

The collaborative university

Markus Perkmann

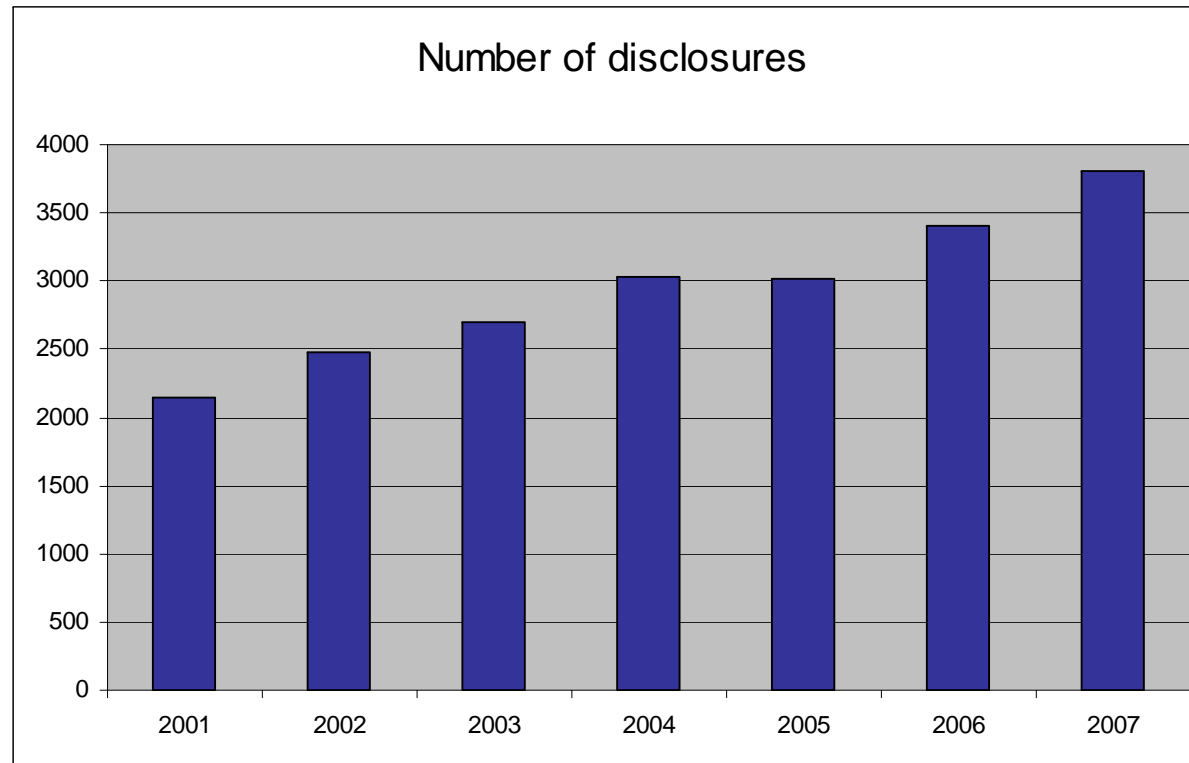
The entrepreneurial university

Universities take on role in technology development & innovation

- Disclosures, patenting and licensing
- University spin-off companies

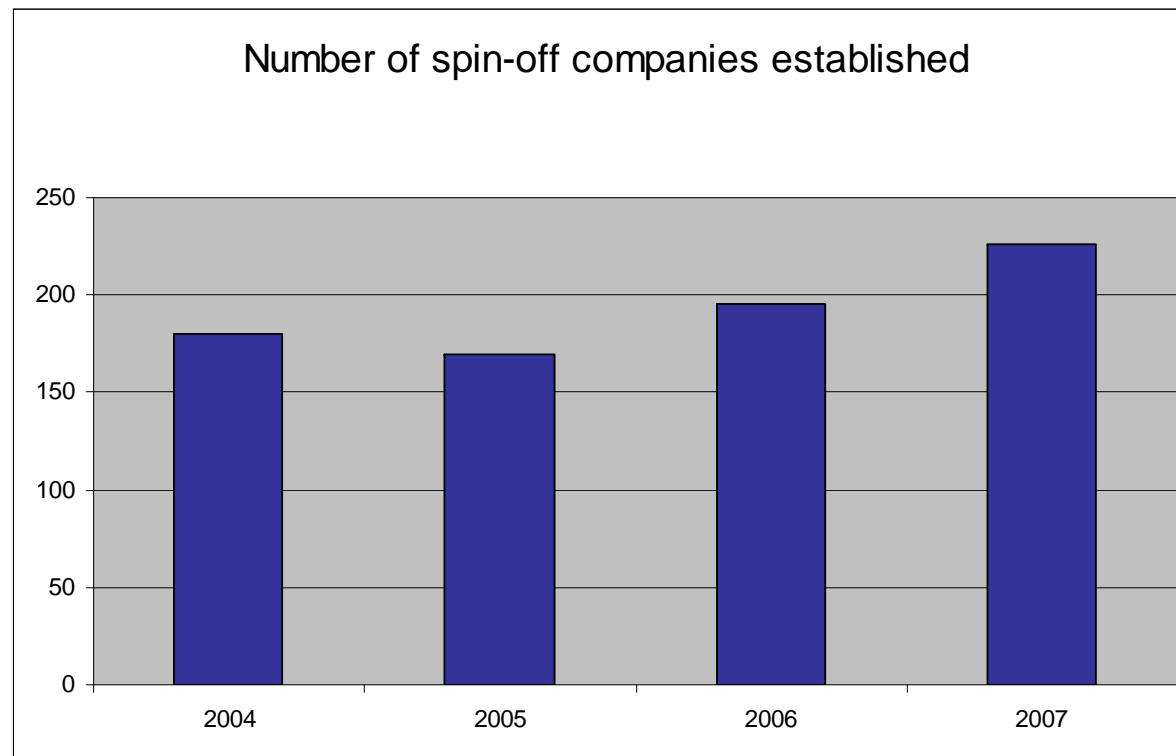


The entrepreneurial university



Source:
HEFCE 2008
(HEBCI survey)

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The entrepreneurial university

- Universities take on a role in technology development & innovation
 - Disclosures, patenting and licensing
 - University spin-off companies
- Central idea: Universities recognise economic opportunities and take steps to exploit them
 - Legal framework: universities own intellectual property
 - Organizational: technology transfer offices, commercialization companies
 - Individual: provide incentives to faculty members
- Does this mean the university's role is shifting from 'blue sky' to actually producing useful technology?

Cohen-Boyer patents for recombinant DNA methods (1974 ff)

