THEORETICAL AND COMPUTATIONAL BIOPHYSICS GROUP

2005 BioCoRE SURVEY REPORT

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EXECUTIVE SUMMARY

The BioCoRE 2005 Survey was announced on March 7, 2005 to 256 registered users and ran through March 29 of that year. Survey questions examined user satisfaction, the impact of the collaboratory on work quality, and user ratings of existing and planned features; demographic questions were asked as well.

- A total of 61 responses were returned by the survey, yielding a response rate of 28.5%.

- Survey results indicate that the majority of BioCoRE users are affiliated with academic institutions (87.9%) and use BioCoRE for research purposes (70.7%) with more around one-third indicating research funded at least in part by NIH (36.2%). Most BioCoRE users are the sole BioCoRE user at their site (31.6%), and consider themselves proficient software users (72.4%).

- A majority of users are satisfied with BioCoRE – 72.4% agreed or strongly agreed with the statement "I am satisfied with BioCoRE".

- BioCoRE was judged to have a positive impact on work quality – 63.8% of respondents agreed or strongly agreed with the statement "I am satisfied with the quality of the work I do within BioCoRE".

- A majority of respondents, 63.8%, agreed or strongly agreed with the statement "BioCoRE is relevant to my work".

- Users without NIH funding were significantly more satisfied with BioCoRE than those with NIH funding, those these groups were not dissimilar in their ratings of the quality of their work performed within BioCoRE, nor their estimations of the relevance of BioCoRE.

BioCoRE (Biological Collaborative Research Environment) is a collaborative work environment for biomedical research, research management and training. A resource-centered platform, BioCoRE offers scientists, working together or alone, a seamless interface to a broad range of local and remote technologies such as discipline-specific and general tools, data, and visualization solutions. The BioCoRE home page, http://www.ks.uiuc.edu/Research/BioCoRE/, at the TCBG web site provides more information about the program. The BioCoRE 2005 Survey is part of an ongoing effort (similar surveys were conducted in 2002 and 2003) to ensure that BioCoRE is up to date, relevant, and of high quality by collecting and analyzing user opinion about the application. BioCoRE users were identified via registration records, and contacted via e-mail with requests that they complete an on-line survey about BioCoRE (see locations below for a copy of the survey) during March 2005. The following report details the results and administration of the survey.

BioCoRE 2005 Survey (complete copy)

A link to the survey form the users completed is available here. Note that for analysis, interpretation and review purposes that all references to the items within the report are based on the numbering of the items as was used in the original survey.

BioCoRE 2005 Survey
http://www.ks.uiuc.edu/Research/biocore/spring2005survey/txt/survey2005.html

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User profile characteristics of those answering the survey are illustrated below:

- 87.9% of users have academic affiliations
- 36.8% are funded at least partially by NIH
- 71.9% use BioCoRE for research purposes
- 31.6% are the sole user of BioCoRE at their site
- 72.4% identified themselves as proficient in the use of software.

Figure 1: BioCoRE User Characteristics

AFFILIATION

Non-academic
12.2%

Academic
87.9%

N= 51 academic, 7 non-academic

NIH FUNDING STATUS

NIH funded
36.8%

No NIH funds
63.2%

N= 21 NIH funded, 36 no NIH funds

PRIMARY USE OF BIOCORE

Other
29.3%

Research
70.7%

N= 41 research, 16 other

NUMBER OF USERS AT SITE

21+
22.8%

1
31.6%

11-20
7.0%

2-4
21.1%

5-10
17.5%

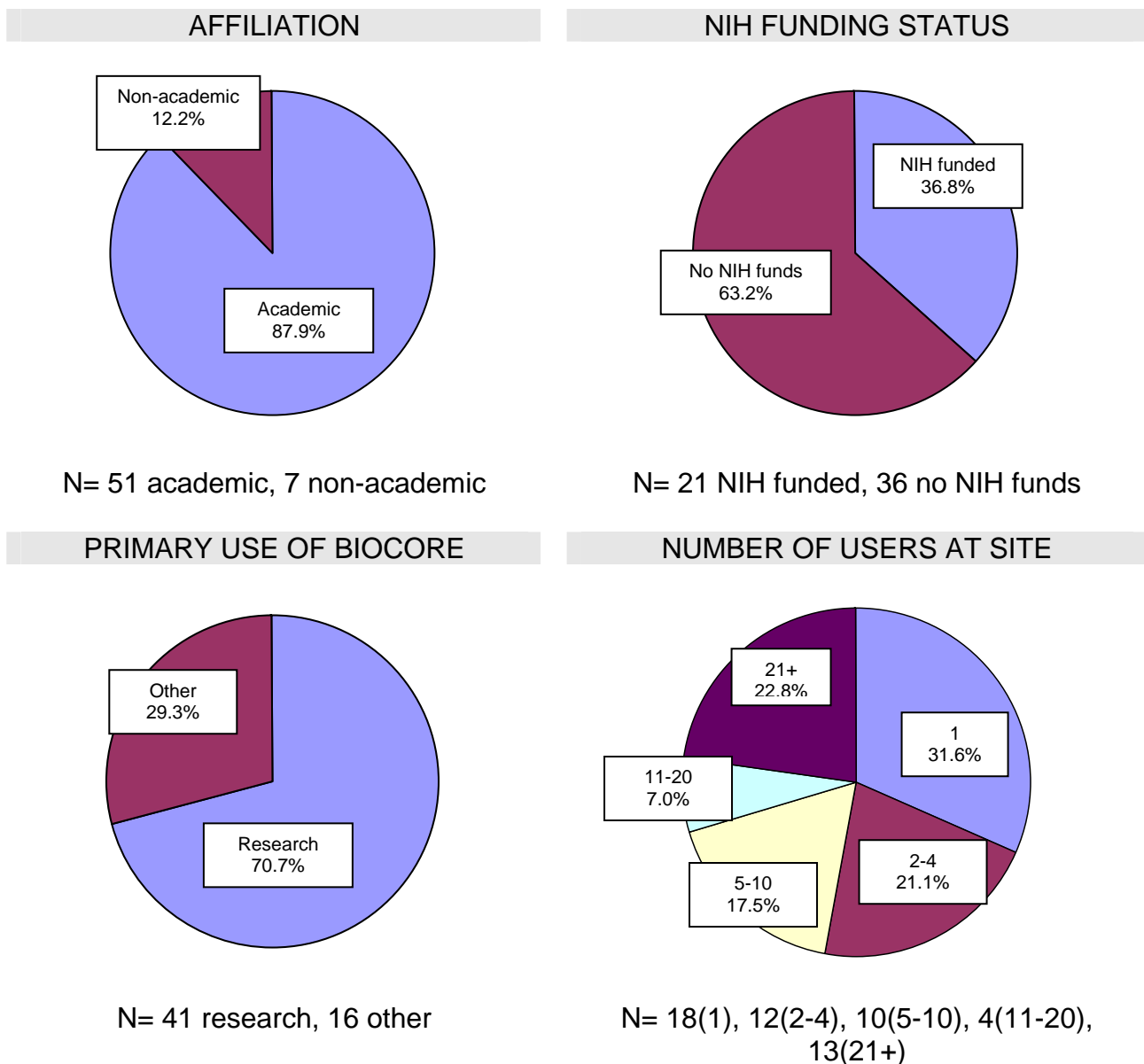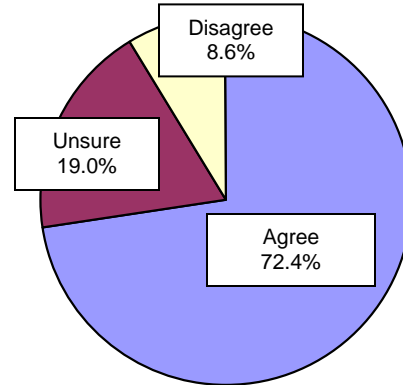N= 18(1), 12(2-4), 10(5-10), 4(11-20),
13(21+)

