METHODS and TECHNIQUES in Drug Discovery

Whether you're involved in genomic, proteomic or pharmacogenomic research and development; whether your responsibility is screening, genotyping, transcription or another key aspect of the discovery and development process; whether your priority is speeding R&D or improving research results, take this opportunity to learn more about the new **Methods and Techniques in Drug Discovery**. The first and only resource of its kind, this one-volume compendium ensures that you're fully briefed on today's most effective technologies and techniques, and their application to your own drug discovery and development efforts.

Table of Contents

Imaging and Visualization

Infrared Imaging for In Vivo Drug Discovery: Thermogenesis-Based Assays Elucidate Tissue-Specific Physiological Changes

Thermogenic Imaging

Localizing Protein Activity Using FRET Imaging: FRET and FRET-FLIM Microscopy Localize Protein Interactions in Living-Cell Nuclei Bio-Rad Laboratories

High-Resolution 3-D Protein Conformation: Sidec's Low-Dose Electron Tomography Produces High-Fidelity Reconstructions

Sidec Technologies

Microarray Image Capture & Analysis: ArrayWorx Delivers Repeatable, Predictable Data and Automation

Applied Precision

Scanning the Horizons in Microarrays: Novel Microarray Formats Call for Flexible Scanning Technologies

Tecan

Visualizing a New Dimension: Novel Visualization Technology Fosters Collaboration and Simplifies Analyses Sun Microsystems

Enabling Tool for Industrial Screening: Flexibility with the Zeiss Ultrahigh-Throughput System *Carl Zeiss*

Quantitation

A Homogeneous, Universal Detection Platform: IQ Technology for Kinase and Phosphatase Screening

Pierce Biotechnology

Multifunctional Assay for DNA-Binding Proteins: Fluorescence Assay Platform Measures Both Proteins and Small Molecule Co-Regulators

Mediomics

Assay for Estimating Total Protein Concentration: Non-Interfering Protein Assay Effective Even in Presence of Common Interfering Agents

Genotech

Nuclease-Protection Boosts Assay Throughput: Multiplexed Nucleic Acid Profiling with HTG's Array-Plate

High Throughput Genomics

PhenoDynamic Protein Characterization: A Structural, Label-Free Approach for Real-Time Detection of Molecular Interactions Signature Bioscience

Lipid Profiling for Studying the Metabolome: Global Quantification of Lipid Metabolites for Bioinformatic Analysis

Lipomics Technologies

Monitoring Low-Affinity Molecular Interactions: Measuring Macromolecular Interactions with the Analight Bio200

Farfield Sensors

Quantitative Analysis of Protein Expression: Using 2-D Nano LC/MS and ICAT Technology

Dionex

Technology for Rapid, Flexible SNP Detection: Using the LightCycler System to Amplify and Genotype SNPs

Roche Applied Science

Libraries and Microarrays

CombiMatrix' Customizable DNA Microarrays: In Situ Computer-Aided Synthesis of Custom Oligo Microarrays

CombiMatrix

Two-Site Immunometric Biochips: HydroGel-Coated Slides Permit Protein Chip Assays for Measuring Multiple Ligands

PerkinElmer Life Sciences

DermArray GeneFilters Technology: DNA Microarrays for Dermatology, Pharmacology, and Toxicology IntegriDerm

Ciphergen's PBS-1 Boosts Alzheimer's Research: System Allows Fast Results Using Microvolumes

Ciphergen Biosystems

Complete cDNA and Genomic Libraries: Novel Cloning Strategy Combines Advantages of High- and Low-Copy Vectors

Epicentre Technologies

Microarray Technology for Expression Profiling: Long-Oligo Probes Offer Significant Advantages Over PCR-Generated Alternatives

Sigma-Genosys and Compugen

Customized High-Density Oligo Microarrays: Digital Masks Introduce Flexibility for High-Density Array Design NimbleGen

Contemporary Small Molecule Drug Discovery: Stacking the Deck in Favor of Druglike Leads PharmaCore

Preparation and Processing

Automation for Ultrahigh-Throughput Screens: The Workstation-Type CyBi Screen-Machine

CyBio Screening

Distributed Management of Compound Libraries: Scalable Plate-Management System Reduces Infrastructure and Extends Compound Life