- Accounted for half of Stanford licensing revenue
- Nonexclusive licences
- Income \$254m (1980 - 1996)
- 468 licensee firms – ten accounting for 77% of royalties (e.g. Genentech \$34.7m) source: Feldman et al 2007

| | | |
|----------------------------------|------|---------------------|
| United States Patent [19] | [11] | 4,237,224 |
| Cohen et al. | [45] | Dec. 2, 1980 |

[54] **PROCESS FOR PRODUCING BIOLOGICALLY FUNCTIONAL MOLECULAR CHIMERAS**

[75] Inventors: **Stanley N. Cohen**, Portola Valley; **Herbert W. Boyer**, Mill Valley, both of Calif.

[73] Assignee: **Board of Trustees of the Leland Stanford Jr. University**, Stanford, Calif.

Mertz et al., Proc. Nat. Acad. Sci. USA, vol. 69, pp. 3370–3374, Nov. 1972.

Cohen, et al., Proc. Nat. Acad. Sci. USA, vol. 70, pp. 1293–1297, May 1973.

Cohen et al., Proc. Nat. Acad. Sci. USA, vol. 70, pp. 3240–3244, Nov. 1973.

Chang et al., Proc. Nat. Acad. Sci, USA, vol. 71, pp. 1030–1034, Apr. 1974.

Ullrich et al., Science vol. 196, pp. 1313–1319, Jun. 1977.

Singer et al., Science vol. 181, p. 1114 (1973).