Figure 1: BioCoRE User Characteristics, continued
SOFTWARE PROFICIENCY

Q8a: "I am a proficient software user."

A majority, 72.4%, agreed or strongly agreed with the above statement. 19.0% were unsure of their proficiency and 8.6% indicated no proficiency in using software.
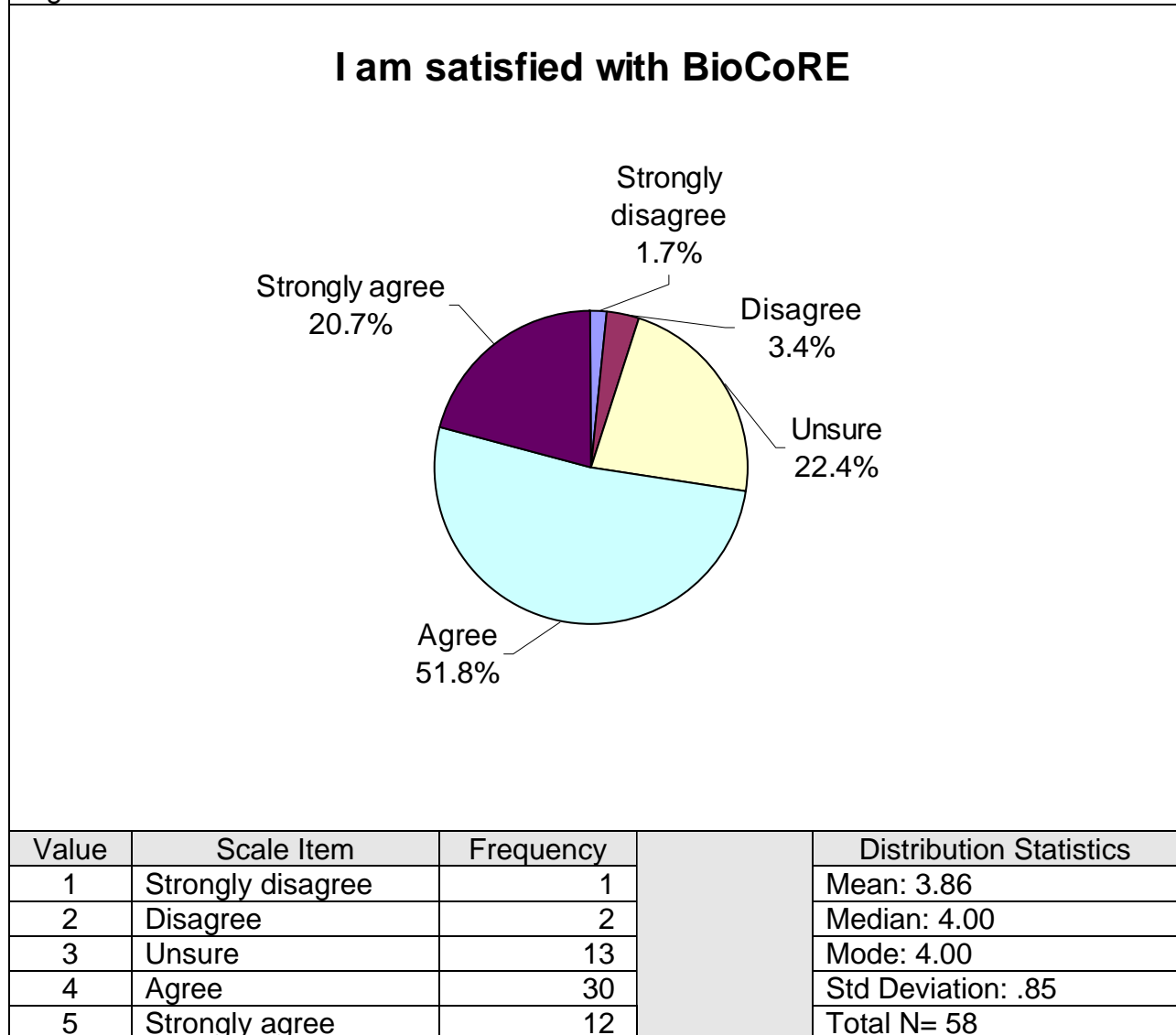
- A majority of users are satisfied with BioCoRE – 72.5% agreed or strongly agreed with the statement "I am satisfied with BioCoRE" (Q8). See Fig. 2.

- Mean satisfaction was 3.86 on a 5-point scale (1=strongly disagree, 5=strongly agree). Statistical analysis reveals the current mean satisfaction is significantly higher than the mean level of satisfaction reported in the 2003 user survey (M=3.58).

