

Fig.3-1 欠損により酵母に亜ヒ酸高感受性を与える遺伝子

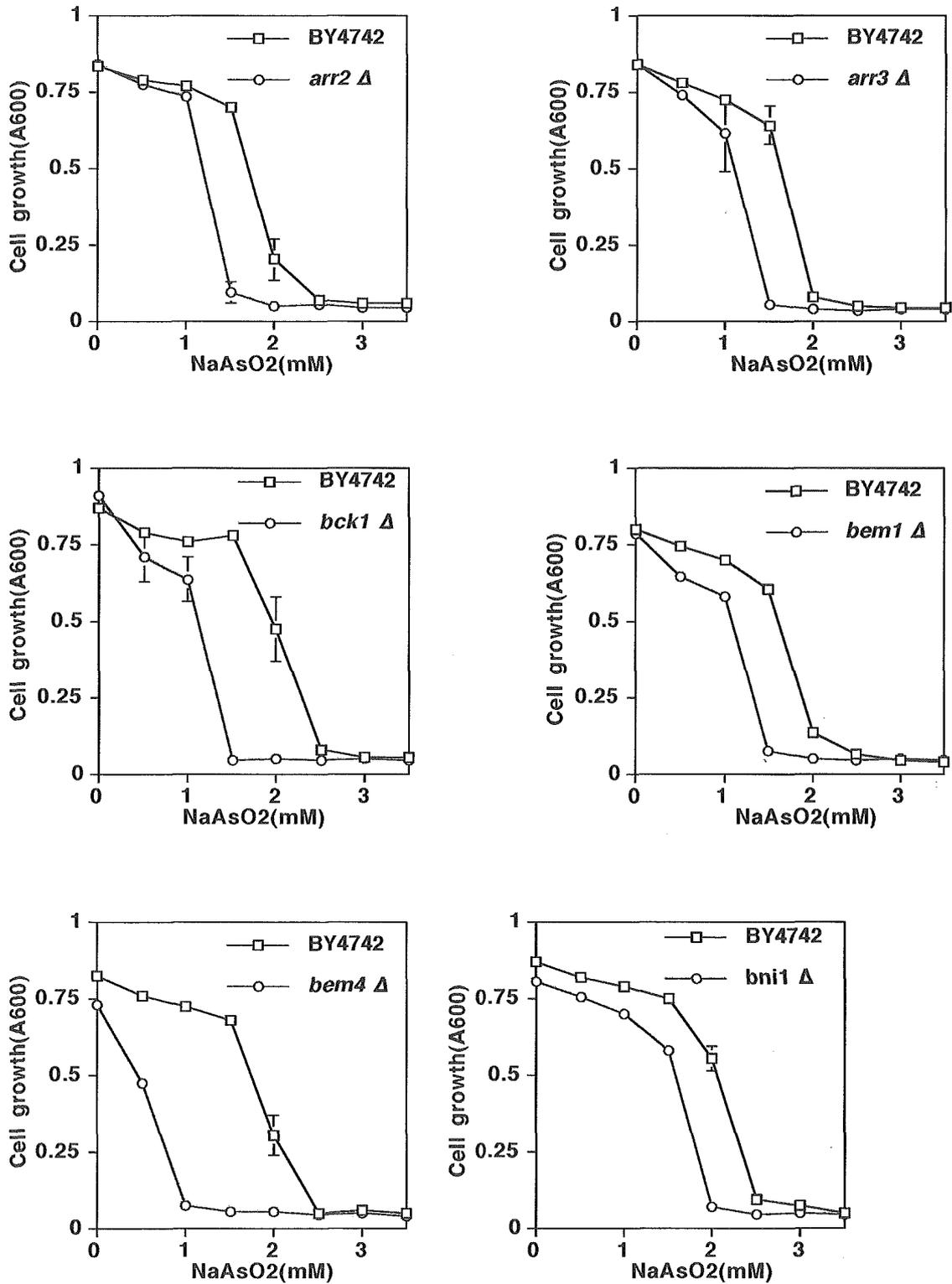


Fig.3-2 欠損により酵母に亜ヒ酸高感受性を与える遺伝子

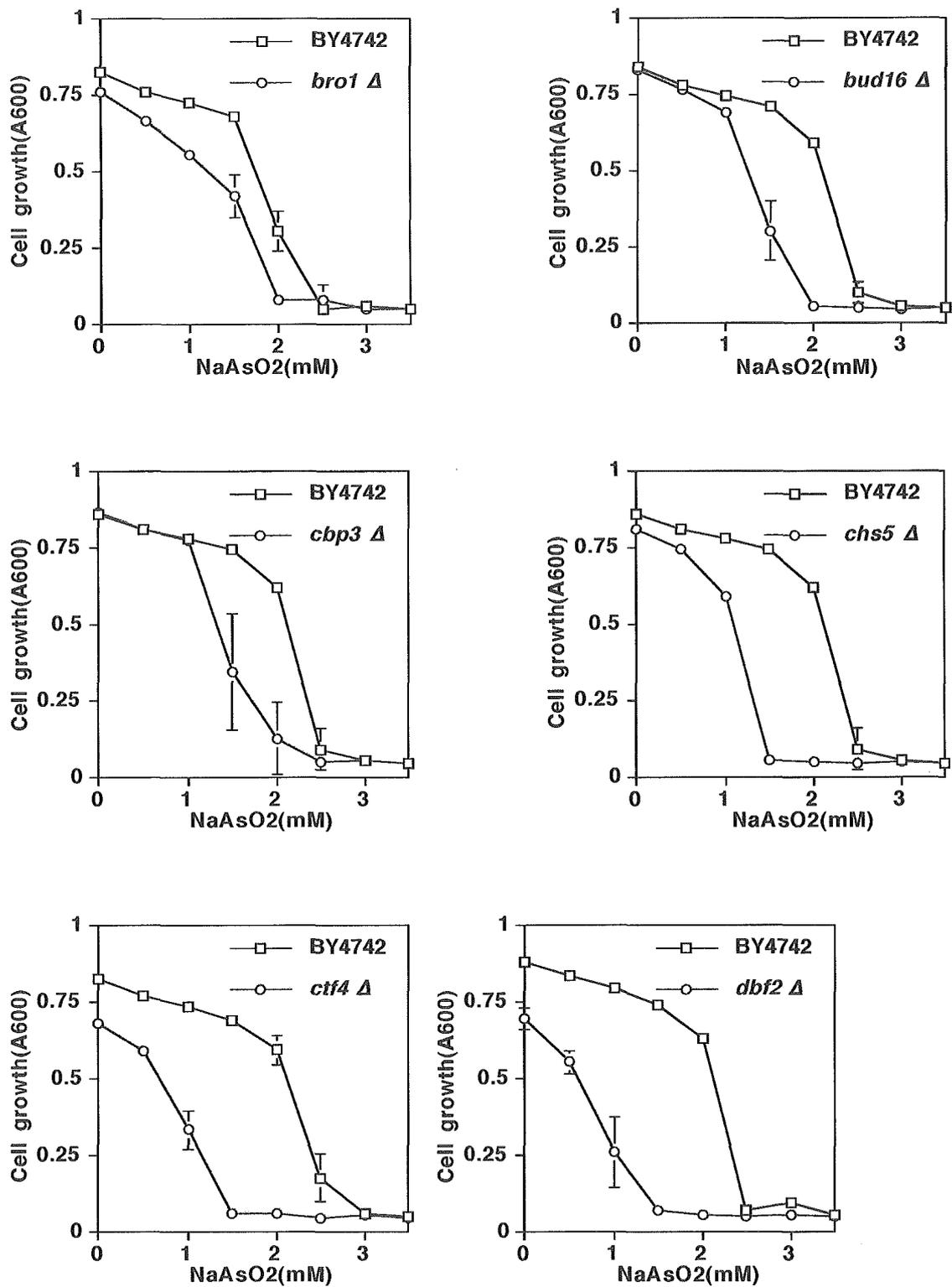


Fig.3-3 欠損により酵母に亜ヒ酸高感受性を与える遺伝子

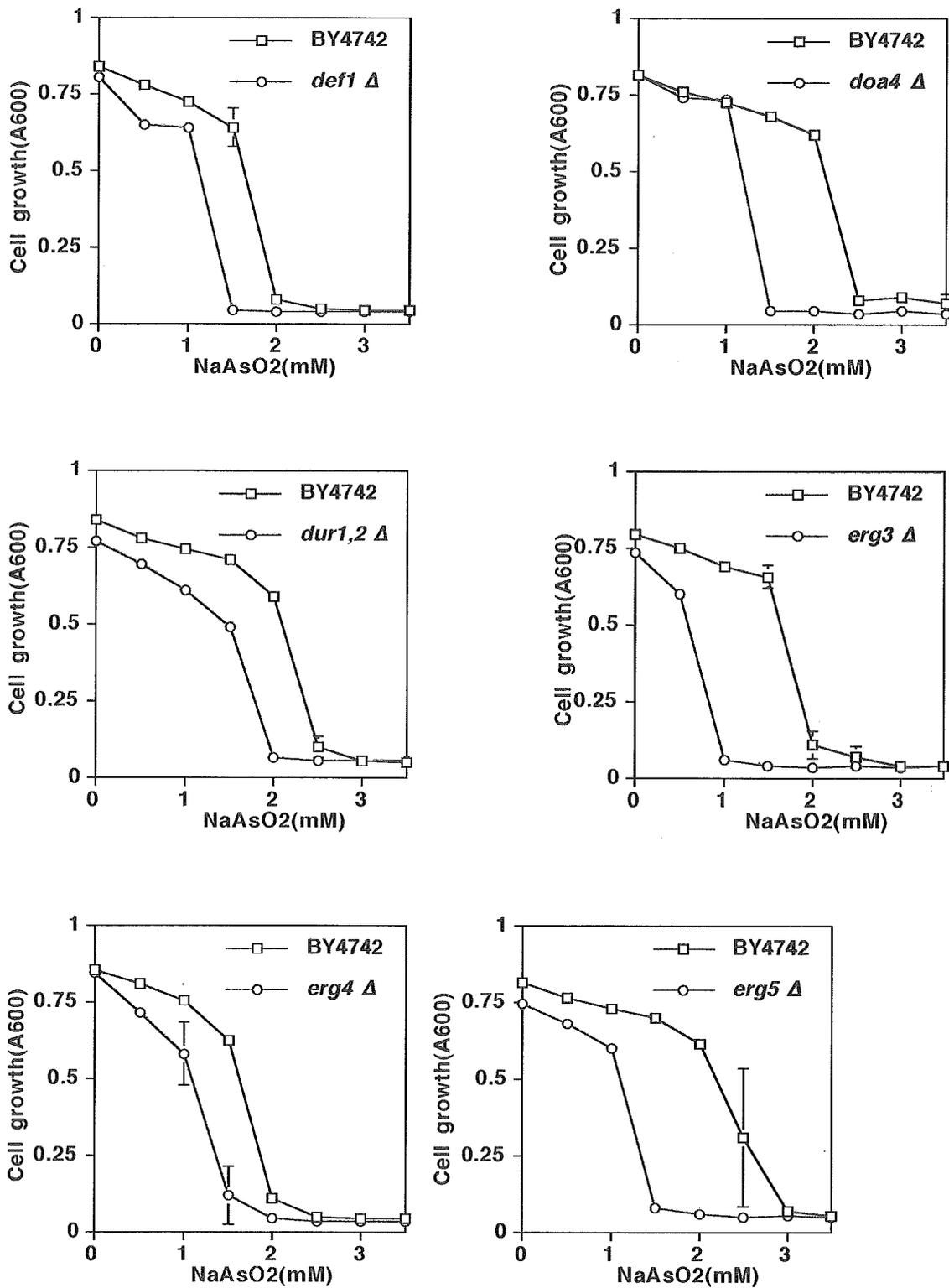


Fig.3-4 欠損により酵母に亜ヒ酸高感受性を与える遺伝子

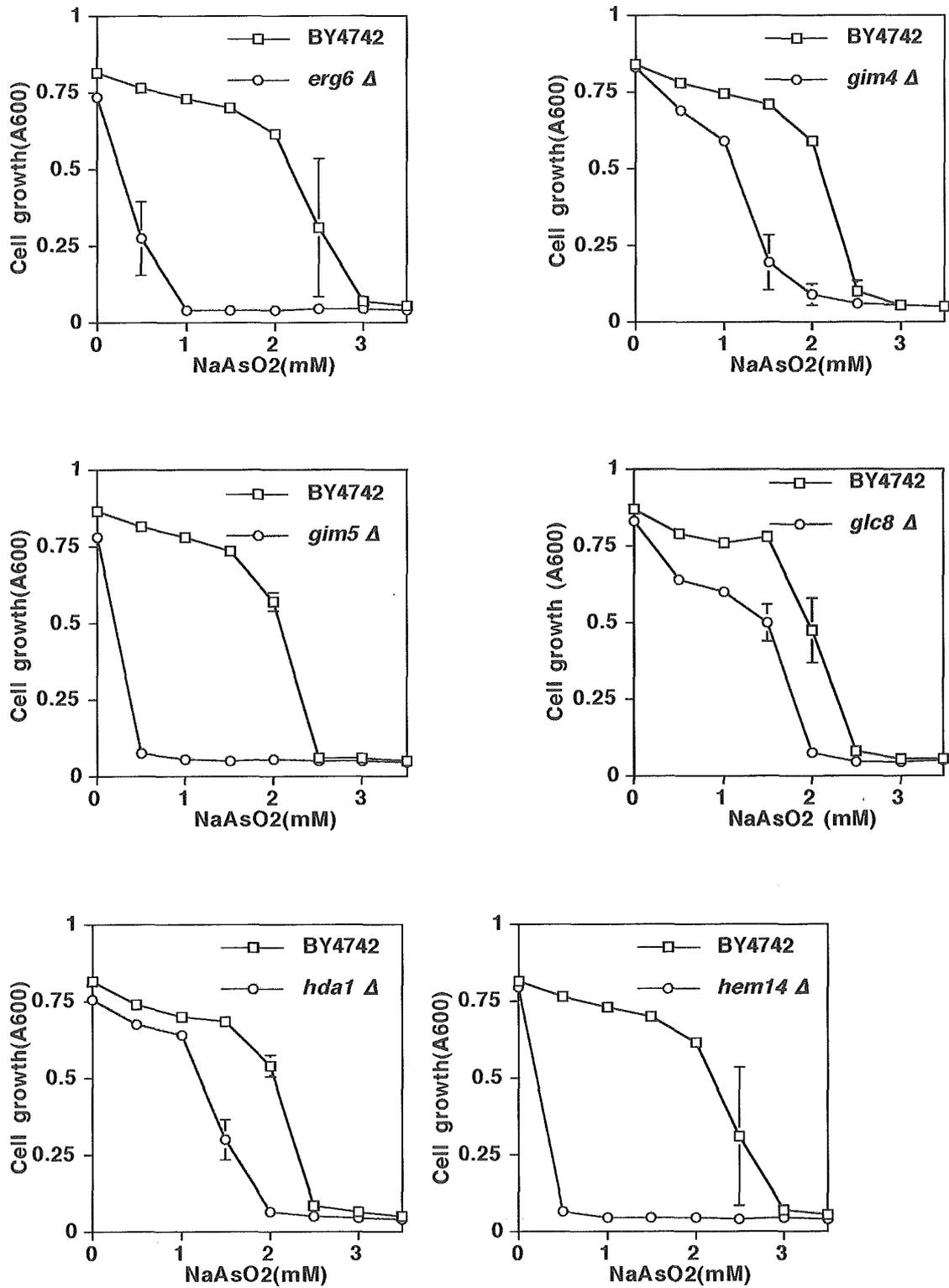


Fig.3-5 欠損により酵母に亜ヒ酸高感受性を与える遺伝子

