

# FARG 2006 SURVEY

## A Comparative Study of Methodology and Instrumentation Uses of Laboratories Performing DNA Fragment Analysis

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The 2006 survey was posted  
on the SurveyMonkey.com  
web site. It consisted of 21  
multiple choice or short  
answer questions and was  
based on a survey done by  
**FARG** in 2003



# The 2006 survey was divided into two distinct parts

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- Laboratory Overview
  - To define the laboratory personal, funding, applications and instrumentation currently being used by the survey participants
- Genotyping Information
  - To define similar information as it relates to the Genotyping being done by the participants



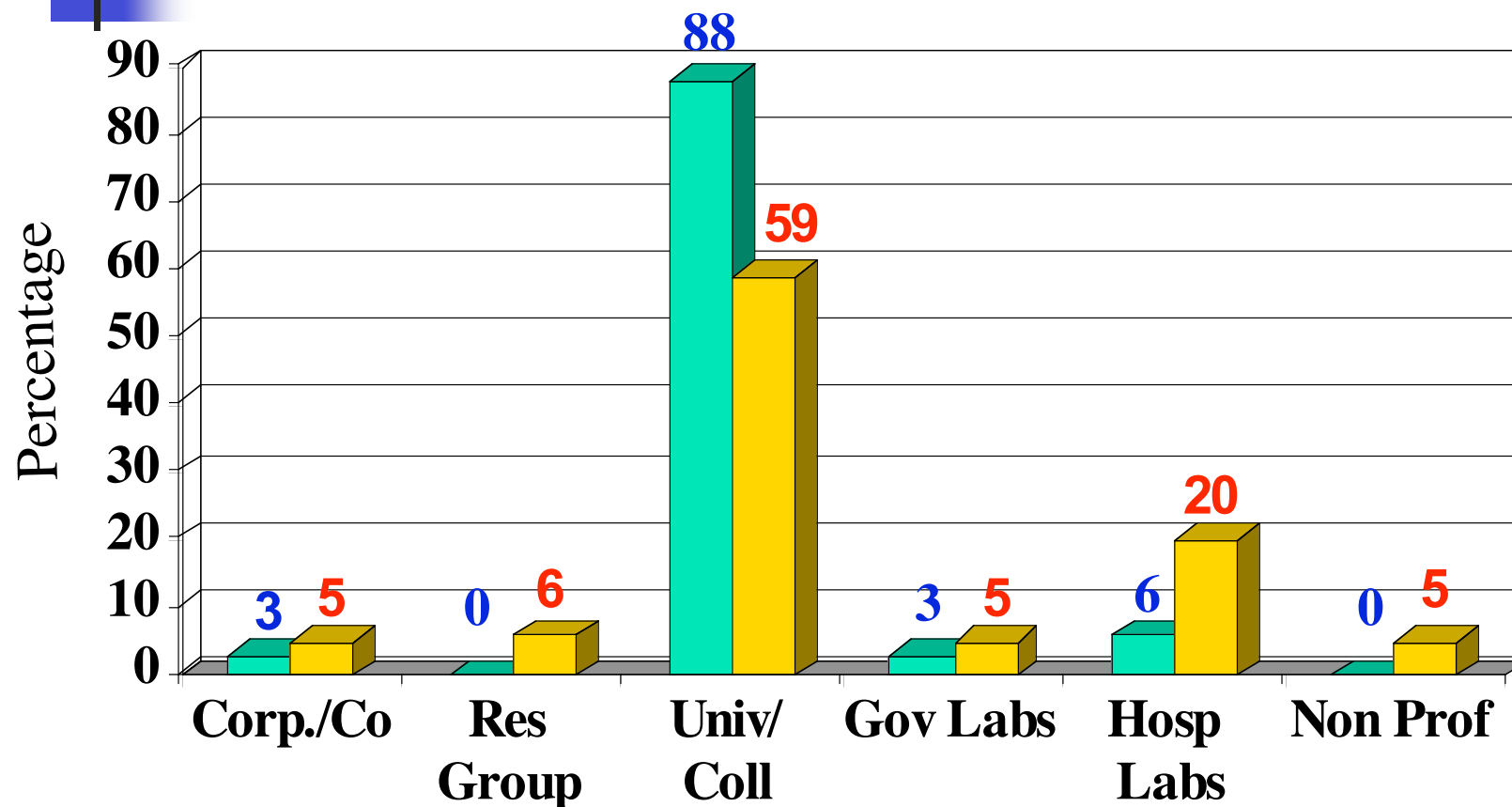
# Survey Participants

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- 1999 Survey had 34 Participants
- 2003 Survey had 36 Participants
- 2006 Survey had 42 Participants

# Survey Participants

2003 2006



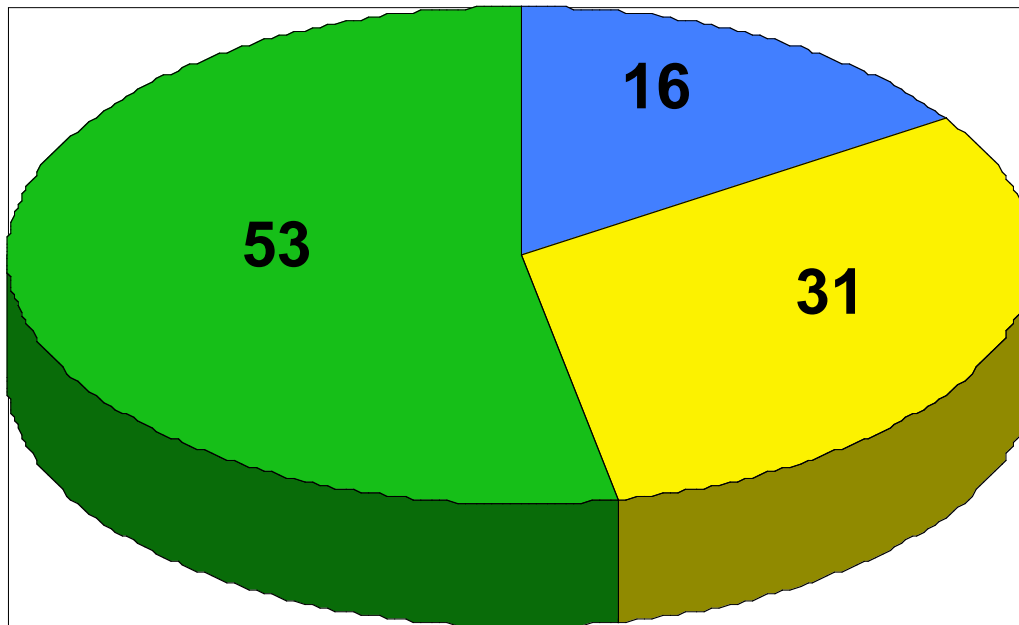


# Lab workers

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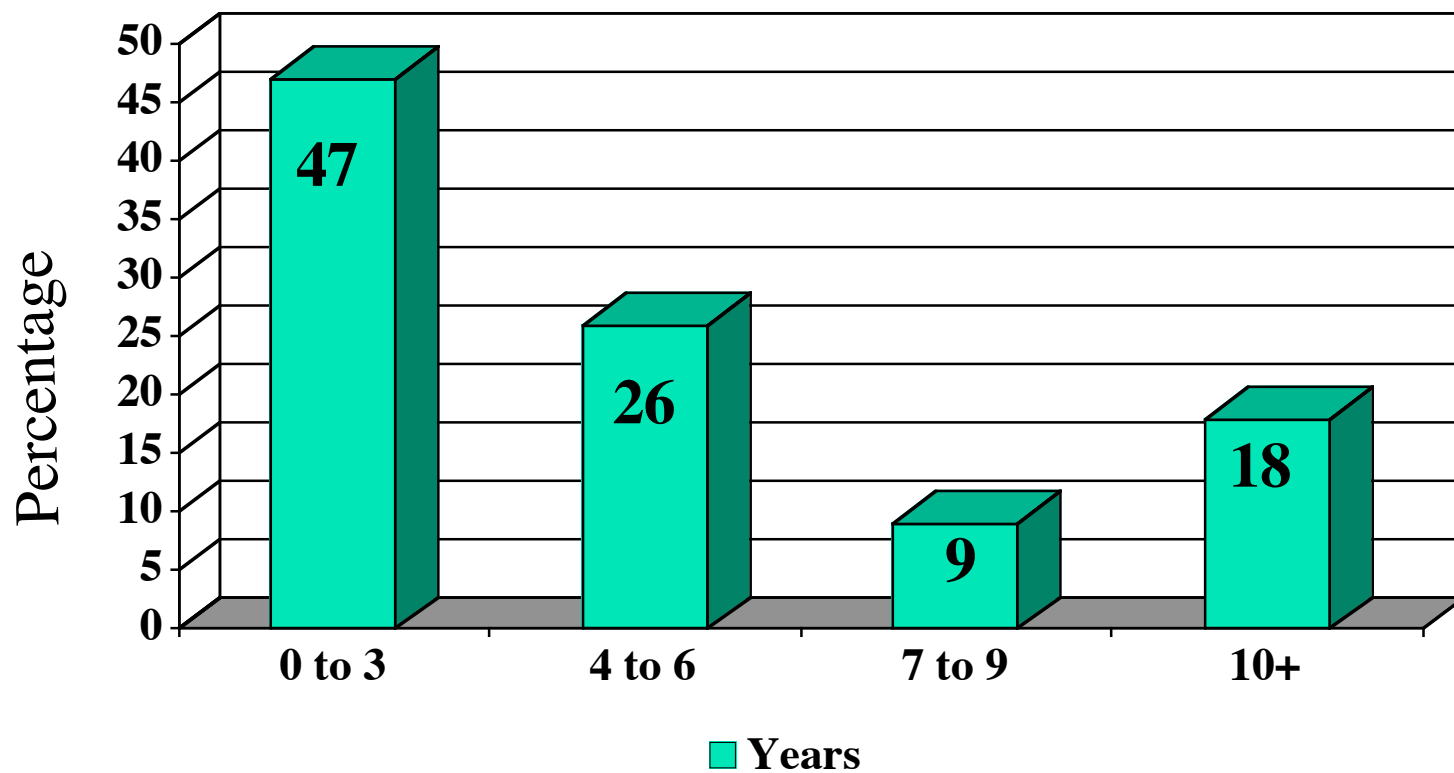
- **Mean in 2003 = 2.8**
- **Mean in 2006 = 4.3**
- **Mean Genotype 2006 = 2.1**