Figure 2: Satisfaction with BioCoRE

I am satisfied with BioCoRE

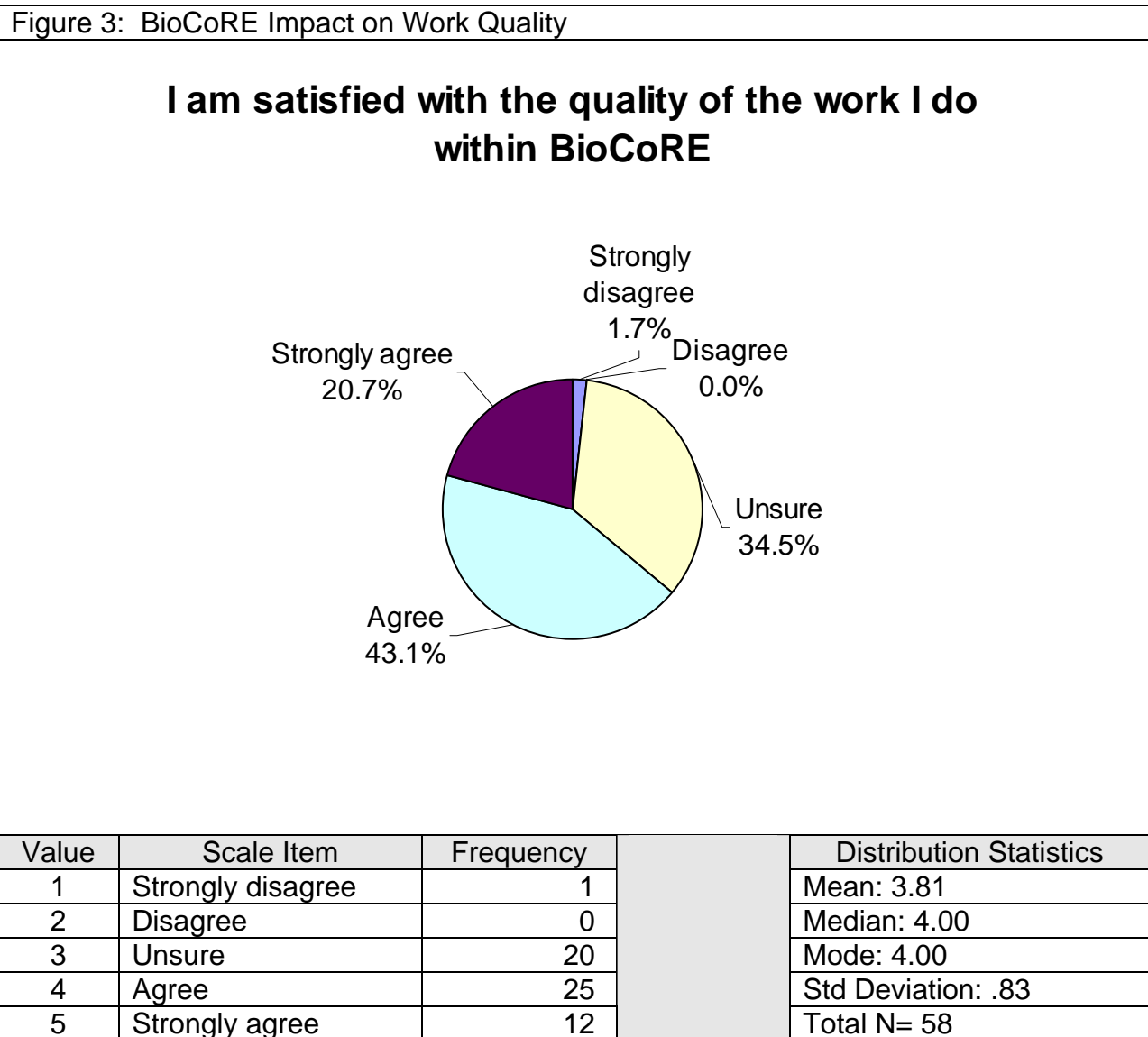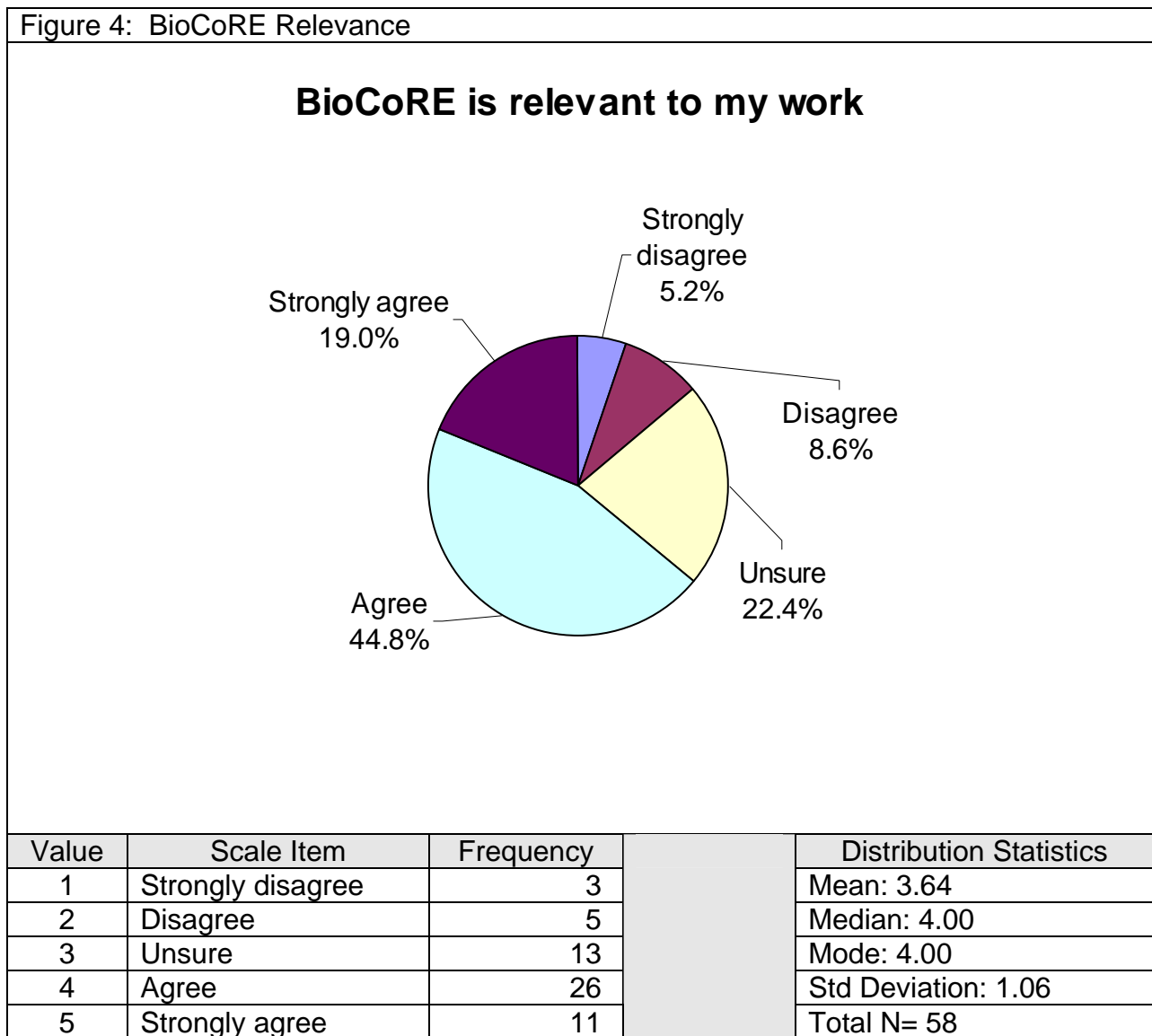| Value	Scale Item	Frequency		Distribution Statistics
1	Strongly disagree	1		Mean: 3.86
2	Disagree	2		Median: 4.00
3	Unsure	13		Mode: 4.00
4	Agree	30		Std Deviation: .85
5	Strongly agree	12		Total N= 58

- BioCoRE was judged to have a positive impact on work quality – 63.8% of respondents agreed or strongly agreed with the statement "I am satisfied with the quality of the work I do within BioCoRE" (Q12). See Fig. 3.

