The 5nd Seminar of the seminar series on
Developmental Biology and Regenerative Medicine

第５回　発生・再生医学セミナー

New therapy for phenylketonuria

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【Place】1F Conference Room, IMEG
(Institute of Molecular, Embryology and Genetics)

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□ このセミナーは発生・再生医学研究者育成コース「 発生・再生医学特論 II」の講義として開催されます。

担当：**Pediatrics,　Fumio Endo　(ex 5188)**

Abstract：**New therapy for phenylketonuria**

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Phenylketonuria (PKU) is caused by deficient activity of phenylalanine hydroxylase (PAH). A phenylalanine (Phe)-restricted diet can ameliorate the effect of high serum Phe on cognitive function. The dietary treatment, which has to be continued for life to prevent cognitive deficit, often fails, since it is a heavy burden for patients and their families. In order to maintain optimal mental function in PKU patients, a search for better therapeutic treatments has been explored including gene therapy and enzyme replacement. In 1999, we reported four patients with hyperphenylalaninemia whose serum Phe level decreased in response to 6-R-L-erythro-5,6,7-tetrahydrobiopterin (BH4) administration. These patients had mutations in the PAH gene, but showed no abnormalities in BH4 metabolism. We have proposed a novel disease entity, BH4-responsive PAH deficiency. Recent studies revealed that the prevalence of BH4-responsive PAH deficiency is much higher than initially anticipated and that not only mild HPA patients but also a part of classical PKU patients favorably responded to BH4 treatment. Successful results of long-term treatment by BH4 with or without Phe-diet have been reported. In 2008, BH4 has been approved as a therapeutic drug for PKU in USA and Japan. Now more than a thousand of patients are under treatment with BH4, which has greatly improved the QOL of the patients.