



BioTechCircle News®

January, 2004

In this issue:

- This month's original article: "What is Proteomics" by Helen R. Dickinson, Ph.D.
 - Links to 50 Web articles of interest to the biotech community: technology, markets and business. **NOTE: if links do not work automatically, simply highlight the entire link address and paste into your browser.**
 - Biotech Patent Watch (in 2 separate e-mails to come): 92 gene-related patents issued and 154 patent applications posted in December. You may copy and paste the data into your own spreadsheet for analysis. **New this issue: patents issued and applications now have country of origin.**
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WHAT IS PROTEOMICS?

Helen R. Dickinson, Ph. D. helen.rose@comcast.net

Proteomics, an emerging field of biochemistry, is the study of the complete set of proteins in an organism, tissue or cell and the interactions between these proteins. The first step in this process is the separation and identification of the thousands proteins in the sample. Proteomics then focuses on determining the structure, function and interactions of between them. Comparative studies can lead to useful observations on diseases and to targeted new treatments.

WHAT DRIVES THE GROWTH OF PROTEOMICS?

In April of 2003 the final human genome sequence was announced. This genome contains the code for protein biosynthesis which biochemists can use to determine the total number and structure of proteins possible in an organism.

Determination of the set of proteins in a sample is expensive and time consuming. However, techniques for isolating and characterizing proteins are becoming more automated and thus easier to carry out and less expensive. http://www.the-scientist.com/yr2003/mar/index_030310.html
(free registration required)

The vast amount of data generated in these studies is difficult for researchers to analyze and manage. <http://us.expasy.org/sprot/hpi/>. Computer programs generated by bioinformatics groups are making the analysis of the data generated more manageable.

http://www.corporate-ir.net/ireye/ir_site.zhtml?ticker=CRGN&script=410&layout=-6&item_id=477583

The promise of more appropriate diagnoses and treatments for diseases is resulting in increased funding for these studies both from government and pharmaceutical companies.

HOW WILL PROTEOMICS AFFECT HEALTHCARE?

Most large pharmaceutical companies have become involved in this technology.

<http://pubs.acs.org/cen/coverstory/8149/8149genomics.html>

Knowledge of how the proteins interact will lead to an improved understanding of the chemistry of diseases; this in turn will drastically improve medical and pharmaceutical science's ability to treat diseases. The technology will allow health care providers to differentiate between diseases that appear to be the same disease, but may be chemically quite different diseases.

Links to 50 Web articles in 13 categories:

- 1) Agri-biotech (6 articles)
- 2) Biobusiness Management (4 articles)
- 3) Clinical Trials (1 article)
- 4) Contract Services (1 article)
- 5) Drug Delivery (1 article)
- 6) Industry (6 articles)
- 7) Investments/Gov. Support (2 articles)
- 8) Organizations (4 articles)
- 9) Pharmaceuticals (1 article)
- 10) Platform Technologies (13 articles)
- 11) Research Tools (1 article)
- 12) Strategic Relationships (1 article)
- 13) Therapeutic Category (9 articles)

1)AGRIBIOTECH (6 articles)

ANIMAL

“Canadian DNA to Fingerprint Pork from Farm to Table”

Roberta Rampton, Reproductive Biology and Endocrinology (January 27, 2004)

Reports on a Canadian system that can trace back a pork loin on a Japanese meat counter to the farm where the hog was born. The company says the system could one day be extended to trace beef and other meat.

<http://www.reuters.com/newsArticle.jhtml?type=scienceNews&storyID=4221980>

“GloFish: First Genetically Modified Pet in U.S.”

AgBiotechBUZZ (January 8, 2004)

A tropical zebra fish that glows fluorescent red will be the first genetically engineered pet brought to market in the U.S. The "GloFish" were originally developed to detect environmental toxins, but they have been licensed them to be sold as pets.

<http://pewagbiotech.org/buzz/display.php3?StoryID=118>

“GM Insects: Waiting In The Wings?”

