Figure 1

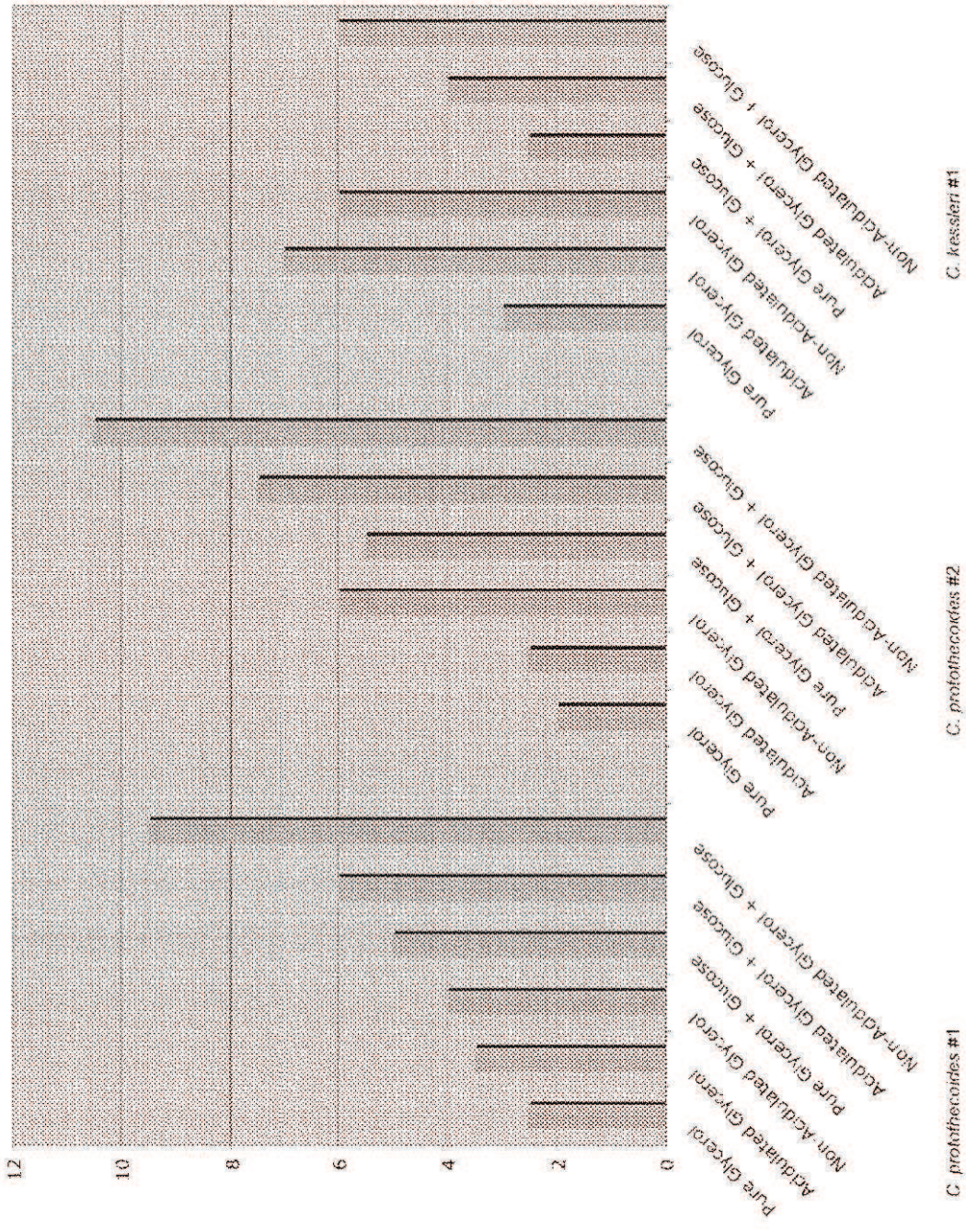

Dry Cell Weight (grams/Liter)
12
10
8
6
4
2
0
Pure Glycerol
Acidulated Glycerol
Non-Acidulated Glycerol
Pure Glycerol + Glucose
Acidulated Glycerol + Glucose
Non-Acidulated Glycerol + Glucose
C. protothecoides #1
C. protothecoides #2
C. kessleri #1

Figure 2

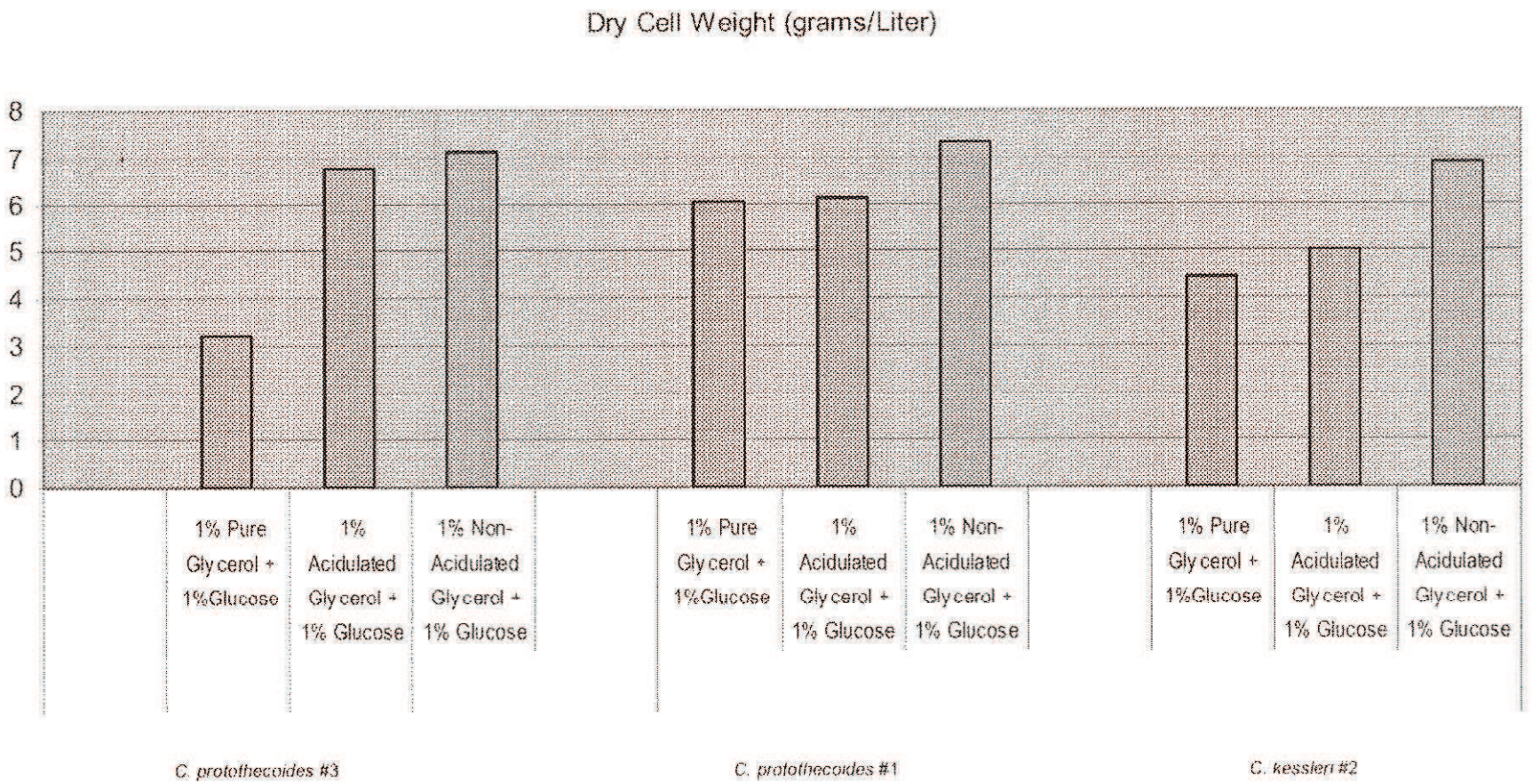

Dry Cell Weight (grams/Liter)
8
7
6
5
4
3
2
1
0
1% Pure Glycerol + 1%Glucose
1% Acidulated Glycerol + 1% Glucose
1% Non-Acidulated Glycerol + 1% Glucose
1% Pure Glycerol + 1%Glucose
1% Acidulated Glycerol + 1% Glucose
1% Non-Acidulated Glycerol + 1% Glucose
1% Pure Glycerol + 1%Glucose
1% Acidulated Glycerol + 1% Glucose
1% Non-Acidulated Glycerol + 1% Glucose
C. protothecoides #3
C. protothecoides #1
C. kessleri #2

Figure 3

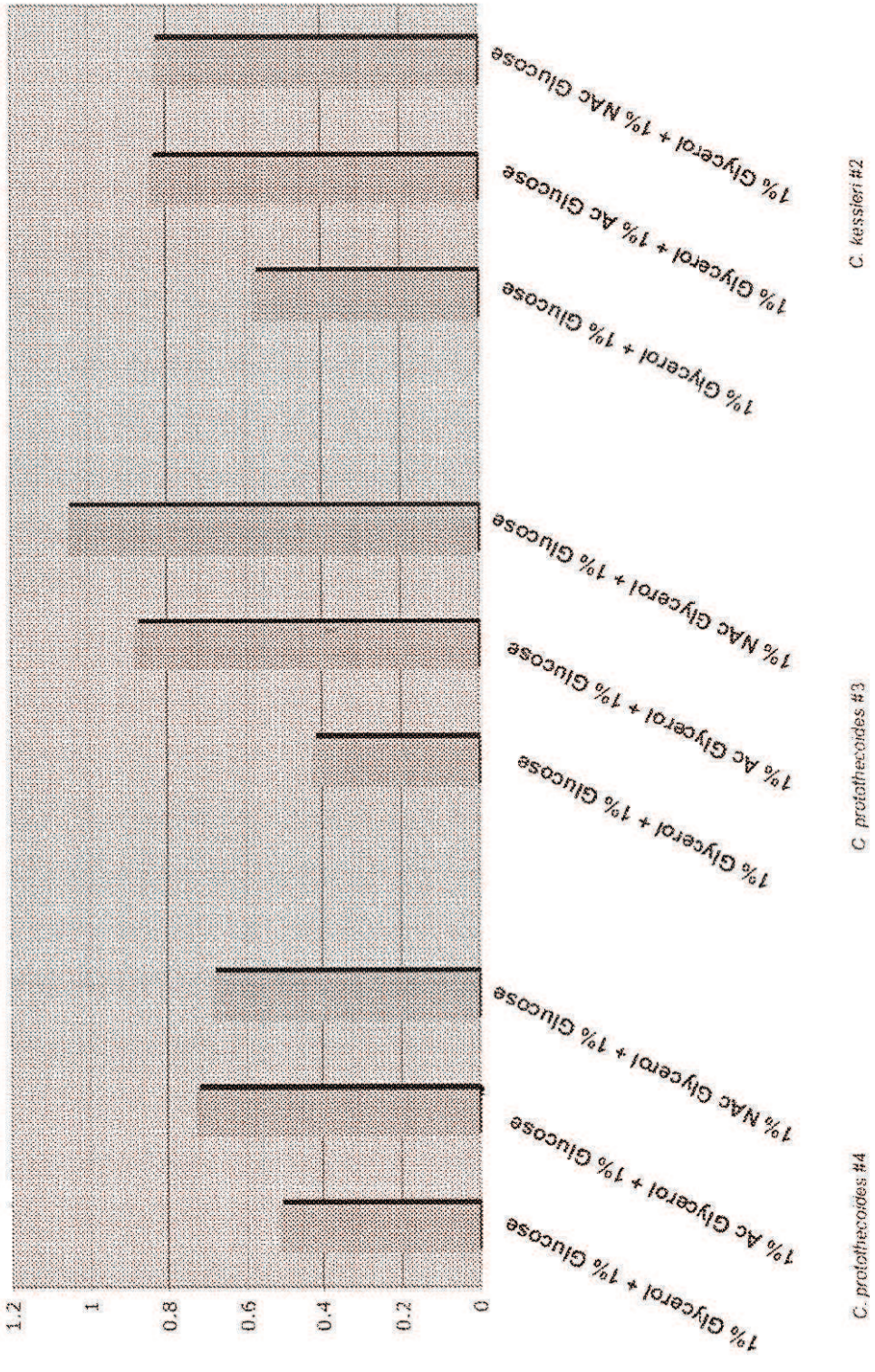

Lipid OD 530nm
1.2
1
0.8
0.6
0.4
0.2
0
1% Glycerol + 1% Glucose
1% Ac Glycerol + 1% Glucose
1% NAc Glycerol + 1% Glucose
1% Glycerol + 1% Glucose
1% Glycerol + 1% Ac Glucose
1% Glycerol + 1% NAc Glucose
C. prototheccoides #4
C. prototheccoides #3
C. kessleri #2