# Lab Workers

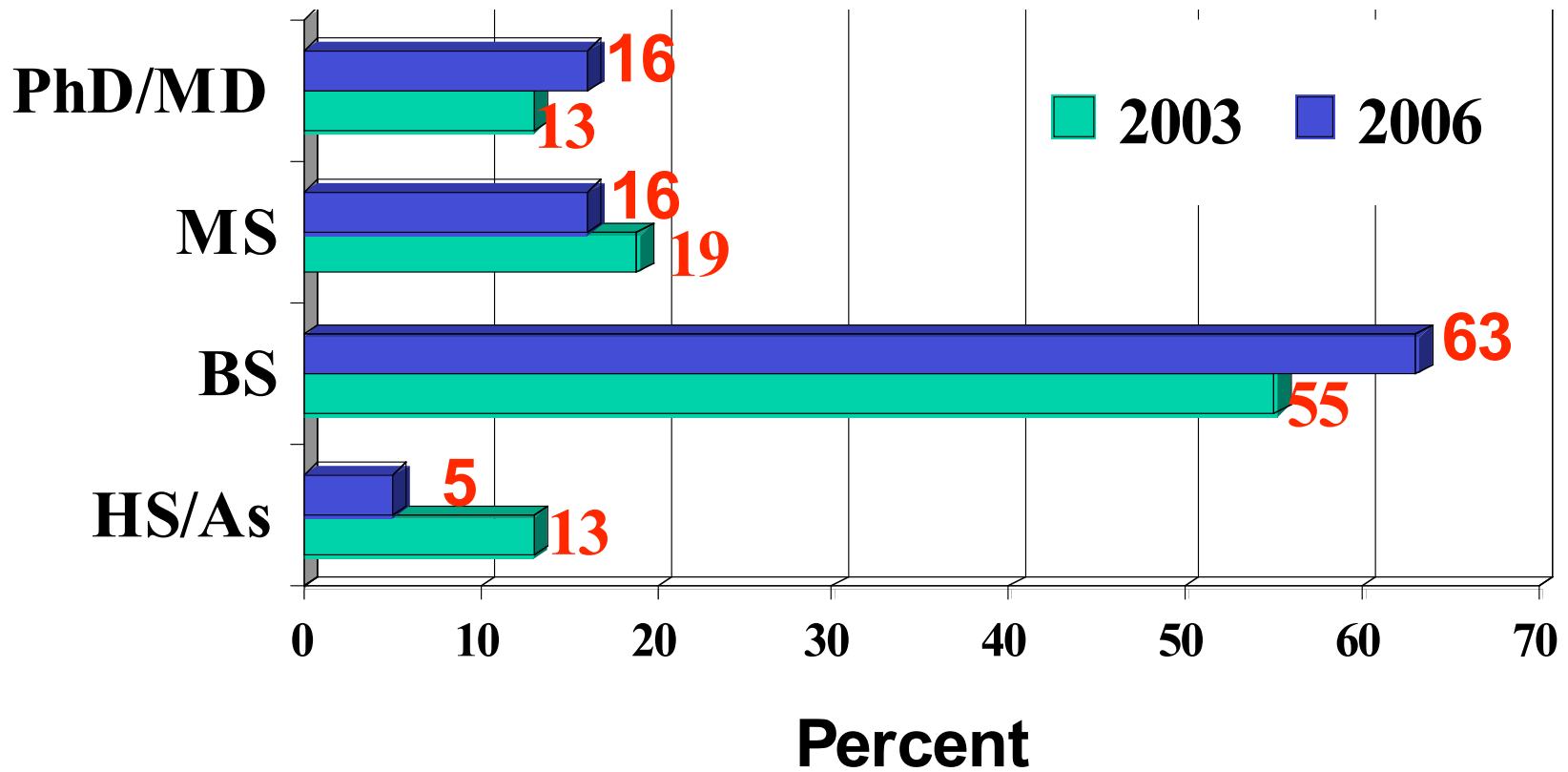


- Head of lab
- Sr Lab Per
- Lab Per

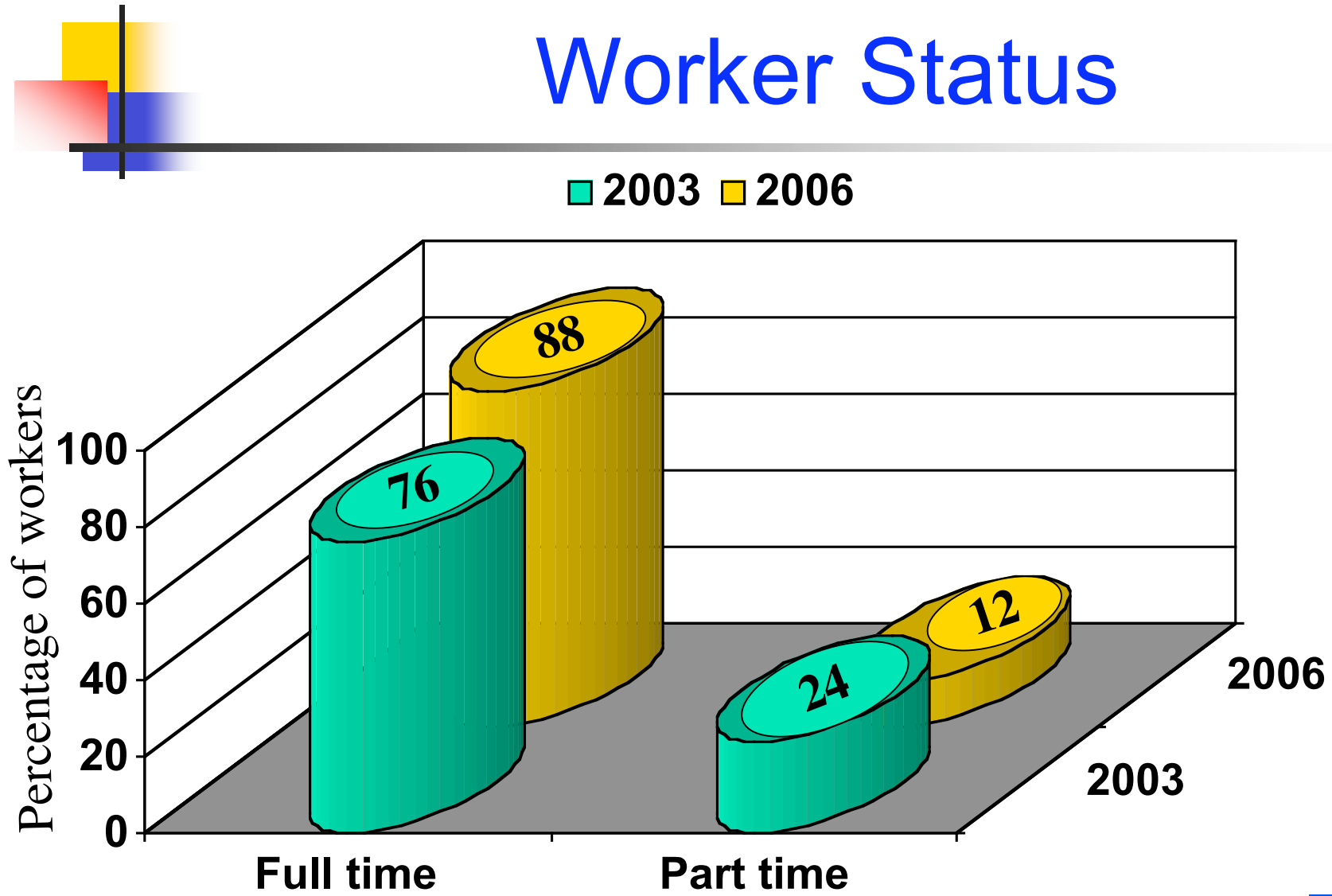
# Lab Experience



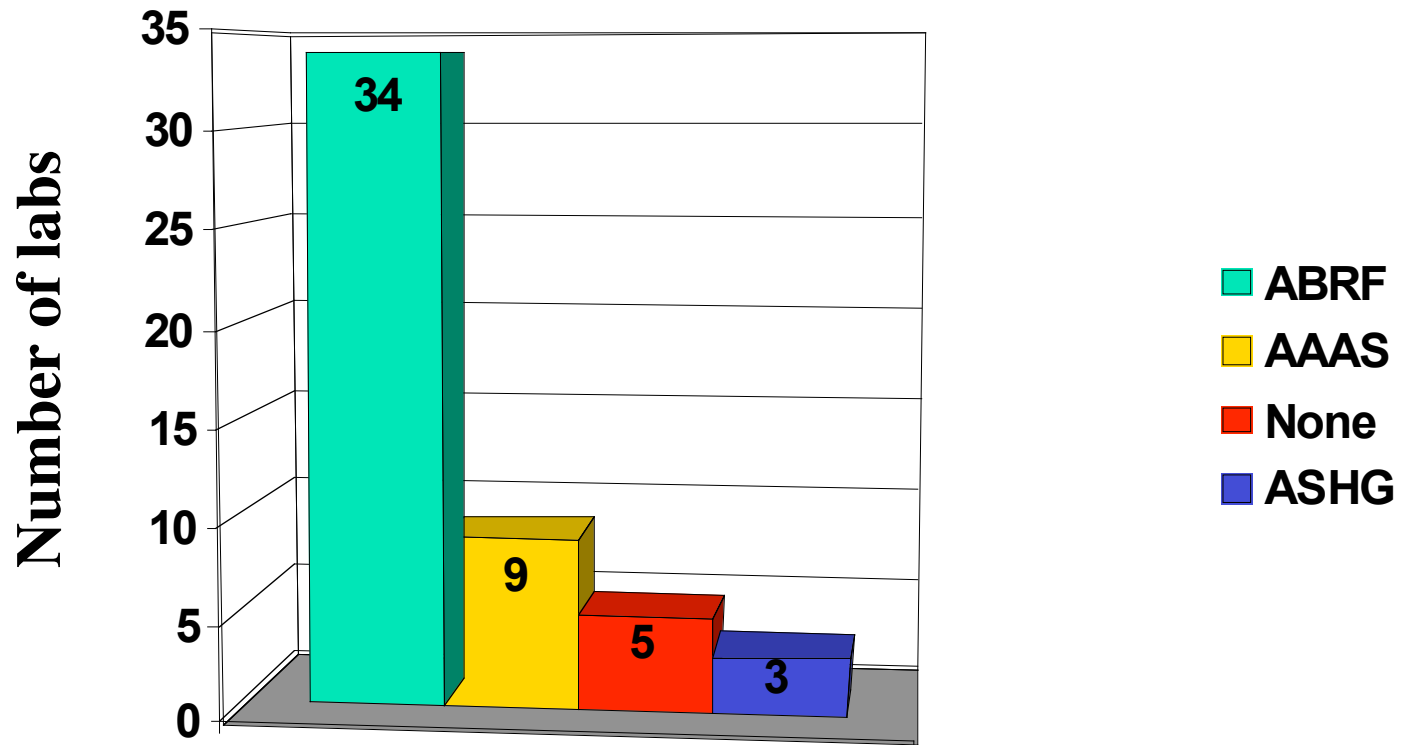
