

Kunskapssamhällets konfliktlinjer

Vetenskaplig praktik och organisation inom omstridda
fält

Vetenskapens organisationsformer

- Hur organiseras och bedrivs modern naturvetenskap?
- Sker en monopolisering, koncentration och integration av forskningen?
- Vem driver på utvecklingen?

Koncentration

vs

utspridning

Koncentration: ideologi

- "Kritisk massa", "Kraftsamling", "Centres of excellence".
- Avveckling av små - "underkritiska" - forskningsmiljöer?
- Övertro på vad byggnader kan åstadkomma?

Koncentration: internationella förebilder

- Bauer Center for Genomics Research,
Harvard

Harvard's melting pot

At a new genomics centre, ethologists are rubbing shoulders with computer scientists, chemists and mathematicians. Peter Aldhous visits a bold experiment in multidisciplinary.

Andrew Murray is used to standing out from the crowd. In the early 1990s, while rising through the academic ranks at the University of California, San Francisco (UCSF), his eye-catching array of facial piercings made him an instantly recognizable figure on campus.

More importantly, his elegant experiments into the checkpoints controlling cell division built his reputation as one of the leading biologists of his generation, and ensured that the brightest students beat a path to his door.

Now in his mid-40s, and having shed the facial metalwork, Murray is director of Harvard University's Bauer Center for Genomics Research, which celebrated its inauguration on 4 March. He is embarking on what could be his most ambitious experiment yet.

The Bauer centre aims to reap a post-genomic harvest by uniting physicists, mathematicians, chemists and computer scientists with a spectrum of biologists. They will work on collaborative projects dependent on high-throughput genomic analyses.

No one is quite sure what to expect yet, but there is a palpable sense of excitement among the centre's recruits. "This place, to me, looks like Disneyland," says mathematician Steve Altschuler.

As biologists struggle to make sense of reams of genomic data, many are wondering about enlisting the help of colleagues from other disciplines. But while most are still musing on the meaning of multidisciplinary, the Bauer centre is pressing ahead. Its strategy: hire a diverse and talented group of young scientists with a yen for collaboration, and throw them together. "We'll put them in



BAUER, MARTHA ST SWARTZ FOR CHASE HARVARD UNIVERSITY/MARCUS HEALEY

Shape of things to come: Doug Melton (below) persuaded Andrew Murray (right) to take on the role of director at the new Bauer centre (above).

a box and we'll shake really hard and hope that some fun things happen," says Murray.

Murray didn't actually plan to become the centre's director. He has always urged biologists to think in an integrated way, rather than simply filling in the molecular details in particular systems. But as the new millennium dawned, his growing interest in evolution was constrained at UCSF, which as a medical school could not indulge such diversions. So, in the summer of 2000, he moved to Harvard, setting up a lab to investigate evolutionary questions, in addition to his existing research in cell biology. One of his current projects, for instance, aims to simulate the origin of new species by applying pressures mimicking natural selection to laboratory populations of yeast.

Blazing a trail

As Murray arrived, the nascent Bauer centre was lacking a director. The original choice, Dari Shalon, a specialist in the production of DNA microarrays for analyses of gene expression, left when it became clear that his focus on technology development was at odds with the centre's wide-ranging mission. The centre's academic 'godfathers', developmental biologist Doug Melton and chemist Stuart Schreiber, who uses small molecules to disrupt gene function, set about convincing Murray to take over the reins. "After some trepidation, I said yes," says Murray.

Given the ambitions that Melton and Schreiber have for the Bauer centre, Murray's trepidation is understandable. Asked to



explain the centre's mission, Melton leaps to his feet and scribbles the word '*Leptothorax*', a genus of ant, on his blackboard. Melton's own research may be focused on stem cells within the pancreas, but he evidently has more than a passing interest in the biology of social insects.

Melton starts explaining the difference in morphology between different castes in *Leptothorax* ants. He then draws a squiggly path, as might be taken by a foraging worker. When a worker finds a food source, others are recruited and soon begin taking a more direct route. Melton chalks a straight line back to the colony's nest.

To understand *Leptothorax* biology, Melton argues, you must study the mechanisms of genome regulation that differentiate workers from other castes. You need expertise in behavioural biology, and the analytical skills to determine how creatures with simple nervous systems can collectively arrive at the solution to a complex navigational problem. Melton turns round from the blackboard:

Bauer Center for Genomics Research, Harvard

Bauer Center:

”We need to embrace physicists, mathematician and computer scientists for help in analyzing and interpreting the data from genomics experiments, and chemists and engineers who can develop new methods of perturbing and analyzing cells.

We believe that serious progress in converting genomic data into biological knowledge will require assembling a small group of scientists who combine a diversity of skills with a commitment to work closely together.”

<http://www.cgr.harvard.edu/goals/interdisciplinarity.html>

Koncentration: internationella förebilder

- Internationell påverkan på forskningspolitiska ideologier
- Varifrån?
- Hur sker import?

Utspridning: ideologi

- Forskning och högre utbildning bör spridas
- Regional utveckling
- Expansion av antalet lärosäten (M. Benner, *VEST 2/2000*)

Koncentration: praktik

- Omlokalisering av institutioner
- Nybyggnationer
- Spatiala organisationsformer: vilka vetenskapliga och forskningspolitiska ideal kan knytas till byggnaderna

Koncentration

- Akademiska hus
- Byggföretag
- Överkonsumtion av byggnader
- Naturhistoriska riksmuseet

Koncentration: praktik och konsekvens

- Bidrar storcentra till etablerandet av "utbyteszoner"?
- Jämförelse med erfarenheter från medicin: klinisk forskning

Akademiskt ledarskap

- Projektbaserade arbetsformer
- Korta och tillfälliga projektkonstellationer
- Få fasta tjänster
- Storskalighet
- Externa kontakter premieras

Akademiskt ledarskap

- Vilka ideal förkroppsligas i den framgångsrike forskningsledaren?
- Förhållandet forskningsledare/ forskningsorganisatoriska strukturer
- Karisma?
- Boundary work

Kunskapssamhällets konfliktlinjer

- HT2003-HT2005
- Finansiering:VR
- Placering: Forskningspolitiska institutet,
Lunds universitet
- www.fpi.lu.se

Kunskapssamhällets konfliktlinjer

- Mats Benner. Sociolog.
- Gustav Holmberg. Vetenskapshistoriker.
- Jesper Sjöström. Kemist.

Exempel

- AlbaNova universitetscentrum, SU&KTH
- Kemicentrum, LU
- Ångströmlaboratoriet, UU