Figure 4

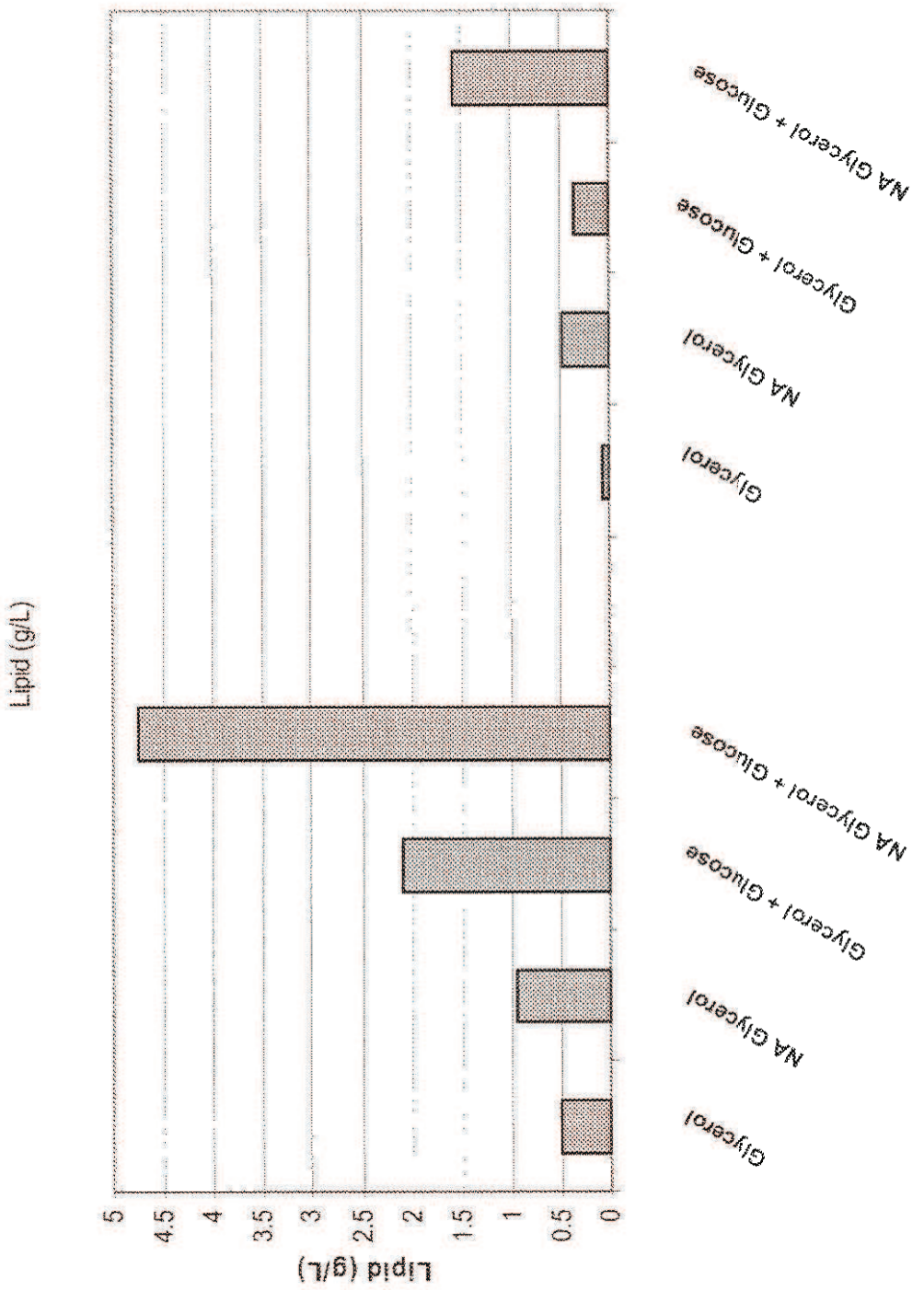

Lipid (g/L)
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Glycerol
NA Glycerol
Glycerol + Glucose
NA Glycerol + Glucose
C. protothecoides #2
Glycerol
NA Glycerol
Glycerol + Glucose
NA Glycerol + Glucose
C. kessleri#1

Figure 5

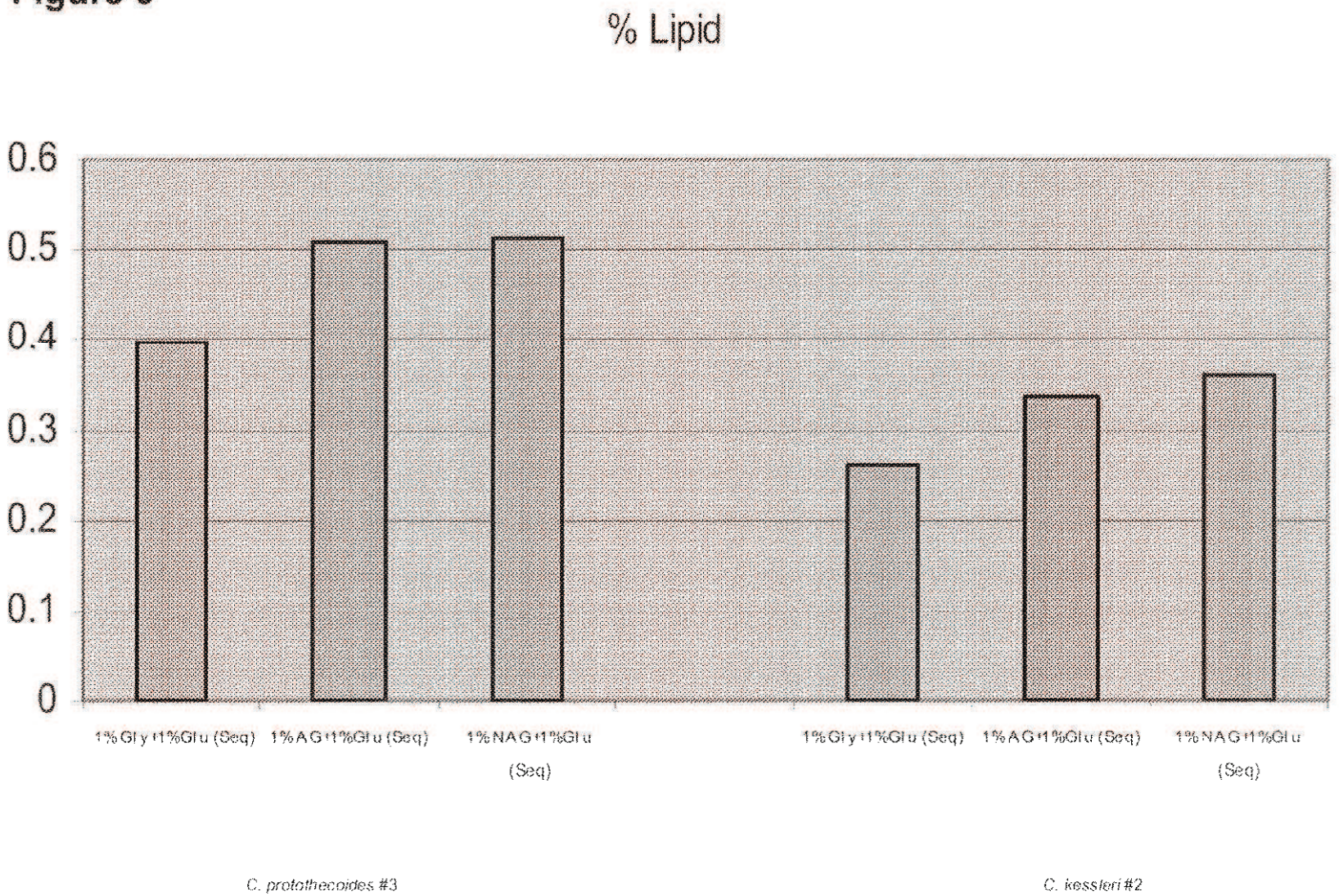

% Lipid
0.6
0.5
0.4
0.3
0.2
0.1
0
1%Gly+1%Glu (Seq)
1%AG+1%Glu (Seq)
1%NAG+1%Glu (Seq)
1%Gly+1%Glu (Seq)
1%AG+1%Glu (Seq)
1%NAG+1%Glu (Seq)
C. prototheocoides #3
C. kessleri #2

Figure 6

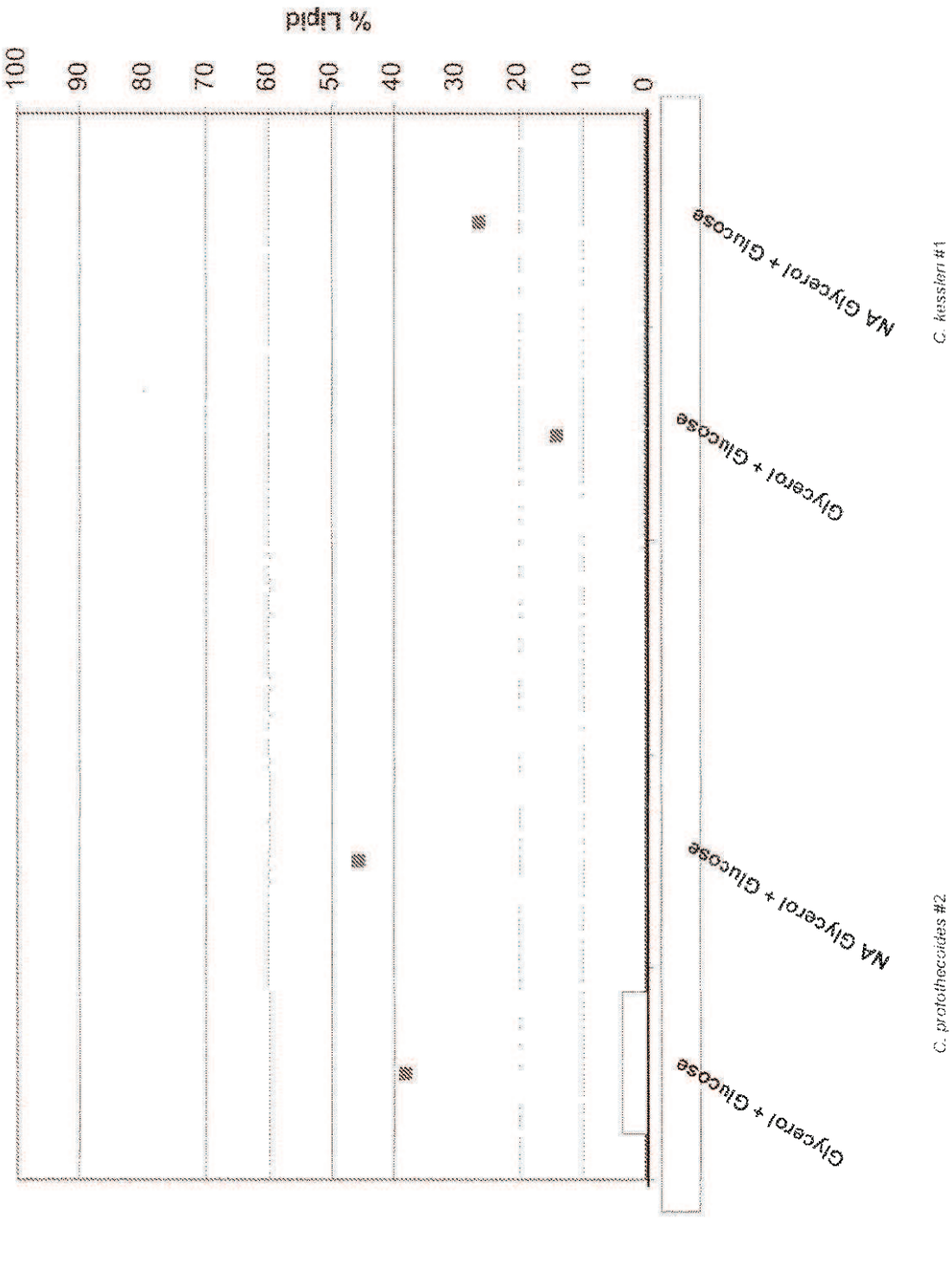

% Lipid
100
90
80
70
60
50
40
30
20
10
0
NA Glycerol + Glucose
Glycerol + Glucose
NA Glycerol + Glucose
Glycerol + Glucose
C. kessleri #1
C. protothecoides #2

