637.
- Nyirjesy, P., (2001) Chronic vulvovaginal candidiasis. *Am Fam Physician* **63**: 697-702.
- Odds, F., (1988) *Candida and Candidosis*. Baillière Tindall, London.
- Okomo-Adhiambo, M., C. Beattie & A. Rink, (2006) cDNA microarray analysis of host-pathogen interactions in a porcine in vitro model for *Toxoplasma gondii* infection. *Infect Immun* **74**: 4254-4265.
- Okutomi, T., T. Tanaka, S. Yui, M. Mikami, M. Yamazaki, S. Abe & H. Yamaguchi, (1998) Anti-*Candida* activity of calprotectin in combination with neutrophils or lactoferrin. *Microbiol Immunol* **42**: 789-793.
- Pabon, C., Z. Modrusan, M. V. Ruvolo, I. M. Coleman, S. Daniel, H. Yue & L. J. Arnold, Jr., (2001) Optimized T7 amplification system for microarray analysis. *Biotechniques* **31**: 874-879.
- Pan, X. & J. Heitman, (1999) Cyclic AMP-Dependent Protein Kinase Regulates Pseudohyphal Differentiation in *Saccharomyces cerevisiae*. *Molecular and Cellular Biology* **19**: 4874-4887.
- Park, H., C. Myers, D. Sheppard, Q. Phan, A. Sanchez, J. Edwards & S. Filler, (2005) Role of the fungal Ras-protein kinase A pathway in governing epithelial cell interactions during oropharyngeal candidiasis. *Cellular Microbiology* **7**: 499-510.
- Peberdy, J. F., (1999) Extracellular proteins in fungi: a cytological and molecular perspective. *Acta Microbiol Immunol Hung* **46**: 165-174.
- Peirs, P., P. Lefevre, S. Boarbi, X. M. Wang, O. Denis, M. Braibant, K. Pethe, C. Loch, K. Huygen & J. Content, (2005) Mycobacterium tuberculosis with disruption in genes encoding the phosphate binding proteins PstS1 and PstS2 is deficient in phosphate uptake and demonstrates reduced in vivo virulence. *Infect Immun* **73**: 1898-1902.

- Pendrak, M. L., S. S. Yan & D. D. Roberts, (2004) Sensing the host environment: recognition of hemoglobin by the pathogenic yeast *Candida albicans*. *Arch Biochem Biophys* **426**: 148-156.
- Phan, Q., R. Fratti, N. Prasadarao, J. Edwards, Jr & S. Filler, (2005) N-cadherin mediates endocytosis of *Candida albicans* by endothelial cells. *The Journal of Biological Chemistry* **280**: 10455-10461.
- Pizarro-Cerda, J. & P. Cossart, (2006) Bacterial adhesion and entry into host cells. *Cell* **124**: 715-727.
- Prigneau, O., A. Porta, J. A. Poudrier, S. Colonna-Romano, T. Noel & B. Maresca, (2003) Genes involved in beta-oxidation, energy metabolism and glyoxylate cycle are induced by *Candida albicans* during macrophage infection. *Yeast* **20**: 723-730.
- Rabeneck, L., M. M. Crane, J. M. Risser, C. E. Lacke & N. P. Wray, (1993) A simple clinical staging system that predicts progression to AIDS using CD4 count, oral thrush, and night sweats. *J Gen Intern Med* **8**: 5-9.
- Ramage, G., B. L. Wickes & J. L. Lopez-Ribot, (2001) Biofilms of *Candida albicans* and their associated resistance to antifungal agents. *Am Clin Lab* **20**: 42-44.
- Ramon, A., A. Porta & W. Fonzi, (1999) Effect of Environmental pH on Morphological Development of *Candida albicans* Is Mediated via the PacC-Related Transcription Factor Encoded by *PRR2*. *Journal of Bacteriology* **181**: 7524-7530.
- Read, N., L. Kellock, T. Collins & A. Gundlach, (1997) Role of topography sensing for infection-structure differentiation in cereal rust fungi. *Planta* **202**: 163-170.
- Reichart, P. A., H. P. Philipsen, A. Schmidt-Westhausen & L. P. Samaranayake, (1995) Pseudomembranous oral candidiasis in HIV infection: ultrastructural findings. *Journal of Oral Pathology and Medicine* **24**: 276-281.