# Education



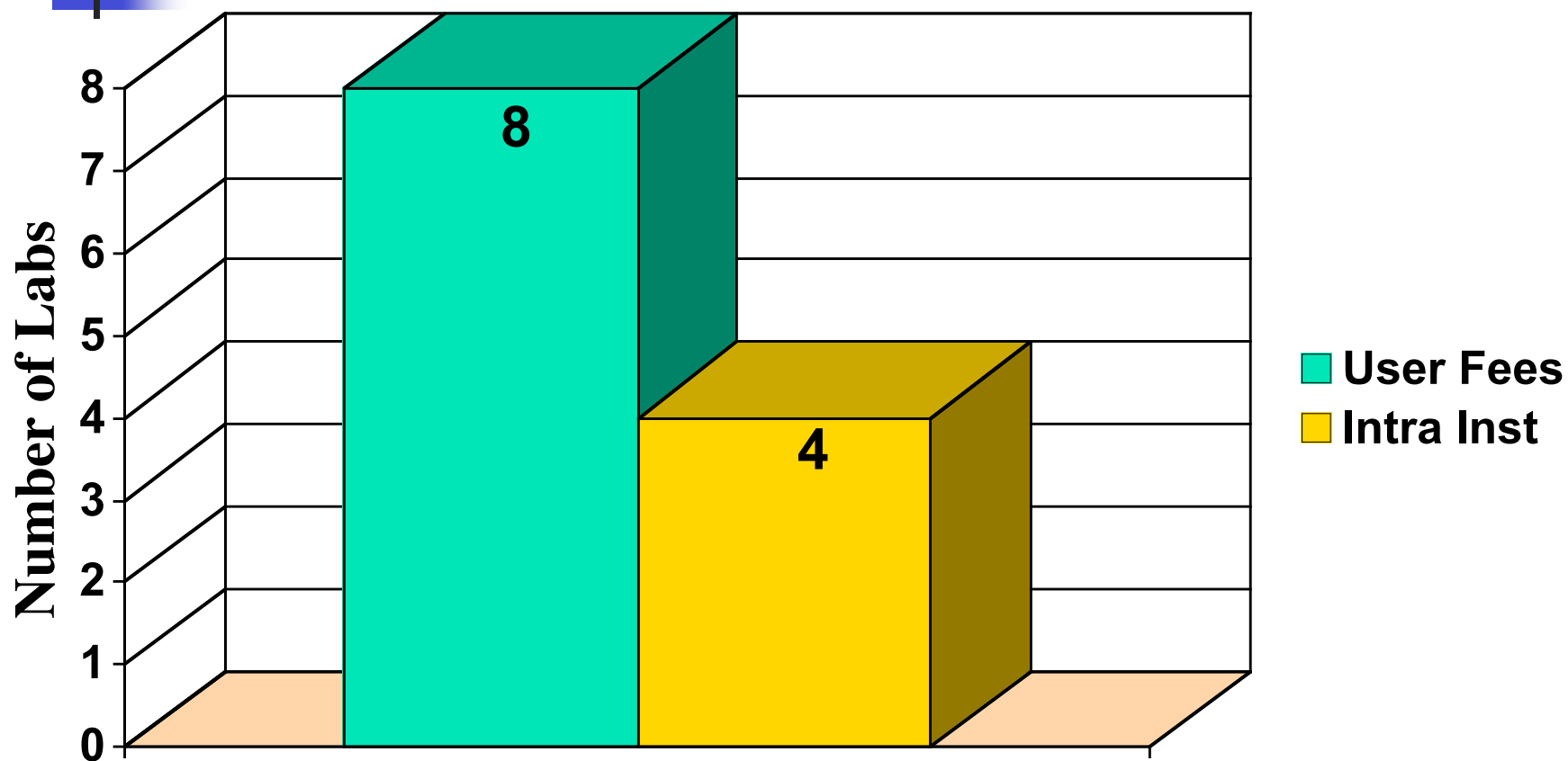
# Worker Status



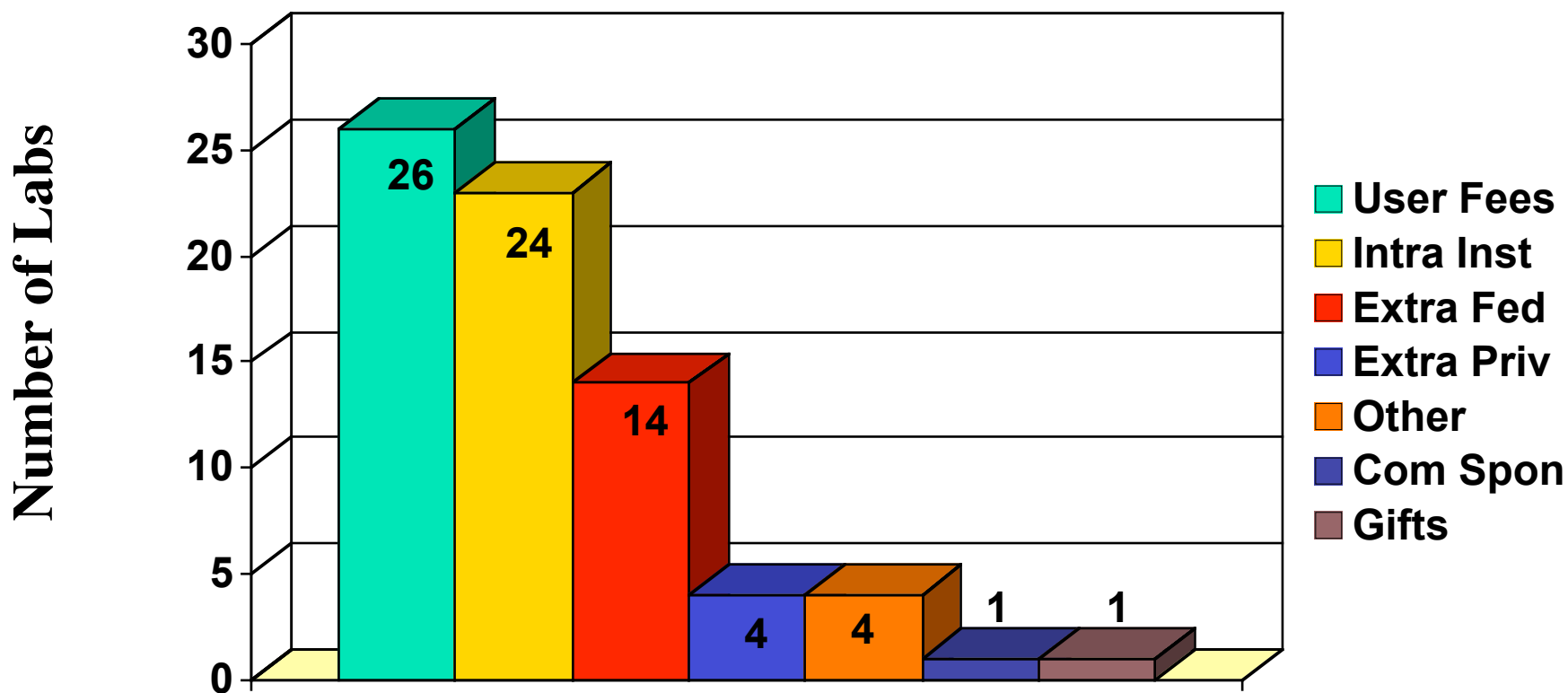
# Professional Organization Memberships



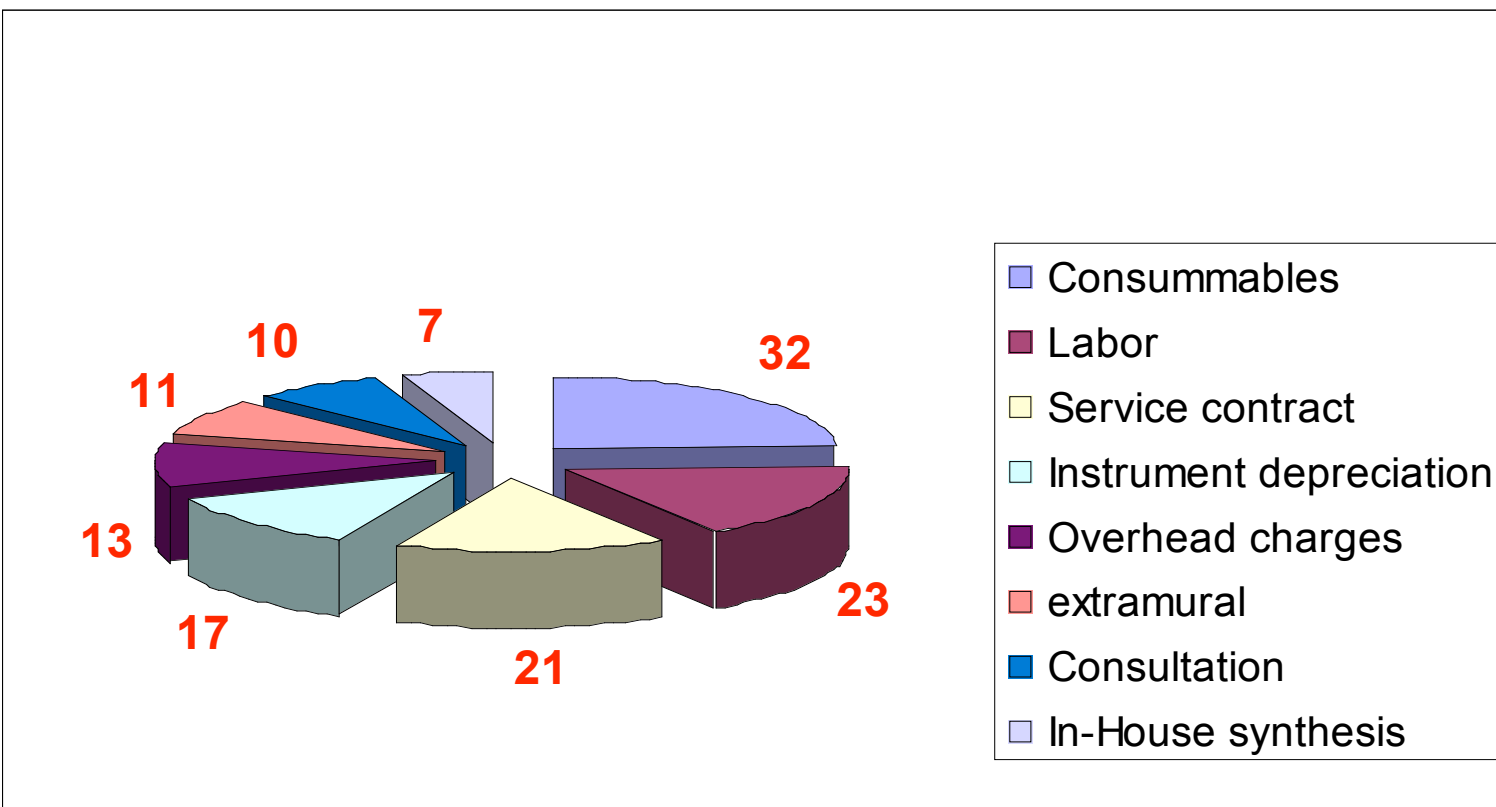
# Single Funding Sources



# Multiple Funding