TekCel

High-Throughput Single-Cell Tracking in Real Time: Pathway HT Kinetic Bioimaging Platform Allows High-Throughput Monitoring of Molecular Events

Atto Bioscience

Purification of BAC DNA Templates: Rapidity and High Throughput with 96-Well Kit for Genome Mapping and Sequencing

Millipore

A MALDI LC/MS Interface for Continuous Sample Deposition from Reversed-Phase HPLC: System Allows Deposition onto Matrix-Precoated Targets

Waters

Immunicon's Immunomagnetic Technology: Tools for Drug Optimization and Clinical Development

Immunicon

Large-Scale Biological Sample Storage: Lessons Learned from Automated Compound Management

The Automation Partnership

Northern Hybridization Analysis: Comparing Different Membranes and Fixation Methods Pall

Automated Blood Sampler for Preclinical R&D: Bioanalytical Systems Brings Automation to Animal Studies

Bioanalytical Systems

High-Throughput Capillary Zone Electrophoresis: Combining Analysis and Preparation of Samples into a Single Process

SpectruMedix

Automating the Normalization of DNA Samples: Increased Efficiency of Technician-Hours and Throughput, with Fewer Errors

Genomics Collaborative

Taking Advantage of Free-Interface Diffusion: Free-Interface Diffusion Technology Speeds Crystallization Screening

Fluidigm

Automated Processing of 2-D Protein Gels: 2DiD Platform Relieves Imaging & Spot-Picking Bottlenecks in Automated Analysis LEAP Technologies High-Throughput Automated gDNA Extraction: Purifying Genomic DNA from Whole Blood with the Biomek 2000 and Xtra Amp

Beckman Coulter

Non-PAGE Complex Protein Expression Analysis: A 2-D Liquid-Phase Technique for High-Throughput Analysis of Intact Proteins

Eprogen

Data Mining and Management

Overcoming Data Management Challenges: ActivityBase Facilitates Handling of Assay Data IDBS

Comparative Genomics for the Mining of Data: Getting a Grip on the Growing Flood of Information *Lion Bioscience*

Pathway Linkage and Data Integration: Metabolomics Holds Key to Intelligent Discovery Efforts Paradigm Genetics

Intelligent Molecular Object for Proteomics: Sentient Platform Provides Functional Integration of Systeomics Data

Biosentients (acquired by IO Informatics)

A New Processing Model for Drug Discovery: Oracle's New Data-Handling Method Offers Computational Flexibility

Oracle Life Sciences

Biomedical Informatics System for Life Science: Platform Allows Multiple Laboratory Workflows to Be Handled in Time-Effective Manner *BioXing*

Integrated Access to Discovery Information: DiscoveryGate Offers Comprehensive Web-Based Content Solution

MDL Information Systems

Integration of Bioinformatics Applications: TurboBench Utilizes Spare Cycles to Speed Computing of Biodata

TurboWorx

Tools for Building a Flexible R&D Infrastructure: DiscoveryLink & IBM Life Sciences Framework for Data Integration

IBM Life Sciences

Data-Pipelining Software for Accelerated Discovery: Platform Computing's Technology Manages Computational Workflow Platform Computing

Accelerated Discovery with Decision Analytics: Combining Desktop Analysis with Web-Based Tools for Analysis of Leads Spotfire Analyzing 2-D Gels at High Throughput: Data Mining with the Progenesis Discovery Informatics Tool

Nonlinear Dynamics

An Enhanced Human-Genome Database: Transforming Raw Human Sequence Data into Useful Information

Biomax Informatics

Clinical Relevance in Discovery & Validation: Integrating Human Tissue and Clinical Information for Molecular Analysis of Disease Ardais

Screening

Exelixis Improves Screening Success: Shift to Ultralarge Compound Libraries Improves Quality of Drug Leads Exelixis

Accelerated System for Novel Drug Discovery: Discovering New Antimicrobial Agents Using Advanced Screening Technology and Structure-Based Drug Design *Quorex Pharmaceuticals*

uHTS-ATLAS for Affinity-Based Screening: Screening Difficult Targets and Targets of Unknown Function