- Reid, J. & J. Q. Svejstrup, (2004) DNA damage-induced Def1-RNA polymerase II interaction and Def1 requirement for polymerase ubiquitylation in vitro. *J Biol Chem* **279**: 29875-29878.
- Remacle, J. E., G. Albrecht, R. Brys, G. H. Braus & D. Huylebroeck, (1997) Three classes of mammalian transcription activation domain stimulate transcription in *Schizosaccharomyces pombe*. *Embo J* **16**: 5722-5729.
- Riggle, P., K. Andrutis, X. Chen, S. Tzipori & C. Kumamoto, (1999) Invasive Lesions Containing Filamentous Forms Produced by a *Candida albicans* Mutant That Is Defective in Filamentous Growth in Culture. *Infection and Immunity* **67**: 3649-3652.
- Ringdahl, E. N., (2000) Treatment of recurrent vulvovaginal candidiasis. *Am Fam Physician* **61**: 3306-3312, 3317.
- Rocha, C., K. Schroppel, D. Harcus, A. Marcil, D. Dignard, B. Taylor, D. Thomas, M. Whiteway & E. Leberer, (2001) Signaling through adenylyl cyclase is essential for hyphal growth and virulence in the pathogenic fungus *Candida albicans*. *Molecular Biology of the Cell* **12**: 3631-3643.
- Rodrigues, A. G., P. A. Mardh, C. Pina-Vaz, J. Martinez-de-Oliveira & A. F. Fonseca, (1999) Germ tube formation changes surface hydrophobicity of *Candida* cells. *Infect Dis Obstet Gynecol* **7**: 222-226.
- Roos, V. & P. Klemm, (2006) Global gene expression profiling of the asymptomatic bacteriuria *Escherichia coli* strain 83972 in the human urinary tract. *Infect Immun* **74**: 3565-3575.
- Roy, S., S. Sharma, M. Sharma, R. Aggarwal & M. Bose, (2004) Induction of nitric oxide release from the human alveolar epithelial cell line A549: an in vitro correlate of innate immune response to *Mycobacterium tuberculosis*. *Immunology* **112**: 471-480.
- Rubin-Bejerano, I., I. Fraser, P. Grisafi & G. Fink, (2003) Phagocytosis by neutrophils induces an amino acid deprivation response in *Saccharomyces cerevisiae* and *Candida albicans*. *Proceedings of the National Academy of Sciences, USA* **100**: 11007-11012.
- Rude, T. H., D. L. Toffaletti, G. M. Cox & J. R. Perfect, (2002) Relationship of the glyoxylate pathway to the pathogenesis of *Cryptococcus neoformans*. *Infect Immun* **70**: 5684-5694.
- Ruhnke, M., (2006) Epidemiology of *Candida albicans* infections and role of non-*Candida-albicans* yeasts. *Curr Drug Targets* **7**: 495-504.
- Ruhnke, M. & S. Rosseau, (2004) Invasive Pilzinfektionen auf der Intensivstation. *Arzneimitteltherapie* **22**: 360-370.
- Rupniak, H. T., C. Rowlett, E. B. Lane, J. G. Steele, L. K. Trejdosiewicz, B. Laskiewicz, S. Povey & B. T. Hill, (1985) Characteristics of four new human cell lines derived from squamous cell carcinomas of the head and neck. *J Natl Cancer Inst* **75**: 621-635.
- Rychlik, I. & P. A. Barrow, (2005) *Salmonella* stress management and its relevance to behaviour during intestinal colonisation and infection. *FEMS Microbiol Rev* **29**: 1021-1040.

- Sachs, G., D. L. Weeks, Y. Wen, E. A. Marcus, D. R. Scott & K. Melchers, (2005) Acid acclimation by *Helicobacter pylori*. *Physiology (Bethesda, Md)* **20**: 429-438.
- Samaranayake, Y. H., L. P. Samaranayake, E. H. Pow, V. T. Beena & K. W. Yeung, (2001) Antifungal effects of lysozyme and lactoferrin against genetically similar, sequential *Candida albicans* isolates from a human immunodeficiency virus-infected southern Chinese cohort. *J Clin Microbiol* **39**: 3296-3302.