Sources



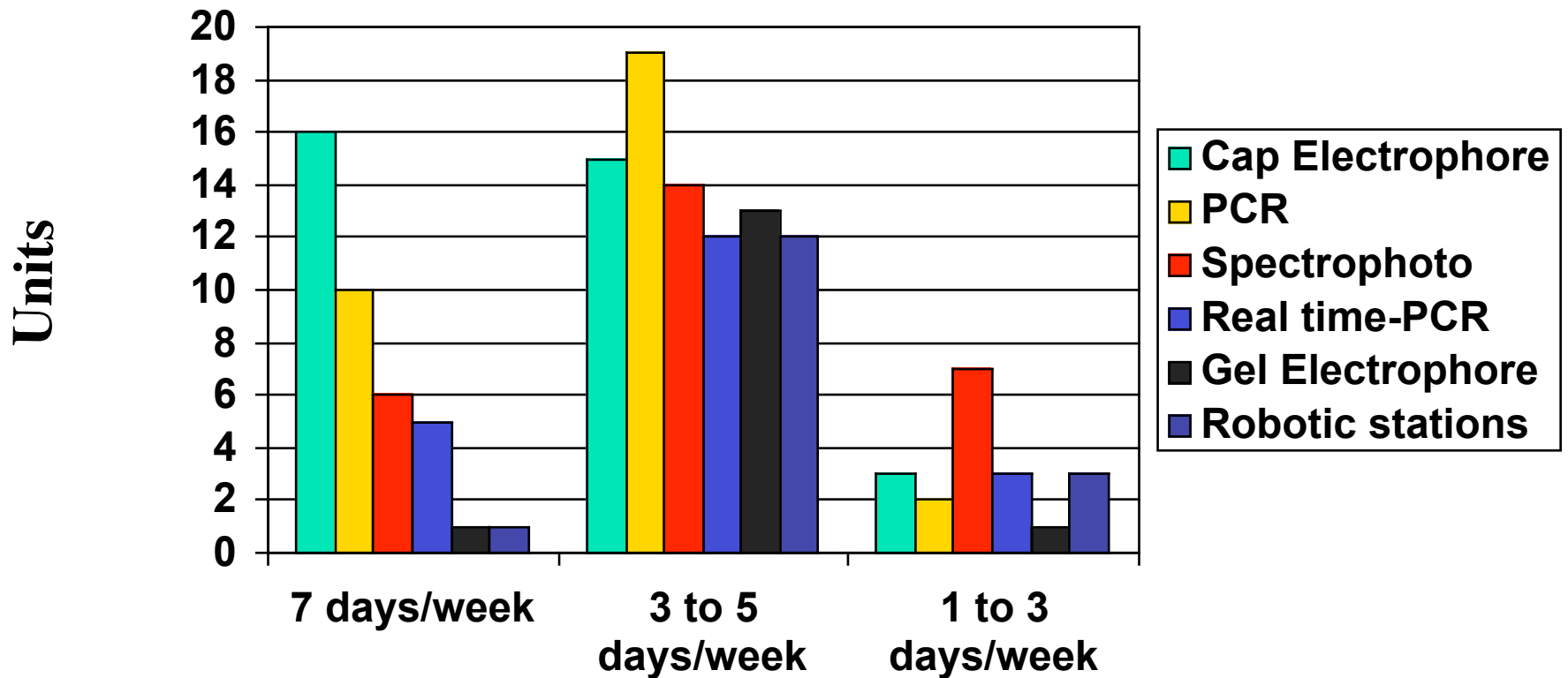
# Fee Components



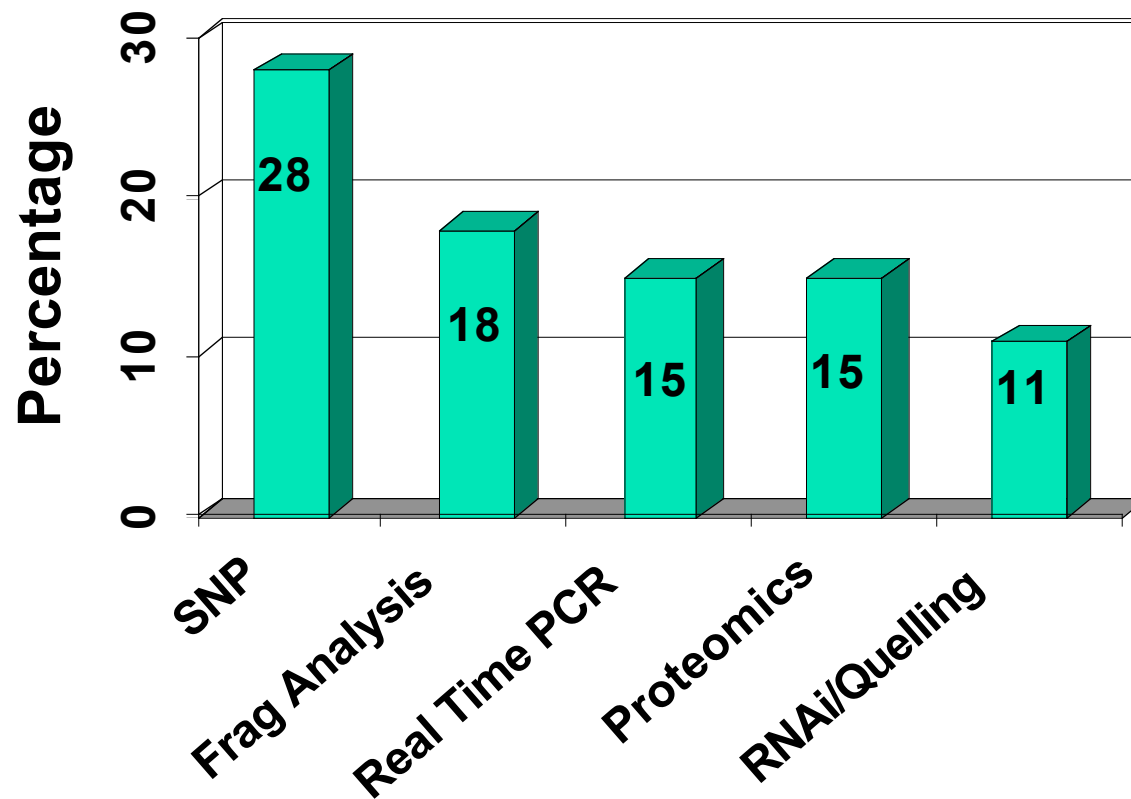
# Technology Plethora

<b>CE</b>	35	<b>Microarrays</b>	8
<b>PCR</b>	31	<b>Chip Analy Inst</b>	7
<b>Spectrophoto</b>	30	<b>Oligo Syn</b>	7
<b>RT-PCR</b>	27	<b>Cell culture</b>	7
<b>Ag Gel Elect</b>	26	<b>HPLC</b>	7
<b>Robotics</b>	22	<b>2D gels</b>	6
<b>Imaging</b>	13	<b>Mass Spec</b>	6
<b>Slab gels</b>	11	<b>Protein Syn</b>	1