AgBiotechBUZZ (January 8, 2004)

GM Insects could be the vehicles for important advances in human health and welfare. But is the regulatory arena ready for these advances? Some express significant concerns about the potential for ecosystem disruption.

<http://pewagbiotech.org/buzz/display.php3?StoryID=115>

CROPS

“The Economic Status and Performance of Plant Biotechnology in 2003: Adoption, Research and Development in the United States”

C. Ford Runge and Barry Ryan, Council for Biotechnology Information (December 11, 2003)

Report focuses on 8 crops, assessing 4 issues: adoption of plant biotech and value to producers, R&D activities by crop and trait, probable economic impacts beyond the farm, and future direction for the public and private plant biotech sectors.

<http://www.whybiotech.com/index.asp?id=4188>

“Green Light for Transgenic Crop”

Jim Giles, Nature (January 14, 2004)

Reports that British farmers could be free to sow genetically modified (GM) maize seeds in spring 2004, based on a government advisory committee saying that the crop doesn't have a harmful impact on biodiversity if it is sprayed with the right herbicides.

<http://www.nature.com/nsu/040112/040112-6.html>

FOOD

“Genetically Modified Food: The Americas' New ‘Green Revolution’?”

Juan Walte, Pan American Health Organization (January 21, 2004)

More than 50 million people worldwide suffer from chronic malnutrition. Reports on positions of GM proponents, who argue that genetically modified crops can address these needs, and critics, who are concerned with safety.

<http://www.paho.org/English/DD/PIN/pr040121.htm>

2)BIO-BUSINESS MANAGEMENT (4 articles)

GOVERNMENT/APPROVALS

“What's the Problem?”

Bob Violino, Bio-IT World (January 12, 2004)

Validating computer systems is unavoidable. Violino explains how to pass FDA inspections while minimizing validation time and cost. Sidebar presents 5 tips for validation success.

http://www.bio-itworld.com/archive/011204/strategic_problem.html

“PDMA Compliance in 12 Steps”

Barbara Depompa, Bio-IT World (January 12, 2004)

Prescription Drug Marketing Act violations can cost millions of dollars in penalties. Depompa compiles steps from suggestions made by analysts and government sources to ensure compliance.

http://www.bio-itworld.com/archive/011204/strategic_pdma.html

“Need More EU Rules? Here's Another One”

Peter O'Donnell, Applied Clinical Trials (January 1, 2004)

O'Donnell reviews what the new EU directive for Good Manufacturing Practice says and covers the dispute between the innovative pharmaceutical industry and generic manufacturers over access to data.

<http://www.actmagazine.com/appliedclinicaltrials/article/articleDetail.jsp?id=82015>

PERSONNEL ISSUES

“Converting Biotech Scientists to Managers”

David G. Jensen, Nature Bioentrepreneur (January 27, 2004)

Scientists are often given the responsibility for people and projects without a second thought or additional training. Discusses skills required for making the transition from technologist to manager and offers further recommendations.

<http://www.nature.com/bioent/building/hr/012004/full/bioent789.html>

3) CLINICAL TRIALS (1 article)

MISCELLANEOUS

"A New Year and New Challenges"

Toby Jane Hindin, EdD, Applied Clinical Trials (January 1, 2004)

Hindin asks why clinical trials are still not getting positive feedback in the press, noting that the subject is often portrayed as a victim rather than as a beneficiary.

<http://www.actmagazine.com/appliedclinicaltrials/article/articleDetail.jsp?id=820>

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4) CONTRACT SERVICES (1 article)

INDUSTRY, GENERAL

"Consolidation in Outsourcing"

Michael A. Martorelli, Contract Pharma (January 1, 2004)

Reviews mergers involving outsourcing companies in 2003, covering clinical and manufacturing entities, and expectations for these two segments in 2004.