Figure 7

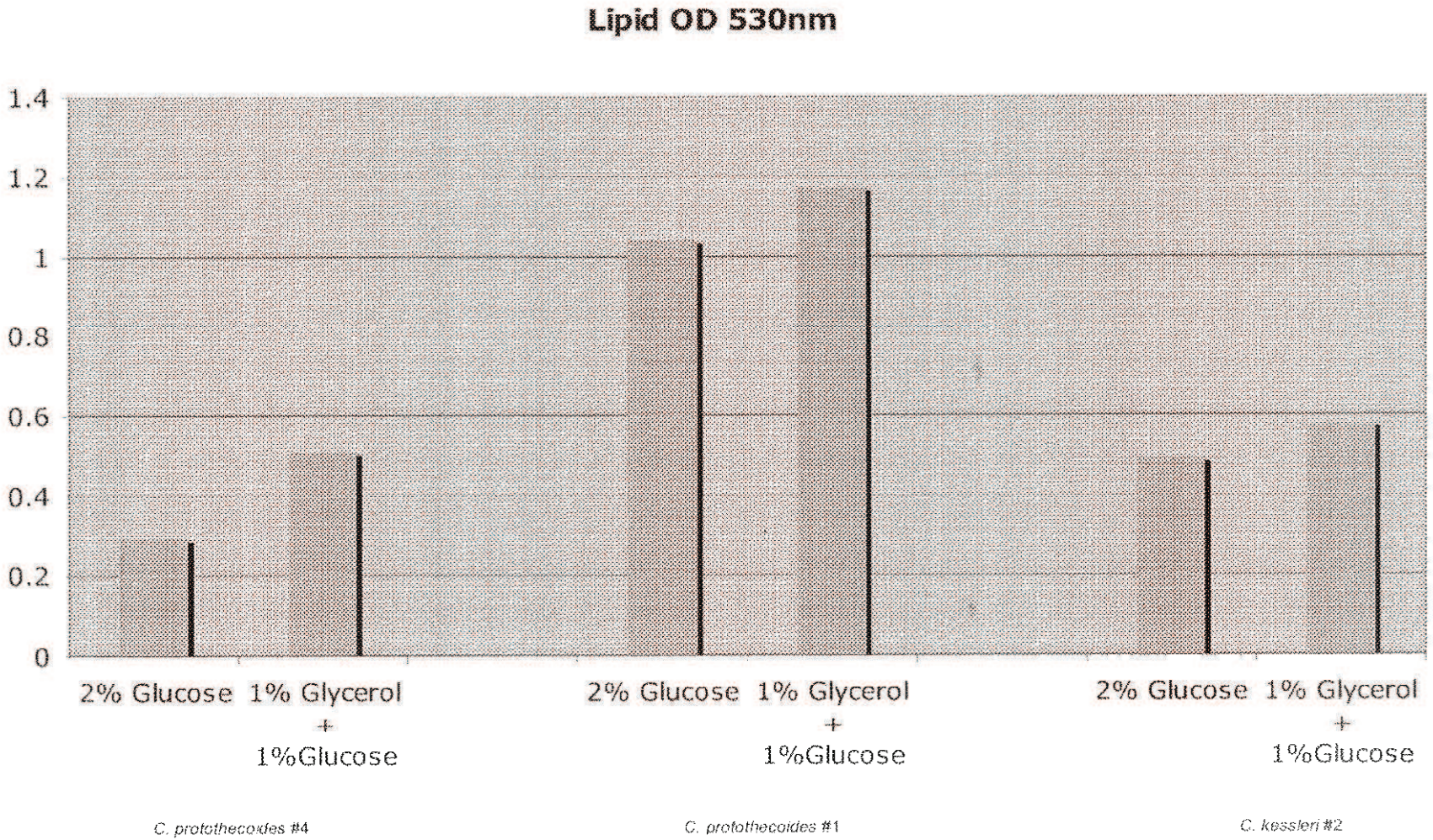

Lipid OD 530nm
1.4
1.2
1
0.8
0.6
0.4
0.2
0
2% Glucose
1% Glycerol + 1%Glucose
2% Glucose
1% Glycerol + 1%Glucose
2% Glucose
1% Glycerol + 1%Glucose
C. protothecoides #4
C. protothecoides #1
C. kessleri #2

Figure 8

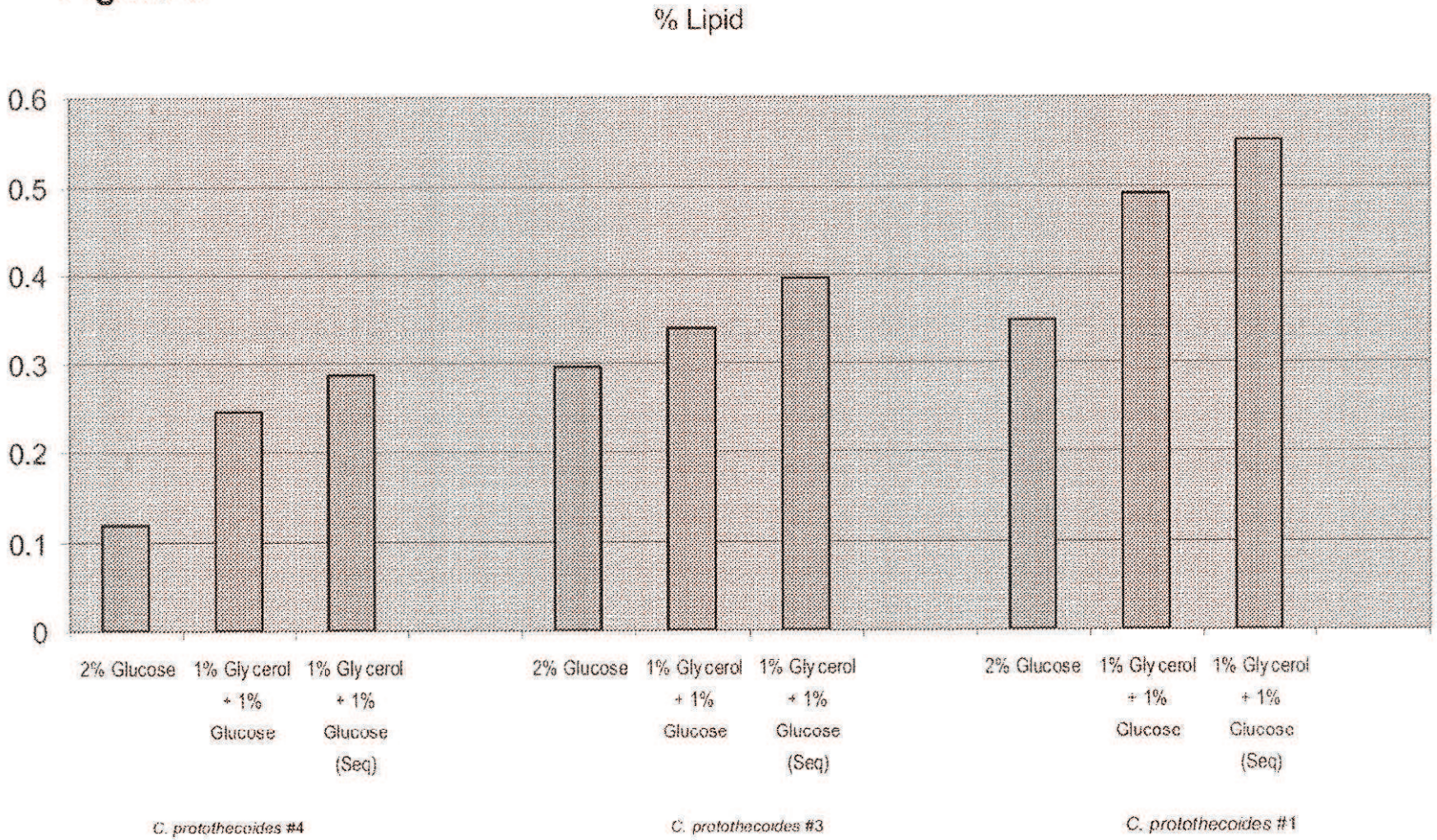

% Lipid
0.6
0.5
0.4
0.3
0.2
0.1
0
2% Glucose
1% Glycerol + 1% Glucose
1% Glycerol + 1% Glucose (Seq)
2% Glucose
1% Glycerol + 1% Glucose
1% Glycerol + 1% Glucose (Seq)
2% Glucose
1% Glycerol + 1% Glucose
1% Glycerol + 1% Glucose (Seq)
C. protothecoides #4
C. protothecoides #3
C. protothecoides #1