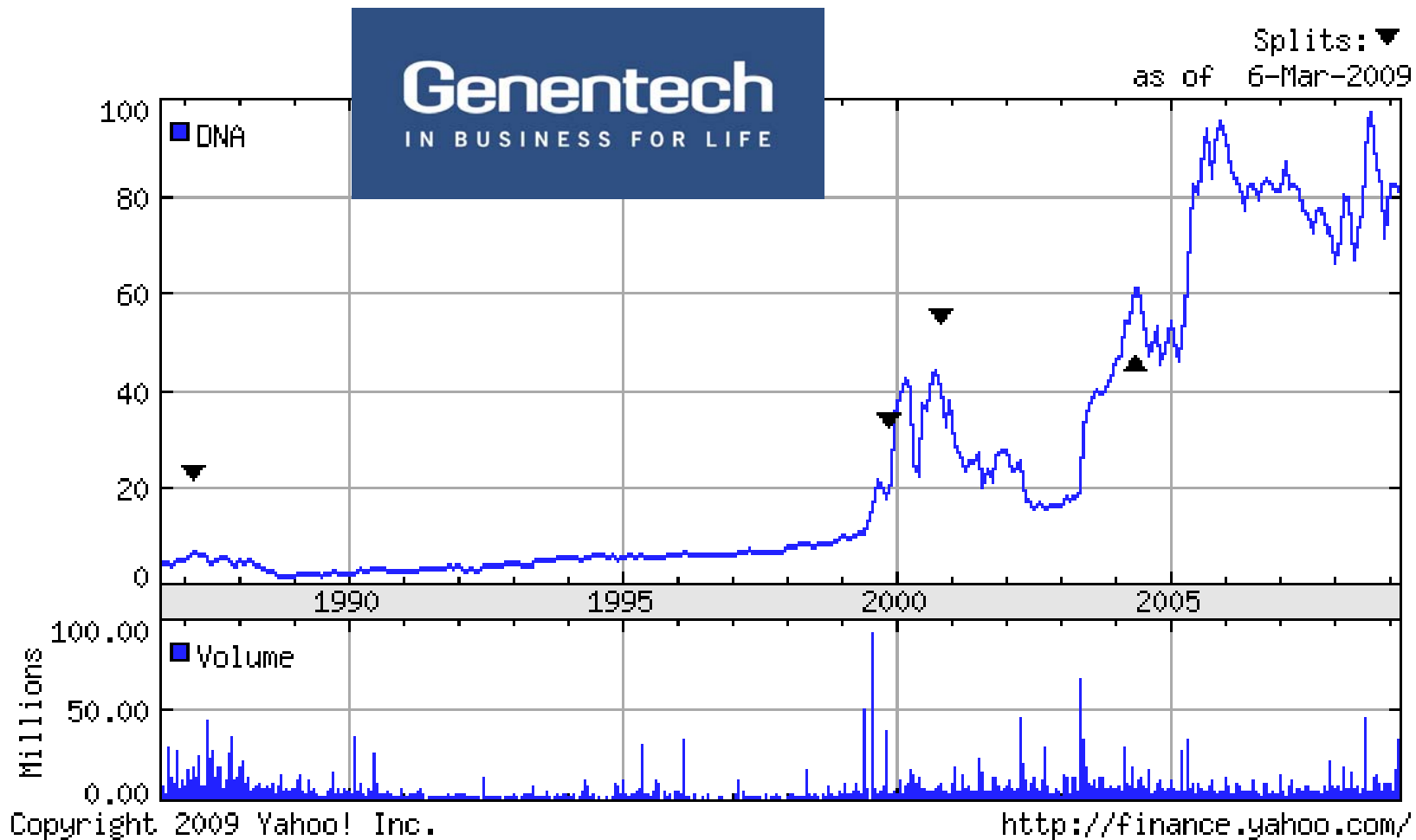