- The mean response was 3.81 on a 5-point scale (1=strongly disagree, 5=strongly agree. See Fig. 3.

Figure 3: BioCoRE Impact on Work Quality

I am satisfied with the quality of the work I do within BioCoRE

Strongly disagree 1.7%
Disagree 0.0%
Strongly agree 20.7%
Unsure 34.5%
Agree 43.1%

Value	Scale Item	Frequency		Distribution Statistics
1	Strongly disagree	1		Mean: 3.81
2	Disagree	0		Median: 4.00
3	Unsure	20		Mode: 4.00
4	Agree	25		Std Deviation: .83
5	Strongly agree	12		Total N= 58

- BioCoRE's should be judged by its user population to provide functions relevant to their everyday work. A majority of respondents, 63.8%, agreed or strongly agreed with the statement "BioCoRE is relevant to my work" (Q7L). See Fig. 4.

- The mean response was 3.64 on a 5-point scale (1=strongly disagree, 5=strongly agree. See Fig. 4.

Figure 4: BioCoRE Relevance

BioCoRE is relevant to my work

Value	Scale Item	Frequency		Distribution Statistics
1	Strongly disagree	3		Mean: 3.64
2	Disagree	5		Median: 4.00
3	Unsure	13		Mode: 4.00
4	Agree	26		Std Deviation: 1.06
5	Strongly agree	11		Total N= 58

- ▪ Users were asked to rate the importance of existing features of BioCoRE as a means of identifying those aspects of the collaboratory that should be a priority for development. In Q6, a list of 11 BioCoRE features was provided to respondents, who were asked to rate their agreement with the statement "The following BioCoRE feature is important for my work" using a 5-point scale (1-strongly disagree, 5-strongly agree).

- ▪ The three most important BioCoRE features are: sharing files via the BioFS file system (M=4.09), posting and reading Message Board entries (M=3.59), and sharing web links via the Website Library (M=3.7). See Figs. 5A, 5B.
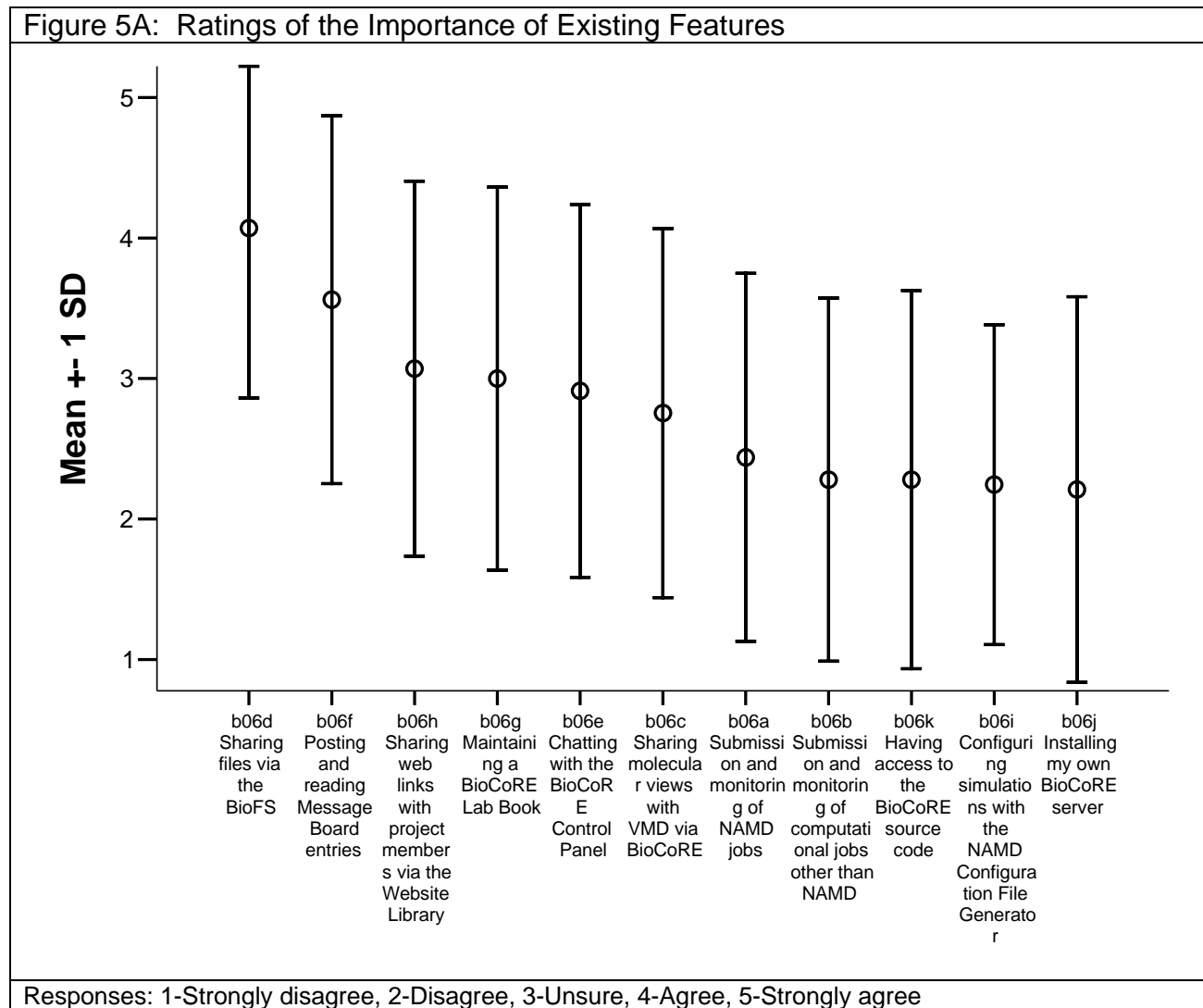
Figure 5A: Ratings of the Importance of Existing Features