<http://www.contractpharma.com/JanFeb042.htm>

5) DRUG DELIVERY (1 article)

INTRAVESICAL

"Trojan Horse Delivers Drugs Across the Blood-Brain Barrier"

Nancy Touchette, Genome News Network (December 24, 2003)

The vast majority of drugs designed to treat brain disease never make it to the brain. Touchette describes a strategy that delivers specific substances to the brain by attaching them to a protein that is normally able to cross the barrier.

http://www.genomenewsnetwork.org/articles/12_03/trojan_horse.shtml

6) INDUSTRY (6 articles)

GENERAL

"Components of the Pharmaceutical Industry Are Converging"

John Rhodes, BioPharm International (December 1, 2003)

Rhodes reviews big and specialty pharma, biotech, generics and service providers, noting that these sectors are refining their strategic focus to emphasize proprietary drugs and delivery systems.

<http://www.biopharm-mag.com/biopharm/article/articleDetail.jsp?id=79582>

“Specialty Pharmas Reduce the Risk”

Jennifer Van Brunt, Signals (December 21, 2003)

Although definitions of "specialty pharma" vary widely, these companies are focused on reducing the risk of drug development. Van Brunt explores the viability of their long-range business model and asks whether a company can achieve rewards without risks.

<http://www.signalsmag.com/signalsmag.nsf/0/63B3701FABA171D088256E010017597E>

“A Happy Pill for Some Biotechs”

Amy Tsao, Business Week (December 29, 2003)

Analysts predict 2003's rally will continue, with the winners changing to include a few blue-chip names and select up-and-comers

http://www.businessweek.com/technology/content/dec2003/tc20031229_0628_tc074.htm

GEOGRAPHIC FOCUS

“After a Year of Struggle, Biotech's Feeling Better”

Luke Timmerman, Seattle Times (December 31, 2003)

Reviews biotech stock and FDA activity during 2003. Provides an overview of good news and challenges faced by Seattle and Washington state's leading biotech companies.

http://seattletimes.nwsourc.com/html/businesstechnology/2001826497_bioyear31.html

“ScanBalt Coordinates Intellectual Property in Northern Europe”

Cormac Sheridan, Nature Bioentrepreneur (January 15, 2004)

Tells about a new organization which will promote the value of managing intellectual property among universities and companies in Scandinavia and near the Baltic Sea.

<http://www.nature.com/bioent/bioentnews/012004/full/bioent791.html>

TEXTILES

“Protein Interactions in Enzymatic Processes in Textiles”

Tzanko Tzanov, et al., Electronic Journal of Biotechnology (December 15, 2003)

Discusses enzymatic processes which have been increasingly incorporated in textiles over the last years in various parts of the world for desizing, scouring, polishing, washing and other uses.

<http://www.ejbiotechnology.info/content/vol6/issue3/full/8/index.html>

7) INVESTMENTS/GOV. SUPPORT (2 articles)

VENTURE

“IPO Step-Ups & Valuations: Then & Now”

Jennifer Van Brunt, Signals (January 21, 2004)

Van Brunt reviews the venture industry's 2003 investment in biotech IPO companies, contrasting it with that of the 2000 bubble.

<http://www.signalsmag.com/signalsmag.nsf/0/57E4F923195B8E7288256E2200799F13>

“Financing Finally Flows”

Jennifer Van Brunt, Signals (January 20, 2004)

Reports that biotech companies in the U.S. and abroad raised more than \$16.7 billion in 2003, not counting revenues from collaborations. Charts on biotech equity investments, tables listing convertible debt financings by company.

<http://www.signalsmag.com/signalsmag.nsf/0/E8044F2E8366459F88256E160076B1CF?Open>

8) ORGANIZATIONS (4 articles)

BIG PHARMA

“Maximizing Production Efficiency in Manufacturing Pharmaceuticals”

Keith Symmers, Contract Pharma (January 1, 2004)

Symmers reports on the best practices of leading manufacturers such as Bayer, Lilly and Pfizer for benchmarking purposes. Discussion and charts on conversion costs, staffing, capacity utilization and other metrics.

