

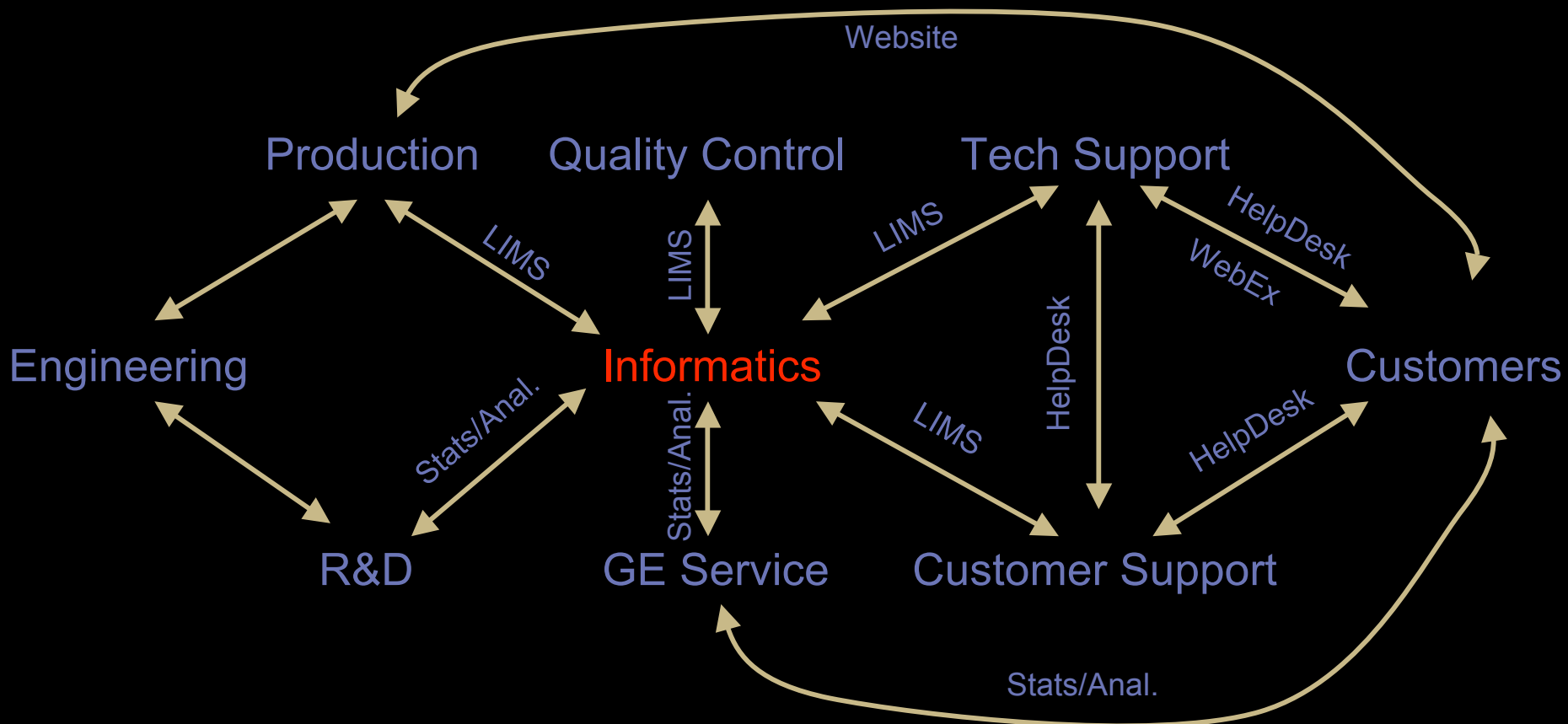
Building A Core Facility

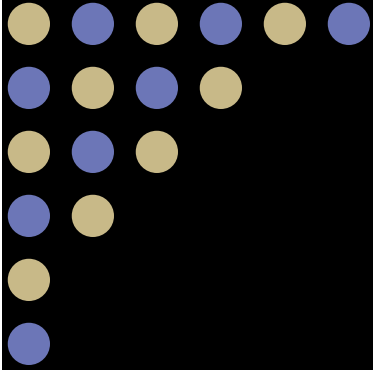
Neil Winegarden

winegard@microarrays.ca



Microarray Core Schema



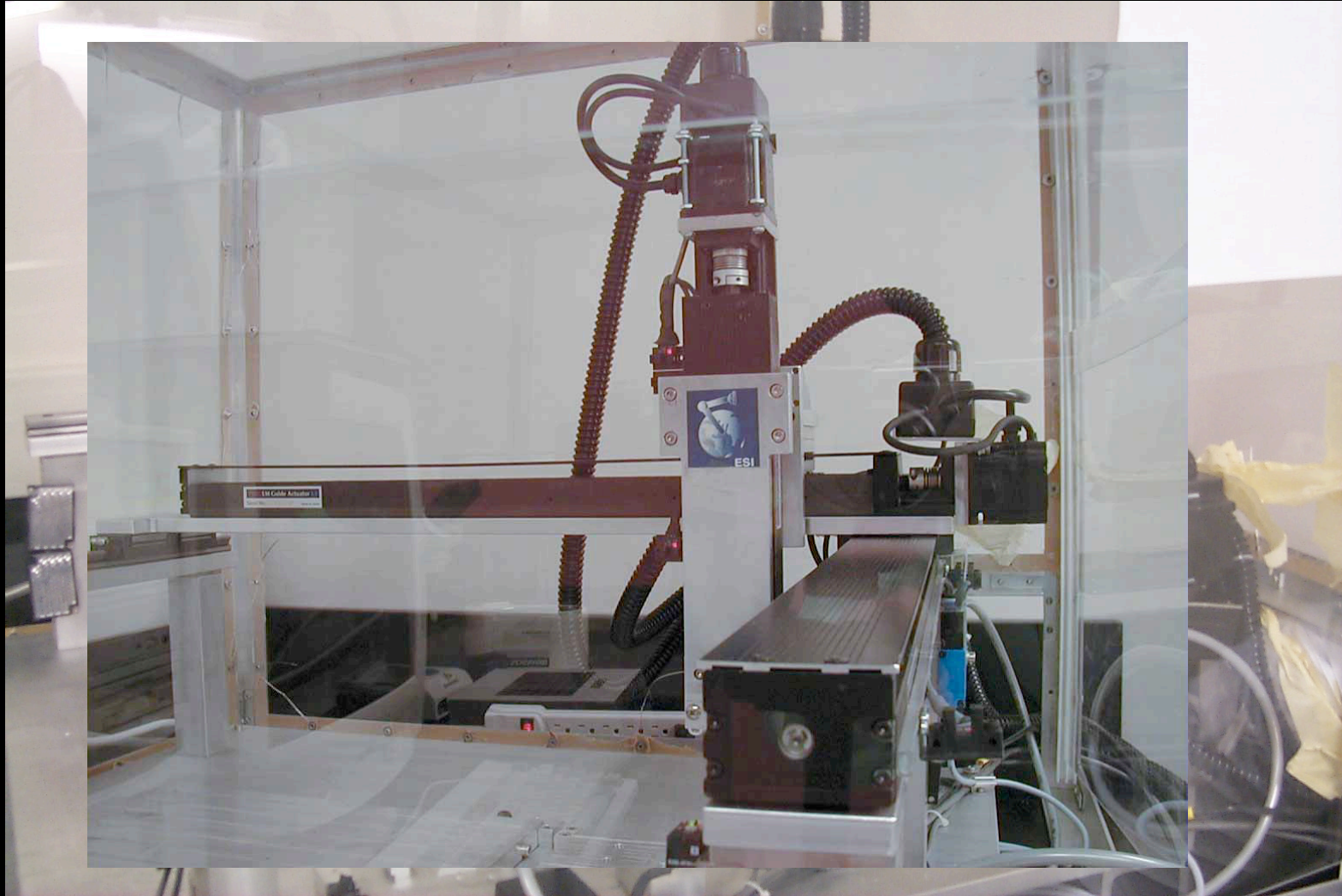


The Production Group

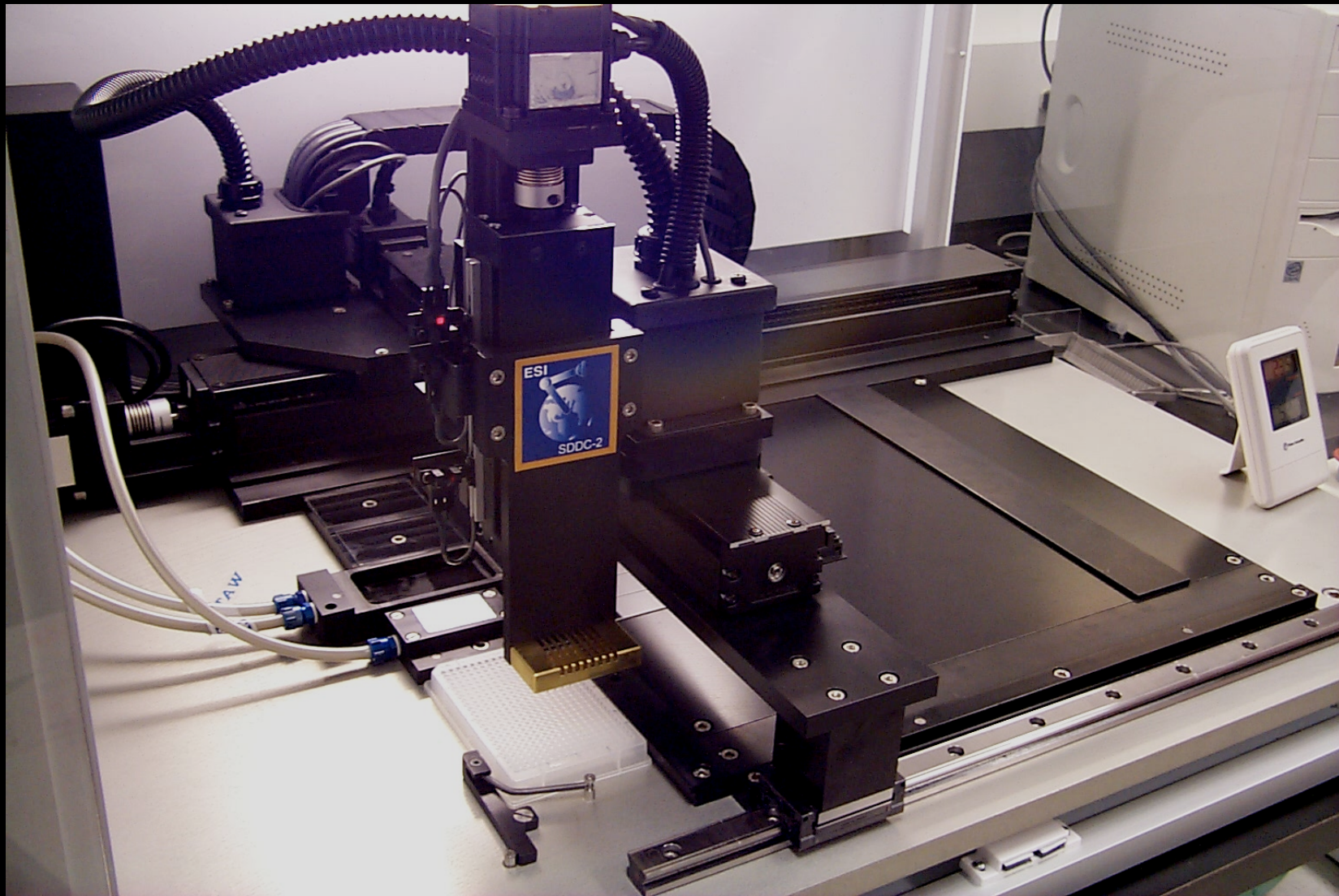
The Core of the Core



The Mk I Robot (the SDDC-1b)

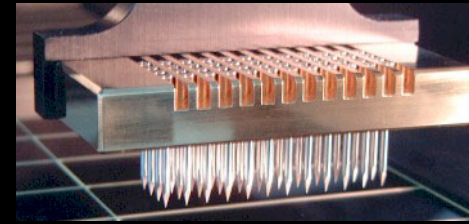


The Mk II System



High-throughput Array Production

- No. of Arraying Robots = 6
- Simultaneous printing = 660 arrays
- Operation Time = 16 hrs/day