Responses: 1-Strongly disagree, 2-Disagree, 3-Unsure, 4-Agree, 5-Strongly agree

Figure 5B: Importance of Existing BioCoRE Features		
Question Stem	Mean[†]	Std Deviation[†]
Q6 The following BioCoRE feature is important for my work:		
6d Sharing files via the BioFS	4.09	1.20
6f Posting and reading Message Board entries	3.59	1.31
6h Sharing web links with project members via the Website Library	3.07	1.33
6g Maintaining a BioCoRE Lab Book	3.03	1.38
6e Chatting with the BioCoRE Control Panel	2.95	1.34
6c Sharing molecular views with VMD via BioCoRE	2.79	1.33
6a Submission and monitoring of NAMD jobs	2.48	1.34
6b Submission and monitoring of computational jobs other than NAMD	2.33	1.33
6k Having access to the BioCoRE source code	2.33	1.38
6i Configuring simulations with the NAMD Configuration File Generator	2.29	1.18
6j Installing my own BioCoRE server	2.26	1.41

[†]Figures based on a 5-point scale, with responses: 1-Strongly disagree, 2-Disagree, 3-Unsure, 4-Agree, 5-Strongly agree.

- Responses to usability, support and documentation items (Q7) indicated why respondents use BioCoRE, and their agreement with statements about specific aspects of the program.

- The three highest rated qualities are: it was easy to launch the BioCoRE Control Panel (M=4.10), BioCoRE is a stable environment (M=3.91), and it was easy to learn to use BioCoRE (M=3.88). See Figs. 6A, 6B.
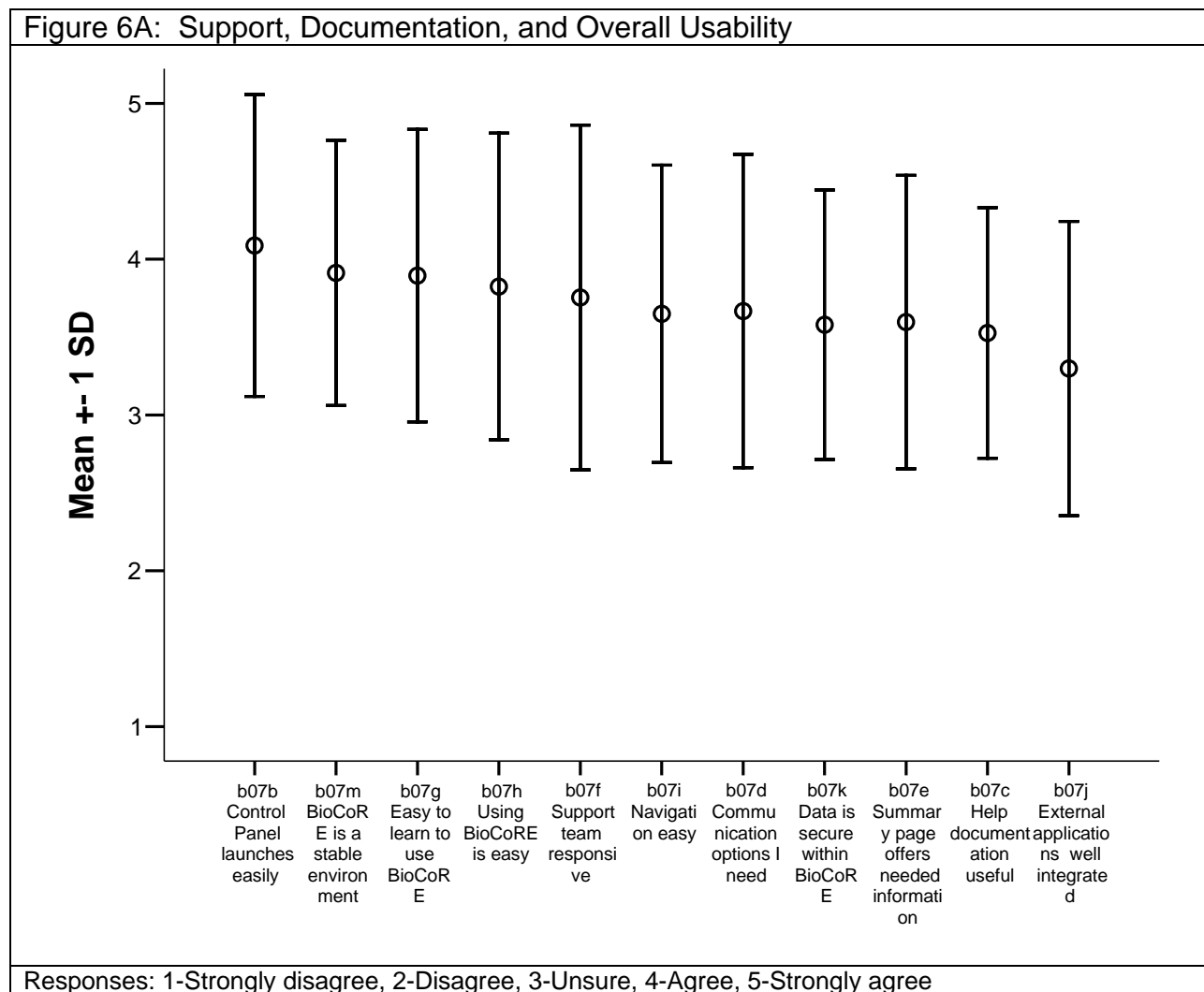
Figure 6A: Support, Documentation, and Overall Usability

Responses: 1-Strongly disagree, 2-Disagree, 3-Unsure, 4-Agree, 5-Strongly agree

Figure 6B: Support, Documentation, and Overall Usability		
Question Stem	Mean[†]	Std Deviation[†]
Q7 Rate your agreement with each the following statements:		
7b It was easy to launch the BioCoRE Control Panel	4.10	.97
7m BioCoRE is a stable environment	3.91	.84
7g It was easy to learn to use BioCoRE	3.88	.94
7h Using BioCoRE is easy	3.81	.98
7f The BioCoRE support team is responsive to my needs	3.74	1.10
7i I can easily navigate within BioCoRE	3.64	.95
7d BioCoRE provides me with the communication options I need	3.64	1.02
7k All my data is secure within BioCoRE	3.59	.86
7e The BioCoRE summary page offers me the information I need about the status of my project	3.59	.94
7c The Help documentation in BioCoRE is useful	3.53	.80
7j External applications (currently VMD and NAMD) are well integrated into BioCoRE	3.28	.95

[†]Figures based on a 5-point scale, with responses: 1-Strongly disagree, 2-Disagree, 3-Unsure, 4-Agree, 5-Strongly agree.

- Users were asked to rate the importance of features planned for BioCoRE as a means of identifying those aspects of the collaboratory that should be a priority for future development. In Q10, a list of 12 potential BioCoRE features was provided to respondents, who were asked to "Rate the importance of BioCoRE planned features to your work" using a 5-point scale (1-very unimportant, 5-very important).