<http://www.contractpharma.com/JanFeb043.htm>

“Forecasting the Future for Pharma”

Simon Smyth, Bio-IT World (January 12, 2004)

Presents forecasts that the global market will reach a sales value of more than \$600 billion by 2007, with a compound annual growth rate (CAGR) of 9.7%. Brief analyses of 7 major companies, including Astrazeneca, Amgen and Merck.

http://www.bio-itworld.com/archive/011204/horizons_smyth.html

BIO PHARMA

“The Ultimate Platform Firm”

Kevin Davies, Bio-IT World (January 12, 2004)

Interview with CEO of Invitrogen, discussing its objective to become the one-stop supplier of tools, reagents, and software across the drug discovery pipeline.

http://www.bio-itworld.com/archive/011204/horizons_conversation.html

“Genzyme: Beyond ‘Orphan’ Diseases”

Amy Tsao, Business Week (January 9, 2004)

Though the biotech made its name developing drugs for extremely limited markets, CEO Henri Termeer is now targeting broader areas, such as osteoarthritis.

http://www.businessweek.com/technology/content/jan2004/tc2004019_6626_tc006.htm

9) PHARMACEUTICALS (1 article)

PHARMACOGENOMICS

“Pharmacogenomics : Down on the Pharma”

Nancy Weil, Bio-IT World (January 12, 2004)

The consensus reached at a pharmaceutical symposium: the challenges confronting the healthcare industry in translating human genome knowledge into clinical practice will require a cultural shift that could take decades to achieve.

http://www.bio-itworld.com/news/011204_report4136.html

10) PLATFORM TECHNOLOGIES (13 articles)

BIOINFORMATICS

“LSID: An Informatics Lifesaver”

Salvatore Salamone, Bio-IT World (January 12, 2004)

Researchers need to know the location of a database, then track down details (perhaps from the experimenter or a lab notebook) about how the data were collected, what format they are in, and so on. Reports on new data access protocol LSID.

<http://www.bio-itworld.com/archive/011204/lsid.html>

“Picture Perfect”

Janet L. Smith, Modern Drug Discovery (January 1, 2004)

Tells how researchers are enlisting an image informatics solution for high-content screening, allowing them to locate image data in seconds and

to use various analysis tools on images regardless of their source.
<http://pubs.acs.org/subscribe/journals/mdd/v07/i01/pdf/104sites.pdf>

BIOMANUFACTURING

“Fermentation and Cell Culture Technology: Problems and Predictions”

BioPharm International (December 12, 2004)

Six industry professionals cast their predictions for the challenges and technological advances in the near and 5-year future of fermentation and cell culture technology.

<http://www.biopharm-mag.com/biopharm/article/articleDetail.jsp?id=80210>

CELL THERAPY

“Regenerative Chemical Turns Muscle Cells into Stem Cells”

Scripps Research Institute, Bio.com (January 14, 2004)

Reports on a small synthetic molecule that can induce a cell to undergo dedifferentiation - to move backwards developmentally from its current state to form its own precursor cell. This avoids technical and ethical issues around embryonic stem cells.

<http://www.bio.com/realm/research.jhtml?realmId=4&cid=129511674&page=1>

DIAGNOSTIC TEST SYSTEMS

“Genomics And Proteomics : Gate Is Up in Molecular Diagnostics”

Anthony Strattnner, Bio-IT World (January 12, 2004)

Reviews the race in 2004 among suppliers of genomics and proteomics technology to achieve commercial success for their diagnostic tests for cancer.

http://www.bio-itworld.com/news/011204_report4141.html

“Quality-Controlled Multi-Gene Expression Measurement”

James C. Willey, PharmaGenomics (January 1, 2004)

Describes a novel, multi-gene transcript measurement method, using a standardized mixture of internal standards in each expression experiment which allows each transcript to be measured relative to its respective internal standard.