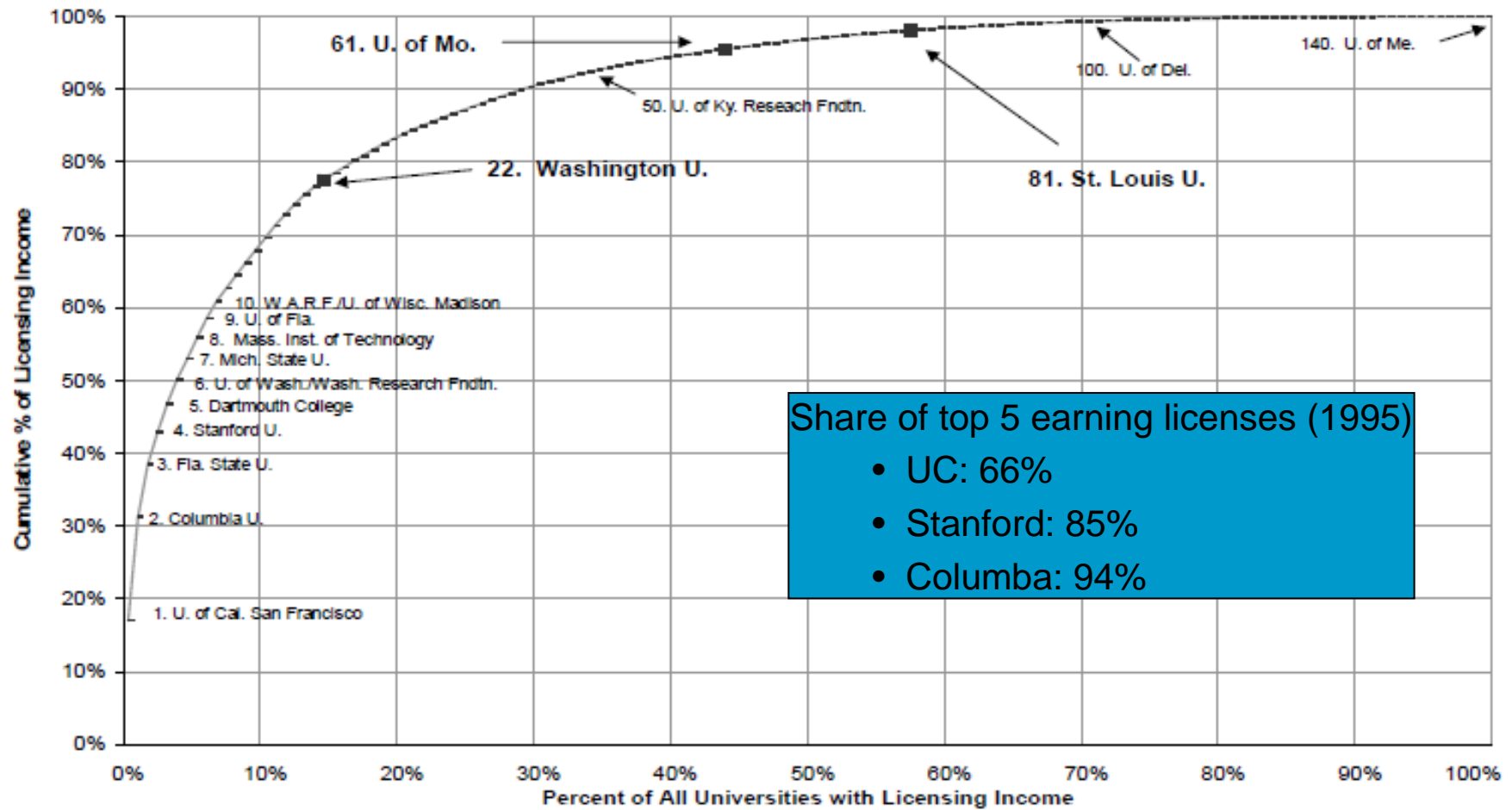
