EDITORIAL

nature cell biology

Tying into BIND

Many a reader of this journal will find themselves exposed to the occasional panic attack when faced with the ever increasing volume of scientific facts. The dam on the information stream in cell and molecular biology was of course most emphatically breached by the high throughput genomic and post-genomic data flood. The exponential increase in qualitative and quantitative information available, and the resulting increased complexity of our understanding of biological pathways and processes, will only remain accessible through the active use of bioinformatic tools. Text searching tools are increasingly successful and, importantly, the fire walls of the *Nature* journals are now transparent to key search engines (see www.nature.com/dynasearch/xrs/). Also, first generation semantic text matching tools are available on *nature.com* to link related content across the *Nature* family archive.

Nevertheless, the real solution for dealing with information overload lies in relational (as opposed to flat text) databases. *Nature Publishing Group* has enjoyed an active involvement in the *Alliance for Cellular Signaling* project for some years (see *Nature Cell Biol.* **6,** 1 (2003) and *Nature Cell Biol.* **4,** E273 (2002)). A core part of this community tool is the Molecule Pages database, which is now being populated by detailed author-entered and peer-reviewed signalling-molecule-focused, literature-derived information.

Of the several other emerging databases, BIND is particularly noteworthy (www.bind.ca). This database is of particular utility to the readers of this journal: the aim is to capture information on interactions in the broadest sense – not merely between proteins, but molecular interaction between any biochemical or even biophysical entity; a further dimension is the planned cataloguing of genetic interactions. The curated literature-derived information is captured in a sufficiently systematic qualitative and quantitative manner so as to allow for pathway navigation and ultimately systems approaches. As such, BIND is highly complementary to the Molecule Pages with its information-dense entries that emphasize individual signalling molecules.

A key feature of BIND is the direct interlinking with the source literature. Turning to page 770 of this issue, the interested reader will find the first links from a primary paper to BIND records derived from this paper. BIND records are generated on a co-publication basis by Blueprint curators, as we think it is important to open up new information to advanced interrogation immediately. The aim is to roll this out to all papers in the journal that carry information on new molecular interactions in the broad sense described, although we note that authors may opt to have their data captured by BIND post-publication. Note that the Blueprint curation team also pursues 'journal back-filling' so that ultimately much of the key literature-derived interaction information should be accessible at the click of a button.

Bibliometric safari

Nowadays, everything must be quantifiable, and apparently there is no limit as to how accurate descriptions of experiences usually thought of as subjective can become: wines are ranked by single percentage points, art is valued by the auction price and even the weather forecast requires a numerical risk factor.

Evaluation of science has also increasingly fallen under the spell of numbers. Life sciences are more amenable to absolute criteria of evaluation: at the *Nature* journals, we pride ourselves on the consistently high quality and interest of our papers. It is another matter to capture this undisputed absolute value of scientific work in a single number; indeed, we discourage referees from assigning a numerical value to a manuscript as, in our experience, this can make the editorial process less informed. It is hard to escape the beguiling simplicity of such a singular summary of quality, scope and interest of a dataset. Understandably, policy makers, granting bodies, journals and scientists crave quantifiable measures of scientific performance that allow arithmetic comparison between scientists, projects or journals. Bibliometric data in the form of citation statistics, such as ISI's 'Impact Factor', remains probably the most instructive way to compare scientific output on the basis of single parameters. Nevertheless, the simplicity of the citation number must not make us its slave. Before assigning grants or tenure track positions, or before submitting a paper to a journal, it is essential to reflect on the meaning of a given rating and the meaningfulness of a given comparison.

A simple rule is that the more diverse the output measured by a given impact factor, the less trivial it is to extract useful information: comparing the impact factors of similar types of paper within the same field is fairly meaningful, whereas the cumulative impact factor of an individual's career, or a whole institute, is less meaningful. Journal impact factors are closer to the second category. The *Nature* journals are broad in scope, capturing fields with divergent average citation rates — affected by the size and activity of a field and the accepted unit of publication within the field. Furthermore, all *Nature* journals publish both primary papers and reviews, which have inherently different average citation rates, but the journal impact factor continues to merge both categories into one (see *Nature Cell Biol.* **5,** 681 (2003)). We are pleased that the 2003 impact factors are consistent with the notion that these journals are among the best in their respective fields (NCB's is 20.27). Nevertheless, we recommend a critical appreciation of the magical number.

Other bibliometric measures have been developed; most prominent among them is the 'Faculty of 1000' initiative. The concept is intriguing, as it aims to add informed comment and ranking to studies. Although it is a useful complement to the impact factor, its downfall lies in the fact that its quantifiable bibliometric parameter, the 'F1000 factor', derives from the opinion of only a couple of researchers at best. Thus, the impact factor retains its value – as long as you know how to interpret it.