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Curriculum Vitae of Masakazu Niimi

Full name: Masakazu Niimi

Nationality: Japan

Position: Visiting Researcher
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Educational history: DDS (1974) Dentistry, Kyushu Dental College, Kitakyushu, Japan
PhD (1984) Kyushu University, Fukuoka, Japan

Professional positions

1978-1980: Lecturer in the Department of Microbiology, Kyushu Dental College, Kitakyushu, Japan

1980-1991: Lecturer in the Department of Microbiology, School of Dentistry, Kagoshima University, Kagoshima, Japan

1991-2000: Research Fellow in the Molecular Microbiology Laboratory, Department of Oral Sciences, School of Dentistry, University of Otago, Dunedin, New Zealand

2000-2009: Chief of the Mycology Laboratory, Department of Bioactive Molecules, National Institute of Infectious Diseases, Tokyo, Japan

2009-2014: Senior Research Fellow and Honorary Fellow of Sir John Walsh Research Institute, School of Dentistry, University of Otago

2014-present Visiting Researcher in the Mycology Unit, Department of Microbiology, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand, and Honorary Fellow of Sir John Walsh Research Institute, University of Otago

Research interests

I have been involved in the cell biology, biochemistry, molecular genetics of morphogenesis, pathogenesis and drug resistant mechanisms in the pathogenic fungus *Candida albicans* and other medically important fungi for the last 40 years. My current research interest is to investigate the efflux pump-mediated drug resistance. Special focus is in the function and structure of fungal and human ABC membrane transporters aiming development of new pump inhibitors.

Selected publications

Keniya, MV, Holmes AR, Niimi M, Lamping E, Jean-Pierre G, Gottesman M and Cannon RD. Drug resistance is conferred on the model yeast *Saccharomyces cerevisiae* by

expression of full length melanoma-associated human ABC transporter ABCB5. Molecular Pharmaceutics 2014.

Lamping E, Niimi M, Cannon RD. Small, synthetic, GC-rich mRNA stem-loop modules 5' proximal to the AUG start-codon predictably tune gene expression in yeast. Microbial Cell Factories 12, 74, 2013.

Niimi K, Harding DRK, Holmes AR, Lamping E, Niimi M, Tyndall JDA, Cannon RD, Monk BC. Specific interactions between the *Candida albicns* ABC transporter Cdr1p ectodomain and a D-octapeptide derivative inhibitor. Molecular Microbiology 85, 747-767, 2012.

Niimi K, Woods MA, Maki K, Nakayama H, Hatakenaka K, Chibana H, Ikeda F, Ueno K, Niimi M, Cannon RD, Monk BC. Reconstitution of severely reduced micafungin susceptibility detected in a clinical isolate of *Candida glabrata* identifies functional homozygosity in glucan synthase gene expression. Journal of Antimicrobial Chemotherapy. 67, 1666-1676, 2012.

Tanabe K, Lamping E, Nagi M, Okawada A, Holmes AR, Miyazaki Y, Cannon RD, Monk BC Niimi M. Chimeras of *Candida albicans* Cdr1p and Cdr2p reveal features of pleiotropic drug resistance transporter structure and function. Molecular Microbiology, 82, 416-433, 2011.

Niimi K, Monk BC, Hirai A, Hatakenaka K, Umeyama T, Lamping E, Maki K, Tanabe K, Kamimura T, Ikeda F, Uehara Y, Kano R, Hasegawa A, Cannon RD and Niimi M. Clinically significant micafungin resistance in *Candida albicans* involves modification of a glucan synthese catalytic subunit *GSC1* (*FKS1*) allele followed by loss of heterozygosity. Journal of Antimicrobial Chemotherapy 65, 842-852, 2010.

Cannon RD, Lamping E, Holmes AR, Niimi K, Baret PV, Keniya MV, Tanabe K, Niimi M, Goffeau A, Monk BC: Efflux-mediated fungal drug resistance. Clinincal Microbiology Reveiws 22, 291-321, 2009.

Tanabe K, Lamping E, Adachi K, Takano Y, Kawabata K, Shizuri Y, Niimi M and Uehara Y. Inhibition of fungal ABC transporters by unnarmicin A and unnarmicin C, novel cyclic peptides from marine bacterium. Biochemical and Biophysical Research Communications, 364, 990-995, 2007.

Wada S, Tanabe K, Yamazaki A, Niimi M, Uerhara Y, Niimi K, Lamping E, Cannon RD, Monk BC. Phosphorylation of *Candida glabrata* ATP-binding cassette transporter Cdr1p regulates drug efflux activity and ATPase stability. Journal of Biological Chemistry 280, 94-103, 2005.

Book

Toda's New Bacteriology 34th Edition, Mycology Chapter, 2013

Patents

1) Monk, B.C., Cannon R.D., Nakamura, K., Niimi, M., Niimi, K., Harding, D.R.K., Holmes, A.R., Lamping, E., Goffeau, A. and Decottignies, A. Membrane protein expression system and its application in drug screening. International Patent PCT/NZ02/00163, June, 2003.

2) Uehara Y, Umeyama T, Niimi M, Nishimura K, Kamei K and Sano A. Novel approach to designing primers for identification and distinction of the human pathogenic fungi *Coccidioides immitis* and *Coccidioides posadasii* by PCR amplification. December, 2006.

Research grants received in recent years

April 2015 - March 2016
Dissection of *Candida albicans* ABC transporter Cdr1p: Large intracellular and extracellar loops are critical structural and functional elements. Block grant of Faculty of Medicine, Chulalongkorn University, as Principal Investigator

October 2014-September 2015
Heterologous ABCB1 expression in cholesterol-producing baker's yeast, National Research Council of Thailand, as Co-Principal Investigator with Dr A Chindamporn

April 2014-January 2017
Fungal drug resistance – not as simple as A-B-C, Marsden Fund New Zealand, as Associate Investigator

January 2014-December 2014
Discovery of fungal efflux pump inhibitors, University of Otago Standard Research Grant New Zealand, as Co-investigator

September 2013-August 2014
Overcoming the azole resistance of *Candida albicans*, Grant-in-Aid for Scientific Research from the New Zealand Dental Association Research Foundation, as Co-investigator