- San-Blas, G., L. Travassos, B. Fries, D. Goldman, A. Casadevall, A. Carmona, T. Barros, R. Puccia, M. Hostetter, S. Shanks, V. Copping, Y. Knox & N. Gow, (2000) Fungal morphogenesis and virulence. *Medical Mycology* **38**: 79-86.
- Sánchez-Martínez, C. & J. Pérez-Martín, (2002) Gpa2, a G-Protein α Subunit Required for Hyphal Development in *Candida albicans*. *Eukaryotic Cell* **1**: 865-874.
- Santos, M., G. Keith & M. Tuite, (1993) Non-standard translational events in *Candida albicans* mediated by an unusual seryl-tRNA with a 5'-CAG-3' (leucine) anticodon. *The EMBO Journal* **12**: 607-616.
- Saporito-Irwin, S., C. Birse, P. Sypherd & W. Fonzi, (1995) *PHR1*, a pH-regulated gene of *Candida albicans*, is required for morphogenesis. *Molecular and Cellular Biology* **15**: 601-613.
- Schaible, U. E. & S. H. Kaufmann, (2004) Iron and microbial infection. *Nat Rev Microbiol* **2**: 946-953.
- Schaller, M., M. Bein, H. Korting, S. Baur, G. Hamm, M. Monod, S. Beinhauer & B. Hube, (2003) The Secreted Aspartyl Proteinases Sap1 and Sap2 Cause Tissue Damage in an In Vitro Model of Vaginal Candidiasis Based on Reconstituted Human Vaginal Epithelium. *Infection and Immunity* **71**: 3227-3234.
- Schaller, M., U. Boeld, S. Oberbauer, G. Hamm, B. Hube & H. C. Korting, (2004) Polymorphonuclear leukocytes (PMNs) induce protective Th1-type cytokine epithelial responses in an *in vitro* model of oral candidosis. *Microbiology* **150**: 2807-2813.
- Schaller, M., C. Borelli, H. C. Korting & B. Hube, (2005a) Hydrolytic enzymes as virulence factors of *Candida albicans*. *Mycoses* **48**: 365-377.
- Schaller, M., B. Hube, M. W. Ollert, W. Schafer, M. Borg-von Zepelin, E. Thoma-Greber & H. C. Korting, (1999a) In vivo expression and localization of *Candida albicans* secreted aspartyl proteinases during oral candidiasis in HIV-infected patients. *J Invest Dermatol* **112**: 383-386.
- Schaller, M., H. Korting, W. Schäer, J. Bastert, W. Chen & B. Hube, (1999b) Secreted aspartic proteinase (Sap) activity contributes to tissue damage in a model of human oral candidosis. *Molecular Microbiology* **34**: 169-180.
- Schaller, M., H. C. Korting, C. Borelli, G. Hamm & B. Hube, (2005b) *Candida albicans*-Secreted Aspartic Proteinases Modify the Epithelial Cytokine Response in an In Vitro Model of Vaginal Candidiasis. *Infection and Immunity* **73**: 2758-2765.
- Schaller, M., W. Schafer, H. Korting & B. Hube, (1998) Differential expression of secreted aspartyl proteinases in a model of human oral candidosis and in patient samples from the oral cavity. *Molecular Microbiology* **29**: 605-615.
- Schaller, M., K. Zakikhany, J. Naglik, Weindl G & B. Hube, (2006) Models of oral and vaginal candidiasis based on *in vitro* reconstituted human epithelia. *NATURE PROTOCOLS* **1**: 1-7.
- Schauer, F. & R. Hanschke, (1999) Taxonomy and ecology of the genus *Candida*. *Mycoses* **42** (Suppl. 1): 12-21.
- Scherwitz, C., (1982) Ultrastructure of human cutaneous candidosis. *J Invest Dermatol* **78**: 200-205.
- Schinabeck, M. K., L. A. Long, M. A. Hossain, J. Chandra, P. K. Mukherjee, S. Mohamed & M. A. Ghannoum, (2004) Rabbit model of *Candida albicans* biofilm infection: liposomal amphotericin B antifungal lock therapy. *Antimicrob Agents Chemother* **48**: 1727-1732.
- Schneider, J., A. Unholzer, M. Schaller, M. Schäfer-Korting & H. C. Korting, (2005) Human defensins. *Journal of Molecular Medicine*.