<http://www.pharmagenomicsonline.com/pharmagenomics/data/articlestandard/pharmagenomics/042004/82336/article.pdf>

DRUG DISCOVERY

“Screening for Pharma \Gold”

John Lynch, Modern Drug Discovery (January 1, 2004)

Tells how drug developers rely increasingly on highthroughput ADME

(absorption, distribution, metabolism, and excretion) screening to identify compounds likely to be unsuccessful in the drug discovery process.

<http://pubs.acs.org/subscribe/journals/mdd/v07/i01/pdf/104applications.pdf>

GENE THERAPY

“Gene-Disabling Technique Simplified by Stanford Team”

Amy Adams, Stanford School of Medicine (January 13, 2004)

Reports on a new way of halting gene expression which will accelerate efforts to find genes that are involved in cancer and the fate of stem cells, or to find genes that make good targets for therapeutic drugs.

<http://mednews.stanford.edu/releases/2004/january/sirna.html>

HIGH THROUGHPUT SCREENING

“The Potential of Preform”

Peter J. Desrosiers, Modern Drug Discovery (January 1, 2004)

To expedite the identification of suitable crystalline forms and avoid late-stage complications, companies are trying to address these preformulation issues earlier in the development process, using an integrated approach to preformulation.

<http://pubs.acs.org/subscribe/journals/mdd/v07/i01/pdf/104desrosiers.pdf>

HUMAN DIAGNOSTICS

“Bioanalytical Advances for Metabolomics and Metabolic Bioanalytical Advances for Metabolomics and Metabolic Profiling”

Rima Kaddurah- Rima Kaddurah-Daouk, et al., PharmaGenomics (January 1, 2004)

Studying a variety of small molecules and metabolites is now called “metabonomics.” Discusses how metabolomics can be applied to study disease, and drug effects on that disease.

<http://www.pharmagenomicsonline.com/pharmagenomics/data/articlestandard/pharmagenomics/042004/82360/article.pdf>

LAB-ON-A-CHIP/ DNA CHIPS/ MICROARRAY

“Facilitating Microarray Experiments To Acquire Genetic Insight”

Biocompare (January 19, 2004)

Defines microarrays, presents their various types and kits for the next step of hybridization. Links to several vendors.

<http://www.biocompare.com/spotlight.asp?id=174>

“The Healthy Promise of Biochips”

Amy Tsao, Business Week (January 21, 2004)

Tracking the human genome was just the beginning. Now, biochips can be used to study many genetic aspects of a disease -- and possibly a cure.

http://www.businessweek.com/technology/content/jan2004/tc20040121_7772_tc139.htm

PROTEOMICS

“Elves Make Protein Crystallography Easier”

University of California, Berkeley, Bio.com (January 27, 2004)

Reports that a computer program called Elves is said to be a nearly magical solution to the tedious and time-consuming task of determining the 3-D shape of proteins - a major focus of cutting-edge proteomics today - from X-ray diffraction data.

<http://www.bio.com/realm/research.jhtml?realmId=2&cid=130811149&page=1>

11) RESEARCH TOOLS (1 article)

COMPUTING SYSTEMS

“Supercomputing: Faster, Cheaper, Smaller”

Salvatore Salamone, Bio-IT World (January 12, 2004)

Describes Fujitsu's BioServer, a supercomputer with a novel architecture that uses cheaper chips to deliver high-performance computing (HPC) for drug discovery.

http://www.bio-itworld.com/news/011204_report4133.html

12) STRATEGIC RELATIONSHIPS (1 article)

COLLABORATION

“Early Stage Deals - Strategies and Terms”

Steve Poile & Suzanne Elvidge, Pharmalicensing (January 14, 2004)

Explains how partnerships between pharmaceutical and biotechnology companies is increasing and evolving. Discusses why, when and how to license, how to decide the value of the deal, types of payments and publicizing the deal.

http://pharmalicensing.com/features/disp/1074083835_400537fb578f2

13) THERAPEUTIC CATEGORY (9 articles)

IMMUNOLOGY/INFECTIOUS DISEASES

“Antimicrobial Peptides: a Natural Alternative to Chemical Antibiotics and a Potential for Applied Biotechnology”

Sergio H. Marshall and Gloria Arenas, Electronic Journal of Biotechnology
(December 15, 2003)

Reviews groups of low molecular weight natural compounds that exhibit antimicrobial activity which have been isolated from animals and plants during the past two decades.