- The three highest rated planned items are: automatic revision control for BioFS files, (M=3.47), a presentation notebook (an enhanced notebook with features such as columns, equations, etc. (M=3.22), and an e-mail gateway to allow emailing data into BioCoRE (M=3.21).
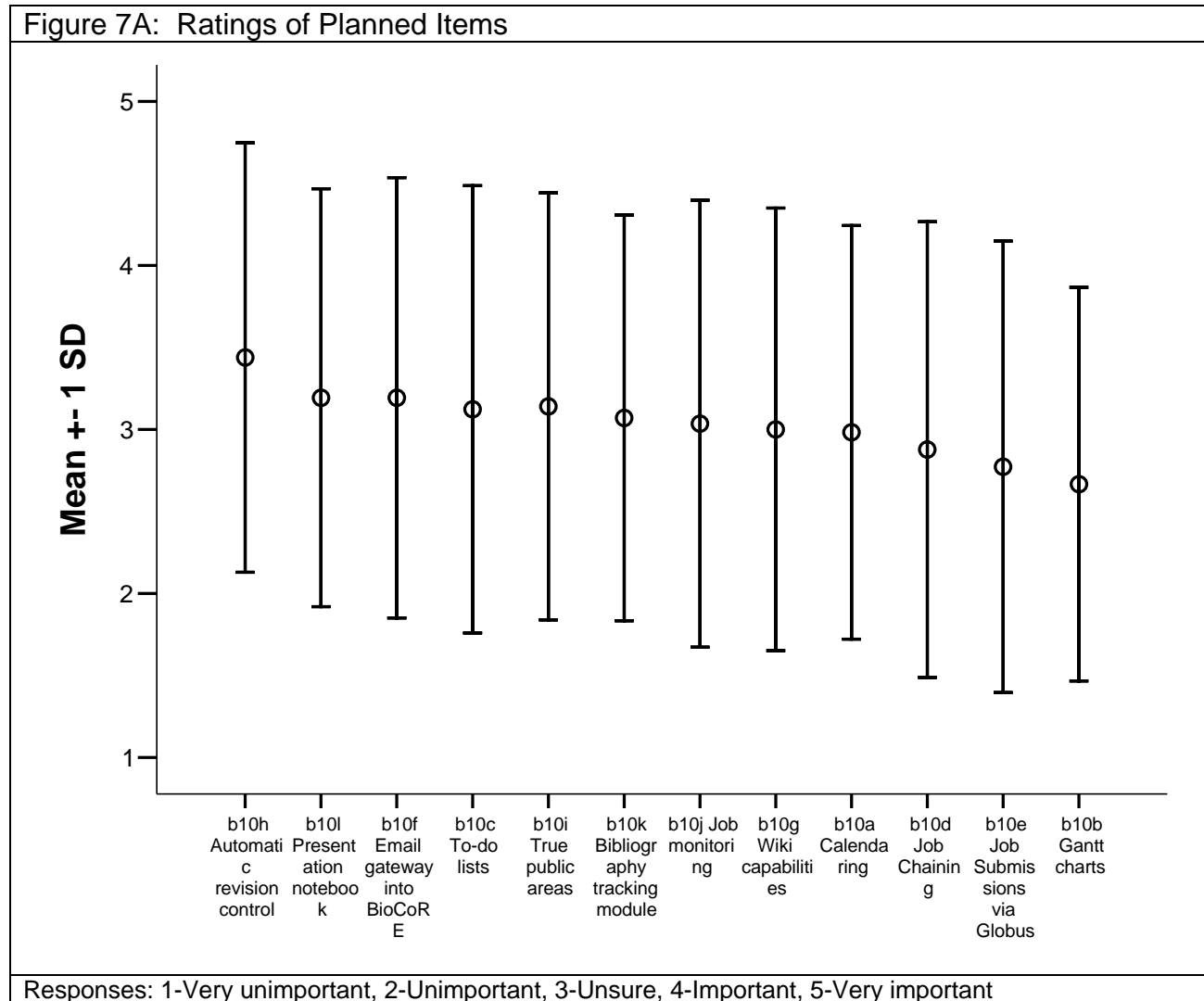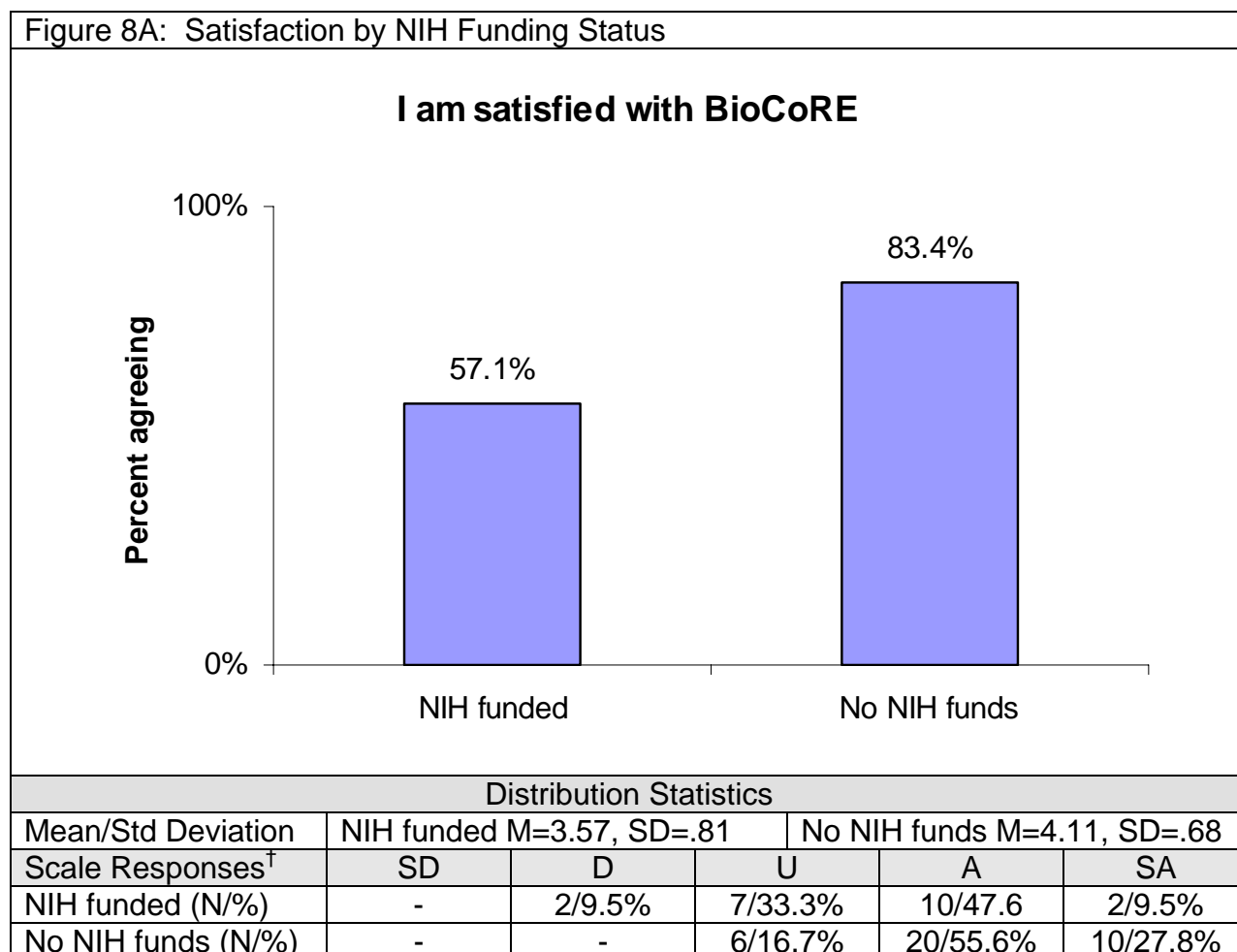
Figure 7A: Ratings of Planned Items