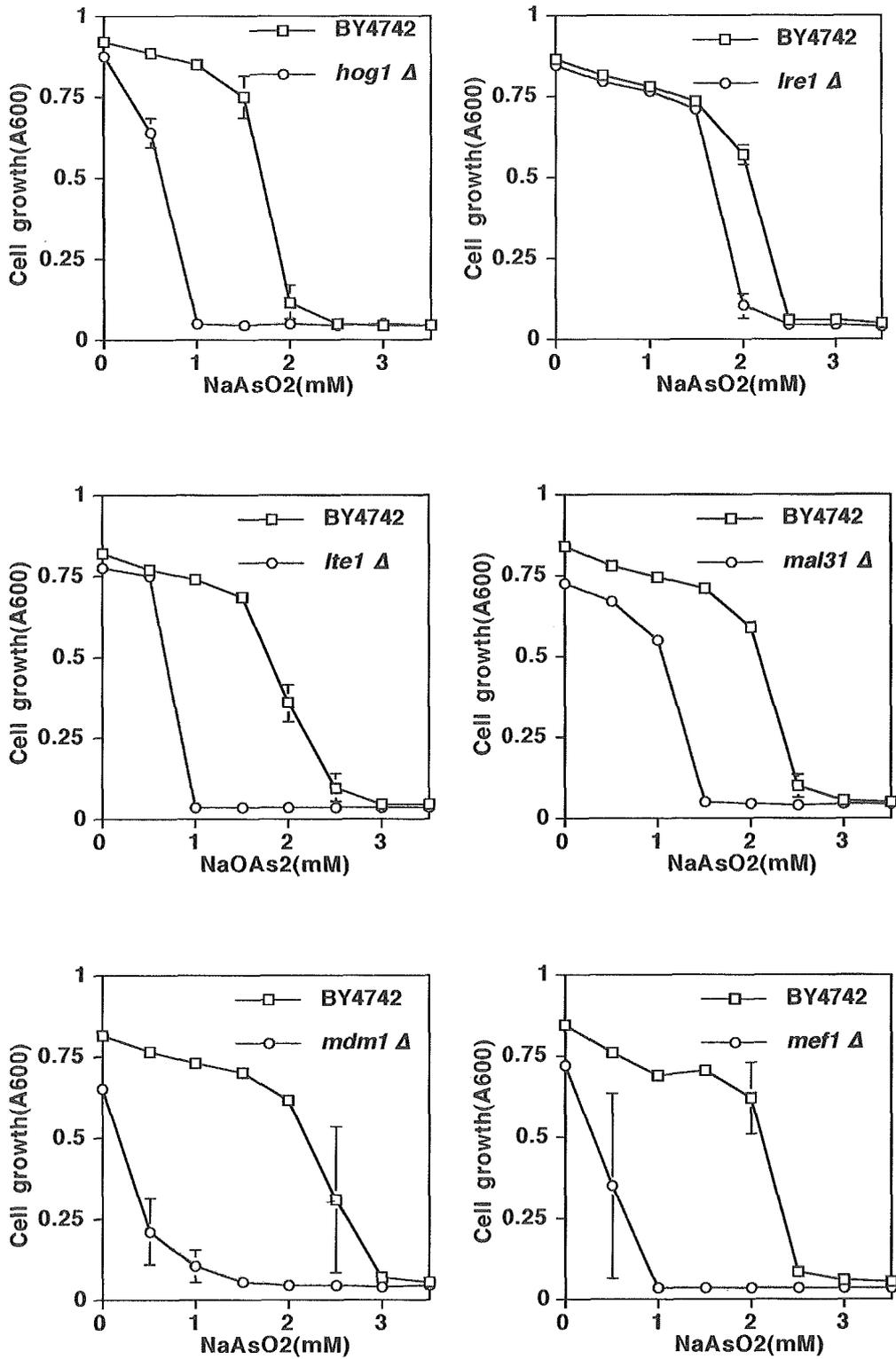


Fig.3-6 欠損により酵母に亜ヒ酸高感受性を与える遺伝子

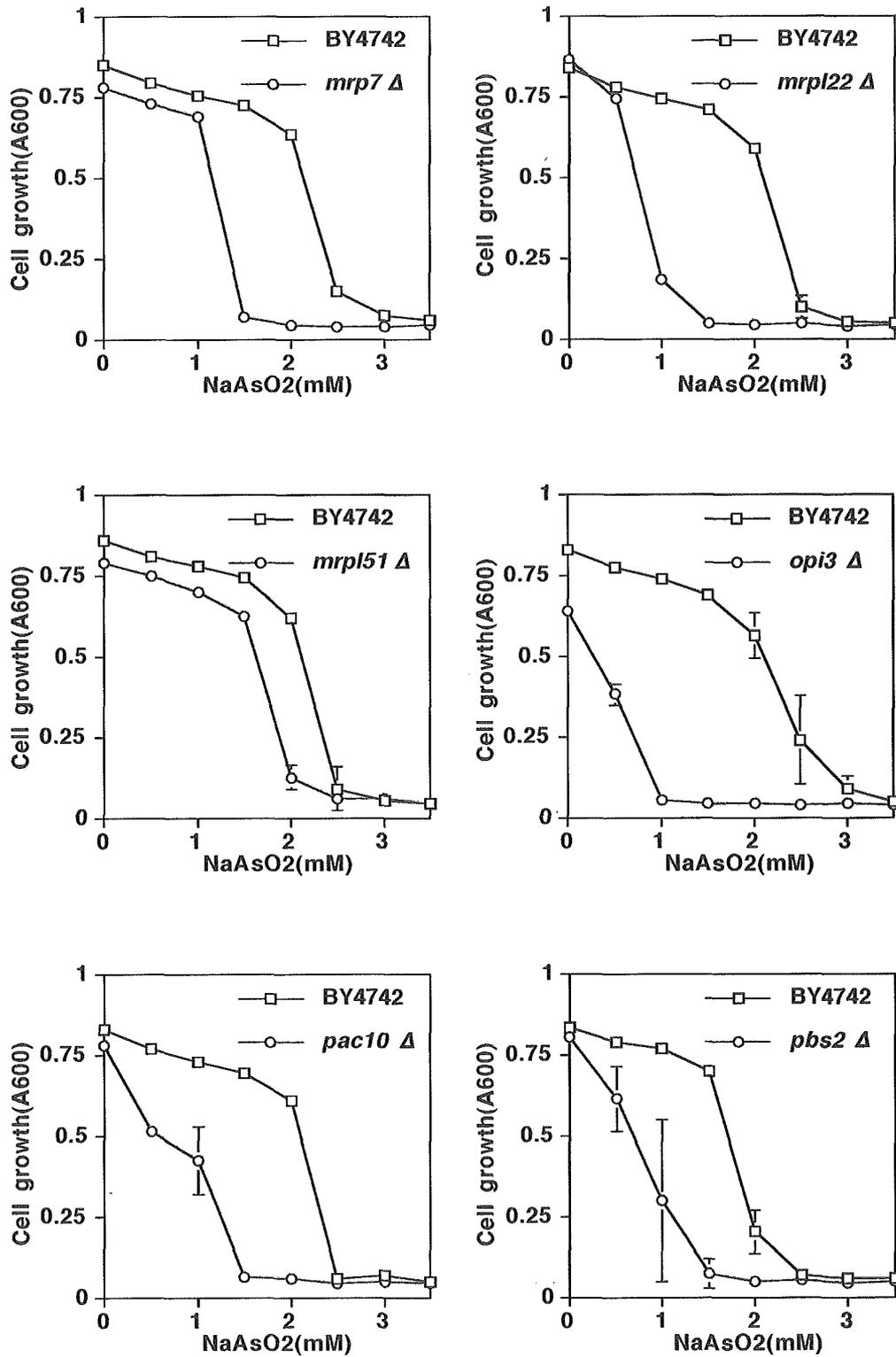


Fig.3-7 欠損により酵母に亜ヒ酸高感受性を与える遺伝子

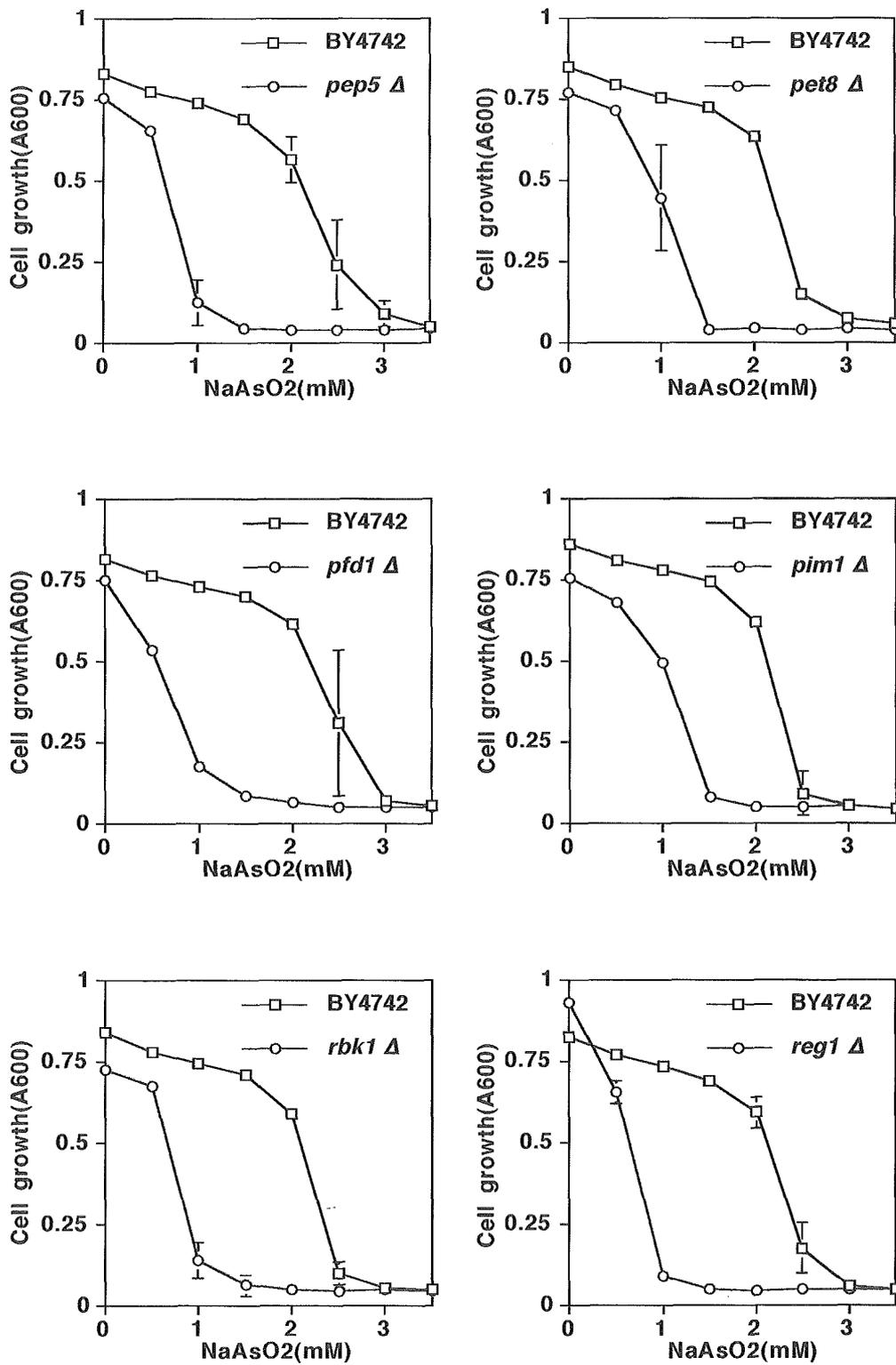


Fig.3-8 欠損により酵母に亜ヒ酸高感受性を与える遺伝子

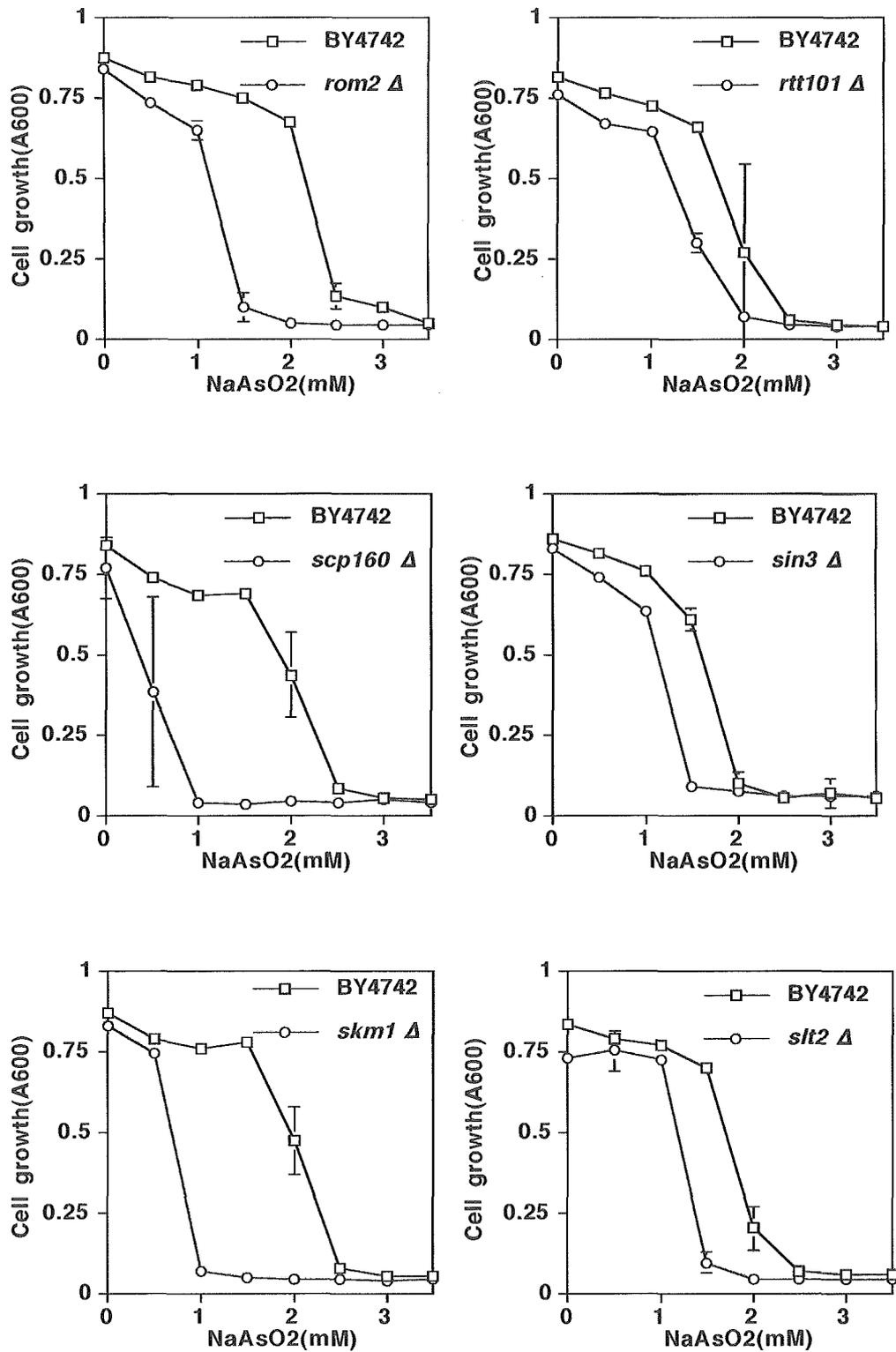


Fig.3-9 欠損により酵母に亜ヒ酸高感受性を与える遺伝子

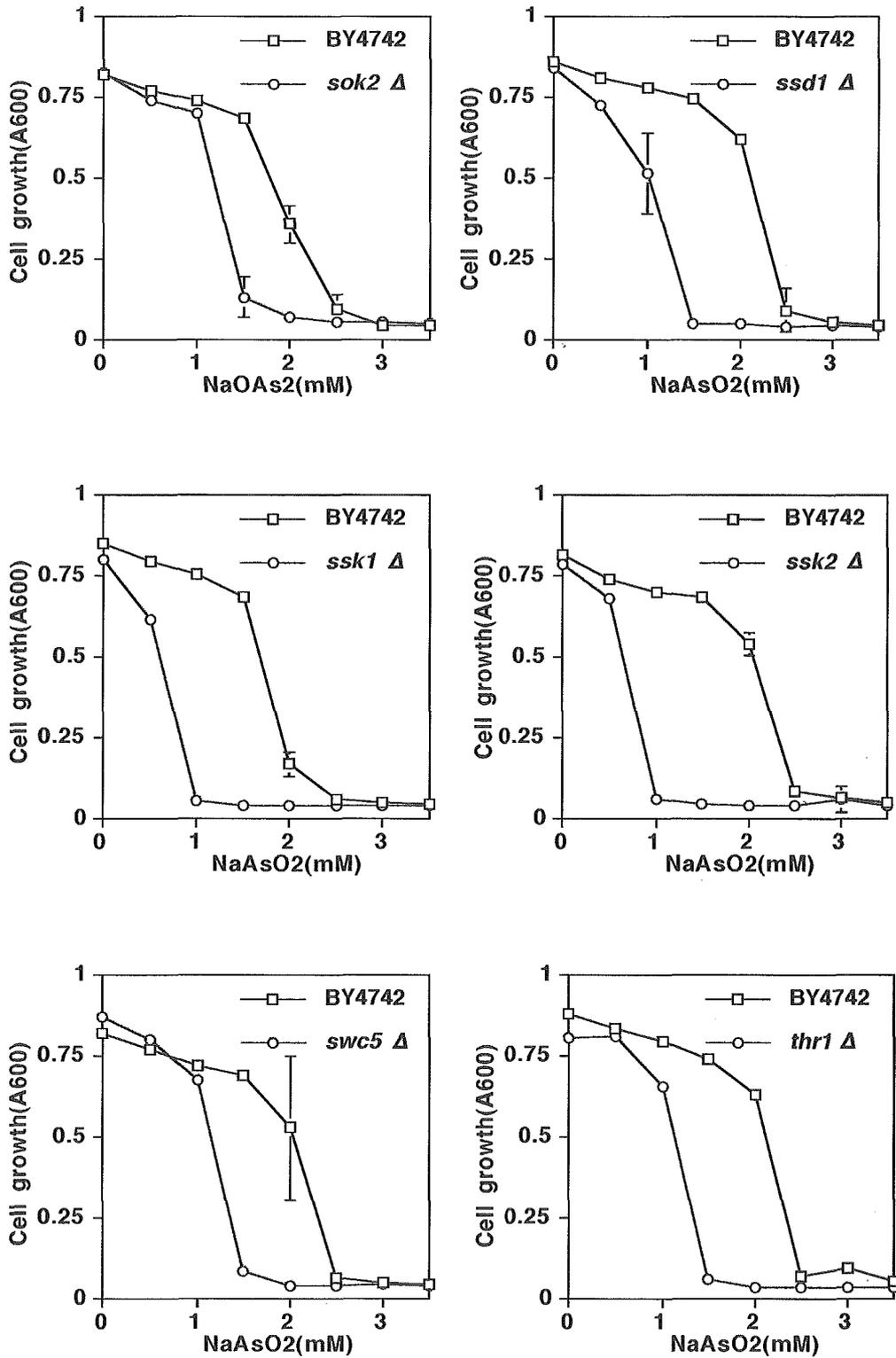