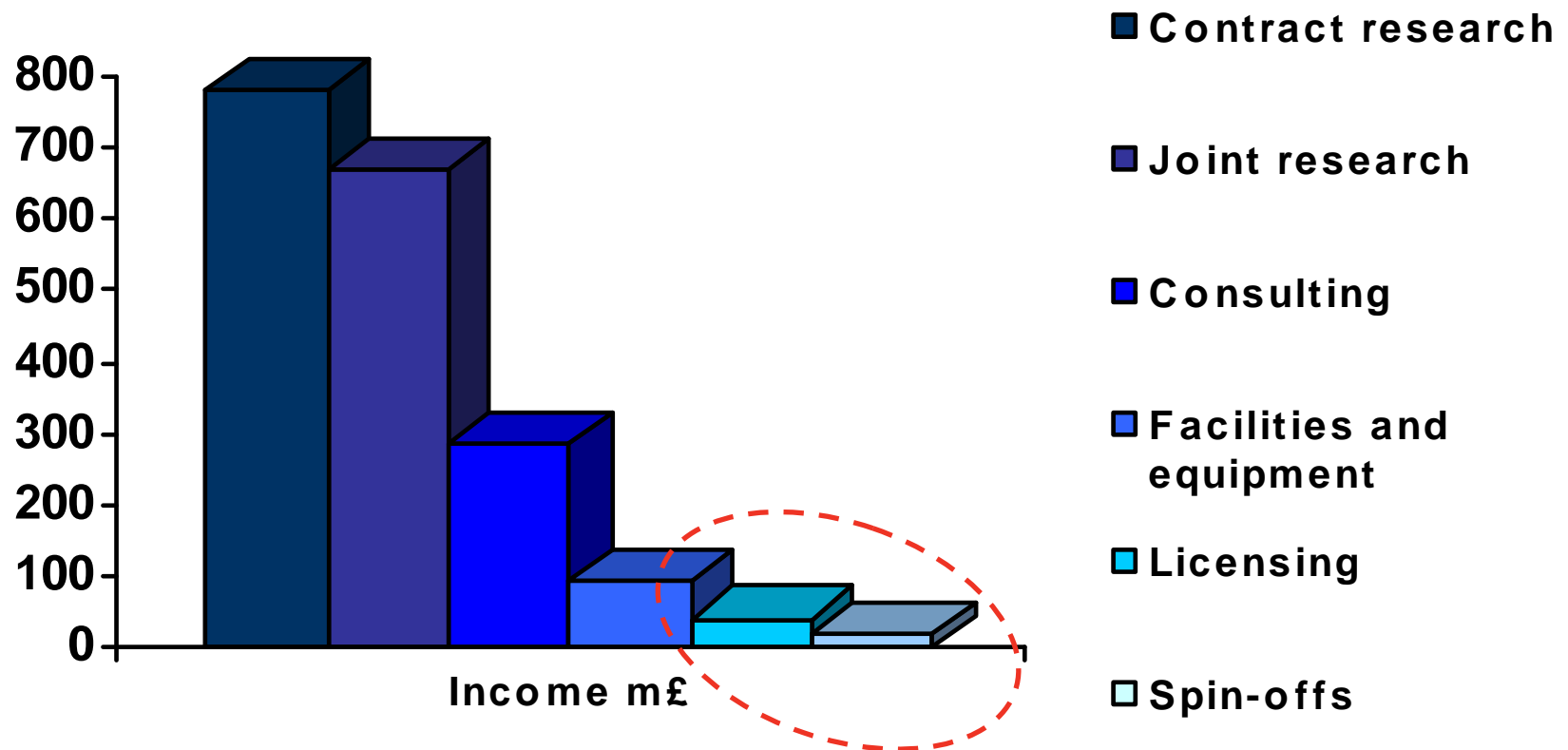


