June 2009 Highlights

YidC and Oxa1 Form Dimeric Insertion Pores on the Translating Ribosome

By Rebecca Kohler, Daniel Boehringer, Basil Greber, Rouven Bingel-Erlenmeyer, Ian Collinson, Christiane Schaffitzel, Nenad Ban (2009) Molecular Cell, 34, 344-353.

Members of the YidC/Oxa1/Alb3 protein family insert membrane proteins in bacteria, mitochondria, and chloroplasts. Kohler et al. report the 3D structures of YidC and Oxa1 bound to translating ribosomes as dimers of two-fold symmetry. The dimeric channel forms a central pore and can open laterally to release transmembrane helices into the lipid bilayer, analogous to the functioning of the two halves of the SecY monomer. The image showing a nut cut into halves symbolizes this bipartite assembly. Image: Basil Greber, ETH Zurich.

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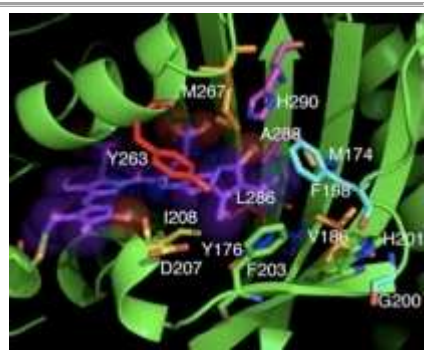

Mammalian expression of Infrared fluorescent proteins engineered from a bacterial phytochrome.

By Shu, X., Royant, A., Lin, M.Z., Aguilera, T.A., Lev-Ram, V., Steinbach, P.A. & Tsien, R.Y. (2009) Science 324, 804-807.
GFP has revolutionized cell biology but has met limited success in whole-body imaging. A scientist from the IBS has contributed in Roger Tsien's lab at the UCSD to the development of a fluorescent protein suitable for whole-body imaging, based on the directed evolution of a truncated phytochrome from Deinococcus radiodurans. Fluorescence Molecular Tomography imaging of mice infected by an adenovirus expressing the Infrared fluorescent protein and specifically targeting the liver has demonstrated the potential of this genetically-encoded marker.
- **PSB contact**: Antoine Royant (IBS)

Highlight from the ESRF Structural Biology Beamlines

The structure of yeast Sac3:Cdc31:Sus1:Thp1 (TREX-2) complex. *The yeast Sac3:Cdc31:Sus1:Thp1 (TREX-2) complex facilitates the repositioning and association of actively transcribing genes with nuclear pores that is central to integrating transcription, processing, and mRNA nuclear export. Crystal structures for the Sac3:CID:Sus1:Cdc31 complex have been solved by researchers from the MRC laboratory of Molecular Biology (UK) and Heidelberg University (Germany). The CID region of Sac3 forms a continuous 12.5 nm alpha helix, which is encircled by two Sus1 chains and one Cdc31 chain. Data for these structures were collected on the ESRF beamlines ID23-1, ID29 and ID14-1.* S**ee Jani, D. et al. Mol. Cell, 33, 727-737 (2009).**