Figure 9

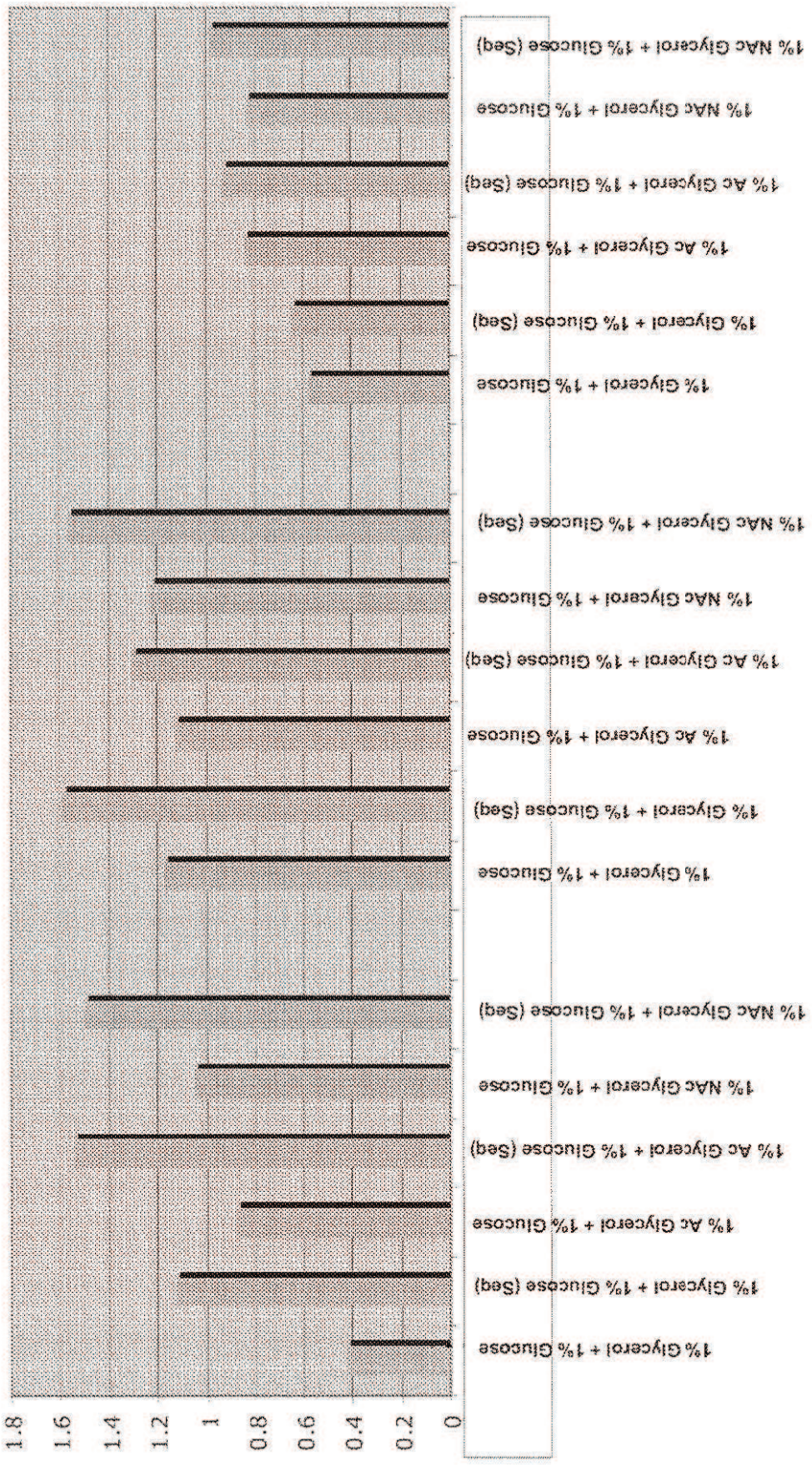

Lipid OD 530nm
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1% Glycerol + 1% Glucose
1% Glycerol + 1% Glucose (Seq)
1% Ac Glycerol + 1% Glucose
1% Ac Glycerol + 1% Glucose (Seq)
1% NAc Glycerol + 1% Glucose
1% NAc Glycerol + 1% Glucose (Seq)
C. protothecoides #3
1% Glycerol + 1% Glucose
1% Glycerol + 1% Glucose (Seq)
1% Ac Glycerol + 1% Glucose
1% Ac Glycerol + 1% Glucose (Seq)
1% NAc Glycerol + 1% Glucose
1% NAc Glycerol + 1% Glucose (Seq)
C. protothecoides #1
1% Glycerol + 1% Glucose
1% Glycerol + 1% Glucose (Seq)
1% Ac Glycerol + 1% Glucose
1% Ac Glycerol + 1% Glucose (Seq)
1% NAc Glycerol + 1% Glucose
1% NAc Glycerol + 1% Glucose (Seq)
C. kessleri #2

Figure 10

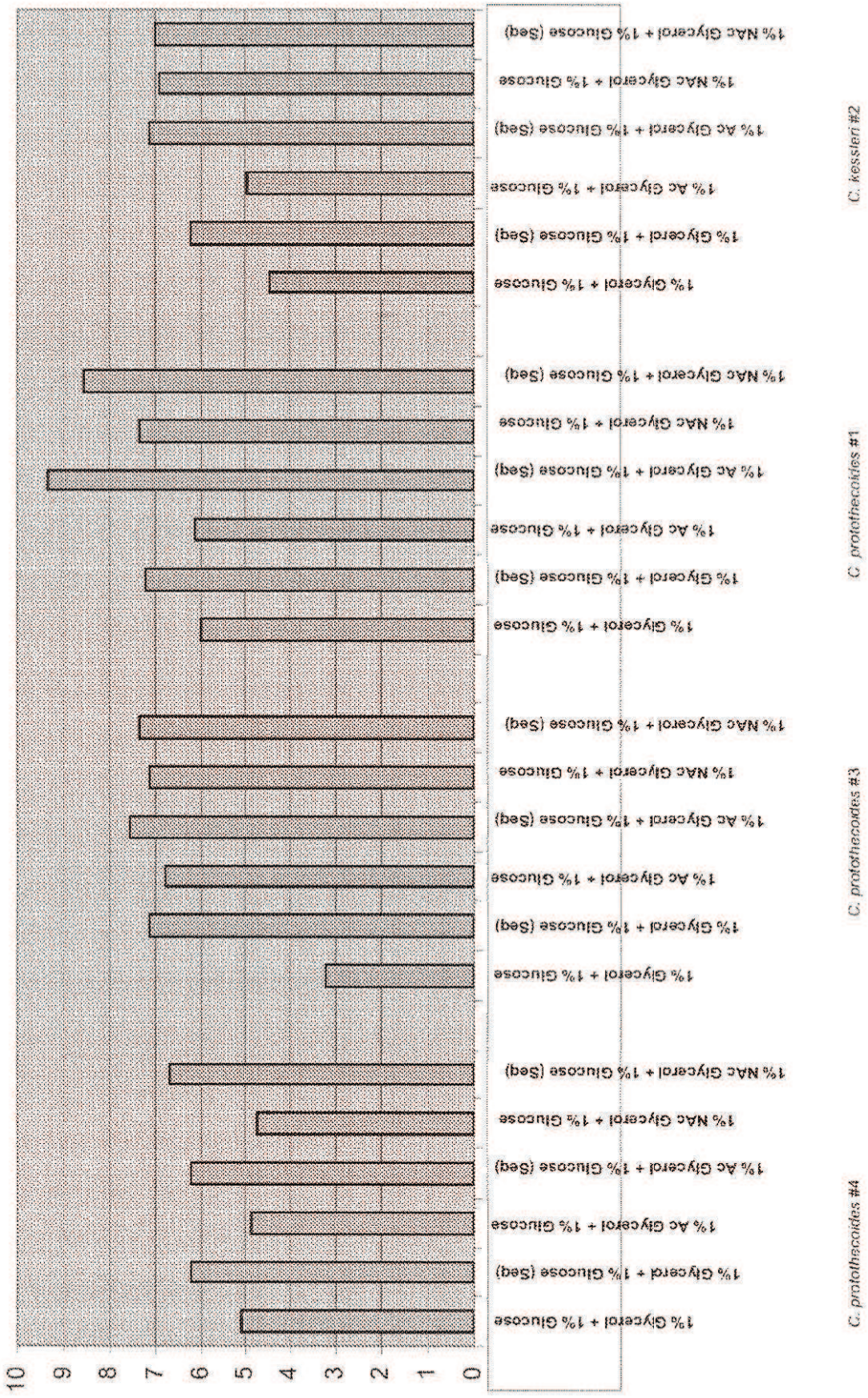
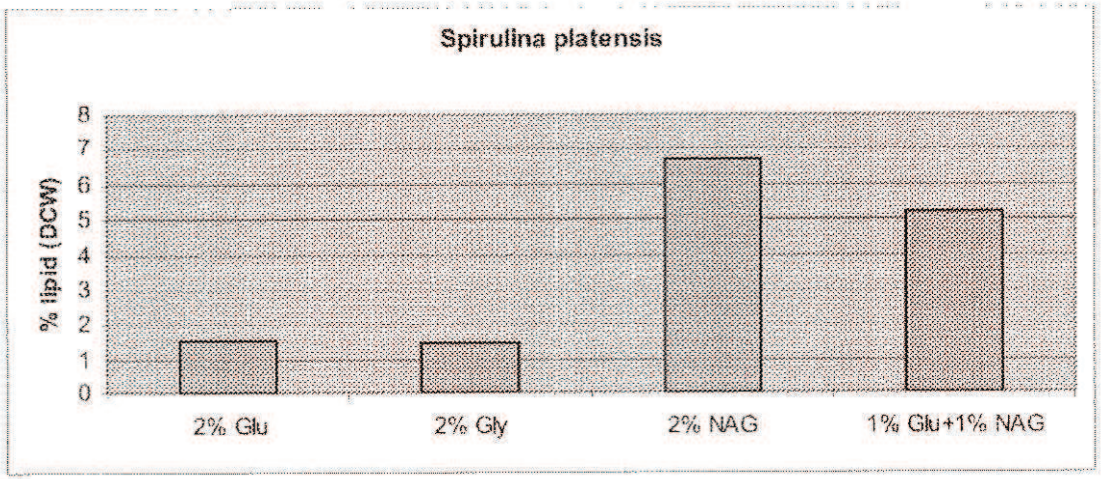

Dry Cell Weight (grams/Liter)
10
9
8
7
6
5
4
3
2
1
0
1% Glycerol + 1% Glucose
1% Glycerol + 1% Glucose (Sed)
1% Ac Glycerol + 1% Glucose
1% Ac Glycerol + 1% Glucose (Sed)
1% NAc Glycerol + 1% Glucose
1% NAc Glycerol + 1% Glucose (Sed)
C. protothecoides #4
1% Glycerol + 1% Glucose
1% Glycerol + 1% Glucose (Sed)
1% Ac Glycerol + 1% Glucose
1% Ac Glycerol + 1% Glucose (Sed)
1% NAc Glycerol + 1% Glucose
1% NAc Glycerol + 1% Glucose (Sed)
C. protothecoides #3
1% Glycerol + 1% Glucose
1% Glycerol + 1% Glucose (Sed)
1% Ac Glycerol + 1% Glucose
1% Ac Glycerol + 1% Glucose (Sed)
1% NAc Glycerol + 1% Glucose
1% NAc Glycerol + 1% Glucose (Sed)
C. protothecoides #1
1% Glycerol + 1% Glucose
1% Glycerol + 1% Glucose (Sed)
1% Ac Glycerol + 1% Glucose
1% Ac Glycerol + 1% Glucose (Sed)
1% NAc Glycerol + 1% Glucose
1% NAc Glycerol + 1% Glucose (Sed)
C. kessleri #2

Figure 11

(a)


Spirulina platensis
% lipid (DCW)
8
7
6
5
4
3
2
1
0
2% Glu
2% Gly
2% NAG
1% Glu+1% NAG

(b)