Figure 9 – Cumulative Distribution of Licensing Income Among Universities, 1999 and 2000



Source: AUTM Technology Transfer Data for Two-Year Recurrent Respondents; N=140.

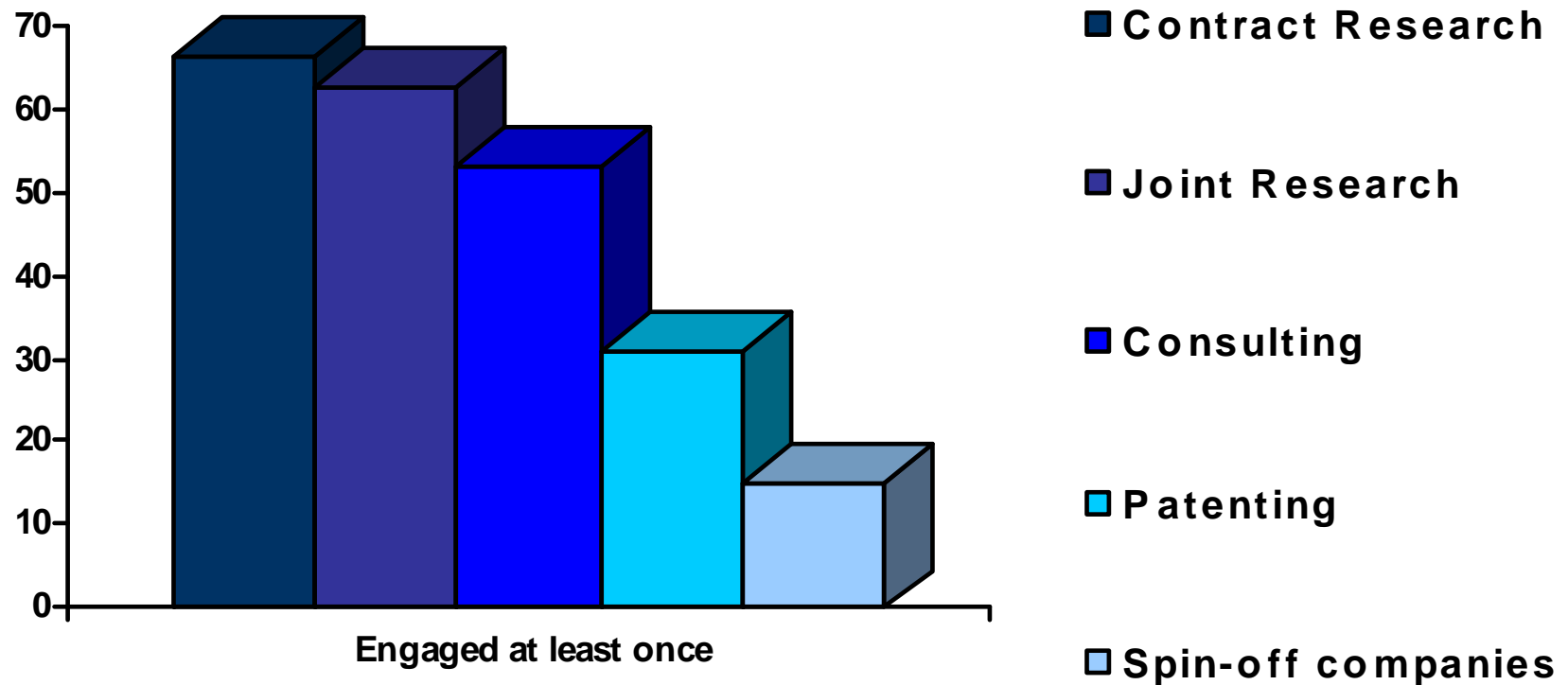
Income from external engagement by UK universities



Income in mGBP.

