

Biochemical Genetics

1. Staffs and Students (April, 2010)

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|---------------------|----------------------------|-----------------|
| Professor | Shigetaka Kitajima MD, PhD | |
| Associate Professor | Yujiro Tanaka MD, PhD | |
| Assistant Professor | Junya Kawauchi MD, PhD | |
| Secretary | Kuniko Takayanagi | |
| Graduate Student | Liu Qin, | Kenji Taketani, |
| | Kaori Sasaki, | Aiko Motoshita, |
| | Hisaharu Masaki, | Manami Kodaka, |
| | Jun Mitamura, | Saori Ooya, |
| | Daiki Miyamoto, | Makoto Inoue, |
| | Manabu Hirata, | Chika Miyagi |
| Research Student | Masashi Aoki | |

2. Purpose of Education

Transcriptional regulation is one of the most important processes by which genome information is expressed from DNA to mRNA to protein. The faithful synthesis of mRNA is achieved by transcriptional machinery comprised of RNA polymerase II, basal factors and many other protein factors, whose dysfunction is implicated in various human diseases. Our research interest is focused on the basic mechanism of transcription cycle and implication of early response transcription factors in determining cell fate in stress response. We are also studying on the mechanism of cell cycle arrest of terminally differentiated cardiac cells and its re-activation to provide novel regeneration therapy.

Key words

- To provide novel paradigm of transcriptional regulation
- To understand role of transcription factor in cell fate determination
- To understand role of transcription factor in cancer and search for novel therapeutic approach

3. Research Subjects

- 1) Transcription
- 2) Cell fate determination by activating transcription factor (ATF) 3
- 3) Transcriptional cascade pathway to regulate cell death

4. Clinical Services

none

5. Publications

Original Article

1. Braglia P, Kawauchi J, and Proudfoot NJ. (2011) Co-transcriptional RNA cleavage provides a failsafe termination mechanism for yeast RNA polymerase I. *Nucleic Acid Res* Vol.39(4) 1439-1448 (2011)
2. Spohn D, Rössler OG, Phillip SE, Raubuch M, Kitajima S, Griesemer D, Hoth M, Thiel G.. (2010) Thapsigargin induces expression of ATF3 in human keratinocytes involving Ca²⁺ ions and c-Jun N-terminal proline kinase. *Mol Pharmacol* 78. 865-876.
3. Taketani K et al. Key role of ATF3 in p53-dependent DR5 induction upon DNA damage of human colon cancer cells. Manuscript in preparation
4. Gurzov EN et al. Pancreatic β -cells activate a JunB/ATF3-dependent survival pathway during inflammation. *Proc Natl Acad Sci USA*. Submitted for publication