Fig.3-10 欠損により酵母に亜ヒ酸高感受性を与える遺伝子

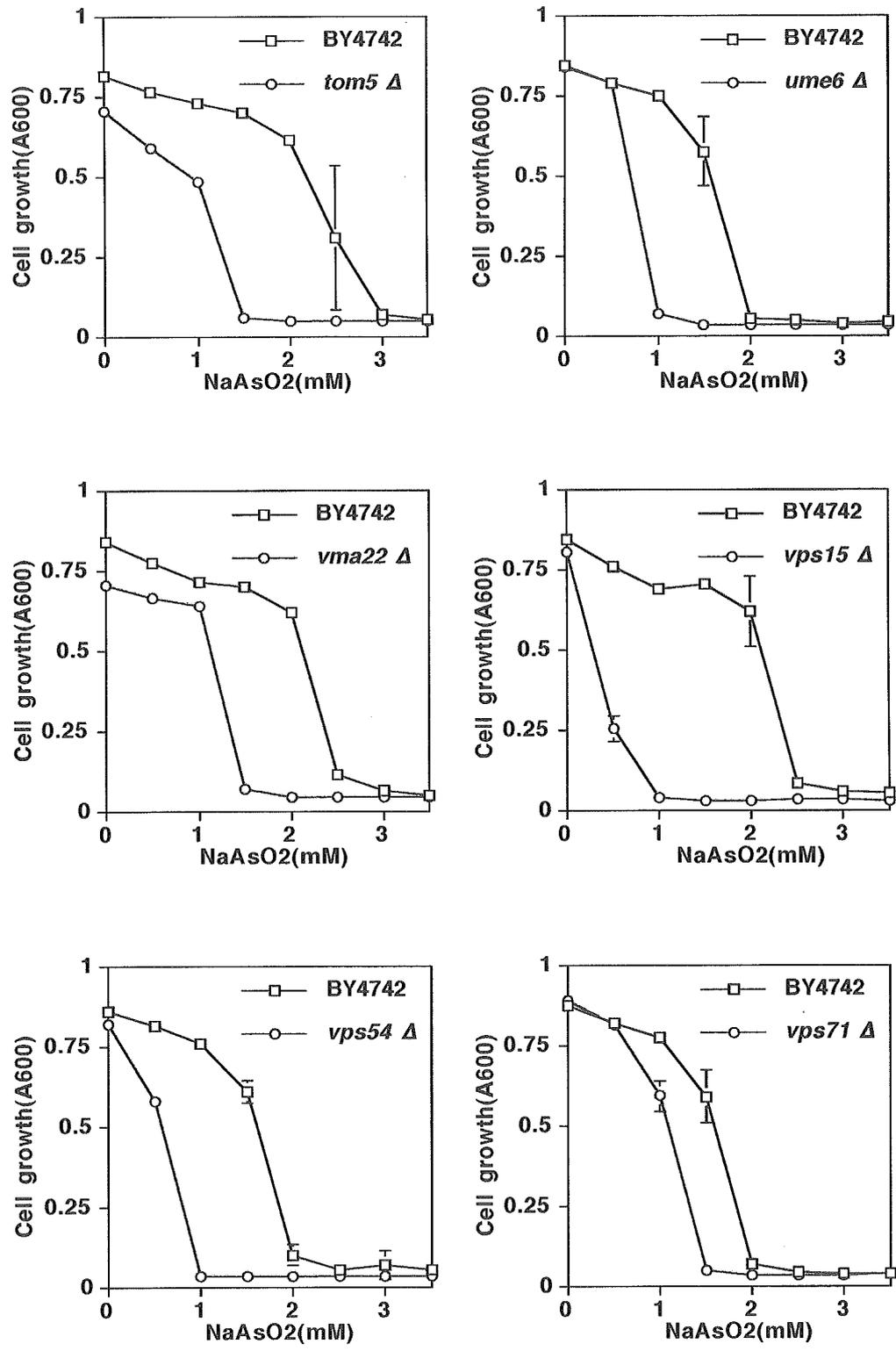


Fig.3-11 欠損により酵母に亜ヒ酸高感受性を与える遺伝子

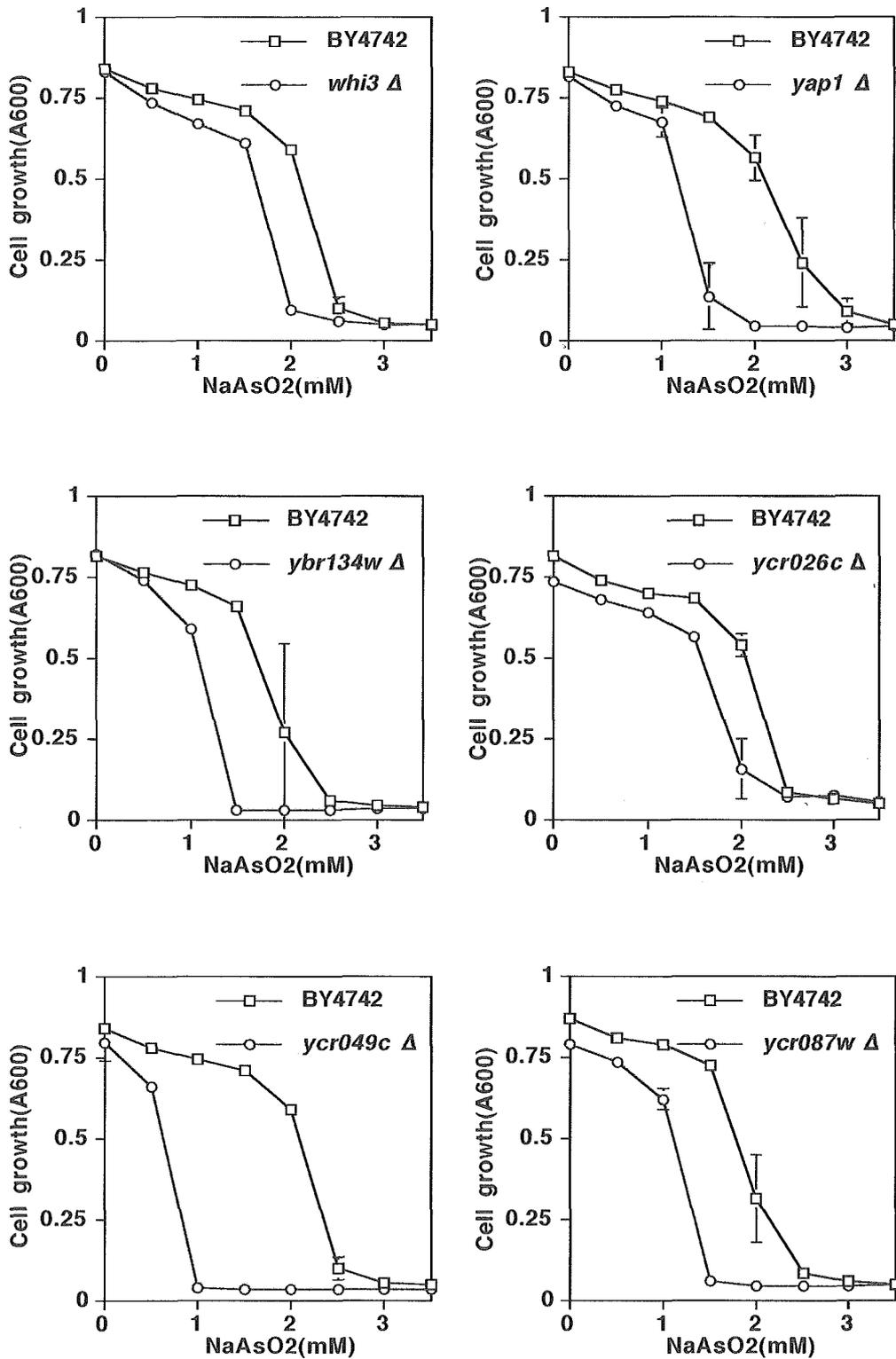


Fig.3-12 欠損により酵母に亜ヒ酸高感受性を与える遺伝子

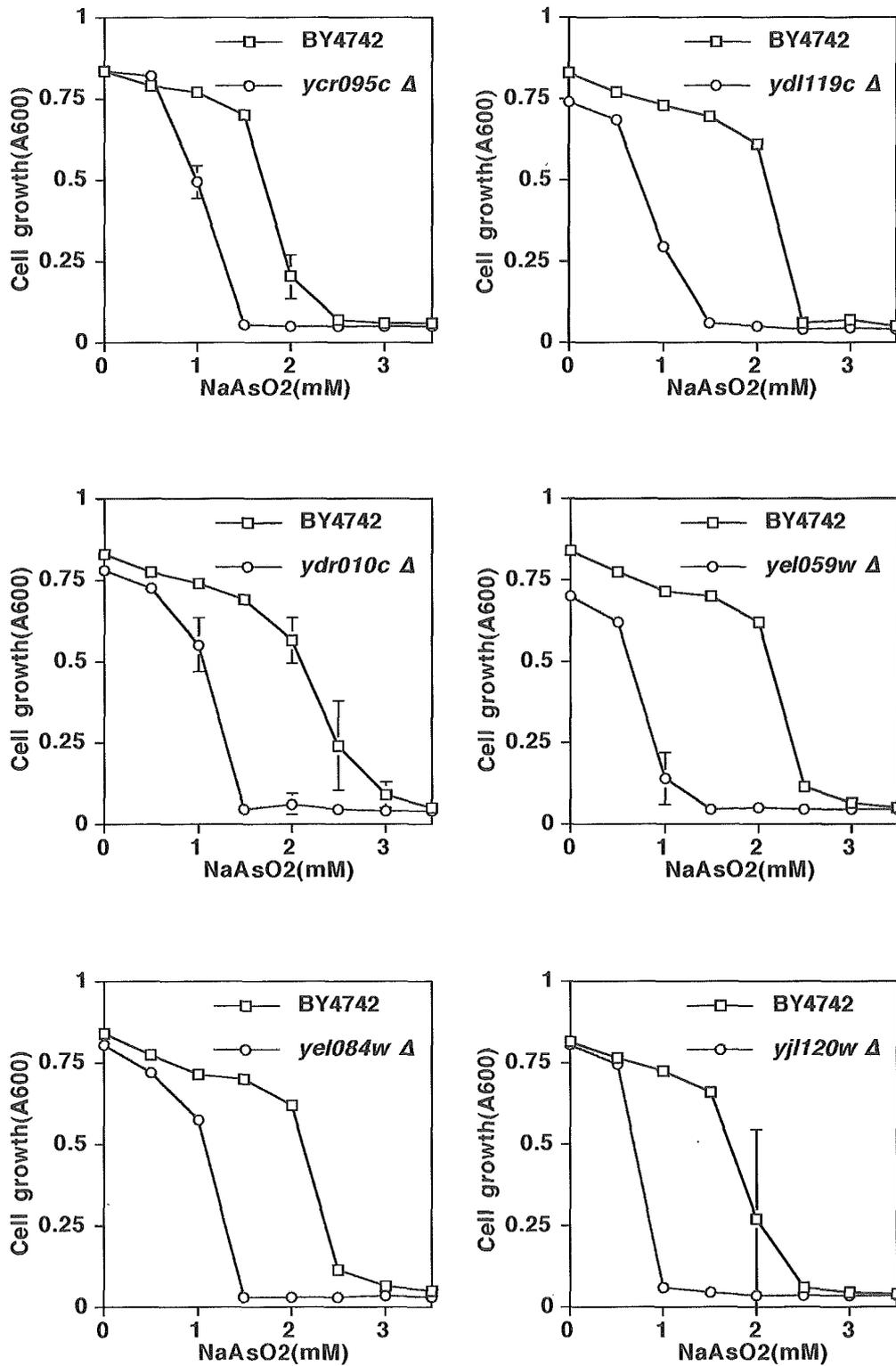


Fig.3-13 欠損により酵母に亜ヒ酸高感受性を与える遺伝子

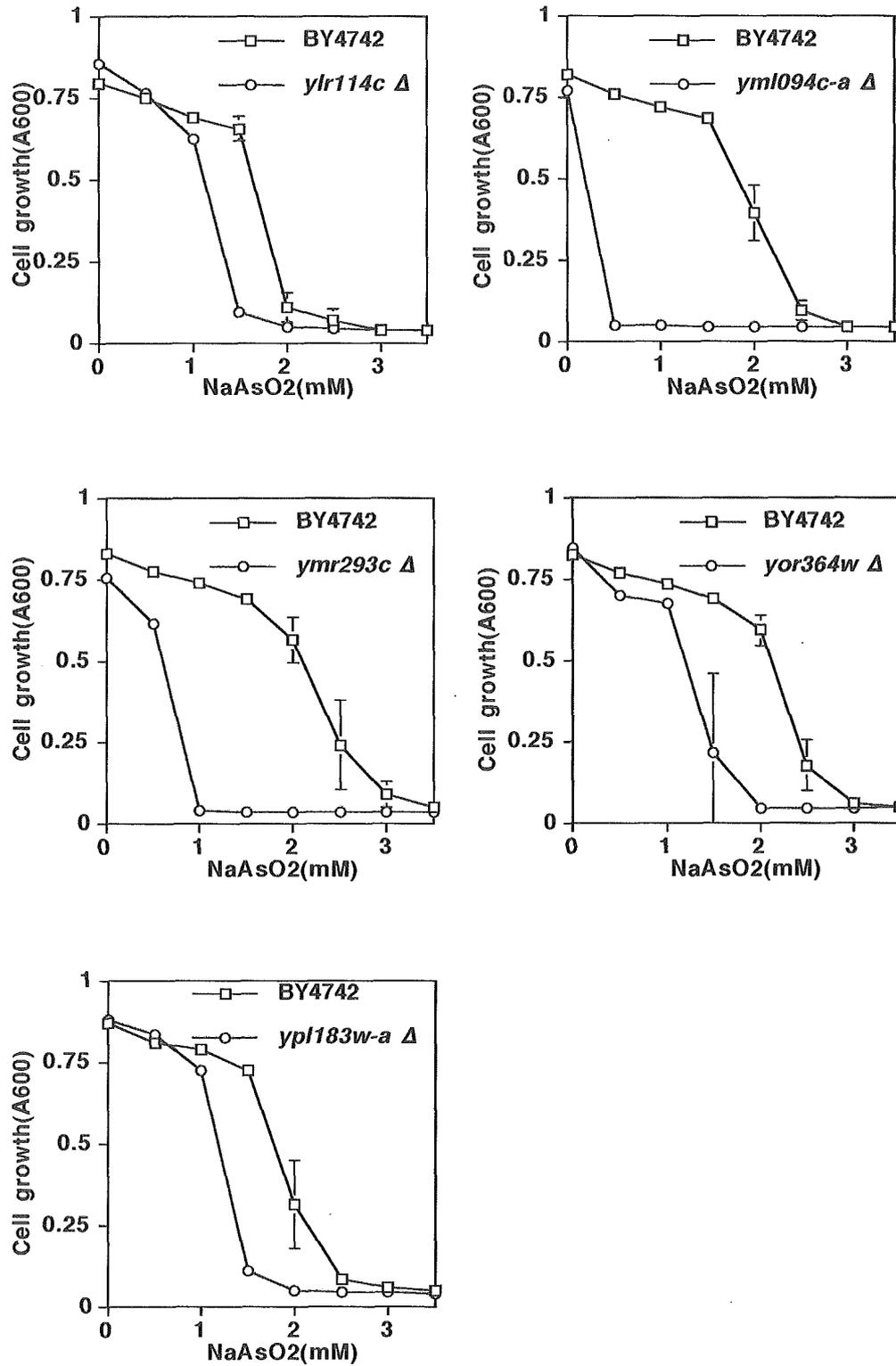