- Schröppel, K., K. Sprößer, M. Whiteway, D. Thomas, M. Röllinghoff & C. Csank, (2000) Repression of hyphal proteinase expression by the mitogen-activated protein (MAP) kinase phosphatase Cpp1p of *Candida albicans* is independent of the MAP kinase Cek1p. *Infection and Immunity* **68**: 7159-7161.
- Schuman, P., S. E. Ohmit, J. D. Sobel, K. H. Mayer, V. Greene, A. Rompalo & R. S. Klein, (1998) Oral lesions among women living with or at risk for HIV infection. HIV Epidemiology Research Study (HERS) Group. *Am J Med* **104**: 559-564.
- Scott, A. J. & J. P. Woods, (2000) Monitoring internalization of *Histoplasma capsulatum* by mammalian cell lines using a fluorometric microplate assay. *Med Mycol* **38**: 15-22.

- Sebbane, F., N. Lemaitre, D. E. Sturdevant, R. Rebeil, K. Virtaneva, S. F. Porcella & B. J. Hinnebusch, (2006) Adaptive response of *Yersinia pestis* to extracellular effectors of innate immunity during bubonic plague. *Proc Natl Acad Sci U S A* **103**: 11766-11771.
- Sentandreu, M., M. Elorza, R. Sentandreu & W. Fonzi, (1998) Cloning and characterization of *PRA1*, a gene encoding a novel pH- regulated antigen of *Candida albicans*. *Journal of Bacteriology* **180**: 282-289.
- Sharkey, L., M. McNemar, S. Saporito-Irwin, P. Sypherd & W. Fonzi, (1999) *HWP1* functions in the morphological development of *Candida albicans* downstream of *EFG1*, *TUP1*, and *RBF1*. *Journal of Bacteriology* **181**: 5273-5279.
- Shea, J. M. & M. Del Poeta, (2006) Lipid signaling in pathogenic fungi. *Curr Opin Microbiol* **9**: 352-358.
- Sherwood, J., N. A. Gow, G. W. Gooday, D. W. Gregory & D. Marshall, (1992) Contact sensing in *Candida albicans*: a possible aid to epithelial penetration. *J Med Vet Mycol* **30**: 461-469.
- Shiloh, M. U. & C. F. Nathan, (2000) Reactive nitrogen intermediates and the pathogenesis of *Salmonella* and mycobacteria. *Curr Opin Microbiol* **3**: 35-42.
- Sitheequ, M. A. & L. P. Samaranayake, (2003) Chronic hyperplastic candidosis/candidiasis (candidal leukoplakia). *Crit Rev Oral Biol Med* **14**: 253-267.
- Slutsky, B., M. Staebell, J. Anderson, L. Risen, M. Pfaller & D. Soll, (1987) "White-opaque transition": a second high-frequency switching system in *Candida albicans*. *Journal of Bacteriology* **169**: 189-197.
- Sohn, K., I. Senyurek, J. Fertey, A. Konigsdorfer, C. Joffroy, N. Hauser, G. Zelt, H. Brunner & S. Rupp, (2006) An in vitro assay to study the transcriptional response during adherence of *Candida albicans* to different human epithelia. *FEMS Yeast Res* **6**: 1085-1093.
- Soll, D., (2001) Phenotypic Switching. In: *Candida* and Candidiasis. R. Calderone (ed). Washington, DC: ASM Press, pp. 123-142.
- Somesh, B. P., J. Reid, W. F. Liu, T. M. Sogaard, H. Erdjument-Bromage, P. Tempst & J. Q. Svejstrup, (2005) Multiple mechanisms confining RNA polymerase II ubiquitylation to polymerases undergoing transcriptional arrest. *Cell* **121**: 913-923.
- Sonneborn, A., D. Bockmühl & J. Ernst, (1999) Chlamydospore formation in *Candida albicans* requires the *Efg1p* morphogenetic regulator. *Infection and Immunity* **67**: 5514-5517.
- Staab, J. F., S. D. Bradway, P. L. Fidel & P. Sundstrom, (1999) Adhesive and mammalian transglutaminase substrate properties of *Candida albicans* *Hwp1*. *Science* **283**: 1535-1538.
- Staib, F., (1965) Serum-proteins as nitrogen source for yeastlike fungi. *Sabouraudia* **4**: 187-193.