Responses: 1-Very unimportant, 2-Unimportant, 3-Unsure, 4-Important, 5-Very important

Figure 7B: Ratings of Planned Items		
Question Stem	Mean[†]	Std Deviation[†]
Q10 Rate the importance of BioCoRE planned features to your work:		
10h Automatic revision control for BioFS files	3.47	1.31
10l Presentation notebook - enhanced notebook with features such as columns, equations, etc.	3.22	1.28
10f Email gateway to allow emailing data into BioCoRE	3.21	1.33
10c To-do lists	3.14	1.36
10i True public areas where users without BioCoRE accounts can view selected data	3.14	1.30
10k Project wide bibliography tracking module	3.10	1.25
10j Dynamic, live action job monitoring	3.04	1.36
10g Wiki capabilities for each project	3.03	1.36
10a Calendaring	3.02	1.28
10d Job Chaining - Ability to give computational jobs desired ordering for execution	2.90	1.39
10e Grid Job Submissions via Globus	2.79	1.37
10b Gantt charts	2.67	1.19

[†]Figures based on a 5-point scale, with responses: 1-Very unimportant, 2-Unimportant, 3-Unsure, 4-Important, 5-Very important.
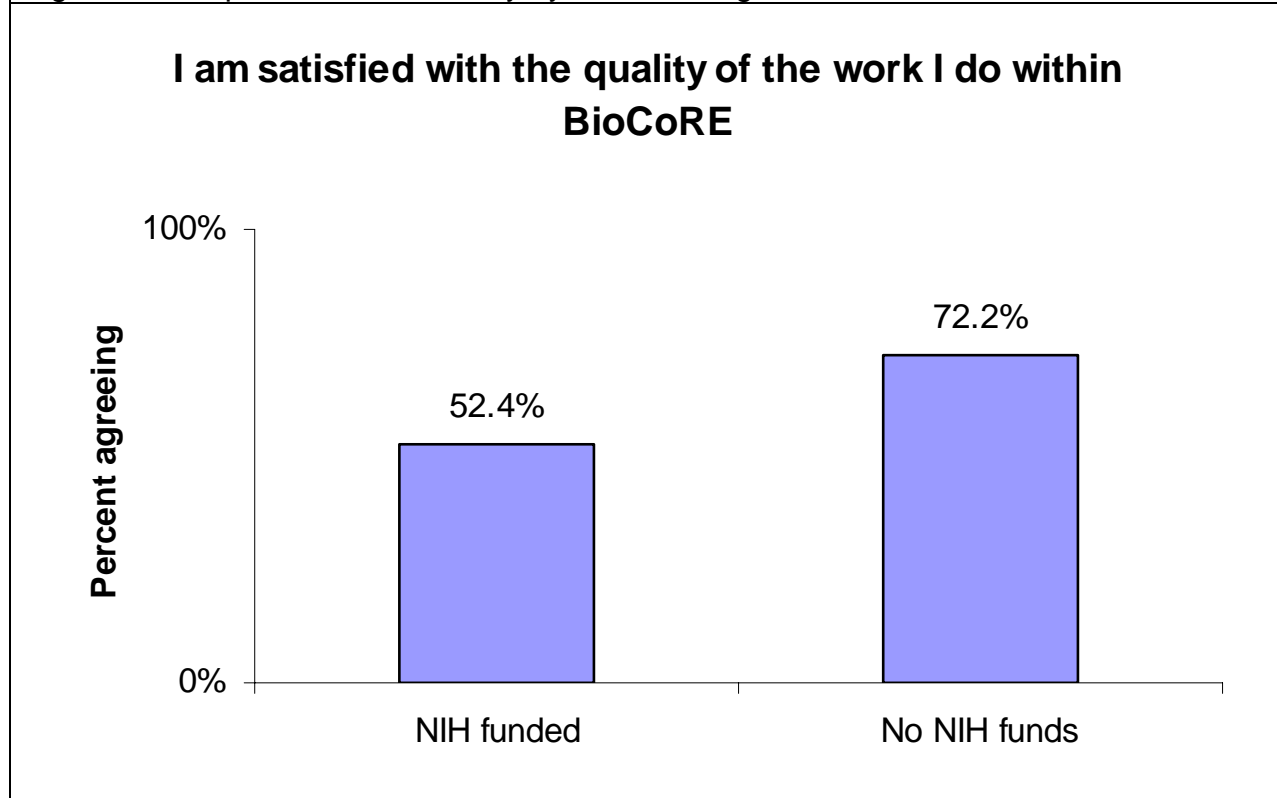
- Users were asked to answer 'yes' or 'no' to the question "The work I do with BioCoRE is funded (at least partially) by NIH" (Q3).

- Half of NIH funded users (57.1%) and a majority of those with no NIH funds (83.4%) agreed or strongly agreed with the statement "I am satisfied with BioCoRE" (Q8). Statistical analysis found that those with no NIH funds were significantly more satisfied with BioCoRE (M=4.11) than those with NIH funds (M=3.57). See Fig. 8A.

- A majority of both NIH funded (52.4%) and those with no NIH funds (72.2%) agreed or strongly agreed with the statement "I am satisfied with the quality of the work I do within BioCoRE" (Q9). Statistical analysis found no significant difference in the mean rankings by NIH funded users (M=3.62) and users with no NIH funds (M=4.00). See Fig. 8B.