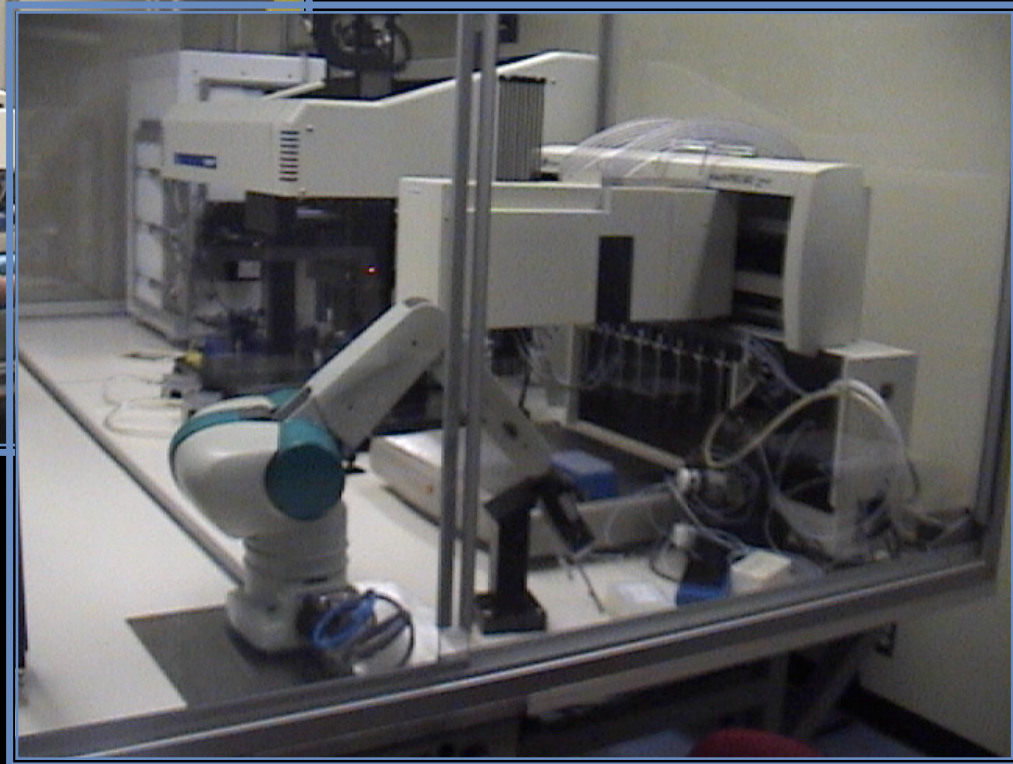
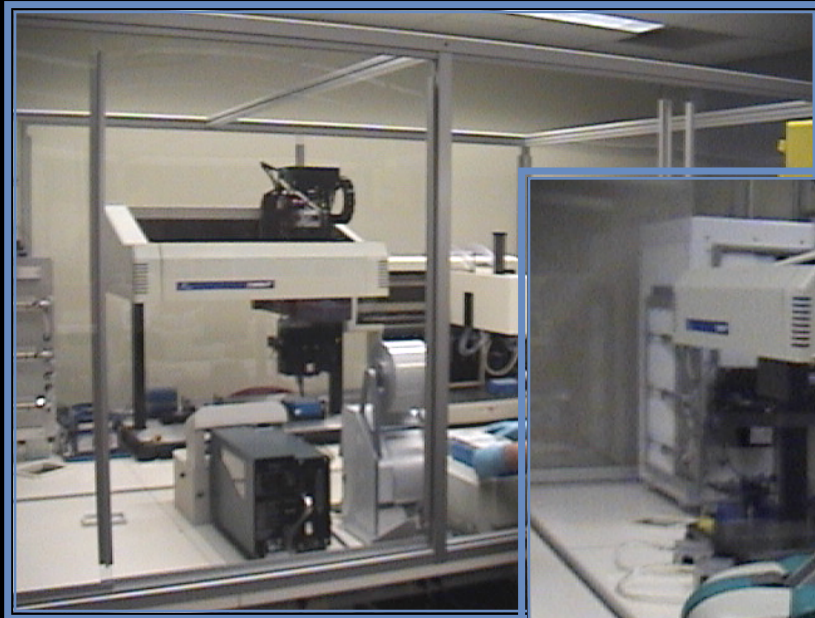
Stealth pins



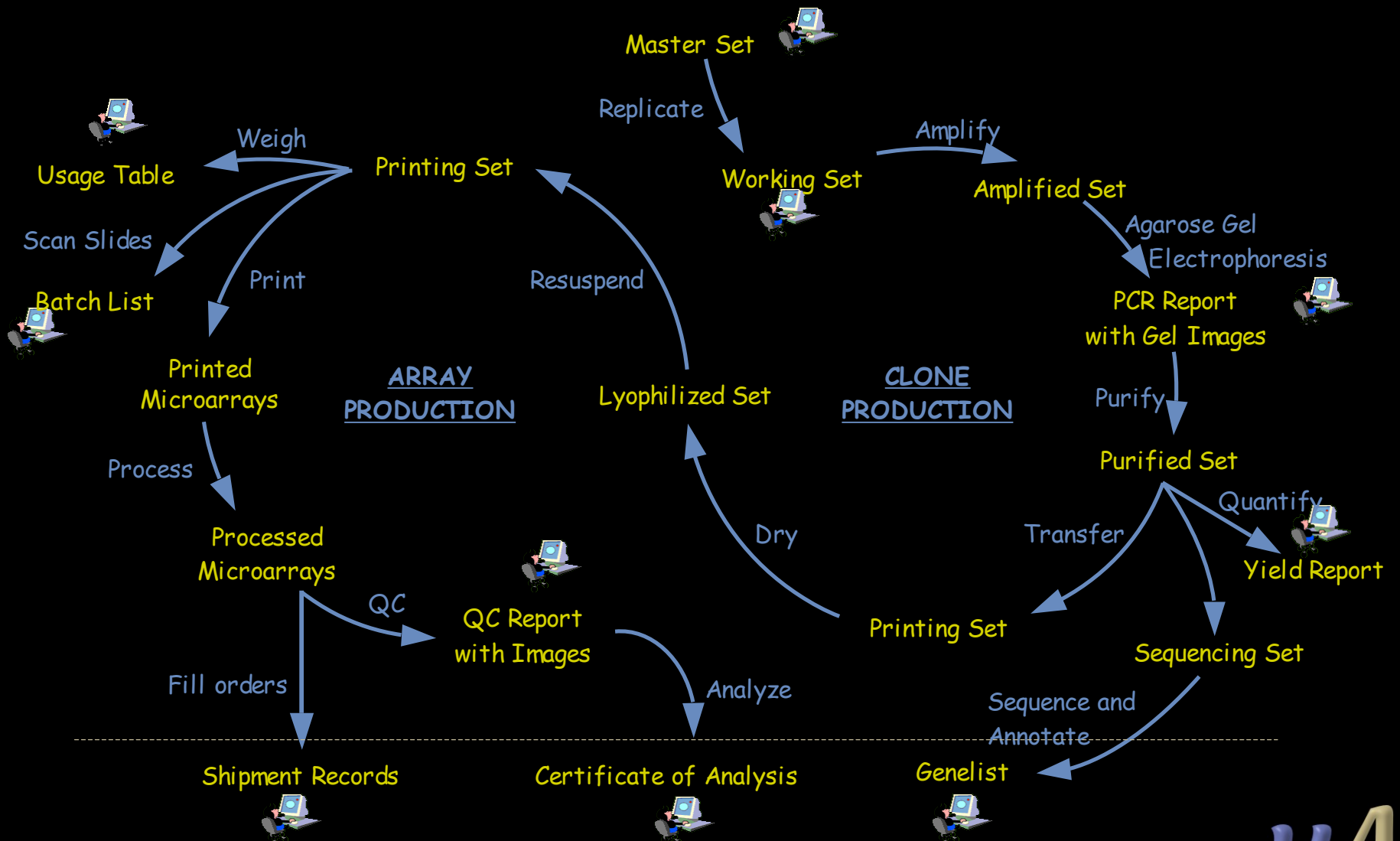
Barcoded slides



Automated Clone Production



ProCIS (Production Cycle Informatics System)



The First Mac Bioinformatics Cluster in Canada



- Three Xserve G5 nodes
 - Processor:
 - Two 2.0GHz G5 processors per node
 - Memory
 - Master node: 4GB
 - Cluster node: 2GB
 - Hard drive
 - Master node: 3X250GB
 - Cluster node: 75GB
- Xserve RAID
 - 3.4TB
 - Fibre Channel



MacCluster Databases


- Array Support
 - Static
 - Available as tab-delimited array layout files
 - Updated
 - Accession, Unigene, Image, Gene Name, Description, Chromosome, cytoband, Locuslink, Refseq, Swiss-prot, OMIM, GO
 - UHNID
- Databases
 - Unigene, UCSC, CpG, GO, Pubmed, dbSNP, BIND

Public Repositories

CIBEX Center for Information Biology gene Expression database

Top Search Experiment List Array List Paper Contact

CIBEX is a gene expression database system in compliance with MIAME, which is a standard that the MGED Society has developed for comparing and data produced in microarray experiments at different laboratories worldwide.