- Staib, P., M. Kretschmar, T. Nichterlein, H. Hof & J. Morschhauser, (2002) Transcriptional regulators *Cph1p* and *Efg1p* mediate activation of the *Candida albicans* virulence gene *SAP5* during infection. *Infect Immun* **70**: 921-927.
- Steele, C., J. Leigh, R. Swoboda & P. Fidel, (2000) Growth Inhibition of *Candida* by Human Oral Epithelial Cells. *The Journal of Infectious Diseases* **182**: 1479-1485.
- Stoldt, V., A. Sonneborn, C. Leuker & J. Ernst, (1997) *Efg1p*, an essential regulator of morphogenesis of the human pathogen *Candida albicans*, is a member of a conserved class of bHLH proteins regulating morphogenetic processes in fungi. *The EMBO Journal* **16**: 1982-1991.
- Sudbery, P., N. Gow & J. Berman, (2004) The distinct morphogenic states of *Candida albicans*. *Trends in Microbiology* **12**: 317-324.
- Sundstrom, P., (1999) Adhesins in *Candida albicans*. *Current Opinion in Microbiology* **2**: 353-357.
- Sundstrom, P., (2002) Adhesion in *Candida* spp. *Cellular Microbiology* **4**: 461-469.
- Svejstrup, J., (2004) The RNA polymerase II transcription cycle: cycling through chromatin. *Biochimica et Biophysica Acta* **1677**: 64-73.
- Takakura, N., Y. Sato, H. Ishibashi, H. Oshima, K. Uchida, H. Yamaguchi & S. Abe, (2003) A novel murine model of oral candidiasis with local symptoms characteristic of oral thrush. *Microbiol Immunol* **47**: 321-326.
- Tenovuo, J., B. Mansson-Rahemtulla, K. M. Pruitt & R. Arnold, (1981) Inhibition of dental plaque acid production by the salivary lactoperoxidase antimicrobial system. *Infect Immun* **34**: 208-214.
- Thewes, S., M. Kretschmar, H. Park, M. Schaller, S. G. Filler & B. Hube, (2007) In vivo and ex vivo comparative transcriptomics of invasive and non-invasive *C. albicans* isolates identified genes associated with tissue infection. *Molecular Microbiology*, accepted.

- Timm, J., F. A. Post, L. G. Bekker, G. B. Walther, H. C. Wainwright, R. Manganelli, W. T. Chan, L. Tsenova, B. Gold, I. Smith, G. Kaplan & J. D. McKinney, (2003) Differential expression of iron-, carbon-, and oxygen-responsive mycobacterial genes in the lungs of chronically infected mice and tuberculosis patients. *Proc Natl Acad Sci U S A* **100**: 14321-14326.
- Titz, B., S. Thomas, S. V. Rajagopala, T. Chiba, T. Ito & P. Uetz, (2006) Transcriptional activators in yeast. *Nucleic Acids Res* **34**: 955-967.
- Tsuchimori, N., L. L. Sharkey, W. A. Fonzi, S. W. French, J. E. Edwards, Jr. & S. G. Filler, (2000) Reduced virulence of HWP1-deficient mutants of *Candida albicans* and their interactions with host cells. *Infect Immun* **68**: 1997-2002.
- Ullmann, B., H. Myers, W. Chiranand, A. Lazzell, Q. Zhao, L. Vega, J. Lopez-Ribot, P. Gardner & M. Gustin, (2004) Inducible Defense Mechanism against Nitric Oxide in *Candida albicans*. *Eukaryotic Cell* **3**: 715-723.
- van den Boom, V., N. G. Jaspers & W. Vermeulen, (2002) When machines get stuck--obstructed RNA polymerase II: displacement, degradation or suicide. *BioEssays* **24**: 780-784.
- Vidotto, V., M. Melhem, S. Pukinskis, S. Aoki, C. Carrara & A. Pugliese, (2005) Extracellular enzymatic activity and serotype of *Cryptococcus neoformans* strains isolated from AIDS patients in Brazil. *Rev Iberoam Micol* **22**: 29-33.
- Vinces, M. D., C. Haas & C. A. Kumamoto, (2006) Expression of the *Candida albicans* morphogenesis regulator gene CZF1 and its regulation by Efg1p and Czf1p. *Eukaryot Cell* **5**: 825-835.