Fig.3-14 欠損により酵母に亜ヒ酸高感受性を与える遺伝子

Table. 2-1 欠損により酵母に亜ヒ酸高感受性を与える遺伝子がコードする
 蛋白の機能

遺伝子	機能
<i>AAT2</i>	Aspartate aminotransferase (2-oxoglutarate aminotransferase), cytosolic and peroxisomal
<i>AKR1</i>	Protein with palmitoyl transferase activity, has an inhibitory effect on signaling in the pheromone pathway, contains ankyrin repeats
<i>API2</i>	Protein involved in apical bud growth and formation of mating projection, required for stimulation of the low affinity Ca ²⁺ influx system (LACS) that is activated in response to mating pheromone and is required for cell-cell fusion
<i>ARC18</i>	Component of the ARP2/3 actin-organizing complex, involved in actin assembly and function
<i>ARP6</i>	Protein involved in ER organization and biogenesis, has weak similarity to actin and actin-related proteins Arp2p, Arp3p, and Arp5p
<i>ARR1</i>	Transcription factor of the basic leucine zipper (bZIP) family involved in arsenic and antimony resistance, member of a fungal-specific family of bZIP proteins
<i>ARR2</i>	Arsenate reductase required for resistance to arsenic
<i>ARR3</i>	Arsenic-resistance protein, member of the arsenical resistance-3 (ACR3) family of secondary active membrane transporters
<i>BCK1</i>	Serine/threonine protein kinase of the MEKK family involved in the cell wall integrity (low-osmolarity) and nutrient sensing pathways

