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毒物学レポート

[Saccharomycescerevisiaeのparaコート毒性に関する成長依存性遺伝子の同定](#)

Vol.1, No.3, p.113-114

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リリース：2014年11月10日

[概要](#)

[全文PDF \[379K\]](#)

酵母の増殖に不可欠な各遺伝子を過剰発現させて確立した酵母株ライブラリーを用いて、酵母のparaコートに対する感受性に影響を与える遺伝子を包括的に検索しました。その結果、7つの新規遺伝子、*UTP4*、*UTP25*、*SEC65*、*NDD1*、*TFB2*、*TIM23*、および*CCT6*が、過剰発現を介して酵母にparaコート耐性を付与するものとして同定されました。

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毒物学レポート

[RPN8、SKP1、MIA40、またはMES1の過剰発現は、Saccharomycescerevisiaeのカドミウムに対する耐性を増加させます](#)

Vol.1, No.3, p.109-111

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リリース：2014年11月10日

[概要](#)

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酵母の細胞増殖に不可欠な遺伝子の中から、カドミウム耐性に関連する遺伝子をスクリーニングしました。4つの新規遺伝子、*RPN8*、*SKP1*、*MIA40*、および*MES1*が、過剰発現を介して酵母にカドミウム耐性を提供する遺伝子として同定されました。

[ページトップ](#)

原著

[7-塩素化ベンズ\[a\]アントラセンを投与したマウスにおける肝臓および肺の毒性学的影響の性別による違い](#)

Vol.1, No.3, p.101-108

Hiroyuki Sakakibara , Takashi Ohura , Yuta Kamiya , Noriko Yamanaka , Nobuaki Shimada , Kayoko Shimoi , Keerthi S. Guruge  
Released: November 10, 2014

[Abstract](#)

[Full Text PDF\[288K\]](#)

Chlorinated polycyclic aromatic hydrocarbons (Cl-PAHs) have recently been found in the environment at relatively high concentrations. However, their toxicological information has not been well documented. In this study, a 24 hr *in vivo* experiment was conducted to evaluate the sex-dependent difference of the acute toxicological effects of 7-chlorinated benz[a]anthracene (7-ClBaA) as a model Cl-PAH. 7-ClBaA or its parent chemical, BaA, was once orally administered to male or female ICR mice at concentrations of 1, 10, and 100

mg/kg body weight. The relative liver weights of the males were significantly increased at the highest dose of both chemicals compared to the vehicle controls, but the weights were comparable among all groups in the females. The plasma 7-ClBaA level was similar in both sexes, but significantly higher than that of BaA. 7-ClBaA dose-dependently induced expression of the genes *Cyp1a1*, *1a2*, and *1b1* in the liver and lung, and these stimulations were significantly higher in both organs and genders at a dose of 100 mg/kg 7-ClBaA compared with an equivalent amount of BaA, except in the case of hepatic *Cyp1a2* and *1b1* and pulmonary *Cyp1a2* in the female mice. The results suggest that acute toxicity of 7-ClBaA is gender- and organ-specific, and female mice might be less sensitive to acute toxicity of both 7-ClBaA and BaA than the males.

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## Original Article

[A screening method for growth-dependent genes involved in the cytotoxicity of chemicals in \*Saccharomyces cerevisiae\*](#)

Vol.1, No.3, p.95-99

JunXuan Zhu , Tsutomu Takahashi , Shusuke Kuge , Gi-Wook Hwang , Akira Naganuma  
Released: November 06, 2014

[Abstract](#)[Full Text PDF\[387K\]](#)

When considering mechanisms of toxicity development to chemical substances, one potentially important mechanism is the selective inhibition of proteins essential for cell growth (target molecules). In this study, to detect the target molecules of chemical substances, we established a method for comprehensively screening for essential proteins that confer resistance against chemical substances via overexpression in yeast. We used budding yeast, a common eukaryotic model organism, to produce yeast strains showing overexpression of different genes encoding essential proteins. This method was used to search for overexpressed genes conferring arsenite resistance in yeast, and as a result, we successfully identified ten types of new genes correlated with arsenite resistance.

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## Original Article

[Residual metals in carbon nanotubes suppress the proliferation of neural stem cells](#)

Vol.1, No.3, p.87-94

Yukari Shigemoto-Mogami , Koki Fujimori , Yoshiaki Ikarashi , Akihiko Hirose , Yuko Sekino , Kaoru Sato  
Released: November 06, 2014

[Abstract](#)[Full Text PDF\[236K\]](#)

Carbon nanotubes (CNTs) are used in many fields; however, little is known about the effects of CNTs on the central nervous system (CNS). In this study, we found that extracts of sonicated CNTs suppressed the proliferation of neural stem cells (NSCs). Single-walled CNTs (SWCNTs) and multiple-walled CNTs (MWCNTs) were suspended in PBS (1 mg/mL) and sonicated for 5 hr using a water bath sonicator. Supernatants from both types of CNTs suppressed NSC proliferation. The effects weakened in a dilution-ratio-dependent manner and strengthened in a sonication time-dependent manner. Metal concentrations extracted from SCNTs and MCNTs after 5-hr of sonication were determined using inductively coupled plasma mass spectrometry. Mn, Rb, Cs, Tl, and Fe were detected in the SWCNT supernatant, and Mn, Cs, W, and Tl were detected in the MWCNT supernatant. The concentration of Mn, Rb, and Fe eluted from the SWCNTs and Rb eluted from MWCNTs following sonication were sufficient to suppress NSC proliferation alone. N-acetyl cysteine (NAC) and ascorbic acid (AA) reversed the effects of Mn and Fe and restored NSC proliferation. The effects of Rb and Tl were not affected by the antioxidants. Both antioxidants largely restored the suppression of NSC proliferation induced by the SWCNT and MWCNT supernatants. These results suggest that metals extracted from CNTs via a strong vibration energy can suppress NSC proliferation through ROS production by the extracted metals.

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[Hazardous effects of titanium dioxide nanoparticles on testicular function in mice](#)

Vol.1, No.3, p.81-85

Nobuhiko Miura , Katsumi Ohtani , Tatsuya Hasegawa , Rieko Hojo , Yukie Yanagiba , Tetsuya Suzuki , Megumi Suda , Rui-Sheng Wang

Released: October 28, 2014

[Abstract](#)[Full Text PDF\[218K\]](#)

It has been reported that titanium dioxide nanoparticles (TiO<sub>2</sub> NPs) show toxicity in organs such as liver, lung, and intestine. There is, however, only a limited number of reports regarding the effect of TiO<sub>2</sub> NPs on the male reproductive system. We examined the effect of TiO<sub>2</sub> NPs on testicular function using mouse model. TiO<sub>2</sub> NPs (Aeroxide P25) were evenly dispersed in disodium phosphate solution by sonication. Mice were treated intravenously with TiO<sub>2</sub>NP (0、2、または10 mg / kg体重) を週に1回、4週間投与した後、最後の注射から9日後に屠殺します。精巣上体尾部の精子頭部数と2つの精子運動パラメーター、運動性パーセント (MP) と進行性パーセント (PP) を評価しました。TiO<sub>2</sub> NPは、精巣上体尾部と精巣の精子頭部数を大幅に減少させ、さらにMPとPPの両方の運動性比を減少させました。これらの結果は、TiO<sub>2</sub> NPは、マウスにおいて精巣機能に有害な影響を有し得ます。

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