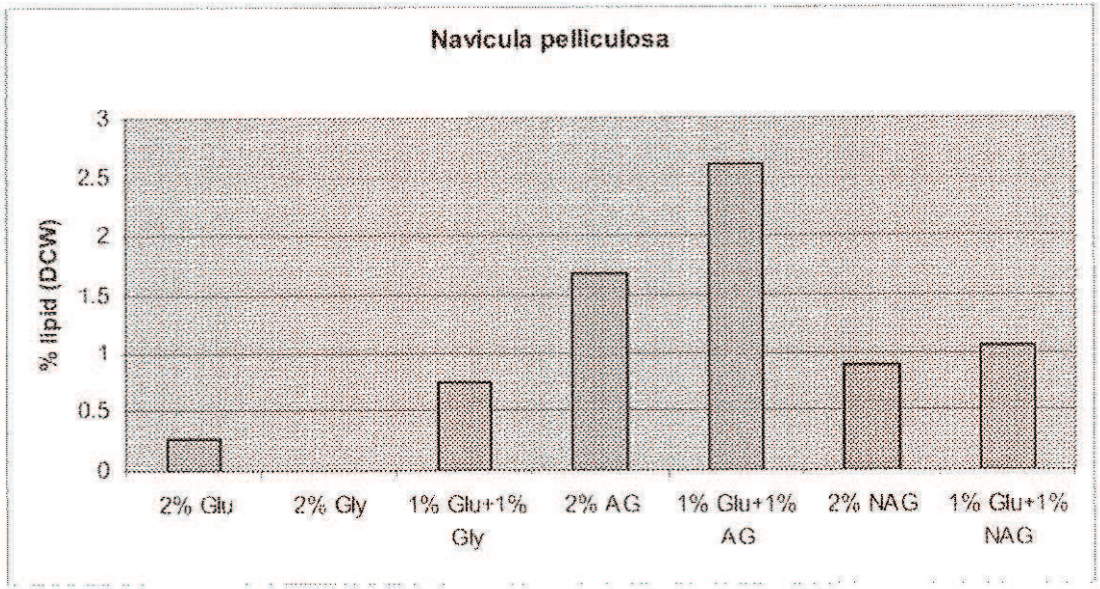
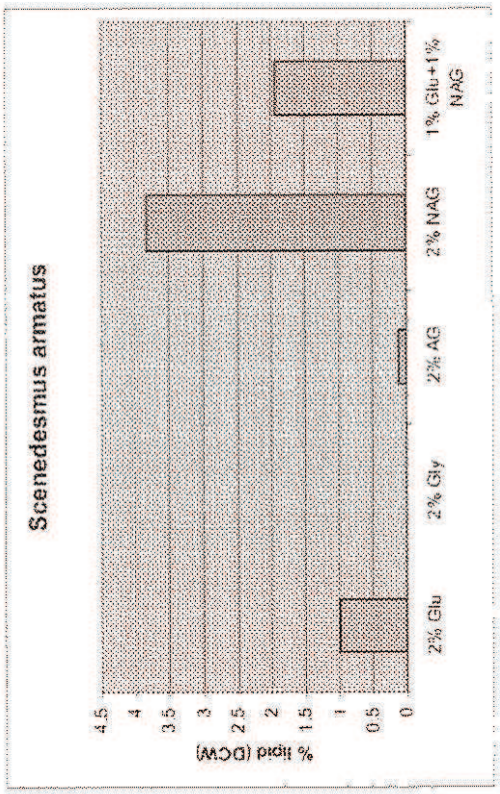
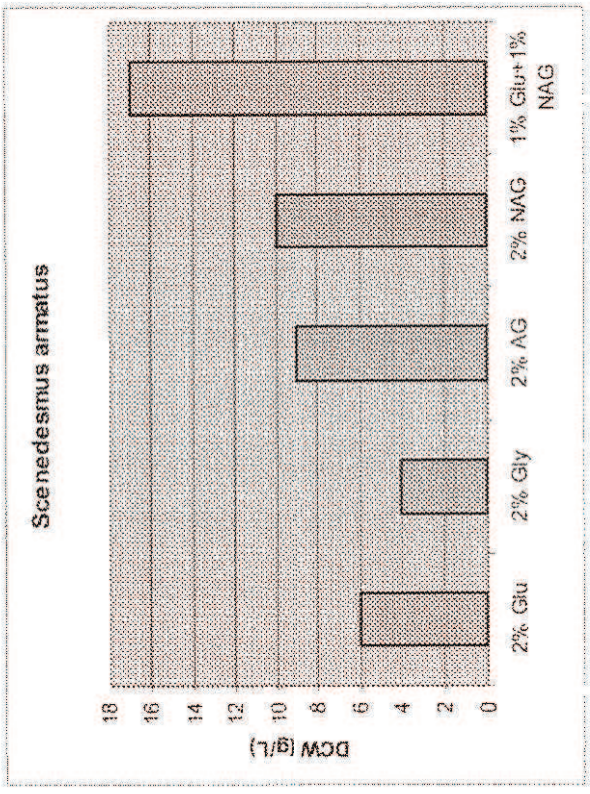

Navicula pelliculosa
% lipid (DCW)
3
2.5
2
1.5
1
0.5
0
2% Glu
2% Gly
1% Glu+1% Gly
2% AG
1% Glu+1% AG
2% NAG
1% Glu+1% NAG

Figure 12


Scenedesmus armatus
% lipid (DCW)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
2% Glu
2% Gly
2% AG
2% NAG
1% Glu+1% NAG

(a)


Scenedesmus armatus
DCW (g/L)
18
16
14
12
10
8
6
4
2
0
2% Glu
2% Gly
2% AG
2% NAG
1% Glu+1% NAG

(b)

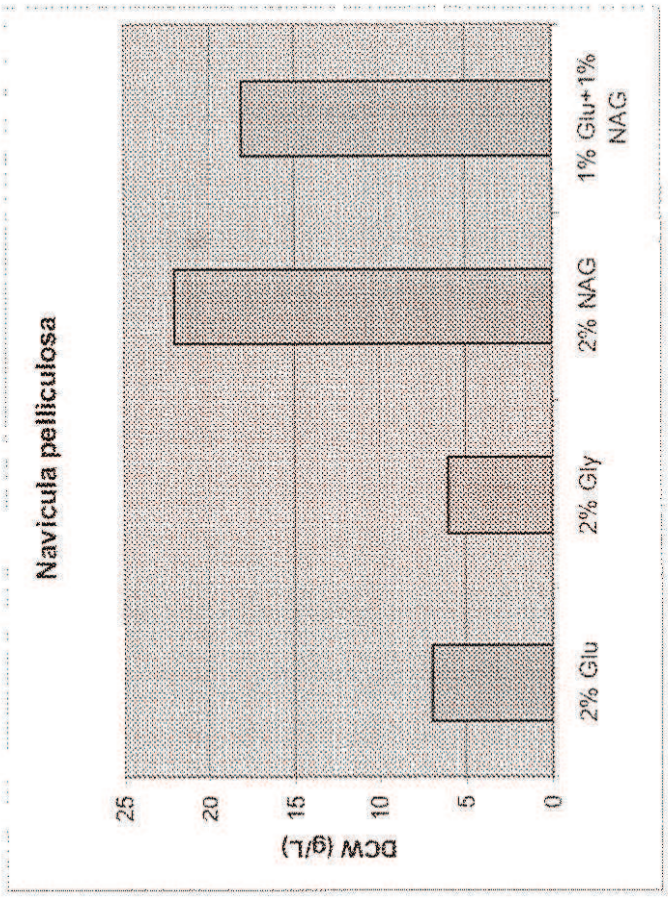
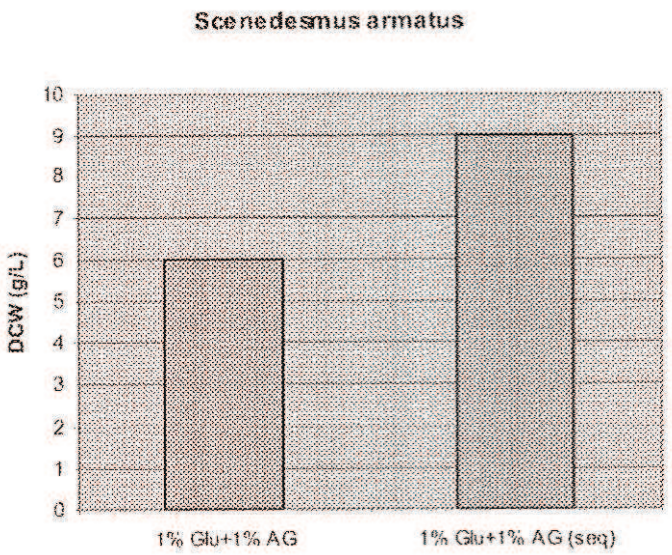

Navicula pelliculosa
DCW (g/L)
25
20
15
10
5
0
2% Glu
2% Gly
2% NAG
1% Glu+1% NAG

Figure 13

Figure 14

(a)


Scenedesmus armatus
DCW (g/L)
0
1
2
3
4
5
6
7
8
9
10
1% Glu+1% AG
1% Glu+1% AG (seq)

(b)

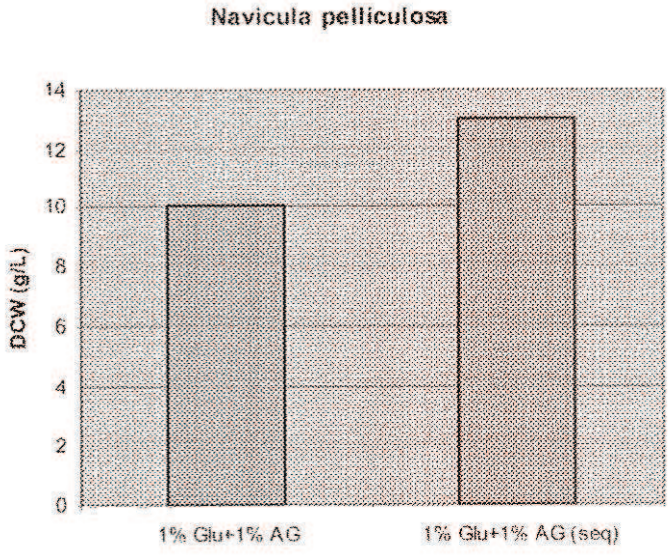

Navicula pelliculosa
DCW (g/L)
0
2
4
6
8
10
12
14
1% Glu+1% AG
1% Glu+1% AG (seq)

Figure 15

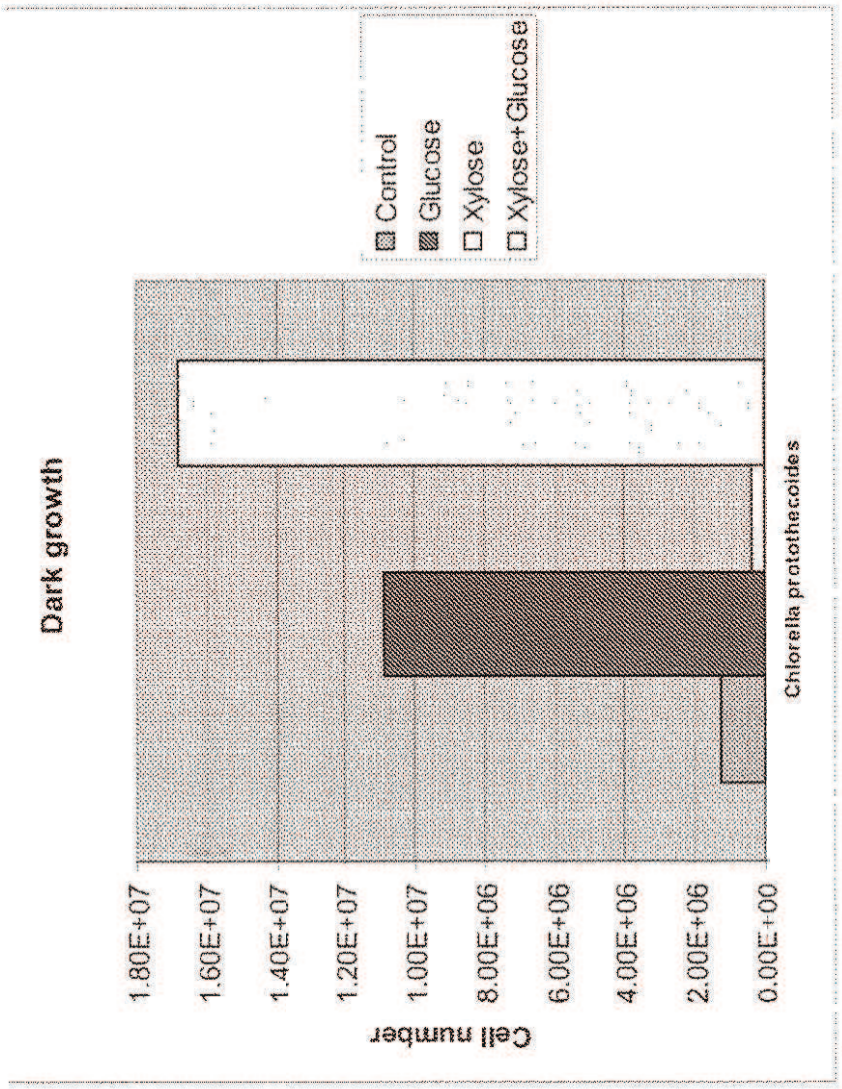

Dark growth
Cell number
1.80E+07
1.60E+07
1.40E+07
1.20E+07
1.00E+07
8.00E+06
6.00E+06
4.00E+06
2.00E+06
0.00E+00
Chlorella protothecoides
Control
Glucose
Xylose
Xylose+Glucose