Table. 2-2 欠損により酵母に亜ヒ酸高感受性を与える遺伝子がコードする
 蛋白の機能

遺伝子	機能
<i>BEM1</i>	Protein required for cell polarization and bud formation, contains two SH3 domains and a PX (phox) domain
<i>BEM4</i>	Bud emergence protein that interacts with Rho-type GTPases
<i>BNI1</i>	Protein involved in cytoskeletal control, stimulates actin (Act1p) filament assembly and protects growing actin ends from excess capping protein, required for bipolar budding pattern
<i>BRO1</i>	Protein that interacts with components of the PKC1-MAP kinase pathway, involved in the multivesicular bodies (MVB) pathway
<i>BUD16</i>	Protein involved in budding, has similarity to human PDXK pyridoxal kinase
<i>CBP3</i>	Protein required for assembly of ubiquinol cytochrome c reductase complex (cytochrome bc1 complex)
<i>CHS5</i>	Protein required for chitin synthase III activity
<i>CTF4</i>	Protein required for DNA synthesis, binds DNA polymerase alpha
<i>DBF2</i>	Serine/threonine protein kinase related to Dbf20p, required for events in anaphase/telophase, component of the CCR4-NOT transcriptional complex
<i>DEF1</i>	Protein involved in vacuolar import and degradation, glutamine rich; required for DNA damage-induced degradation of RNA polymerase II
<i>DOA4</i>	Ubiquitin-specific protease (ubiquitin C-terminal hydrolase), involved in recycling ubiquitin from protein substrates targeted to the proteasome and the vacuole

Table. 2-3 欠損により酵母に亜ヒ酸高感受性を与える遺伝子がコードする

蛋白の機能

遺伝子	機能
<i>DUR1,2</i>	Urea amidolyase, contains urea carboxylase and allophanate hydrolase activities fused together in a single polypeptide
<i>ERG3</i>	C-5 sterol desaturase, an iron, non-heme, oxygen-requiring enzyme of the ergosterol biosynthesis pathway
<i>ERG4</i>	Sterol C-24 (28) reductase
<i>ERG5</i>	Cytochrome P450, delta 22(23) sterol desaturase, catalyzes an intermediate pathway step in the biosynthesis of ergosterol
<i>ERG6</i>	S-adenosylmethionine delta-24-sterol-C-methyltransferase, carries out methylation of zymosterol as part of the ergosterol biosynthesis pathway
<i>GAS1</i>	1,3-beta-Glucanosyltransferase, glycopospholipid-anchored surface glycoprotein that regulates the crosslinking of beta-1,6-glucans in the cell wall
<i>GIM4</i>	Prefoldin subunit 2, component of the Gim protein complex that promotes formation of functional alpha- and gamma-tubulin, and actin
<i>GIM5</i>	Prefoldin subunit 5, component of the Gim protein complex that promotes formation of functional alpha-tubulin, gamma-tubulin, and actin
<i>GLC8</i>	Modulator of protein serine/threonine phosphatase Glc7p, involved in control of vacuole fusion
<i>HDA1</i>	Histone deacetylase, catalyzes removal of acetyl groups from histones, required for repression of many genes

Table. 2-4 欠損により酵母に垂ヒ酸高感受性を与える遺伝子がコードする

蛋白の機能

遺伝子	機能
<i>HEM14</i>	Protoporphyrinogen oxidase, converts protoporphyrinogen to protoporphyrin during heme biosynthesis
<i>HOG1</i>	MAP kinase (MAPK), principal component of the high-osmolarity signal transduction pathway
<i>LRE1</i>	Protein involved in regulation of beta-1,3-glucan biosynthesis, activation of Pkc1p-MAPK pathway, and laminarinase resistance
<i>LTE1</i>	GDP/GTP exchange factor, required for termination of M phase
<i>MAL31</i>	Maltose permease, a high affinity maltose/H ⁺ symporter, member of the hexose transporter family of the major facilitator superfamily (MFS)
<i>MDM10</i>	Protein involved in coupling mitochondria to the actin cytoskeleton and in mitochondrial morphology and inheritance, plays a role in maintenance of functional mitochondrial genome
<i>MEF1</i>	Mitochondrial translation elongation factor G, promotes GTP-dependent translocation of nascent chain from A-site to P-site of ribosome
<i>MRP7</i>	Mitochondrial ribosomal protein of the large subunit (YmL2) (E. coli L27)
<i>MRPL22</i>	Protein of the mitochondrial large ribosomal subunit, involved in the internalization step of endocytosis
<i>MRPL51</i>	Protein of the mitochondrial large ribosomal subunit

Table. 2-5 欠損により酵母に垂ヒ酸高感受性を与える遺伝子がコードする

蛋白の機能

遺伝子	機能
<i>OPI3</i>	Phospholipid-N-methyltransferase, carries out the second and third methylation steps of the phosphatidylcholine biosynthesis pathway
<i>PAC10</i>	Prefoldin subunit 3, component of the Gim protein complex that promotes formation of functional alpha- and gamma-tubulin, and actin
<i>PBS2</i>	MAP kinase kinase (MEK) activated by high osmolarity through the Sln1p-Ypd1p-Ssk1p two-component osmosensor and the Sho1p osmosensor
<i>PEP5</i>	Vacuolar peripheral membrane protein required for vacuole biogenesis
<i>PET8</i>	S-adenosylmethionine carrier, member of the mitochondrial carrier (MCF) family of membrane transporters, has similarity to Mrs4p and Mrs3p
<i>PFD1</i>	Component of the Gim protein complex that promotes formation of functional alpha- and gamma-tubulin and actin, has similarity to bovine prefoldin subunit 1
<i>PIM1</i>	Serine protease required for intramitochondrial proteolysis and maintenance of respiratory function, related to E. coli ATP-dependent protease La, member of the AAA+ family of putative ATPases
<i>RBK1</i>	Ribokinase, member of a family of sugar kinases that includes Pfk2p
<i>REG1</i>	Regulatory subunit for protein phosphatase Glc7p, required for glucose repression
<i>ROM2</i>	GDP-GTP exchange factor for Rho1p that is activated by cell wall defects, involved in ethanol tolerance

Table. 2-6 欠損により酵母に亜ヒ酸高感受性を与える遺伝子がコードする

蛋白の機能

遺伝子	機能
<i>RTT101</i>	Protein of the cullin family that has ubiquitin-protein ligase activity, involved in the regulation of Ty1 transposition, has similarity to Cdc53p
<i>SCP160</i>	Protein involved in control of mitotic chromosome transmission, acts as an effector for Gpa1p in the mating response pathway, contains 14 KH domains which are found in RNA-binding proteins such as Mer1p and mouse hnRNP X
<i>SIN3</i>	Component of histone deacetylase B and transcriptional regulator of RNA polymerase II, has negative and positive effects on gene expression
<i>SKM1</i>	Serine/threonine protein kinase with similarity to Ste20p and Cla4p
<i>SLT2</i>	Serine/threonine protein kinase of MAP kinase family involved in the cell wall integrity (low-osmolarity) pathway and in G2 phase cell-cycle checkpoint control
<i>SOK2</i>	Transcription factor with dual roles as both activator and repressor, negatively regulates meiosis, involved in regulation of cAMP-dependent kinase-stimulated growth, pseudohyphal differentiation, and sporulation
<i>SSD1</i>	Protein involved in regulating formation and composition of the cell wall, resistance to the tobacco antifungal agent osmotin, and calcium tolerance, single-copy enhancer of <i>arl1</i> null mutation, single-copy suppressor of many different mutations