

Denmark launches big push for protein power

M. HOLTUM

A major centre dedicated to protein research is to be built in Denmark thanks to the largest ever donation to Danish research. The Novo Nordisk Foundation, which owns various healthcare and biotechnology companies, this week announced that it would provide 600 million kroner (US\$110 million) to fund the project at the University of Copenhagen.

A core component of the new centre will be a high-throughput facility to express and purify proteins, determine their structure and investigate their properties. The centre will focus on human disease, and will seek to formulate proteins for preclinical tests if they look promising as therapeutics. The university will keep the project's intellectual property, says vice-dean Birgitte Nauntofte.

Just as the study of genes scaled up into genomics in the 1990s, so in recent years protein researchers have been upgrading to proteomics. It is a substantial challenge: genes can code for more than one protein, and the products described in genes can be modified after being translated into protein. This means that although the human genome contains some 25,000 protein-encoding genes, a given person's various cells might use up to a million different proteins to do different things at different times in the course of a life. To crank up the complex-



Targeting proteins: Søren Brunak (above) and Matthias Mann.

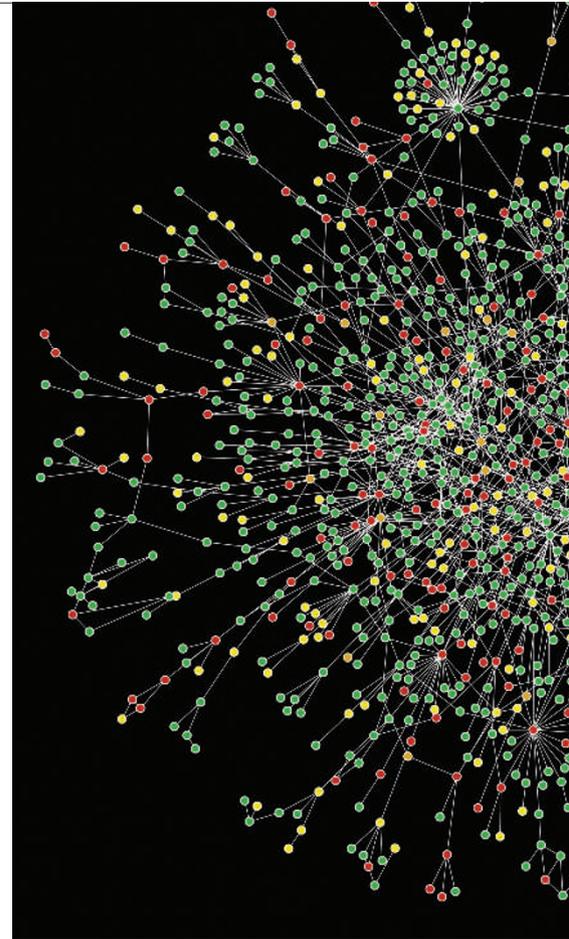


ity further, the proteins work in coordinated teams, requiring their relevant members to be in the right place at the right time if they are to generate the right response.

The Novo Nordisk Foundation Center for Protein Research will have five principal investigators, two of whom have already been appointed. One is Matthias Mann, a director at the Max Planck Institute of Biochemistry in Martinsried near Munich. Mann is a pioneer of protein mass spectrometry, a key proteomics technology. This technique, which smashes proteins into tiny fragments before reconstructing them by computer for identification and further study, benefits from the sort of large-scale computing power and bioinformatics capability

a large centre can provide. Mann will not quit his current position but will oversee independent groups working on biological mechanisms such as signal transduction and on stem-cell biology, particularly in relation to diseases such as cancer.

The other lead investigator so far named is Søren Brunak, from the Technical University of Denmark in Copenhagen. Brunak runs one of the largest bioinformatics departments in Europe. At the new centre he will focus on integrating what is known about creatures' physical characteristics with proteomic and genomic information in order to understand



how different protein complexes may relate to disease. "We'll have access to Scandinavian biobanks and electronic patient records renowned for their high quality," says Brunak, "and we'll find more by text mining scientific publication databases."

Mann and Brunak already collaborate in the Interaction Proteome Project, which is funded by the European Commission. "We've merged our skills before — for example we've created

Rapid sequencer puts virus in the frame for deaths

The discovery of a virus that may have killed three transplant recipients in Australia could mark a dramatic acceleration in the speed at which new pathogens can be identified. But it raises concerns that the ease with which such suspects can now be found could lead to researchers overlooking the need to firmly establish them as the cause of the disease in question. Fingering the wrong microbe could lead to inappropriate treatment or divert attention away from the real cause.

The three patients received organs from a single donor in Melbourne in December 2006. By January all three were dead. Ian Lipkin of Columbia University's Mailman School of Public Health in New York, who specializes in identifying new pathogens, heard about the case and collaborated with the Australian researchers who first took it on. After looking

