HOKKAIDO UNIVERSITY

～講演会のご案内～

モントリオール大学の James G. Omichinski 教授が来学される機会に、講演会を企画しました。Omichinski 教授は、タンパク質・DNA の構造解析において、多くの顕著な業績を上げておられます。先生の最新の転写因子の構造に基づく機能解明研究について、興味深いお話が伺えるものと思います。多数のご参加をお待ちしております。

演 題： “At the Crossroads of Transcription and Repair: XPC/Rad4 competes with XPG/Rad2 and TFIIEα for binding to TFIIH”

講 師： **Prof. James G. Omichinski**
(Université de Montréal, Canada)

日 時： 2012 年 10 月 10 日（水）15：00～16：00

場 所： 理学部 6 号館 6-204-02 室（多目的演習室）

共 催： 生命分子化学セミナー, フロンティア化学教育研究センター
日本生化学会北海道支部, 日本化学会北海道支部

要 旨：

The general transcription factor IIH (TFIIH) plays crucial roles in transcription as part of the pre-initiation complex (PIC) and in DNA repair as part of the nucleotide excision repair (NER) machinery. In transcription, TFIIH is recruited to the PIC by an interaction between its p62/Tfb1 subunit and the alpha subunit of TFIIE (TFIIEα). In NER, TFIIH assists in the elimination of large adducts in DNA including cyclobutane pyrimidine dimers (CPD) and (6,4) photoproducts (6,4PP). During global genome NER, XPC/Rad4 recruits TFIIH to the DNA-damaged site through interactions with its p62/Tfb1 and Ssl2/XPB subunits. Once recruited to the lesion site, TFIIH recruits the endonuclease XPG/Rad2 and other factors required for DNA excision. The recruitment of XPG/Rad2 by TFIIH results in the displacement of XPC/Rad4, and it appears that XPC/Rad4 and XPG/Rad2 bind to TFIIH in a mutually exclusive manner within the repair complex. I will present NMR structural evidence describing the displacement mechanism between XPC/Rad4 and XPG/Rad2 during NER and demonstrate that XPC/Rad4, XPG/Rad2 and TFIIEα all possess a common p62/Tfb1-binding motif. Our data shows that XPC/Rad4 and XPG/Rad2 form similar interactions with the p62/Tfb1 subunit of TFIIH, and this supports the hypothesis that XPG/Rad2 displaces XPC/Rad4 from the repair complex through a series of interactions with different subunits of TFIIH. In addition, the structure of a Rad4-Tfb1 complex indicates that XPC/Rad4 may compete with TFIIEα for TFIIH at the PIC and this would explain the role of XPC in transcriptional activation of center genes.

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