2011B 期 採択長期利用課題の事後評価について - 3 -

公益財団法人高輝度光科学研究センター
利用推進部

2011B 期に採択された長期利用課題について、2014A 期に3年間の実施期間が終了したことを受け、第52回 SPring-8利用研究課題審査委員会長期利用分科会（平成27年3月）による事後評価が行われました。

事後評価は、長期利用分科会が実験責任者に対しヒアリングを行った後、評価を行うという形式で実施し、SPring-8利用研究課題審査委員会で評価結果を取りまとめました。以下に対象となる長期利用課題3課題のうち、今回評価を受けた1課題の評価結果を示します。研究内容については本誌241ページの「最近の研究から」に実験責任者による紹介記事を掲載しています。

なお、3課題のうち先に事後評価が行われた2課題の評価結果については、「SPring-8／SACLA 利用者情報」Vol.20 No.1（2015年2月号）の88〜89ページおよび No.2（2015年5月号）の192〜193ページに掲載済みです。

課題名	Structural and functional understanding of secondary active transporters
実験責任者（所属）	Nieng Yan (Tsinghua University)
採択時課題番号	2011B0040
ビームライン	BL41XU
利用期間 / 配分総シフト	2011B〜2014A/37.5シフト

［評価結果］

Original research purposes in this proposal are to determine the crystal structures of secondary active transporters with different conformation and to elucidate substrate recognition and energy coupling mechanisms. Elucidation of dynamic process of the working states of the transporters is also considered to dissect the energy coupling mechanism.

In the last three years, Yan *et al*. have published several high impact and notable results in major scientific journals such as *Nature* and *Science* by elucidating the structure-function relationship on the secondary active transporters with the support of BL41XU at SPring-8. However, as pointed out in the comments of the interim review, such excellent results are limited in side projects such as XylE, its homolog GLUT1-4, PPR proteins, TAL effectors, and voltage-gated sodium channel Na_vRh, and no significant progress have been published in the crystallographic analyses on the transporters described in the original proposal such as AdiC, FucP, and UraA.

But, nevertheless, the scientific results obtained by Yan *et al*. are satisfactory, because the results are all related to the main project and published in the major journals. In view of these considerations, this project reaches a goal, and the review committee would like to expect that, based on the results obtained in this project, the structural analyses of the transporters described in the original proposal and their intermediated states are carried out in the near future, and also the targets are extended from bacterial transporter to eukaryotic transporter to find out a general rule for structural change coupled with energy transfer.

Thus, the committee is convinced that this long-term project was a highly successful one.

［成果リスト］

（査読付き論文）

［1］ SPring-8 publication ID = 21597
X. Zhang *et al*.: “Crystal Structure of an Orthologue of the NaChBac Voltage-Gated Sodium Channel” *Nature* **486** (2012) 130-134.

［2］ SPring-8 publication ID = 23895
L. Sun *et al*.: “Crystal Structure of a Bacterial Homologue of Glucose Transporters GLUT1-4” *Nature* **490** (2012) 361-366.

［3］ SPring-8 publication ID = 23896
D. Deng *et al*.: "Structural Basis for Sequence-Specific Recognition of DNA by TAL Effectors" *Sciences* **335** (2012) 720-723.
［4］ SPring-8 publication ID = 27025
P. Yin *et al*.: "Structural Basis for the Modular Recognition of Single-Stranded RNA by PPR Proteins" *Nature* **504** (2013) 168-171.
［5］ SPring-8 publication ID = 28172
J. Wang *et al*.: "Crystal Structure of a Bacterial Homologue of SWEET Transporters" *Cell Research* **24** (2014) 1486-1489.