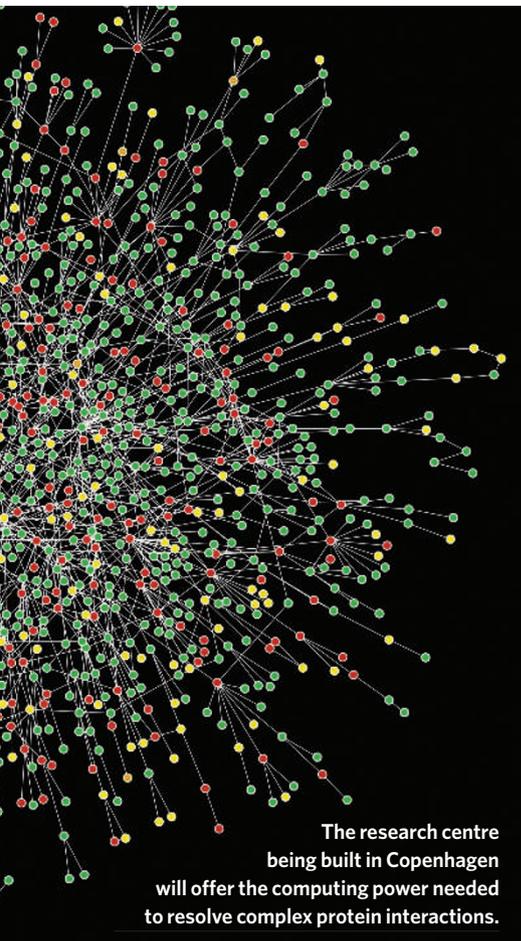


Transplanted organs can carry viruses.

for thousands of telltale signs of known pathogens without success, Lipkin, who sits on the advisory board of 454 Life Sciences in Branford, Connecticut, decided to use the company's technology to sequence genes from samples that had been filtered to enrich their non-human DNA component.

Roughly one month and

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H. JEONG, UNIV. NOTRE DAME/SPL

what we call a 'temporal interactome' in one cellular compartment, the human nucleus," comments Brunack, referring to studies of patterns in protein interaction studied over time as well as in space.

Building work for the centre will start immediately and it will open in 2008 with a hundred or so staff; some research projects will begin in other premises before this. ■ Alison Abbott

144,000 fragments of sequence later, a homemade algorithm in Lipkin's lab had pulled out 14 gene fragments that looked viral. Preliminary, unpublished analyses suggest they come from a new member of the family Arenaviridae. Although this sort of sequencing has been used to identify viruses in the past, the 454 technology cuts down on time and effort, says Anthony Fauci, director of the US National Institute of Allergy and Infectious Diseases, which funded part of Lipkin's work. Lipkin estimates that the technique could be used to process samples in a matter of days.

But simply finding a virus is not enough,

Live Earth taps into sense of joy

In some contexts, black suits over black shirts might seem depressingly funereal. But for Rob Reiner, Hollywood writer-director-producer-actor, and Al Gore, the Oscar-winning former US vice-president, the black-on-black look is the sort of chic more or less de rigueur when opening the Tribeca Film Festival. They were there because this year it features a series of shorts about climate change. And above the collars the two men were all about the joy, doing their best to give green activism a new, upbeat sell.

Their enthusiasm revolved around Live Earth, a global extravaganza set for 7 July that, Gore says, "is an opportunity for the whole world to come together at the same time in a spirit of joyfulness".

Live Earth is to be a media event in the tradition of 2006's Live 8, which focused attention on debt relief at the time of the G8 summit in Gleneagles, Scotland. It will include seven concerts on seven continents, and fits into Gore's stated plan to move the global culture past a "tipping point, beyond which political and business leaders and all sectors of civil society compete to offer policies and programmes that will sharply reduce emissions".

Naturally, nothing says

rock and roll like policies and programmes, and Live Earth has attracted a wide range of talent, although skewed, perhaps, to the tastes of Gore and Reiner's generation. At Tribeca, the band in the spotlight was Spinal Tap, whose life on the road was documented in Reiner's 1984 spoof rockumentary of the same name. The Tap, veterans of *Save the Ferret* and donors to the High Instep Foundation, are not only reforming for Live Earth but also releasing a new single, 'Warmer than Hell'.

A Reiner film of the reunion will be one of 60 short films on climate-change themes released at the time. Six of these shorts were shown at the festival, and ranged

from the dressed-up factual — an explanation of America's energy sources in the style of a rock video — to the strikingly metaphoric — a pretty face being spat on by passers by.

"All of these things that we are seeing where people are raising awareness are good," says Katie Mandes, communication director for the Pew Center on Global Climate Change, a policy shop in the Washington DC area. "You can't do the advocacy if you don't have heightened awareness, and we still have a long way to go." And she agrees with Reiner and Gore's cheerful stance. "I think it is important to start talking about solutions, to avoid the notion of hopelessness." ■

Emma Marris



PLASTIC SHEET DELIVERS WIRELESS POWER

Desks and walls could one day light up electronics without need for cables.

www.nature.com/news



None more green: Spinal Tap talk climate with Rob Reiner (left).

cautions microbiologist David Wang of Washington University in St Louis. Establishing that the virus actually caused the deaths is also critical, and is a lot harder. At present, the virus has been found in tissue from all three patients, and not in tissue from 60 controls. The virus's closest relative seems to be the lymphocytic choriomeningitis virus, which is believed to have killed organ-transplant patients in the past. But the team does not know whether the virus was also present in the donor. Lipkin says donor tissue samples have not been supplied to him by his Australian collaborators.

The guilt-by-association approach to pathogens can be misleading, warns microbiologist David Relman of Stanford University. Viruses do not necessarily behave in the same way as their closest known relatives. And the very fact that these new techniques work with raw sequence, rather than entities that could be grown and studied in the lab, makes follow-up experiments more challenging.

"It's not hard to find somebody you can implicate," says Relman, in police-procedural mode. "What's really hard is to nail the conviction." ■

Heidi Ledford