Figure 16

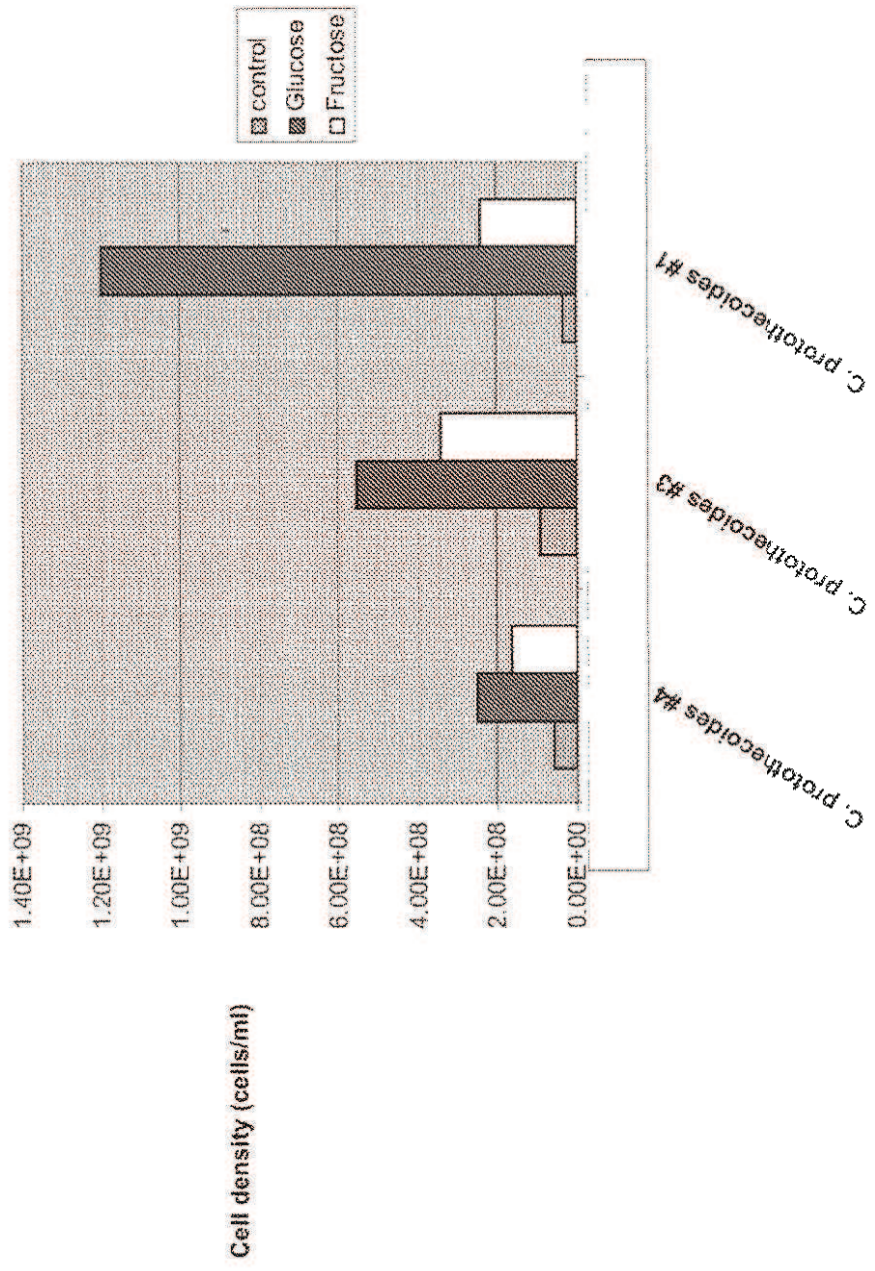

control
Glucose
Fructose
1.40E+09
1.20E+09
1.00E+09
8.00E+08
6.00E+08
4.00E+08
2.00E+08
0.00E+00
Cell density (cells/ml)
C. protothecoides #1
C. protothecoides #3
C. protothecoides #4

Figure 17

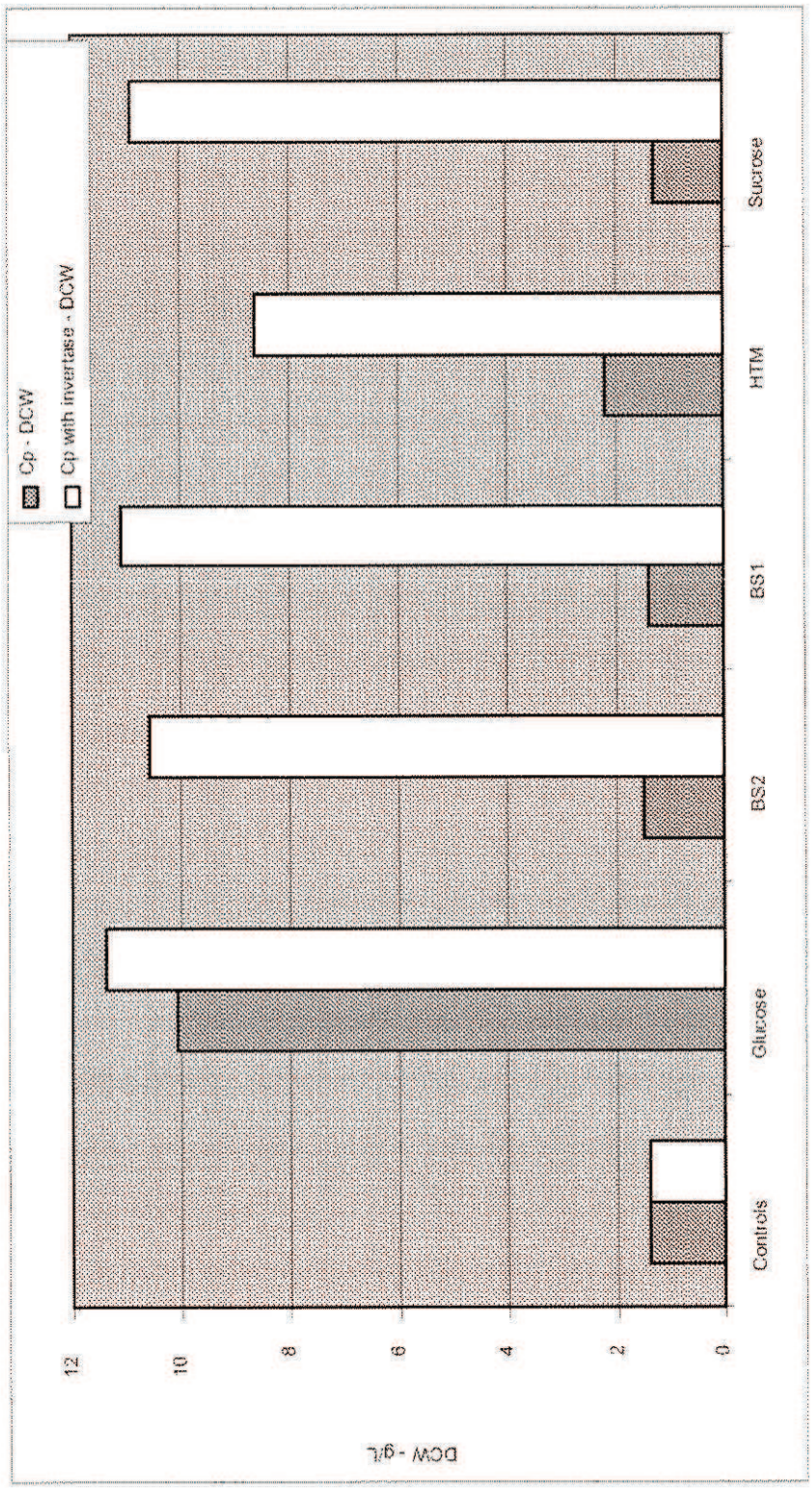
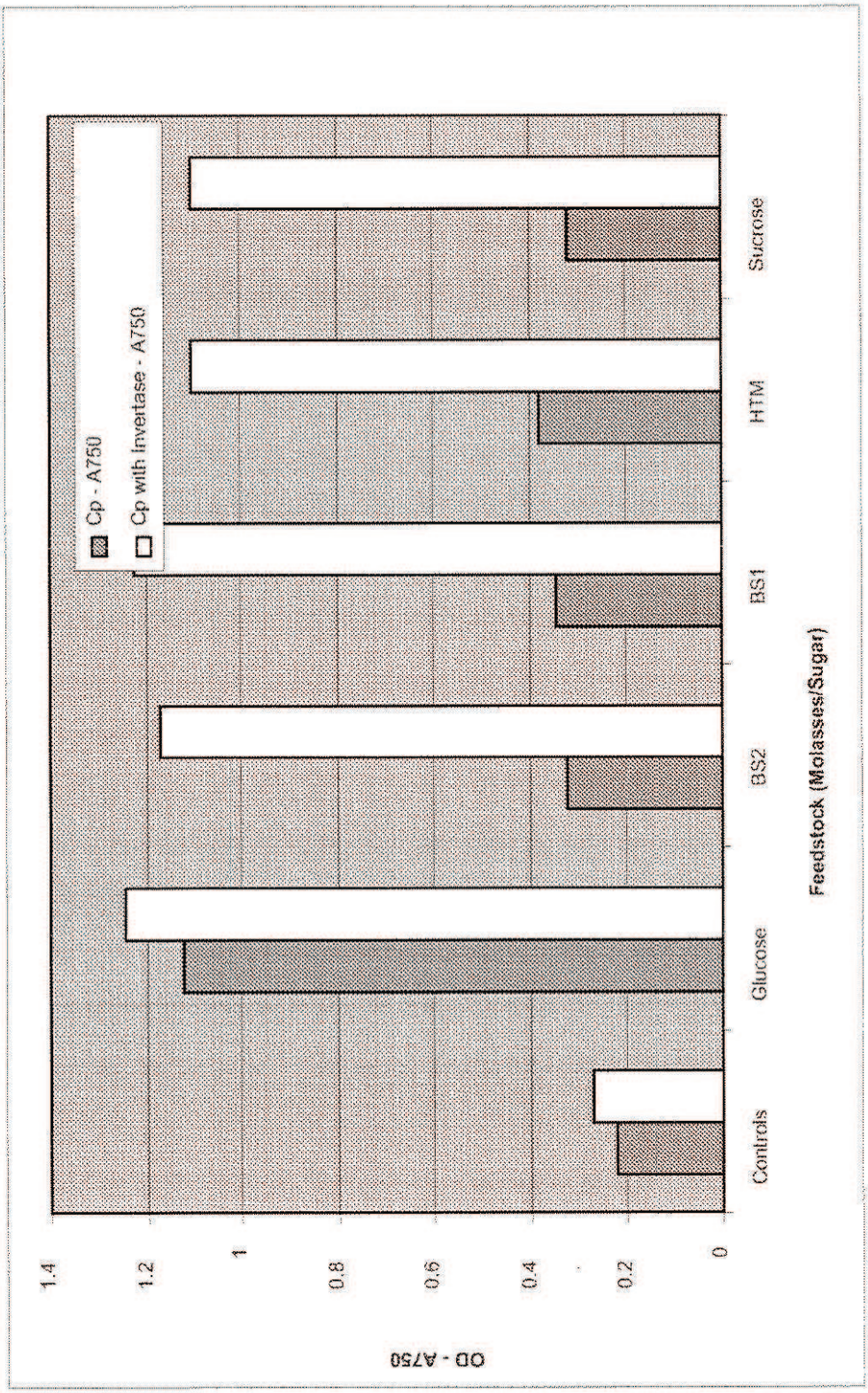