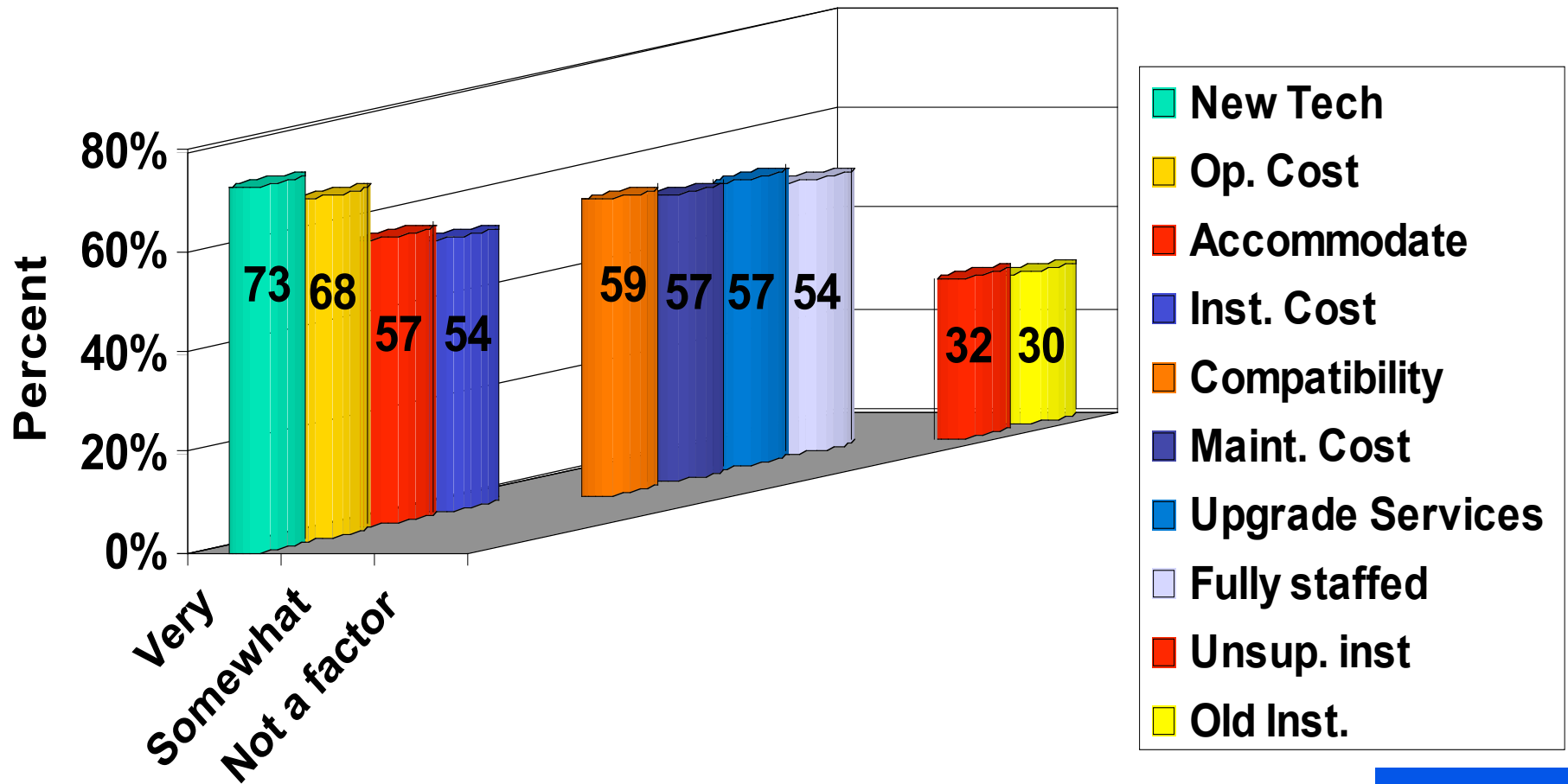
# Equipment Usage



# Applications to be Added



# Factors of Equipment Purchases



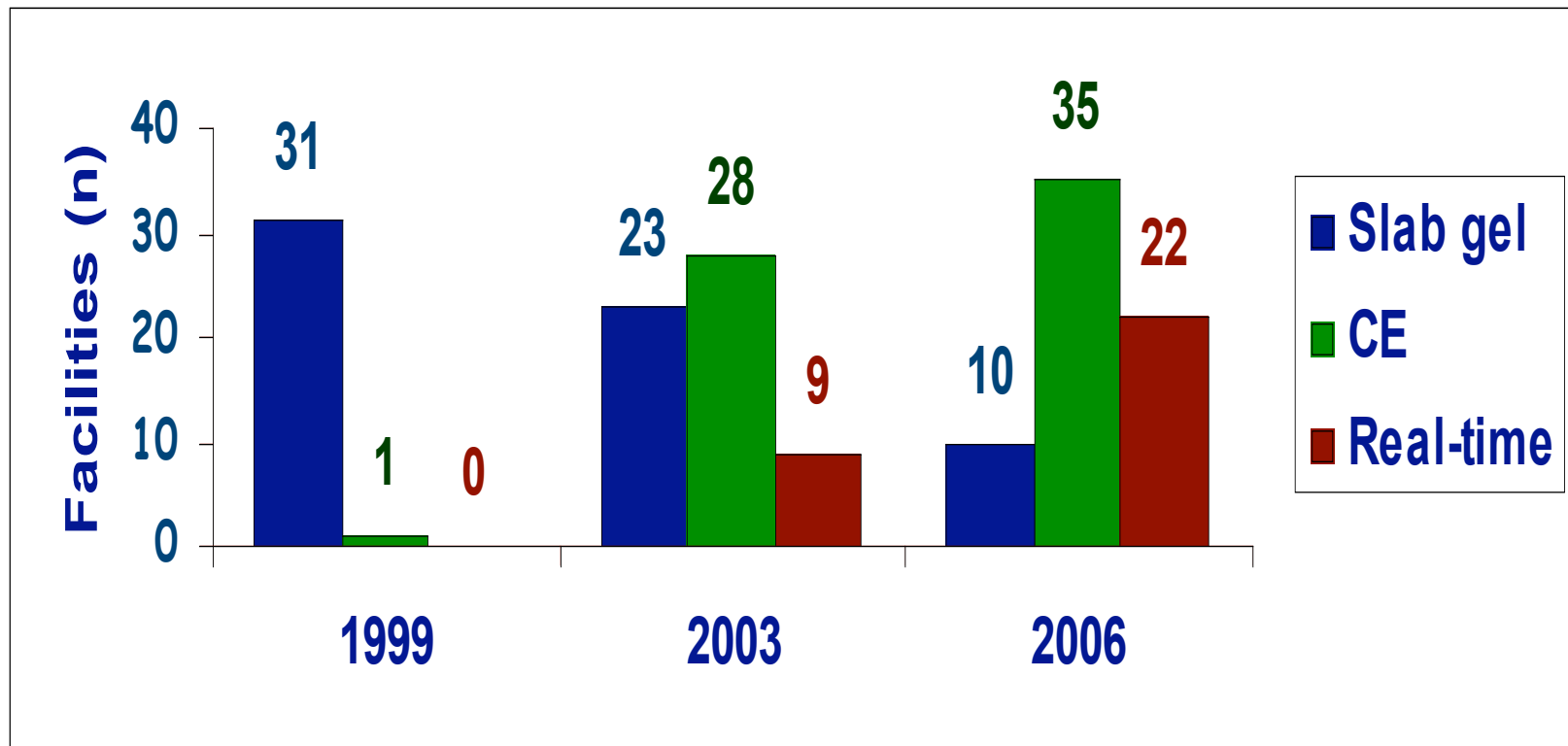


# Genotyping Unit

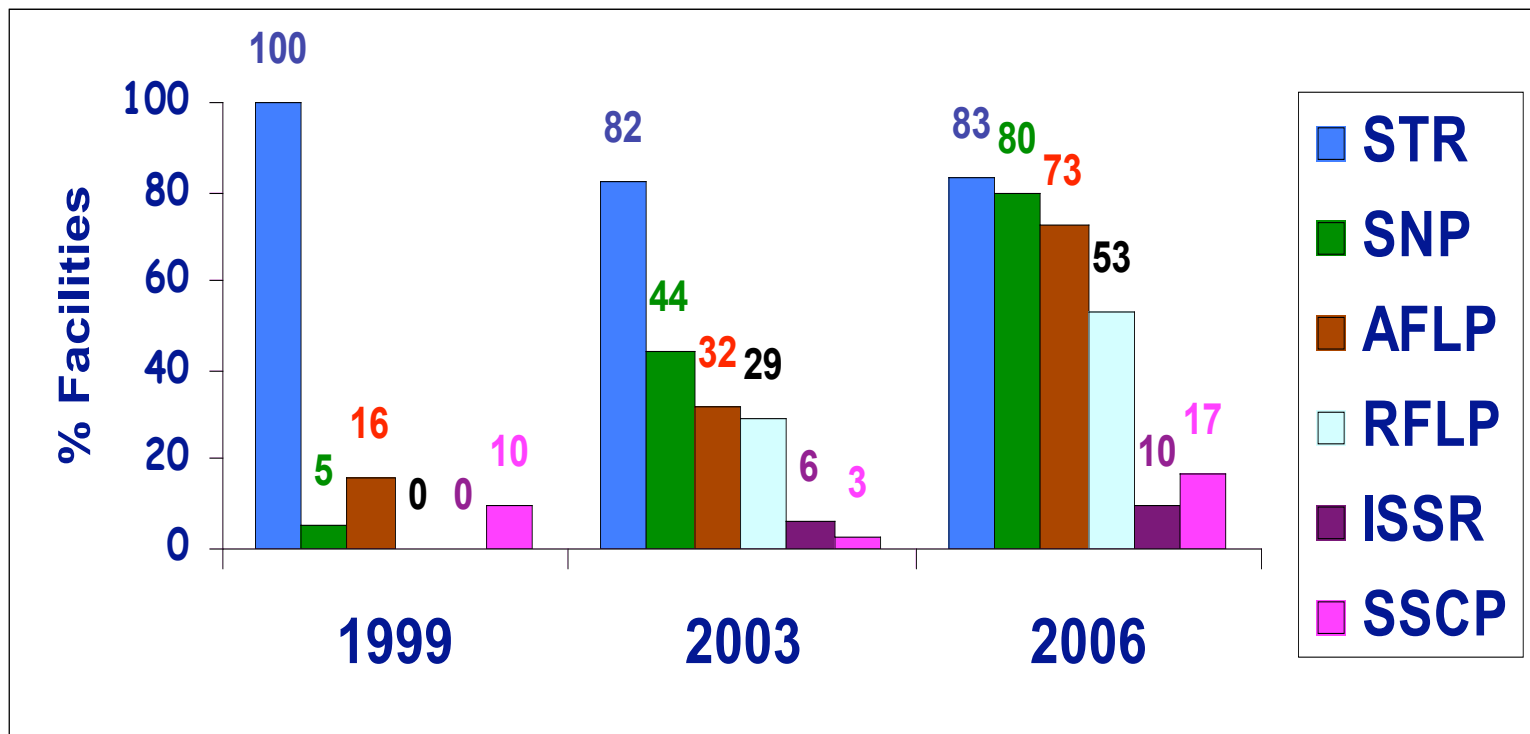
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**Learn the full story.....**

