

平成22年6月9日

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学術講演会開催について (通知)

このたび、下記により学術講演会を開催いたしますので、関係者へ周知方  
よろしくお取りはからい願います。

記

1. 演 題 " Neurons, mitochondria, astrocytes, glycolysis … what's the connection  
with cancer? "

1. 講演者 Sir, Salvador Moncada  
Professor  
The Wolfson Institute for Biomedical Research,  
University College London

1. 日 時 平成22年 6月 18日 (金) 16:30 ~ 18:00

1. 場 所 医学研究科 A棟1階102号室

1. 主 催 神経・細胞薬理学

(要旨) Astrocytes respond to inhibition of their mitochondrial respiration by switching on glycolysis. The ATP thus generated is utilized by the cells to maintain their mitochondrial membrane potential and prevent apoptosis. Neurons, in contrast, are unable to activate this mechanism and die rapidly following inhibition of mitochondrial respiration. This is due to the virtual absence in neurons of the enzyme 6-phosphofructo-2-kinase/fructose 2,6-bisphosphatase, isoform 3 (PFKFB3) which is responsible for the generation of fructose-2,6-bisphosphate, the allosteric activator of the key glycolytic enzyme 6-phosphofructo-1-kinase. We have discovered that the absence of PFKFB3 in neurons is due to the fact that in these cells this enzyme is continuously degraded by the ubiquitin 3 ligase APC/C-Cdh1. Neurons utilize glucose mainly through the pentose phosphate pathway for the generation of the antioxidant glutathione. APC/C-Cdh1 is also the ubiquitin ligase responsible for the degradation of mitotic cyclins and we have evidence to suggest that inactivation of this complex during the cell cycle is responsible not only for the increase in mitotic cyclins required for the initiation of cell proliferation but also for the increase in PFKFB3 necessary to provide glucose for this process. This is likely to occur not only in normal cells but also in cancer.