Search **Browse** **Link**

Show summary list of whole experiments or arrays in CIBEX.

Experiment

Accession

Title

Authors

advanced search

Array

Accession

Model Name

Provider

advanced search

Statistics

Experiments :

Arrays :

Hybridizations :

last update 2004

Link

MGED society

MGED home

MIAME

MAGE

Microarray Databases

Topic

- RIKEN data is submitted to CIBEX.

EMBL-EBI
European Bioinformatics Institute

EBI Home About EBI Research Services Toolbox Databases Downloads Submissions

ARRAYEXPRESS DATABASE

ArrayExpress

- ArrayExpress Home
- Query Database >>
- Login To Database >>
- Submissions
- Help & Documentation
- Microarray Standards
- Software
- Microarray Home >>

Highlights

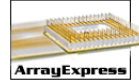
- MGED 7 Meeting University of Toronto, Toronto, Ontario, Canada.

08/09/2004 - 10/09/2004

[Register Now](#)

ArrayExpress at the EBI

ArrayExpress is a public repository for microarray data, which is aimed at storing well annotated data in accordance with MGED recommendations.



Current Content Overview:

Experiments:	313	View
Arrays:	250	View
Protocols:	147	View
Hybridizations:	947	

- [Query Database >>](#)
- [Login To Database >>](#)
- [NEW Try gene queries in prototype data warehouse >>](#)
- [Submissions](#)
- [Help & Documentation](#)
- [FAQ](#)
- [Microarray Standards](#)
- [Software](#)
- [Microarray Home >>](#)

Please read our [ArrayExpress FAQ](#) before contacting us at arrayexpress@ebi.ac.uk.

Latest News

Fission Yeast Cell Cycle Data
13/06/2004

Data from approximately 200 hybridizations of yeast *Schizosaccharomyces pombe* is now available from ArrayExpress - accession numbers E-MEXP-54 to E-MEXP-64 and G. Rustici et al. 'Periodic Gene Expression Program of the Fission Yeast Cell Cycle', Nature Genetics. [Direct link to data in ArrayExpress.](#)

Updated Proposal On Encoding MIAME In MAGE-ML
13/05/2004

An updated version of the recommendations on how to encode MIAME required information in MAGE-ML is available from [here](#).

[News Archive](#)

NCBI **Gene Expression Omnibus**

HOME SEARCH SITE MAP NCBI Handbook Chapter NAR 2002 Paper FAQ MIAME Email GEO

NCBI > GEO

The **Gene Expression Omnibus** is a high-throughput gene expression / molecular abundance data repository, as well as a curated, online resource for gene expression data browsing, query and retrieval. GEO became operational in July 2000.

Public data

GPL Platforms	842
GSM Samples	23317
GSE Series	1216
Total	25375

Sep 19 2004

Site contents

Documentation

Overview | FAQ
Web deposit brief
Batch deposit guide
SOFT examples
Linking & citing
GDS Clustering
GEO announce list
Data disclaimer
GEO staff

Query & Browse

DataSet browser
Repository browser
SAGEmap
FTP site
GEO Profiles
GEO Datasets

Deposit & Update

Web deposit
Direct deposit
New account
coming soon

External Tools

coming soon

GEO navigation

BROWSE

- GEO accessions
- DataSets
- GEO accession
- Platforms
- Samples
- Series

Get

Scope: Self In: HTML view: Quick





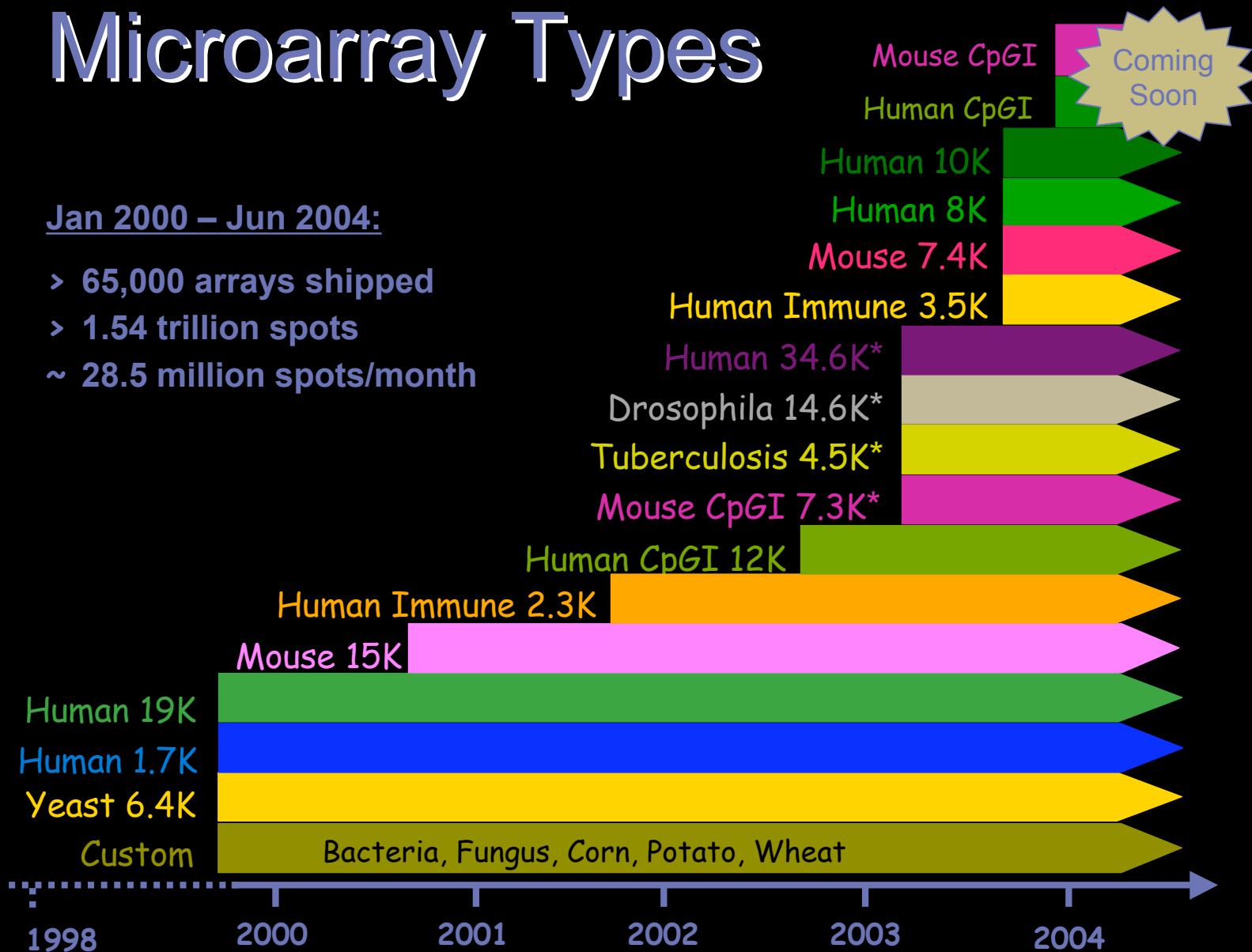
Creating New Arrays - Human 8k

- Derived from 40k
 - All from 40k, none in 19k
- All have unigene IDs
 - 4612 unique unigene IDs
 - 6756 clones
- At least has one of OMIM, Swiss-Prot, and RefSeq
- 2928 unique OMIM, 4265 total
- 2516 unique RefSeq, 3743 total
- 1282 unique Swiss-Prot, 1855 total