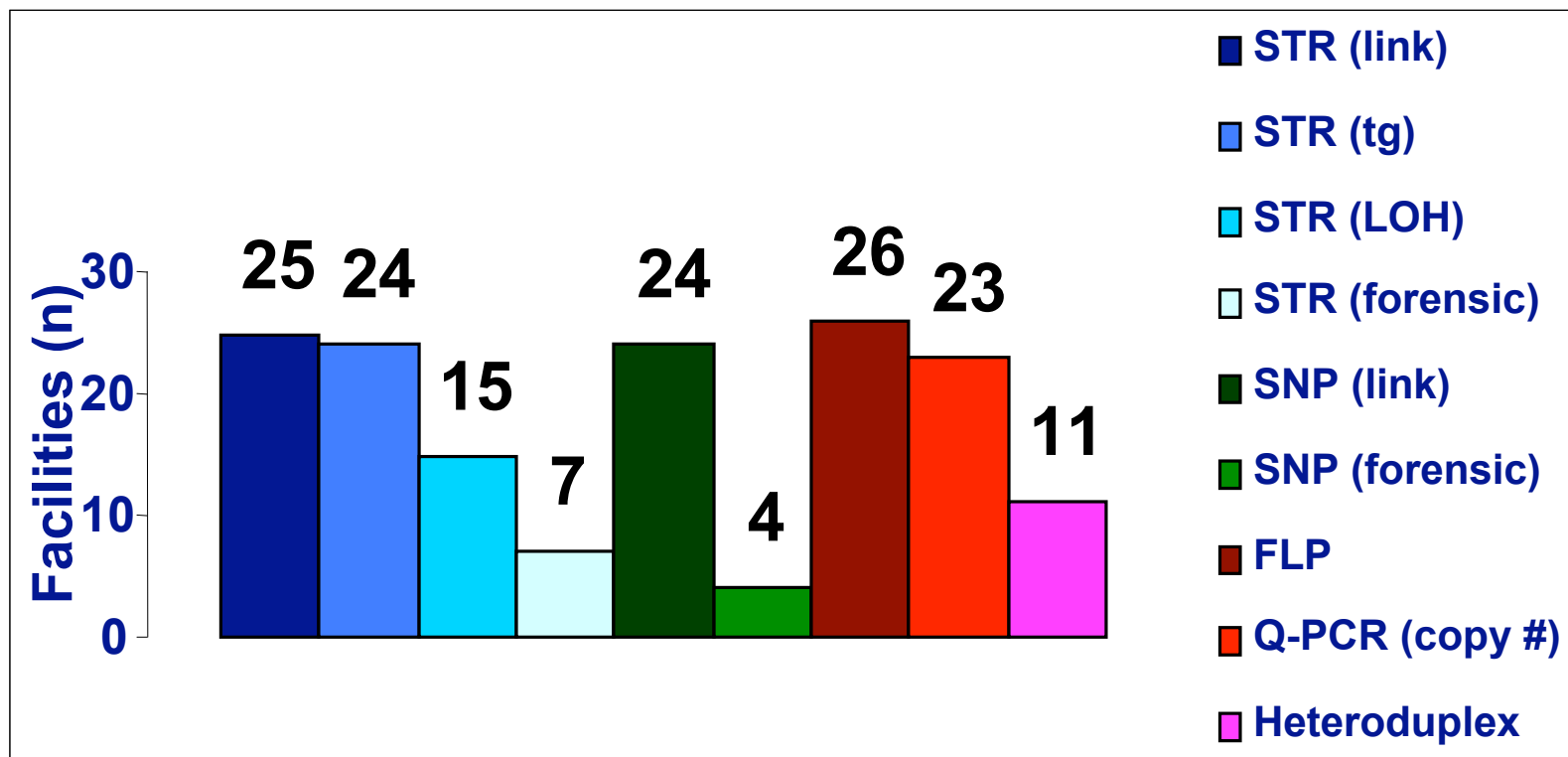
# Platform Trends

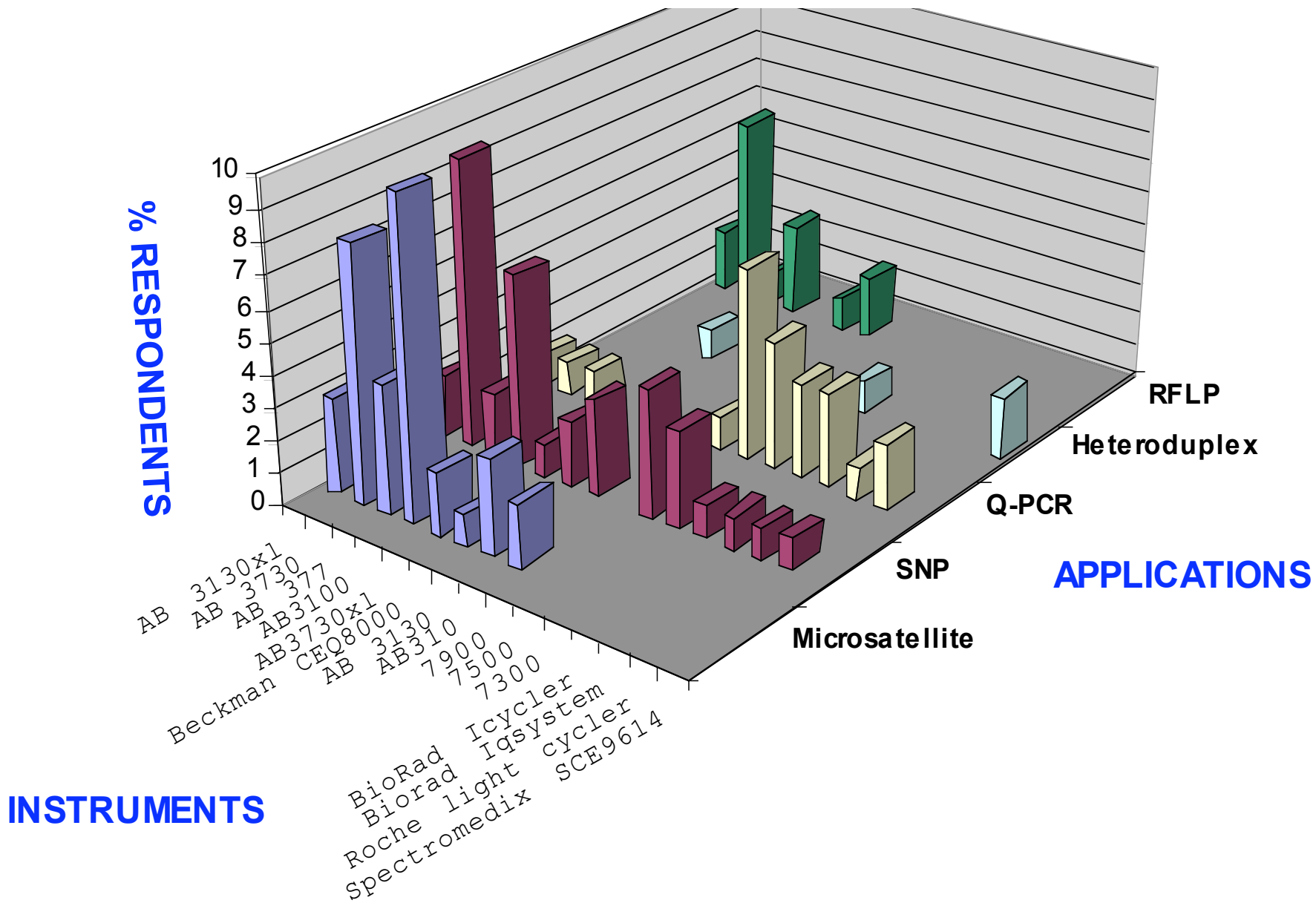


# Application Trends

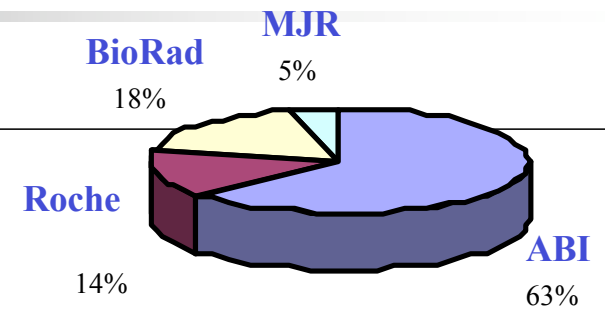


# Genotyping Applications

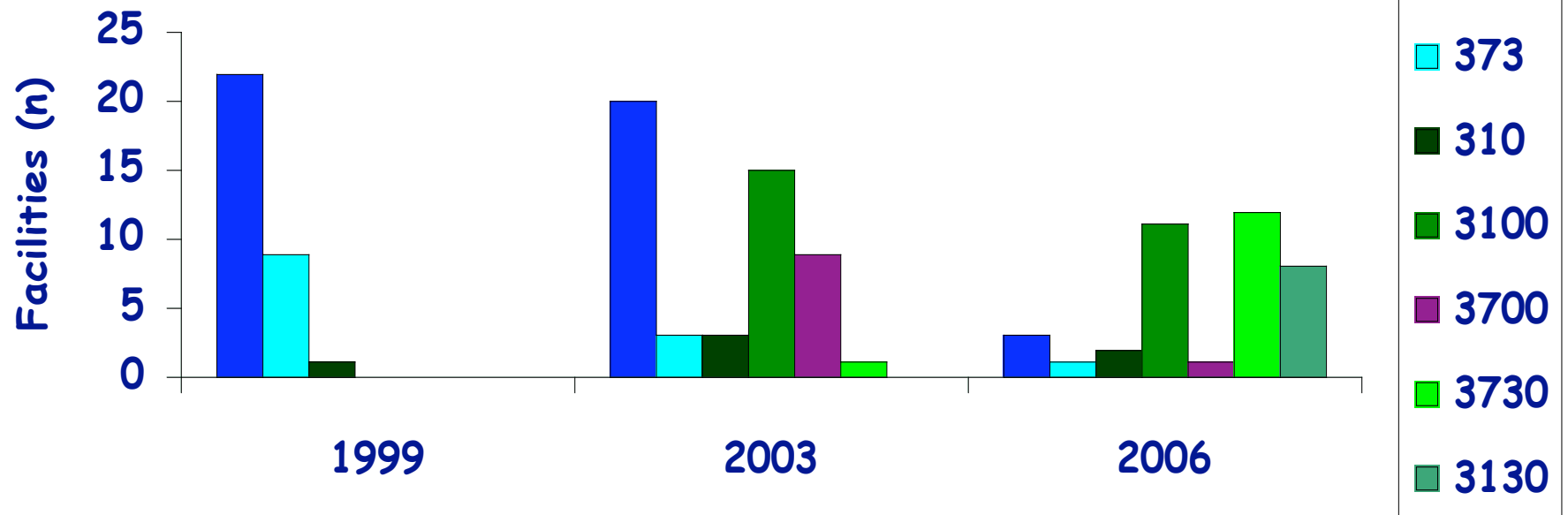


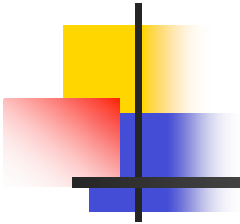


## Real Time Instrument

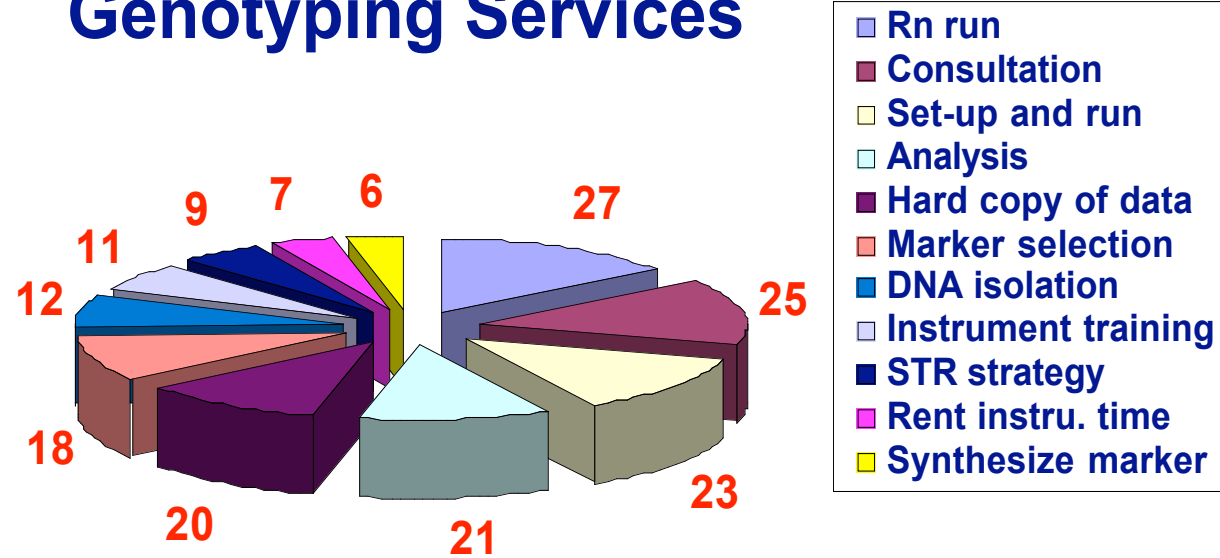


## ABI Instrument Trends

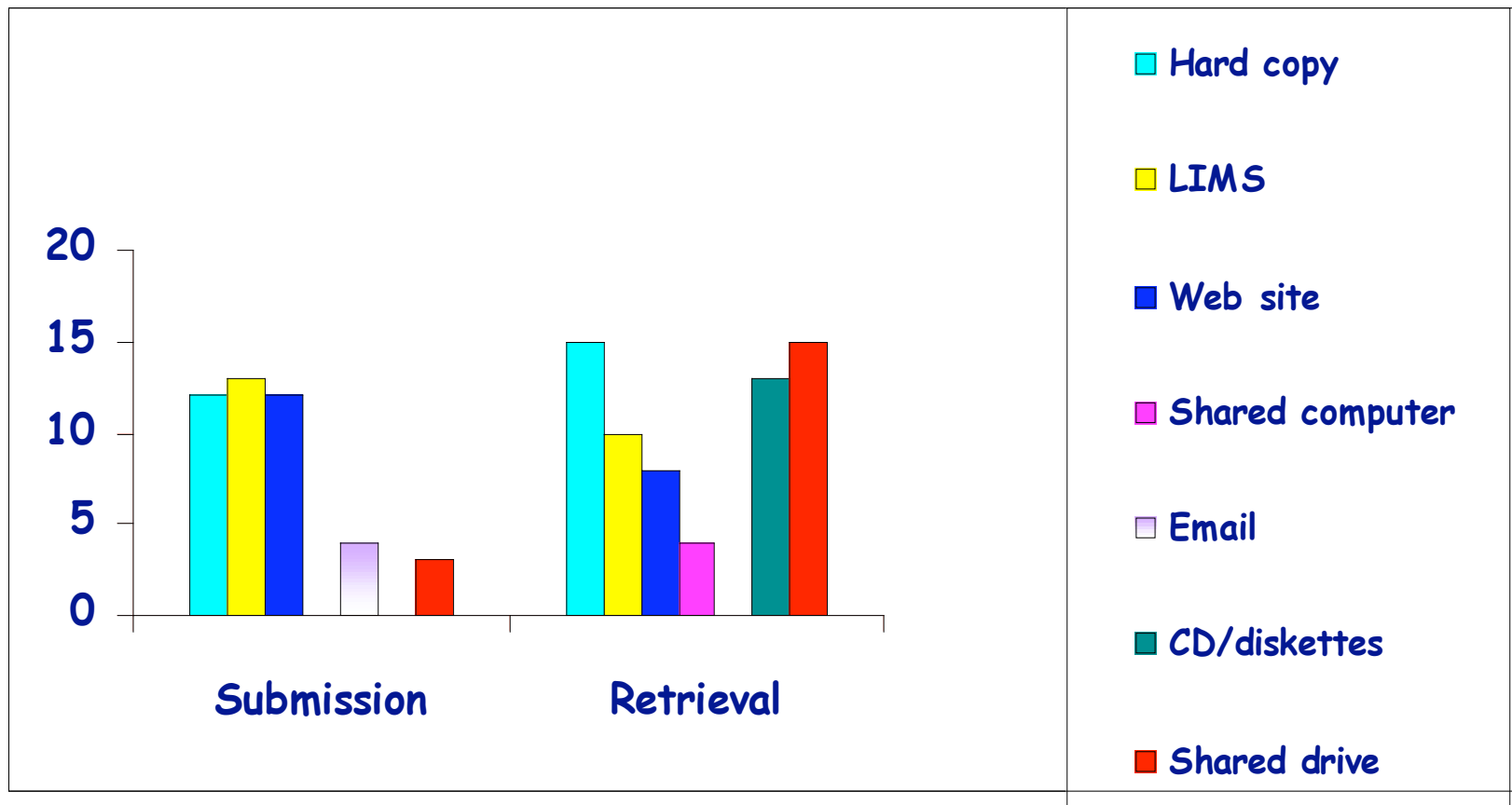




# Genotyping Services



# Customer interface





# The Full Story...

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- **Response Sample:** 42 respondents
  - 80% of the participating labs are also member of the ABRF=> trends are relevant to other core labs within this professional association.
- **Trends in Genotyping Services:**
  - In the post genomic era SNPs have become progressively more widely utilized.
  - 80% of the cores in our sample are currently using SNP as compared to 5% six years ago.
  - 29% of respondents reported that they were planning to add new SNP services.
  - New methods for mutation discovery (e.g. heteroduplex) are beginning to appear in a small minority of the laboratories.

# Story Continued...

## ➤ **Major Technological Approaches:**

- Capillary electrophoresis is the platform of choice
- Slab gels resist
- Real time PCR is the rising star
- Complementary platforms (pyrosequencing, DHPLC, arrayed platforms and bioanalyzers).

## ➤ **Major Technology Platforms:**

- The ABI genetic analyzers are dominating
- However, alternative platforms and new manufacturers are appearing
  - Real time PCR instruments (AB, BioRad, Roche and MJR)
  - Licor systems, Biotage PSQ MA, Transgenomics WAVE, Beckman Coulter CEQ8000, Spectrumedix SCE9614, Illumina bead system, Affymetrix Chip, and Agilent 2100 bioanalyzer.

# FARG HALL OF FAME



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- Participants for ABRF 1999, 2003 and 2006

- Margaret Robertson for sticking with us yet another term