Cp - DCW
Cp with invertase - DCW
DCW - g/L
0
2
4
6
8
10
12
Controls
Glucose
BS2
BS1
HTM
Sucrose
Feedstock (Molasses/Sugar)

Figure 18


OD - A750
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Cp - A750
Cp with Invertase - A750
Controls
Glucose
BS2
BS1
HTM
Sucrose
Feedstock (Molasses/Sugar)

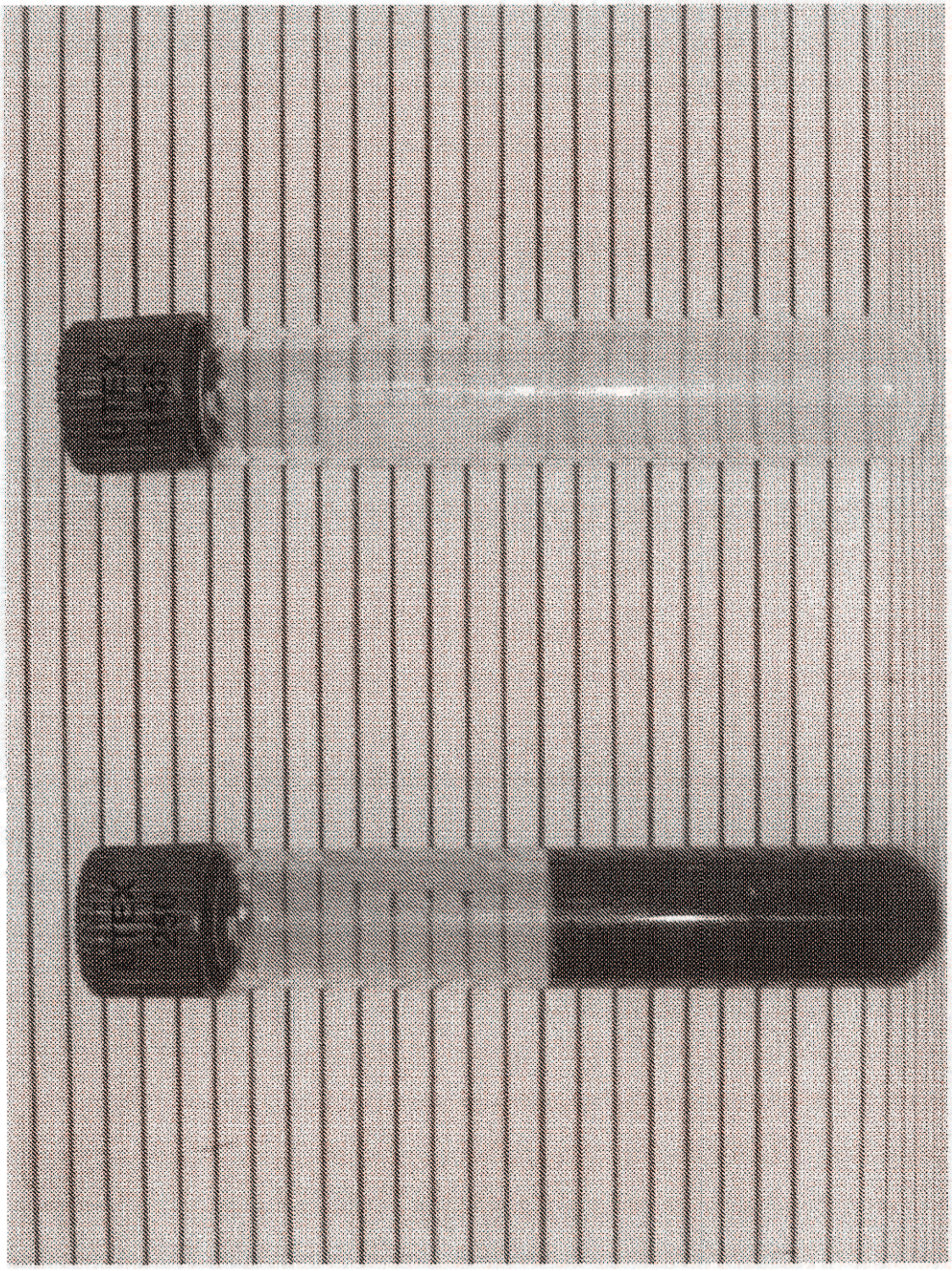


Figure 19

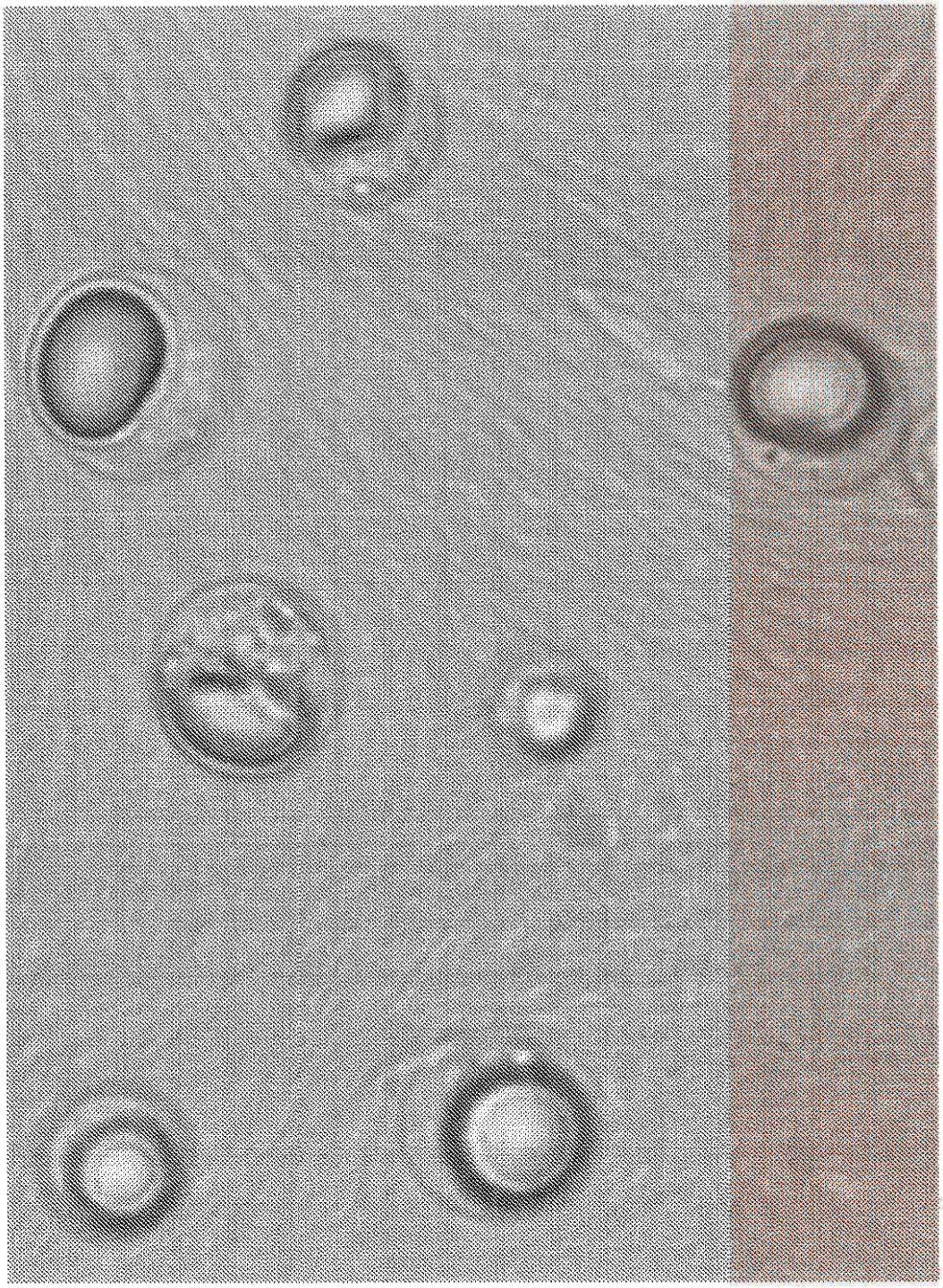


Figure 20

Figure 21a

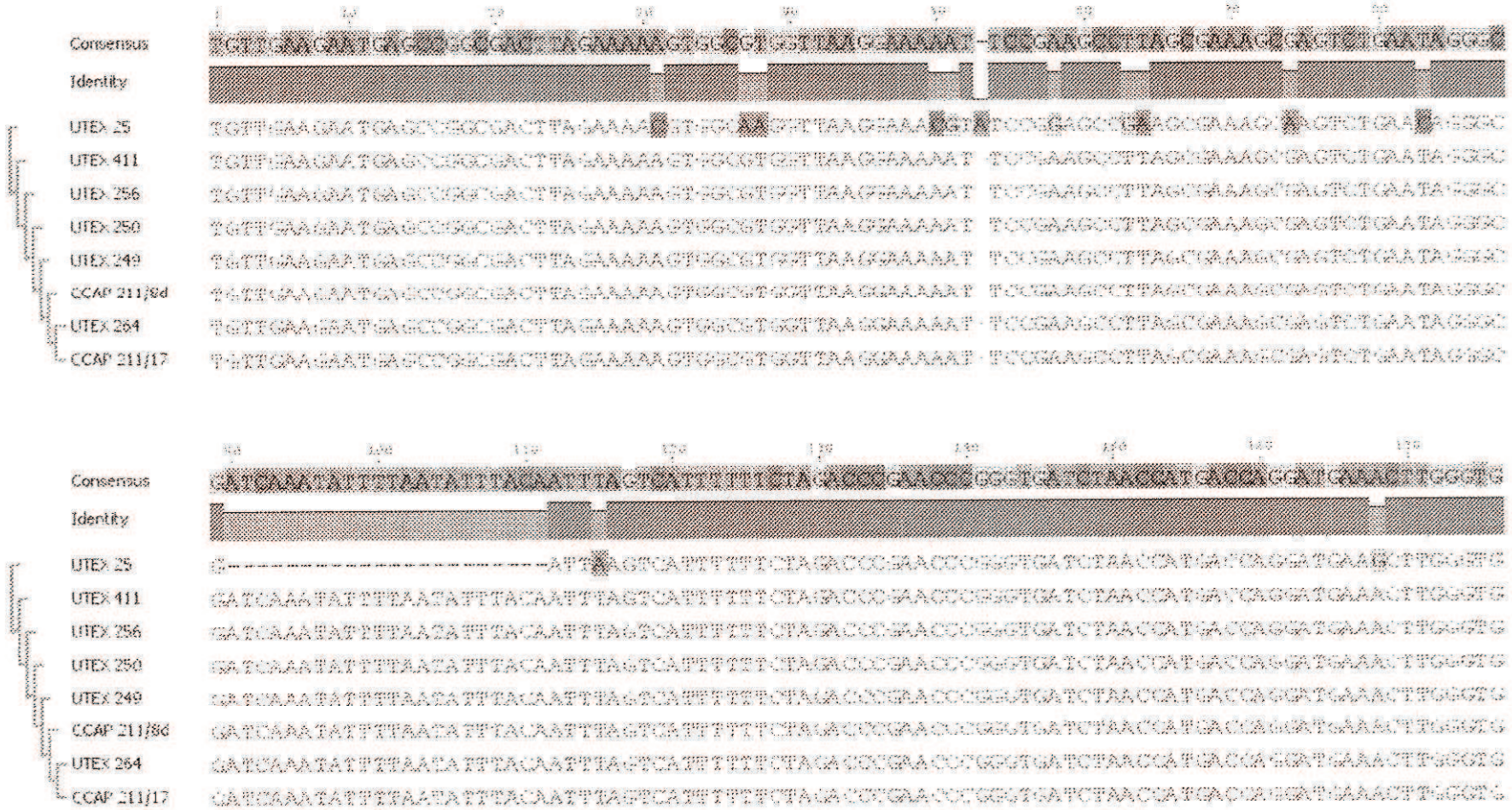

Consensus
Identity
UTEX 25
UTEX 411
UTEX 256
UTEX 250
UTEX 249
CCAP 211/8d
UTEX 264
CCAP 211/17