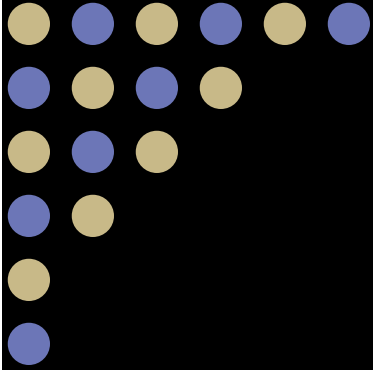
Microarray Types

Jan 2000 – Jun 2004:

- > 65,000 arrays shipped
- > 1.54 trillion spots
- ~ 28.5 million spots/month



* For internal use only



The R&D Group

Keeping it on the Cutting Edge





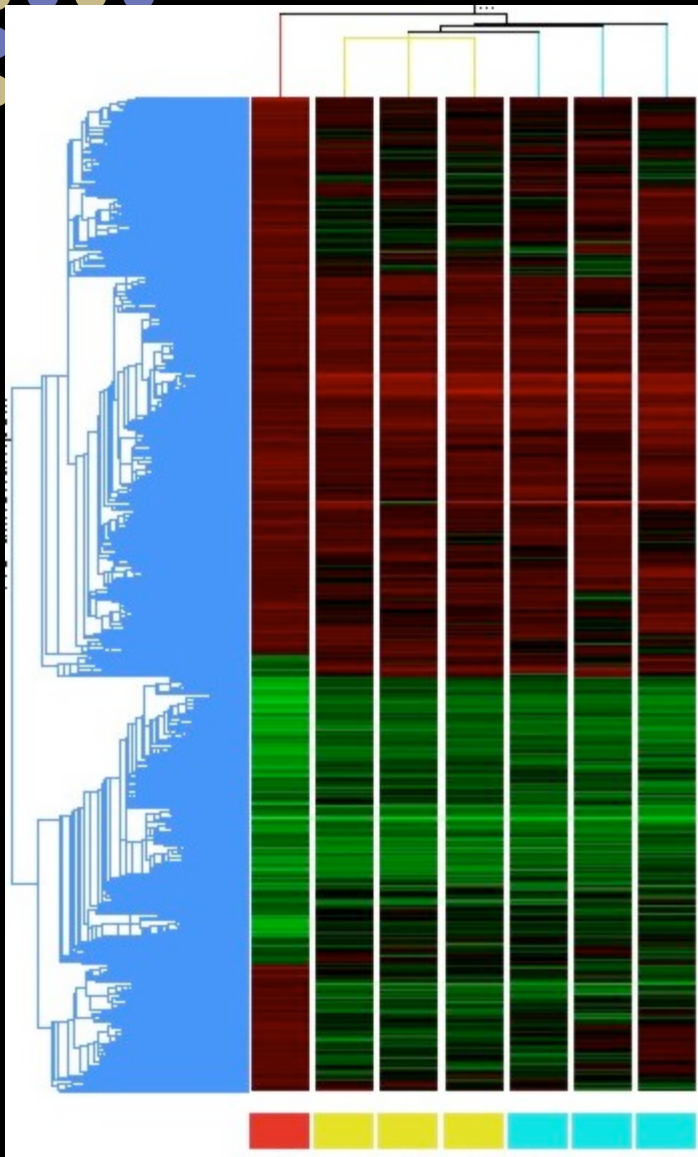
Microarrays: Beyond Gene Expression

- Promoter/Enhancer binding assays
 - ChIP on Chip
 - PBMs (Protein Binding Microarrays)
- Methylation/Epigenetics
 - CpG Island microarrays
- Protein Expression effects
 - Cell Arrays

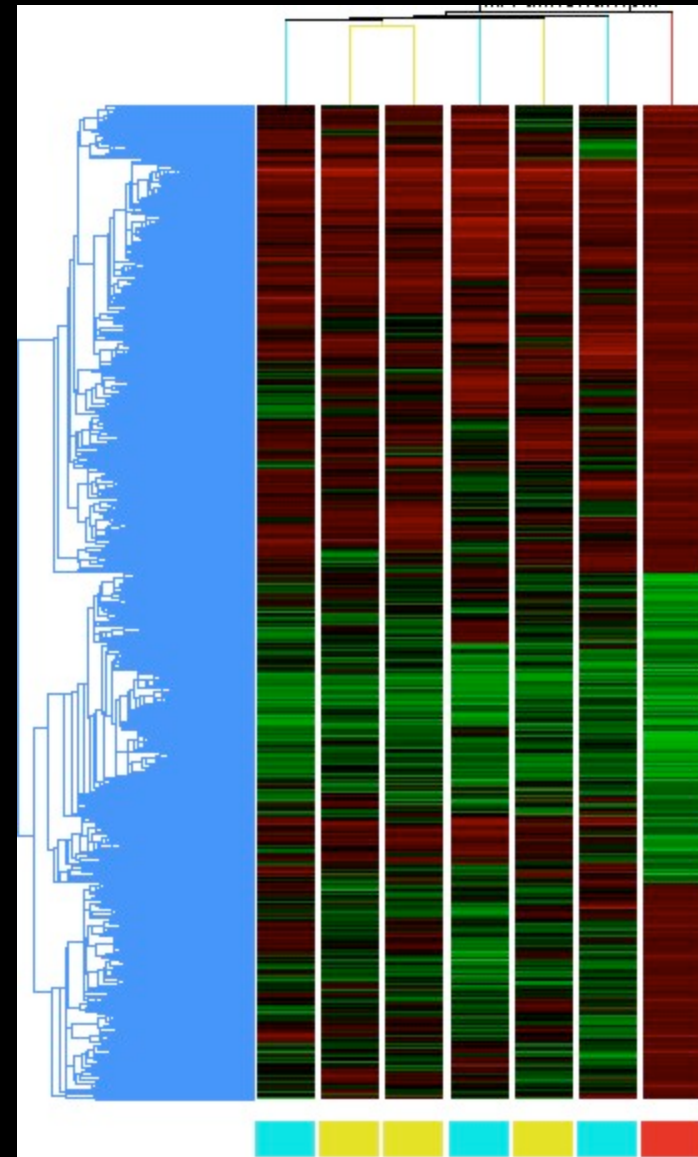


R&D

- New techniques
- Optimised Protocols
- Beta - testing
- Validation



Isothermal linear amplification
(20ng -blue & 100ng -yellow)



T7 in vitro transcription (100ng -
blue & 500ng -yellow)