Anadys Pharmaceuticals

Automated Drug Screening Using Zebrafish: COPAS XL Allows for Increased Throughput

Union Biometrica

Antisense for High-Throughput Genomic Studies: Applying Morphant Technology for Determination of Vertebrate Gene Function

Discovery Genomics

Applying Pathway-Based Drug Discovery: Exploiting the Intersection of Functional Genomics and Systems Biology Odyssey Therapeutics

Predictive Toxicity-Screening Methodologies: Practical Application of Toxicogenomic Research

CuraGen

Dual Uses of In Silico and In Vitro Metabolism Data in Lead Discovery: ComGenex MAID: A Metabolism-Alerting System for Early-Phase Discovery Research

ComGenex

Detecting Drug Interactions and P450 Inhibition: Applying Vivid P450 Fluorescence-Based Screening Kits PanVera

Chemical Genetics Platform for Kinase Studies: Cellular Genomics' Analog-Sensitive Kinase Alleles Cellular Genomics

Genotyping

Genotyping in the Post-Genome Sequencing Era: Luminex' LabMAP Technology for SNP Analysis Luminex

Addressing Challenges in Large SNP Studies: Information-Rich, Prevalidated Assays Improve SNP Detection and Simplify Workflow Applied Biosystems

Optimization of Production-Scale Genotyping: High-Multiplex SNP Genotyping Assay Benefits from Integration with a Turnkey Production System

Illumina

Cracking the Genetics of Diabetes: The Wave DNA Fragment Analysis System Detects Polymorphisms and Mutations *Transgenomic*

Improving Workflows for Antibody Screening: Next-Generation Systems Increase Assay Throughput for Antibody Characterization Applied Biosystems and

HTS Biosystems

In Silico Tools

Protein Sequence to Lead Compounds: Virtual Discovery Laboratory Tripos

Target Validation Using In Silico Disease Models: "Virtual Patients" Allow Top-Down Disease-Specific Systems Biology Approach Entelos

Compound-Selection & Pharmacogenetics Tools: Computing Methods Increase Hit Rates, Permit True Pharmacogenetic SNP Analysis Golden Helix

Protein Target Discovery and Characterization: DS Modeling and Discovery Studio Streamline Target Discovery Accelrys

Mining Data In Silico For Target Discovery: BioExpress and GX Gencarta for Gene Discovery, Marker Selection, and Target Prioritization

Avalon Pharmaceuticals and Gene Logic

Molecular Design and Engineering

Synthetically Driven Rational Drug Design: MIDAS Technology Furthers Intelligent Drug Development without In Silico Approaches

Palatin Technologies

Real-Time Structure-Based Drug Development: Triad's NMR-Based Structural Determinations Are Smart Chemistry

Triad Therapeutics

Epitope Mapping and Therapeutic Proteins: Rational Design of Protein Biodrugs May Reduce Deleterious Side Effects

Genencor International

Engineering Enzymes at High Throughput: Solid-Phase Methods and Instrumentation for Screening Libraries of Enzyme Variants Kairos Scientific

Application of More-Effective Interferons: Combination of Two Platforms May Help Combat Variety of Cancers

PBL Therapeutics

Transcription & Gene Expression

Random Activation of Gene Expression: Applying RAGE for Developing New Therapeutics Athersys

Alternative Splicing: Shortcut to Discovery: DATAS Technology Employs RNA Splicing for Discovery of Novel Pharmaceuticals ExonHit Therapeutics

Multitarget Automated Gene Expression Assays: Simultaneous Measurement of Several Target mRNAs

Chromogen

Gene Discovery Using Differential Display: Method Analyzes Difference in Gene Expression GenHunter

From Splice Variants to Target Discovery: Mining the Transcriptome for Drug Discovery Research Compugen

One-Step Identification of Both Drug and Target: Cytos Biotech's DELphi Technology Rapidly Identifies Functional Activity Cytos Biotechnology

Chemical Genomics Advances New Medicines: High-Throughput Transcriptional Profiling for Drug Discovery and Lead Development Avalon Pharmaceuticals

"Drug Discovery researchers looking to apply new techniques or improve their current processes will find this book a convenient reference."

— W. Steven Fillers, Ph.D., CSO TekCel, Inc.