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Crystallography in the news

December 1, 2010. One year after the Nobel Prize in chemistry was awarded for the discovery of the bacterial ribosome's atomic structure, French researchers from the Institut de Genetique et de Biologie Moleculaire et Cellulaire - led by Adam Ben-Shem - have determined the first structure of a eukaryotic ribosome, that of yeast.

December 6, 2010. Advances in our understanding of basic biological processes and human disease owe much to the groundbreaking research of scientists at the Chromosome Dynamics Laboratory at RIKEN Advanced Science Institute. This article details work led by Tatsuya Hirano, currently chief scientist of the Chromosome Dynamics Laboratory at the RIKEN Advanced Science Institute, involving the discovery of the 'condensin' protein complex.

December 7, 2010. A pair of biologists at the University of Groningen, Bauke Dijkstra and Lubbert Dijkhuizen, have identified the enzyme that is responsible for dental plaque sticking to teeth, and hope to soon identify substances that will inhibit it, potentially leading to substances that fight tooth decay. The work used protein crystallography to work out the 3D structure of the enzyme, revealing details about its folding mechanism, which allowed them to gain insight into how it functions.

December 8, 2010. Researchers led by Prof. Andreas Ziegler, the director of the Institut fur Immunogenetik of the Charite Universitatsmedizin Berlin, found an MHC protein in chickens that recognized fats (lipids) instead of protein fragments. In the current issue of the online, open-access journal PLoS Biology (PLoS Biol 8(12): e1000557), he and his collaborators at the Max Delbruck Centrum, the Free University Berlin and the Beckman Research Institute in California demonstrate that the immune system of the chicken is still not completely understood.

December 13, 2010. Scientists at the European Molecular Biology Laboratory (EMBL) in Grenoble, led by Christiane Schaffitzel, have determined the structure of a ribosome-protein complex involved in carrying nascent proteins out of the cell.

December 16, 2010. Zenobia Therapeutics, Inc. (Zenobia), a leader in fragment-based lead discovery for CNS diseases, announced a research collaboration with H. Lundbeck A/S (Lundbeck) utilizing Zenobia's expertise in protein expression and X-ray crystallography for the Parkinson's disease target, LRRK2. Under the agreement, Zenobia will continue to use its capabilities in fragment-based lead discovery (FBDL) to advance its internal LRRK2 drug discovery program independently of Lundbeck.

December 22, 2010. Scientists at Rockefeller University, led by Radhika Subramanian - in conjunction with Tarun Kapoor's Laboratory of Chemistry and Cell Biology and Seth Darst's Laboratory of Molecular Biophysics - have detailed the role of one protein, PRC1, that acts in the penultimate stage of cell division, helping to form the architectural structures, called central spindles, needed before the cell splits in two.

Maximum performance optic: VariMax VHF

VariMax, the latest generation of Confocal Max-Flux® (CMF) optics, is a landmark of innovative design and functionality. VariMax optics will increase output from most fine focus rotating anode generators but were specifically...
Rigaku HighFlux HomeLab™ featuring the new VariMax VHF optic coupled to a MicroMax™-007 HF microfocus rotating anode X-ray generator and equipped with a Rigaku Saturn 944+ 3rd generation CCD detector.

Hao Wu Group at the Department of Biochemistry, Weill Medical College of Cornell University.

GCC BioSAXS Workshop
Tuesday, January 25, 2011
The Woodlands, TX · 9am to 4pm CST

In a continuing effort to further the current understanding of Small Angle X-ray Scattering (SAXS) as used for the elucidation of biological macromolecular structure, Rigaku Americas Corporation and the Gulf Coast Consortium SAXS Group are pleased to co-sponsor a day-long complementary workshop, on Tuesday, January 25, 2011 (lunch will be provided), focused on the latest developments in BioSAXS technologies and applications.

November Survey Results

If you had to chose only one scientific meeting to go to in the next 12 months, what would it be (choose one)?
Introducing the "Quick Puck Loader"

The Quick Puck Loader, invented at Structural Genomics Consortium at Toronto, is designed to load crystal mounted pins into the Rigaku style puck quickly while reducing the potential for mis-seating. This tool was designed to be used with both a Rigaku Puck and Puck Tong.

