

Title of Research:

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Research for establishing new method for risk assessment of chemical toxicity using gene-modified ES cells

Principal Investigator:

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Summary of Research:

We will establish a new method of assessment of many chemical risks by using embryonic stem cells and iPS cells with gene-modification. We will examine growth retardation, chromosome aberration and developmental defects of stem cells. We cultured mouse ES cells in 96-well plates. After adding carcinogenic chemicals (DEN, MNU, MMS), we examined the cell growth by MTT assay. We detected cytotoxicity and difference of effect depending on the status of p53. Our experiment revealed that (1) difference of cytotoxicity by chemical species, (2) that p53 mutation resulted in resistance to the cells, (3) and that high frequencies of chromosome aberration in p53-deficient ES cells. These result suggested that risk assessment using ES cells will become high through-put system capable of characterizing mechanisms of toxicity and defense.

Timeline: November 1, 2012 –

Topics:

1. First new LRI Annual research Report 2012 Aug,31
2. Chemical Industrial News Paper 2013Apr2
3. Second new LRI Annual research Report 2013 Aug,30

Publications:

1. Patent Application
Patent number: 2012-110115;
Inventors: Takashi Morita and Kayo Yoshida
Invention: The assessment method of the toxicological risk using a pluripotent stem cell
Applicant: Osaka City University,
Filing date: May 11, 2012
2. JST new technology, Oral presentation "Toxic judgment method of using pluripotent stem cell"
October 19, 2012, Tokyo JST headquarters
3. Innovation Kansai, Poster Announcement "Toxic judgment method of using pluripotent stem cell"
December 6, 2012, Osaka International Conference Hall