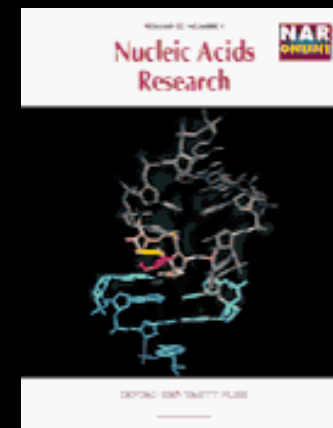
Methods Journals



BioTechniques

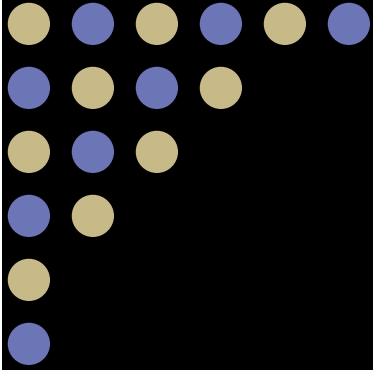


nature methods
Techniques for life scientists and chemists



Nucleic Acids Research

μA



Gene Expression Service

...Because you've got better
things to do





Gene Expression Service

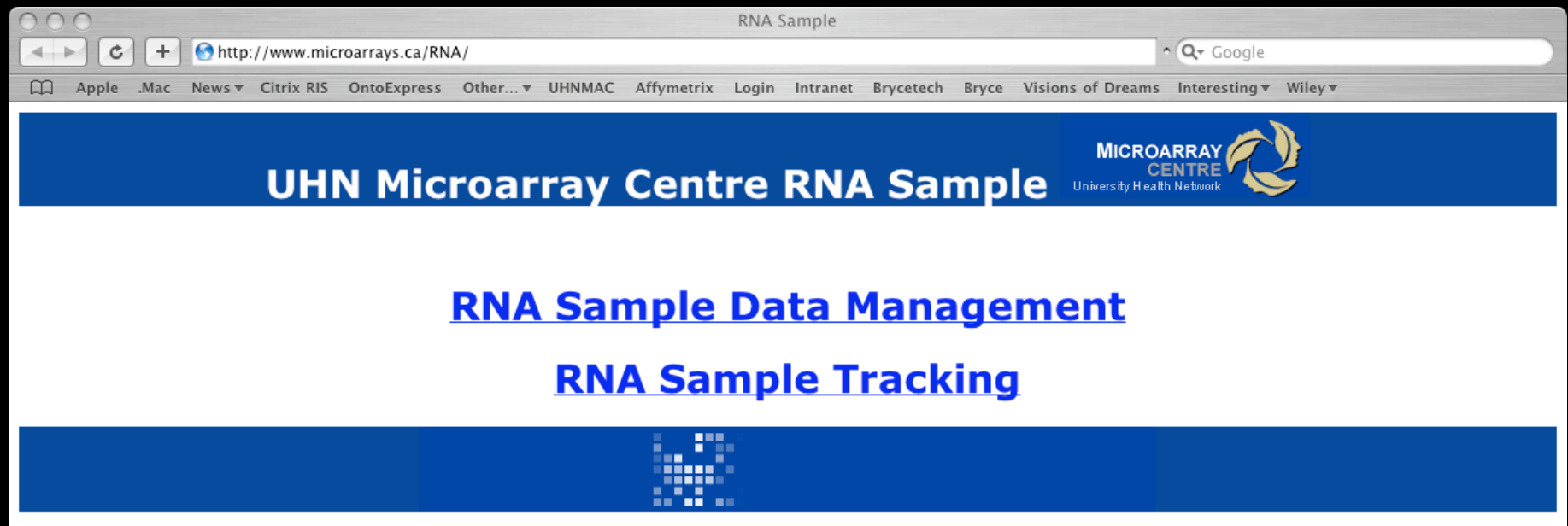
- Many of our customers (or potential customers) do not have access to the necessary equipment (scanners in particular)
- Often times turn-over in labs does not allow for an “expert” to develop
- Some customers only ever want to run one experiment, and do not want to go through learning how to do the work.

GE Service Options

- Spotted Arrays
- Affymetrix GeneChips™
- Labelling
- Hybridisation
- Scanning
- Informatics
- Data Warehousing



Tracking GE Projects



The screenshot shows a web browser window with the title "RNA Sample" and the URL "http://www.microarrays.ca/RNA/". The browser's address bar includes a search box with "Google" and a search button. The browser's menu bar includes "Apple", ".Mac", "News", "Citrix RIS", "OntoExpress", "Other...", "UHNMAC", "Affymetrix", "Login", "Intranet", "Brycetek", "Bryce", "Visions of Dreams", "Interesting", and "Wiley". The main content area features a blue header with the text "UHN Microarray Centre RNA Sample" and the "MICROARRAY CENTRE University Health Network" logo. Below the header, the text "RNA Sample Data Management" and "RNA Sample Tracking" is displayed in blue. A blue footer bar contains a grid of small white squares.

Tracking Experiments

UHN RNA Sample Management

ID	<input type="text" value="2004-10-20"/>
Description <input checked="" type="checkbox"/>	<input type="text" value="Dr. Who - Dalek RNA"/>
RNA Received <input checked="" type="checkbox"/>	<input type="text" value="2004-9-19 11:4:28"/>
RNA quality check completed <input checked="" type="checkbox"/>	<input type="text" value="2004-9-19 11:4:29"/>
Samples being labelled <input type="checkbox"/>	<input type="text"/>
Microarrays being hybridised <input type="checkbox"/>	<input type="text"/>
Arrays being scanned <input type="checkbox"/>	<input type="text"/>
Image Quantitation <input type="checkbox"/>	<input type="text"/>
Data being analysed <input type="checkbox"/>	<input type="text"/>
Data ready <input type="checkbox"/>	<input type="text"/>
CD Shipped <input type="checkbox"/>	<input type="text"/>










Retrieve

Update

Reset

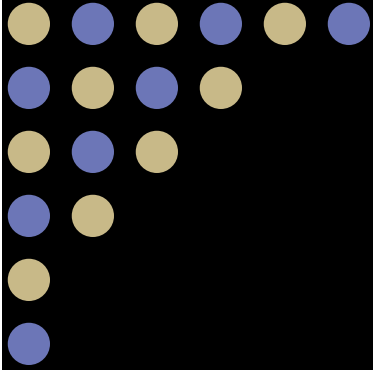
Customer Access

UHN Microarray Centre RNA Sample Tracking Result

ID		
Description		
RNA Received		2004-03-26 12:01:11
RNA quality check completed		2004-03-26 12:01:12
Samples being labelled		2004-06-04 23:27:49
Microarrays being hybridised		2004-06-04 23:27:50
Arrays being scanned		2004-06-04 23:27:51
Image Quantitation		2004-06-04 23:27:52
Data being analysed		2004-06-04 23:27:53
Data ready		2004-06-04 23:27:54
CD Shipped		2004-06-04 23:27:54