Figure 8A: Satisfaction by NIH Funding Status

I am satisfied with BioCoRE

Distribution Statistics					
Mean/Std Deviation	NIH funded M=3.57, SD=.81			No NIH funds M=4.11, SD=.68	
Scale Responses†	SD	D	U	A	SA
NIH funded (N/%)	-	2/9.5%	7/33.3%	10/47.6	2/9.5%
No NIH funds (N/%)	-	-	6/16.7%	20/55.6%	10/27.8%

†Responses: 1-Strongly disagree, 2-Disagree, 3-Unsure, 4-Agree, 5-Strongly agree.
Total N: NIH funded, 20; no NIH funds, 23.

Figure 8B: Impact on Work Quality by NIH Funding Status

I am satisfied with the quality of the work I do within BioCoRE

Distribution Statistics					
Mean/Std Deviation	NIH funded M=3.62, SD=.67			No NIH funds M=4.00, SD=.76	
Scale Responses[†]	SD	D	U	A	SA
NIH funded (N/%)	-	-	10/47.6%	9/42.9%	2/9.5%
No NIH funds (N/%)	-	-	10/27.8%	16/44.4%	10/27.8%

[†]Responses: 1-Strongly disagree, 2-Disagree, 3-Unsure, 4-Agree, 5-Strongly agree.
Total N: NIH funded, 21; no NIH funds, 21.

Following are details about the administration of the survey, including survey method, target population, survey schedule and response rates, sample validity, and questions used on the survey.

Survey Method

Population members received an e-mail solicitation asking them to complete an on-line survey, with the link to the survey containing information about the user. Participants were asked to complete all items on the survey form and submit their responses; upon submission, participants were to complete any items they had skipped, with an option to submit without doing so. After submission, users were thanked for their participation.

Target Population

The target population was defined as users who had logged in at least three times since the last evaluation survey in March of 2003. A total of 256 users met these criteria.

Survey Schedule and Response Rates

	Dates/Activities			
	Initial Solicitation	First Reminder	Second Reminder	Closing/Totals
	March 7	March 21	March 29	April 3
Number receiving by date	256	241	216	-
Number of responses to next date	15	25	21	61
Response rate for this population	5.9%	9.8%	8.2%	23.8%

Data Editing

Those responses considered incomplete were deleted from our dataset. The deletions fell into two categories: Unresponsive and duplicates.

▪ Unresponsive records were those instances in which respondents did not answer most of the questions in the survey, specifically those cases in which more than 28% of the questions were not answered.

▪ Duplicates were those instances in which there was more than one response for a person, based on their e-mail address.

Deletions left 58 valid records for analyses, as shown in the table below.

Deleted Survey Responses			
Deletions category	Unresponsive	Duplicates	Total
	3	0	3
Number of records in dataset after removing deletions			58

- The final response rate, after accounting for deleted records, is 22.7%.

Sample Validity

The validity of a sample size for representing an entire population is always a concern in survey research. Sample size calculators can provide measures of confidence intervals (+/- figures, i.e. 'margin of error') and confidence level measures (how certain you can be that an answer falls within a confidence interval). For a sample of 58 and a population of 256, using a standard test percentage of 50%, sample size calculations indicate that it can be said with 95% confidence that a given result for a question falls within a +/-11.3% confidence interval. (Figures were generated using Survey System sample size calculator: http://www.surveysystem.com/sscalc.htm).

Question Sets

To aid in interpreting survey results, it is useful to view the question stems viewed by survey participants. Below are the survey questions, grouped by purpose:

Demographic/User Information Questions:

Q. #	Topic	Question Stem	Scale
1	E-mail address	Auto-completed, but users could change	Text box
2	Affiliation	Academic, Government, Industry, Other (specify)	Select one, Text box (other)
3	Funding	My work in BioCoRE is funded (at least partially) by NIH	Select Yes or No
4	BioCoRE use	I primarily use BioCoRE for: Research, teaching, business, Personal	Select one
5	Site use	The number of people using BioCoRE at my site is: 1, 2-4, 5-10, 11-20, 20+	Select one
7a	Software proficiency	I am a proficient software user	1-5 scale, strongly disagree to strongly agree

Evaluation Questions:

Q. #	Question Stem	Scale
7l	BioCoRE is relevant to my work	1-5 scale, strongly agree to strongly disagree
8	I am satisfied with BioCoRE	
9	I am satisfied with the quality of the work I do within BioCoRE	
12	What suggestions do you have for improving BioCoRE and BioCoRE support:	Text area

Importance of Existing Features: All planned items used the same 1-5 scale ranging from very unimportant to very important.

Q. #	Question Stem
6	The following BioCoRE feature is important for my work:
6a	Submission and monitoring of NAMD jobs
6b	Submission and monitoring of computational jobs other than NAMD
6c	Sharing molecular views with VMD via BioCoRE
6d	Sharing files via the BioFS
6e	Chatting with the BioCoRE Control Panel
6f	Posting and reading Message Board entries
6g	Maintaining a BioCoRE Lab Book
6h	Sharing web links with project members via the Website Library
6i	Configuring simulations with the NAMD Configuration File Generator
6j	Installing my own BioCoRE server
6k	Having access to the BioCoRE source code

Ratings of Support, Documentation, and Overall Usability: All ratings of existing items used the same 1-5 scale, ranging from strongly disagree to strongly agree.

Q. #	Question Stem
7	Rate your agreement with each the following statements:
7b	It was easy to launch the BioCoRE Control Panel
7b	It was easy to launch the BioCoRE Control Panel
7c	The Help documentation in BioCoRE is useful
7d	BioCoRE provides me with the communication options I need
7e	The BioCoRE summary page offers me the information I need about the status of my project
7f	The BioCoRE support team is responsive to my needs
7g	It was easy to learn to use BioCoRE
7h	Using BioCoRE is easy
7i	I can easily navigate within BioCoRE
7j	External applications (currently VMD and NAMD) are well integrated into BioCoRE
7k	All my data is secure within BioCoRE
7m	BioCoRE is a stable environment

Importance of Planned Features: All planned items used the same 1-5 scale ranging from very unimportant to very important.

Q. #	Question Stem
10	Rate the importance of BioCoRE planned features to your work:
10h	Automatic revision control for BioFS files
10l	Presentation notebook - enhanced notebook with features such as columns, equations, etc.
10f	Email gateway to allow emailing data into BioCoRE
10c	To-do lists
10i	True public areas where users without BioCoRE accounts can view selected data
10k	Project wide bibliography tracking module
10j	Dynamic, live action job monitoring
10g	Wiki capabilities for each project
10a	Calendaring
10d	Job Chaining - Ability to give computational jobs desired ordering for execution
10e	Grid Job Submissions via Globus
10b	Gantt charts