Survey Question of the Month

What is your most common method for solving protein structures? (choose one)
- Molecular replacement
- MAD phasing from synchrotron data
- SAD phasing from synchrotron data
- SAD phasing at home
- MIR at home
- Other [please specify]

Take Survey or cut-and-paste into your browser.
http://www.surveymonkey.com/s/dec_survey

http://dx.doi.org/10.1098/rspa.2010.0448

Crystallographic snapshots of the reaction of aromatic C-H with O2 catalysed by a protein-bound iron complex. Cavazza, Christine; Bochot, Constance; Rousselot-Pailley, Pierre; Carpentier, Philippe; Cherrier, Mickaël V.; Martin, Lydie; Marchi-Delapierre, Caroline; Fontecilla-Camps, Juan C.; Ménage, Stéphane. Nature Chemistry, Dec 2010, 2(12): 1069-1076.

http://dx.doi.org/10.1038/nchem.841

Effect of seed loading and cooling rate on crystal size and shape distributions in protein crystallization—A study using morphological population balance


http://dx.doi.org/10.1016/j.jmb.2010.09.053

Mouse ApoM Displays an Unprecedented Seven-Stranded Lipocalin Fold: Folding Decoy or Alternative Native Fold? Sevanya, Madhumati; Kassler, Kristin; Ahrnsröm, Josef; Weller, Sigrid; Dhalback, Björn; Slicht, Heinrich; Muller, Yves A. Journal of Molecular Biology, Dec 2010, 404(3): 363-371.

http://dx.doi.org/10.1016/j.jmb.2010.09.062


http://dx.doi.org/10.1007/s10822-010-9394-9


http://dx.doi.org/10.1016/j.jmb.2010.09.065


http://dx.doi.org/10.1016/j.str.2010.09.013

http://dx.doi.org/10.1038/nmeth.1526

Maltose-neopentyl glycol (MNG) amphiphiles for solubilization, stabilization and crystallization of membrane proteins. Pil Seok Chae; Rasmussen, Søren G F; Rana, Rohini R.; Gotfried, Kamil; Chandra, Richa; Goren, Michael A.; Kruse, Andrew C.; Nurva, Shailika; Lolland, Claus J.; Pierre, Yves; Drew, David; Popot, Jean-Luc; Picot, Daniel; Fox, Brian G.; Lan Guan; Gether, Ulrik; Byrne, Bernadette; Kobika, Brian; Gellman, Samuel H. Nature Methods, Dec 2010, 7(12): 1003-1008. http://dx.doi.org/10.1038/nmeth.1526
Just load pins directly into the Quick Puck Loader, and then fit the Rigaku Puck right overtop ... and use Puck tongs to firmly grasp and flip. Pins are perfectly seated. No more losing crystals. The device is currently used in labs from University Health Network (Canada), York University and the Structural Genomics Consortium.

The Quick Puck Loader is made of durable aluminum and comes with a 1-year warranty on the part. Colors available include red, blue and gold. Mixed colors are also available. View more information on the new Quick Puck Loader.

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**Book review:**

*Decision Points*  

I bought this book because I felt that, in order to properly discuss what happened during the years 2000-2008, I needed to know what President Bush was thinking and why. When I told my mother I had bought a copy she admonished me for paying full price and I told her I got my copy for 80% off. My colleague Mark Benson heard me talk about the book and dared me to review it, so here it is.

The book is organized around various episodes in Bush's life. The result is that topics are fully explored from start to finish, so there are overlapping timelines. I don't think I have to say this but please make sure to read other books that cover this period. I recommend *Twilight of the Bombs* by Richard Rhodes for a different perspective on the issue of WMD in Iraq as well the 9/11 Commission Report (for obvious reasons).

The book starts off with a brief description of why he wrote the book. The first chapter addresses his decision to quit drinking the day after his 40th birthday and his subsequent return to his faith. It also describes his childhood and the story of the loss of his little sister to leukemia. Chapter 3 covers the decision to run first for Governor of Texas in 1994, and then President in 1999, and includes details about how he ran the campaigns. The next chapter covers decisions regarding personnel, including the selection of Cheney for VP, and the Cabinet and Supreme Court after the election.

The remainder of the book covers a variety of disparate topics, including his decision to limit stem cell research, 911 and the immediate aftermath, the wars in Afghanistan and Iraq, Katrina, aid to Africa to combat AIDS, the Surge, bringing democracy to Iraq and Afghanistan and, finally, the current financial crisis.

I believe that the book does in fact answer the two questions of what and why. Is he telling the truth? I believe that he is telling the truth...as he sees it. I have disagreed with many of his decisions, but history tells us he bad information. Did he adequately question the information? History also tells us that he did not. To paraphrase Bush, "I will be long gone before history decides if I made right decisions." I thought the book was well written, but Bush did have the help of speechwriter Christopher Michel.

Finally, I did have to laugh when he concludes with a description of cleaning up after his Scottish terrier on a morning walk after leaving the White House. He says it was ironic that he was picking up that which he had been avoiding for the last 8 years.

Joseph D. Ferrara, Ph.D.