- Walther, A. & J. Wendlend, (2003) An improved transformation protocol for the human fungal pathogen *Candida albicans*. *Current Genetics* **42**: 339-343.
- Wang, X., S. Ghosh & S. Guo, (2001) Quantitative quality control in microarray image processing and data acquisition. *Nucleic Acids Research* **29**: E75-E75.
- Watts, H., F. Cheah, B. Hube, D. Sanglard & N. Gow, (1998) Altered adherence in strains of *Candida albicans* harbouring null mutations in secreted aspartic proteinase genes. *FEMS Microbiology Letters* **159**: 129-135.
- Weissman, Z. & D. Kornitzer, (2004) A family of *Candida* cell surface haem-binding proteins involved in haemin and haemoglobin-iron utilization. *Mol Microbiol* **53**: 1209-1220.
- Westerberg, D. P., J. M. Gill, B. Dave, M. J. DiPrinzio, A. Quisel & A. Foy, (2006) New strategies for diagnosis and management of celiac disease. *J Am Osteopath Assoc* **106**: 145-151.
- Whiteway, M. & U. Oberholzer, (2004) *Candida* morphogenesis and host-pathogen interactions. *Current Opinion in Microbiology* **7**: 350-357.
- Wieser, H., (1996) Relation between gliadin structure and coeliac toxicity. *Acta Paediatr Suppl* **412**: 3-9.
- Wiesner, S. M., C. M. Bendel, D. J. Hess, S. L. Erlandsen & C. L. Wells, (2002) Adherence of yeast and filamentous forms of *Candida albicans* to cultured enterocytes. *Crit Care Med* **30**: 677-683.
- Wilson, R., D. Davis & A. Mitchell, (1999) Rapid Hypothesis Testing with *Candida albicans* through Gene Disruption with Short Homology Regions. *Journal of Bacteriology* **181**: 1868-1874.
- Woods, J. P., (2003) Knocking on the right door and making a comfortable home: *Histoplasma capsulatum* intracellular pathogenesis. *Curr Opin Microbiol* **6**: 327-331.
- Woudstra, E. C., C. Gilbert, J. Fellows, L. Jansen, J. Brouwer, H. Erdjument-Bromage, P. Tempst & J. Q. Svejstrup, (2002) A Rad26-Def1 complex coordinates repair and RNA pol II proteolysis in response to DNA damage. *Nature* **415**: 929-933.
- Wray, D., D. H. Felix & C. G. Cumming, (1990) Alteration of humoral responses to *Candida* in HIV infection. *Br Dent J* **168**: 326-329.
- Wroblewski, F. & J. S. Ladue, (1955) Lactic dehydrogenase activity in blood. *Proc Soc Exp Biol Med* **90**: 210-213.
- Xiau, J., T. Watanabe & I. Yamaguchi, (1994) Studies on the cellular differentiation of *M. grisea*. *Physiol. Mol. Plant Pathol.* **44**: 227-236.
- Xu, Y., I. Ambudkar, H. Yamagishi, W. Swaim, T. J. Walsh & B. C. O'Connell, (1999) Histatin 3-mediated killing of *Candida albicans*: effect of extracellular salt concentration on binding and internalization. *Antimicrob Agents Chemother* **43**: 2256-2262.
- Xu, Z., L. X. Zhang, J. D. Zhang, Y. B. Cao, Y. Y. Yu, D. J. Wang, K. Ying, W. S. Chen & Y. Y. Jiang, (2006) cDNA microarray analysis of differential gene expression and regulation in clinically drug-resistant isolates of *Candida albicans* from bone marrow transplanted patients. *Int J Med Microbiol* **296**: 421-434.

- Yang, W. C., G. V. Devi-Rao, P. Ghazal, E. K. Wagner & S. J. Triezenberg, (2002) General and specific alterations in programming of global viral gene expression during infection by VP16 activation-deficient mutants of herpes simplex virus type 1. *J Virol* **76**: 12758-12774.
- Zheng, X., Y. Wang & Y. Wang, (2004) Hgc1, a novel hypha-specific G1 cyclin-related protein regulates *Candida albicans* hyphal morphogenesis. *The EMBO Journal* **23**: 1-12.