

nature

International weekly journal of science

Search Advanced search

Editor's Summary

29 November 2007

Gatekeeper for the nucleus

The nuclear pore complex plays a crucial role in the cell, as gatekeeper for traffic between the cytoplasm and the interior of the nucleus. It is a large supramolecular complex made up of multiple copies of about 30 different proteins — 456 protein molecules in all. Cell biologists would love to know how each of the pore molecules are placed, but so far this has eluded conventional structural studies. Now, a new proteomics-based technique has provided a detailed view of the architecture of the yeast nuclear pore complex. Half of the complex is made of a core scaffold forming a network coating the surface of the nuclear envelope membrane within which the complex is embedded. The selective transport barrier is formed by the many proteins lining the inner face of the scaffold. Despite its size, there are only a few structural modules in the complex; this underlying simplicity provides possible pointers to an evolutionary origin from a 'primordial' nuclear pore complex. In the cover graphic, the 100-nm diameter pores are shown in the silver-grey nuclear envelope.

NEWS AND VIEWS

Cell biology: Pore puzzle

Where would you start in trying to work out the structure of a macromolecular machine consisting of 456 proteins? Taking a combined experimental and computational approach is one answer.

John D. Aitchison & Richard W. Wozniak

doi:10.1038/450621a

[Full Text \(/nature/journal/v450/n7170/full/450621a.html\)](#) | [PDF \(284K\) \(/nature/journal/v450/n7170/pdf/450621a.pdf\)](#)

ARTICLE

Determining the architectures of macromolecular assemblies

Frank Alber, Svetlana Dokudovskaya, Liesbeth M. Veenhoff, Wenzhu Zhang, Julia Kipper, Damien Devos, Adisetyantari Suprapto, Orit Karni-Schmidt, Rosemary Williams, Brian T. Chait, Michael P. Rout & Andrej Sali

doi:10.1038/nature06404

[Abstract \(/nature/journal/v450/n7170/abs/nature06404.html\)](#) | [Full Text \(/nature/journal/v450/n7170/full/nature06404.html\)](#) | [PDF \(2.188K\) \(/nature/journal/v450/n7170/pdf/nature06404.pdf\)](#) | [Supplementary information \(/nature/journal/v450/n7170/supinfo/nature06404.html\)](#)

ARTICLE

The molecular architecture of the nuclear pore complex

Frank Alber, Svetlana Dokudovskaya, Liesbeth M. Veenhoff, Wenzhu Zhang, Julia Kipper, Damien Devos, Adisetyantari Suprapto, Orit Karni-Schmidt, Rosemary Williams, Brian T. Chait, Andrej Sali & Michael P. Rout

doi:10.1038/nature06405

[Abstract \(/nature/journal/v450/n7170/abs/nature06405.html\)](#) | [Full Text \(/nature/journal/v450/n7170/full/nature06405.html\)](#) | [PDF \(958K\) \(/nature/journal/v450/n7170/pdf/nature06405.pdf\)](#) | [Supplementary information \(/nature/journal/v450/n7170/supinfo/nature06405.html\)](#)