<http://www.ejbiotechnology.info/content/vol6/issue3/full/1/index.html>

METABOLISM/OBESITY

“The Making of a New Disease”

Joanna Breitstein, PharmExec.com (January 1, 2004)

Discusses the increasing attention paid to the concept that obesity, hyperlipidemia, diabetes, and hypertension-and perhaps other diseases, including some cancers-are linked.

<http://www.pharmexec.com/pharmexec/article/articleDetail.jsp?id=80917>

MUSCULOSKELETAL

“Gene May Be Target for Osteoporosis Treatment”

Ed Edelson, HealthDay (January 9, 2004)

A gene that plays a role in heart disease now appears to be a potential target for treatment of osteoporosis.. The gene, named Alox15, is part of a pathway that determines whether cells in marrow become either bone or fat.

<http://www.healthday.com/view.cfm?id=516854>

NEUROLOGY

“Gene Technique Targets Alzheimer’s Memory Loss”

Northwestern University (January 6, 2004)

Reports on the use of a gene-targeting approach to block production of beta-amyloid, or “senile,” plaques associated with Alzheimer's disease. Scientists report beta-amyloid appears to be responsible for the memory-robbing effects of the disease.

http://www.northwestern.edu/univ-relations/media_relations/releases/2004_01/alzheimers.html

“Genetic Screening Recommended To Detect New Neurodegenerative Disorder In Men Over Age 50”

University of California, Davis - Medical Center, Bio.com (January 27, 2004)

Reports on the discovery that fragile X-associated tremor/ataxia syndrome (tremor and balance problems in the adult population) may be accurately and easily identified with a standard DNA blood test.

<http://www.bio.com/realm/research.jhtml?realmId=1&cid=130811551&page=1>

ONCOLOGY

“Wound Repair and Deadliest Cancers Share Genetic Signature”

Nancy Touchette, Genome News Network (January 23, 2004)

Discusses new studies suggesting that for reasons yet unknown, the genes active during wound healing are also activated in cancers with the worst outcomes. These studies may lead to new ways to diagnose and treat the most deadly types of tumors.

http://www.genomenewsnetwork.org/articles/2004/01/23/wound_repair.php

PSYCHIATRY/PSYCHOLOGY

“Gene Seems Linked to Alcoholism Risk”

Maggie Fox, Reuters Health Information (January 14, 2004)

Reports study of more than 260 families showing that several different changes in a gene, called GABRG3, were linked with the risk of becoming an alcoholic.

<http://www.reuters.com/newsArticle.jhtml?type=healthNews&storyID=4128919>

PULMONARY/RESPIRATORY DISEASES

“Scientists Identify Genes That Regulate Allergic Response to Diesel Fumes”

Paul Williams, National Institute of Allergy and Infectious Diseases (January 8, 2004)

Reports on study finding the risk of developing respiratory allergies from exposure to diesel emissions depends largely on genetics. This knowledge will help accelerate development of drugs to treat and prevent these diseases.

<http://www.niaid.nih.gov/newsroom/releases/dieselallergy.htm>

REPRODUCTION

“Researchers Find Key Gene In Production Of Egg And Sperm”

University Of California - Berkeley, Science Daily (January 5, 2004)

Reports on a key gene involved in the first step in the process of creating eggs and sperm, called meiosis. Researchers say it will help in elucidating the causes of infertility and genetic diseases that result from abnormalities of meiosis.

<http://www.sciencedaily.com/releases/2004/01/040105065350.htm>

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