- Special appreciation

Bob Keefe , Rebecca Scholl

- Audience of ABRF 2006



# FARG-DSRG-NARG Joint Study Proposal

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**DNA Variant Screening  
Strategies: A Multidisciplinary  
Pilot Study**



# DNA Variants Project

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- Single Nucleotide Polymorphism
  - SNP genotyping
  - SNP association studies
  - SNP medical application
  - SNP forensic
  - Etc..



# Investigational Tools

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- DNA Sequencing
- Real Time PCR
- Single Base Extension methods
- Pyrosequencing
- Heteroduplex Analysis
- Fragment Analysis
- Bead Technologies
- Etc...



# Selection Dilemma

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How to choose the method(s) most suitable to one's needs?

What are the specific advantages and limitations of even the most routinely used mutation detection techniques?



# Proposed Study Design

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- Phase 1: Pilot study
  - FARG
  - NARG
  - DSRG
- Phase 2: Launch validated study



# Pilot Study

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- Prepare one set of samples of known genotype
  - Point mutation (SNP)
  - Other polymorphism (?)
- Prepare artificial mixtures
  - Test sequence environment vs. technology/chemistry
  - Plasmid or genomic DNA (?)



# Pilot (continued)

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- Analyze
- Compare
- Contrast
  
- Feasibility of Phase 2?



# Phase 2

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- Open Study
  - ABRF members
  - Non-ABRF members
  
- ABRF 2007
  - Pilot Study-Tutorial
  - New technologies could be added (?)



# Open Discussion

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- What do you think?
- Would this type of studies be helpful to you?
- Comments/Concerns
- Better ideas .....