Sample Tracking

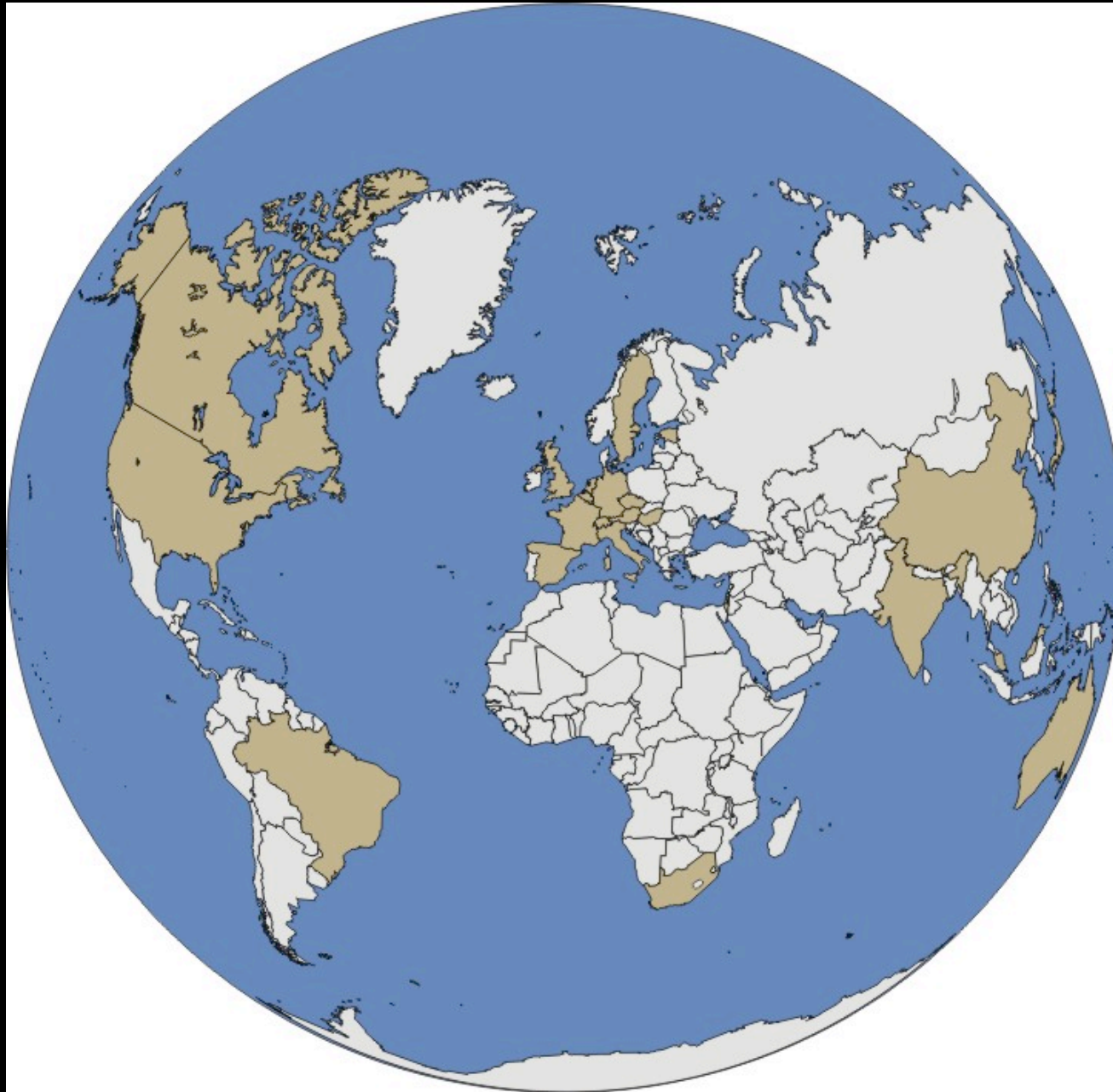
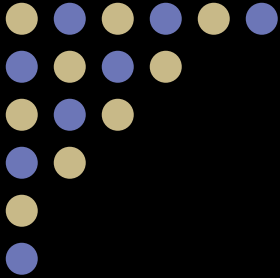
RNA Sample

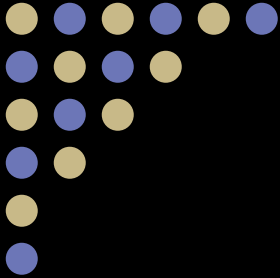


The Customers


The most important part








First line of support



MICROARRAY CENTRE
University Health Network


[about us](#) | [products & services](#) | [support](#) | [services](#) | [resource links](#) | [contact](#)

SUPPORT

- ▶ PROTOCOLS
- ▶ TUTORIALS
- ▶ GENE LISTS
- ▶ SLIDE - TECH DATA
- ▶ FAQ
- ▶ GUIDELINES & POLICIES
- ▶ DOWNLOADS

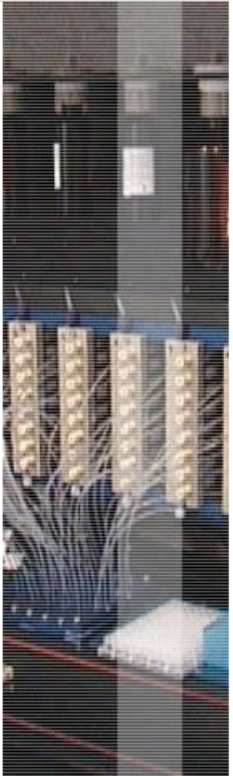
SUBSCRIBE TO OUR NEWSLETTER

Gene Lists

Each of our microarrays has a unique layout. The genelists describes what each spot on the array is. It is critical that the right layout be used for the appropriate array or serious annotation problems will be introduced. All shipments of our slides include a sheet to indicate what version slides you are receiving, please refer to the sheet if you are unsure.

Microarray Slides Gene List				
	QuantArray	GenePix	Iobion	Sequence
Current Products				
Single Spot H19Kv7	.zip	.zip	.zip	.zip
Human 1.7Kv8	.zip	.zip		.zip
Human CpG 12Kv1	.zip	.zip		
Mouse 15Kv4	.zip	.zip	.zip	
Mouse 7.4Kv1	.zip	.zip		
Yeast 6.4Kv4	.zip	.zip		
Previous Layouts				
Single Spot H19Kv6	.zip	.zip	.zip	.zip
Single Spot H19Kv4	.zip	.zip		.zip
Human 19Kv6	.zip	.zip	.zip	.zip
Human 19Kv4	.zip	.zip		.zip
Human 19Kv3	.zip	.zip	.zip	.zip
Human 19Kv2.2	.zip	.zip	.zip	
Human 1.7Kv7	.zip	.zip		.zip
Human 1.7Kv4	.zip	.zip	.zip	.zip

[HOME](#) | [SITE MAP](#)

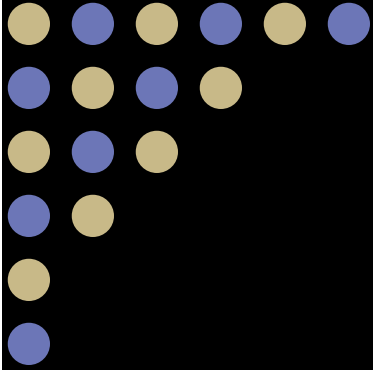


Microarray Centre



When the Website's Not Enough

The screenshot shows a web interface for the Microarray Centre. At the top right, the logo for the Microarray Centre, University Health Network, is displayed. Below the header, there is a navigation bar with 'Support Center' and 'My WebEx' tabs, and a 'Log In' button. A left sidebar contains a menu with 'Get Support' (sub-item 'Join Session'), 'Provide Support', and 'Assistance'. The main content area is titled 'Support Session' and features two buttons: 'Join a support session' (with an icon of three people) and 'Start a support session' (with an icon of a computer monitor). A 'POWERED BY WebEx' logo is centered below these buttons. The footer contains copyright information: '©2000-2004. University Health Network / Princess Margaret Hospital / Ontario Cancer Institute. All Rights Reserved.' and links for 'WebEx Privacy' and 'WebEx Terms of Service'.