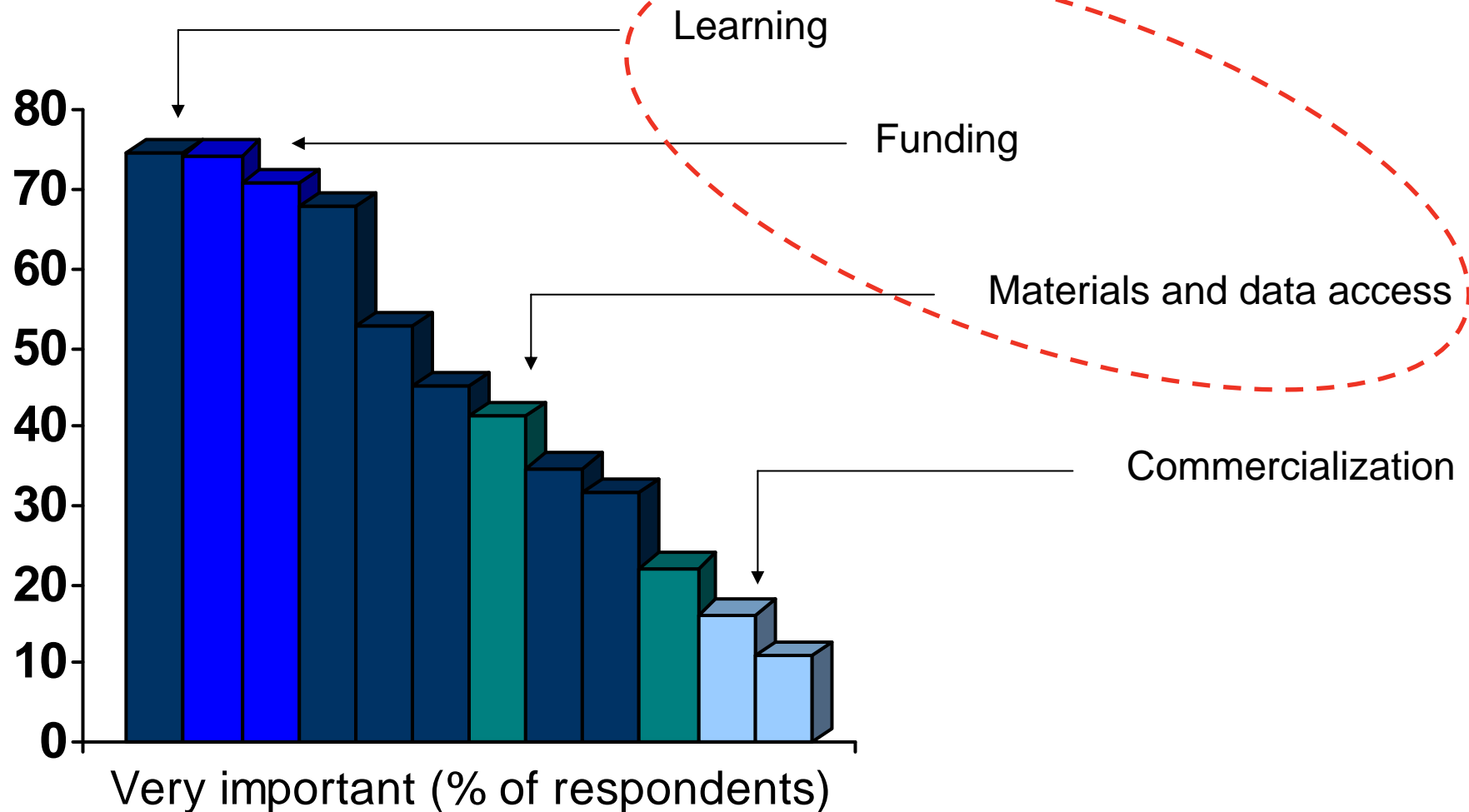
Source: HEFCE 2008 (HEBCI 2006/07 survey)

Academics' engagement in industry interaction



Percentage of respondents participating in various types of interaction with industry over 2002-2003; N=1085. Source: EPSRC Survey 2004 (Pablo d'Este).

Why do academics work with industry?



Source: EPSRC Survey 2004; N=1085.

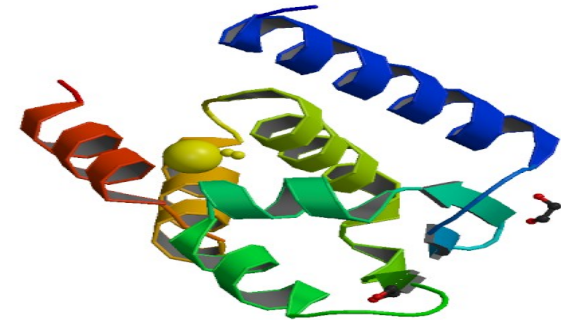
Why do academics work with industry?



- Most academics work with industry
 - because it is good for their research
 - not because they want to get directly involved in commercialization
- This does not mean academics prefer ‘basic’ projects
 - basic projects are less interactive but lead to publications
 - applied projects might not lead to publications but are more interactive and enable learning
- Implications
 - a *learning-centred* interpretation of university-industry relationships
 - entrepreneurial motives exist but only for a minority of scientists
 - this is largely in line with what businesses want

By-passing intellectual property ?

- The Structural Genomics Consortium
- A drug discovery initiative at Toronto, Oxford & Stockholm Universities
- Aim: determine 3D structure of proteins
- Makes *all results publicly available* with no restriction – no intellectual property
- Financed by pharma (GlaxoSmithKline, Merck, Novartis) and others (Wellcome Trust, etc.)
- 2003-2011, budget \$30m/year, 180 staff



Conclusions: the collaborative university

- Engaging with industry is about learning – not necessarily commercialization
- Academics do not need to be entrepreneurs in order for knowledge transfer to occur
- Implications for universities and industry
 - Instead of converging, co-evolve!
 - Embrace broader notion of collaboration (vs. tech ‘transfer’)
 - Reduce transaction costs
 - Balance societal and proprietary-economic considerations