Where Do We Go From Here?





Beyond Expression Microarrays

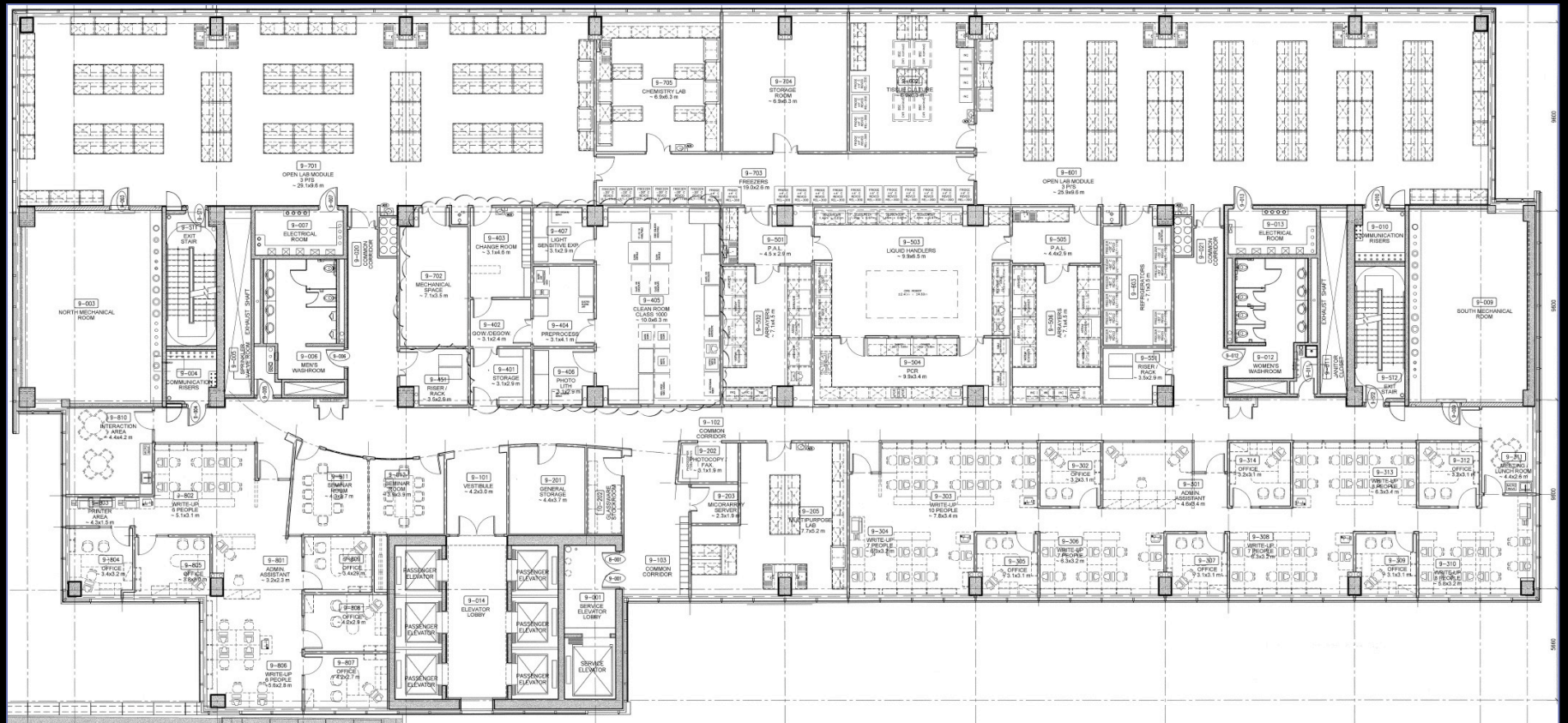
Transcriptome

Genome

Regulome
Omanome
Degradome

μ A

The Convergence Centre





Core Facility Keys to Success

- Work to keep ahead of the curve - R&D is critical
- Customer support needs to grow with customer base
- A constant flow of new products and services
- Everything is held together by informatics



The UHN Microarray Centre

Production

- Patrick Yau (Production Manager)
- Eric Ho
- Quyen Tran
- Tuyet Diep
- Robert Kardish
- Elizabeth Sakac
- Gurbaksh Basi (Tech Support)
- Stephanie Selders
- Joanne Walsh
- Christina Johnston
- Leslie Wyard

Quality Control

- Julissa Tsao

Engineering

- Sasan Raghizadeh (Manager)
- Yasin Bismilla

Administration

- Susan Alexander

Research and Development

- Mark Takahashi (Research Scientist)
- Pascale Macgregor (Research Scientist)
- Carolyn Modi (Project Manager)
- Robert Clum (CANVAC Core Coordinator)
- Krista Attridge
- Kelly Jackson
- Shani Mintzberg
- Monika Sharma
- Natalie Stickle
- James Paris
- Monique Albert
- Tonya Martin

Informatics

- Carl Virtanen
- Zhibin Lu
- Elizabeth Tillier (Assistant Professor)
- Thomas Liu
- Andrew Smith
- Orianna Wong

Thank-You

University Health Network Microarray Centre

http://www.microarrays.ca/

Apple .Mac News Citrix RIS OntoExpress Other... UHNMAC Affymetrix Maps Login Intranet Brycotech PocketMac ... Bookmarks

MICROARRAY CENTRE
University Health Network

about us products & services support services resource links contact

MICROARRAY CENTRE HOME | SITE MAP

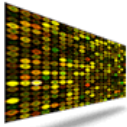
A LEADER IN MICROARRAY TECHNOLOGY.

NEWS

17/12/03
The UHN Microarray Centre Launches Gene Expression Service
The UHN Microarray Centre has officially launched their full Gene Expression Service. For more details, [click here](#).

17/11/03
The UHN Microarray Centre to Host MGED 7
The UHN Microarray Centre will be hosting **MGED 7** in Toronto, September 8-11, 2004. For more information on MGED, [click here](#).

MICROARRAY CENTRE

 The Microarray Centre at The Ontario Cancer Institute, University Health Network is a leader in Canadian microarray technology. We are dedicated to providing high quality microarrays, technical support and service to Canadian researchers. Access to high quality microarrays will allow our Canadian researchers to be on the cutting edge of genetic research.

[Read more >](#)

NEWSLETTER

On occasions we may need to distribute new and important information to our users. If you use our microarrays, please sign up to our newsletter, it is the most effective and efficient way to receive information from us.

[SUBSCRIBE TO OUR NEWSLETTER](#)

Visit us at
www.microarrays.ca