Figure 21b


Consensus
Identity
UTEX 25
UTEX 411
UTEX 256
UTEX 250
UTEX 249
CCAP 211/8d
UTEX 264
CCAP 211/17

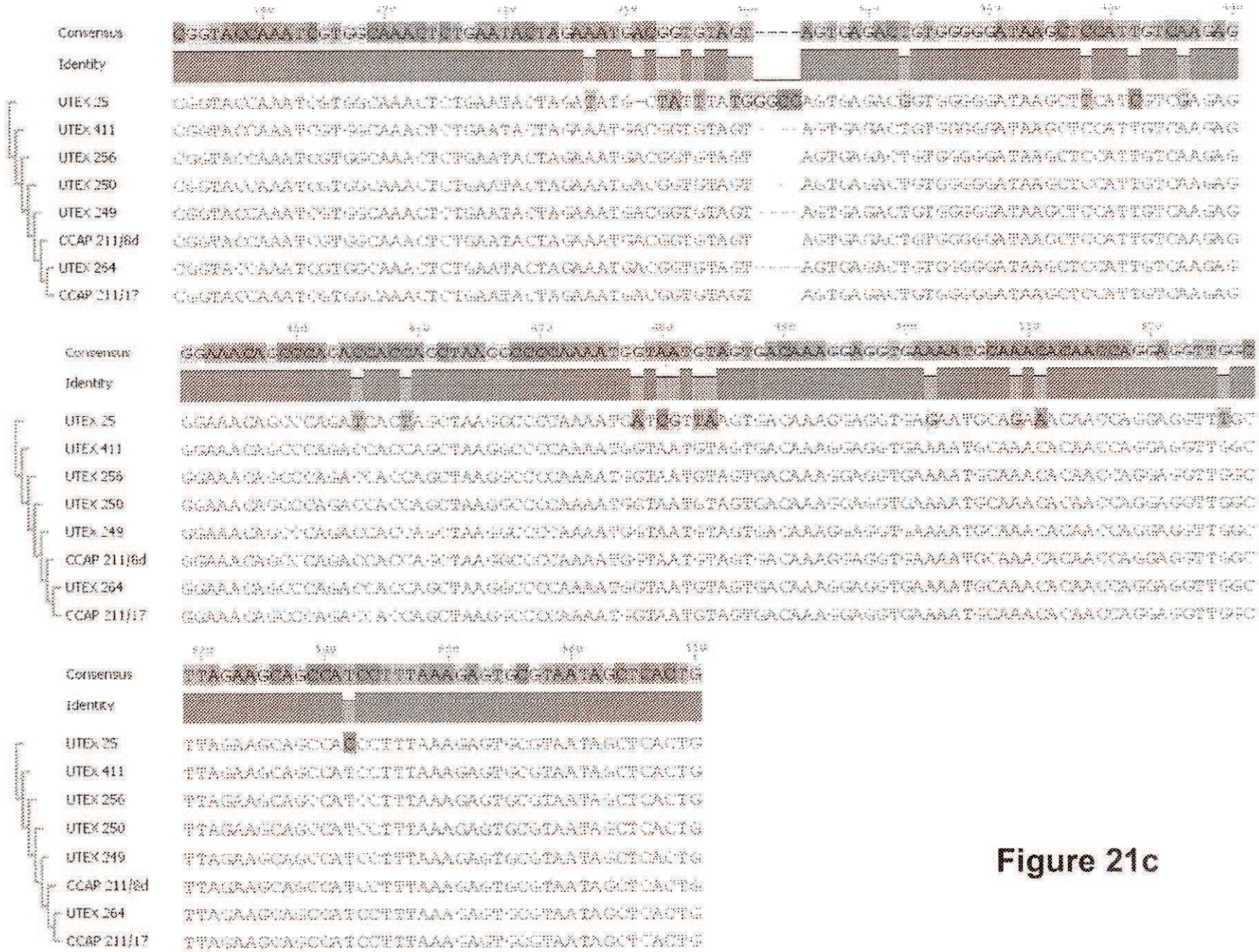
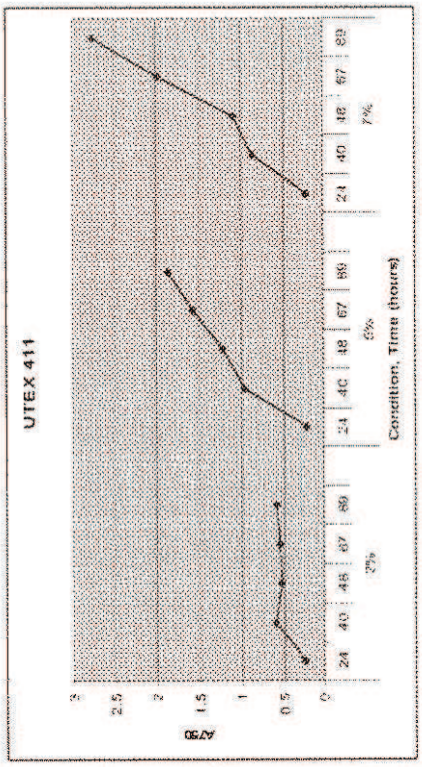
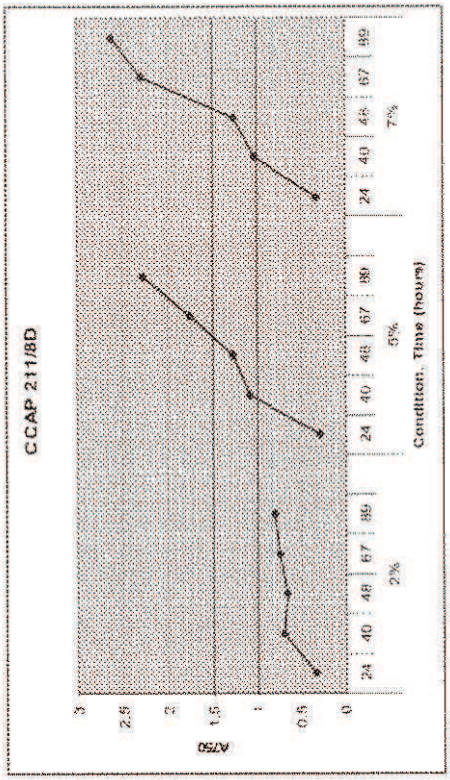
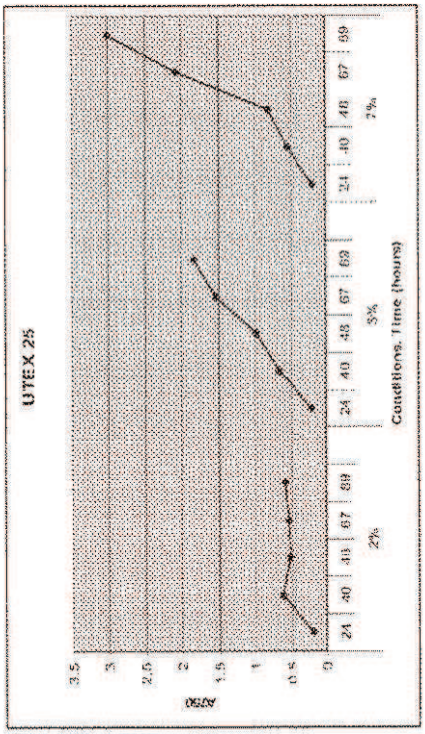

Consensus
Identity
UTEX 25
UTEX 411
UTEX 256
UTEX 250
UTEX 249
CCAP 211/8d
UTEX 264
CCAP 211/17

Figure 21c

Figure 22


UTEX 411
A750
Condition, Time (hours)
2%
5%
7%


CCAP 211/8D
A750
Condition, Time (hours)
2%
5%
7%


UTEX 25
A750
Conditions, Time (hours)
2%
5%
7%

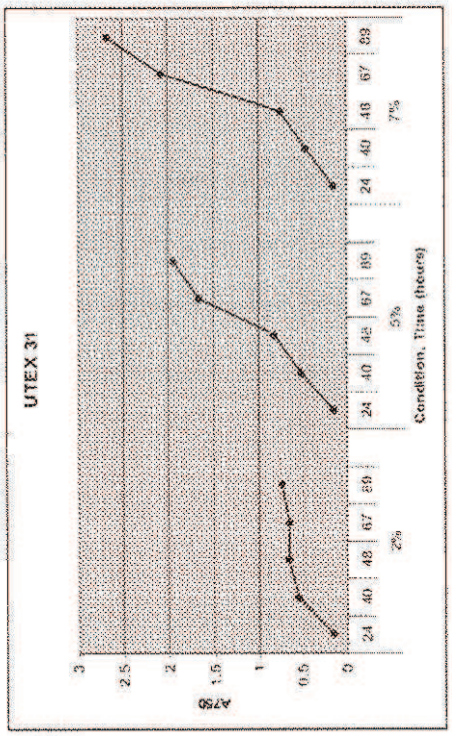
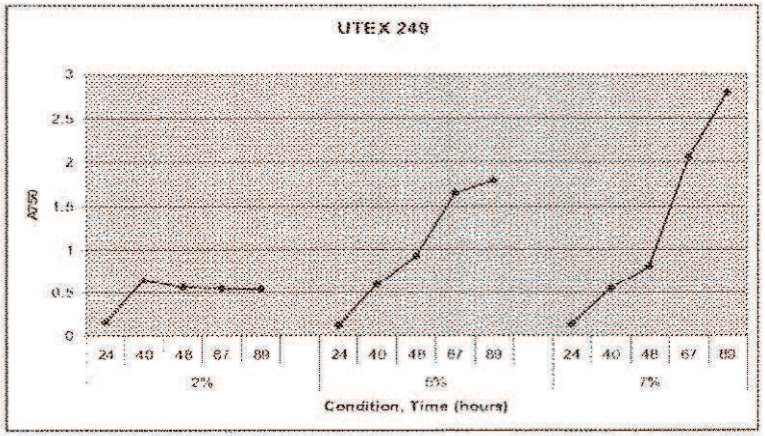
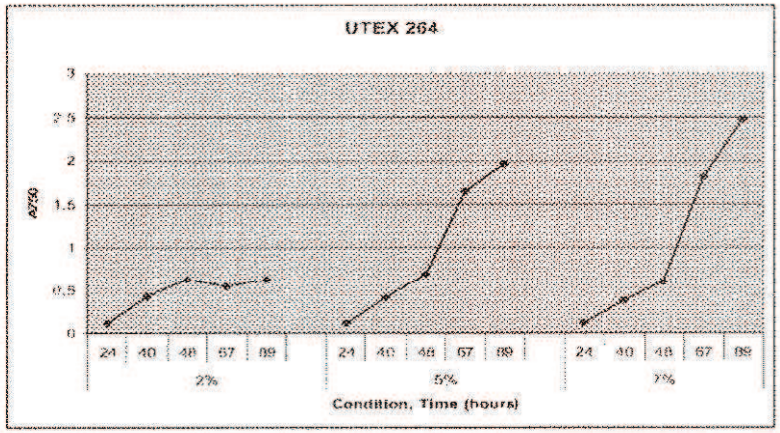
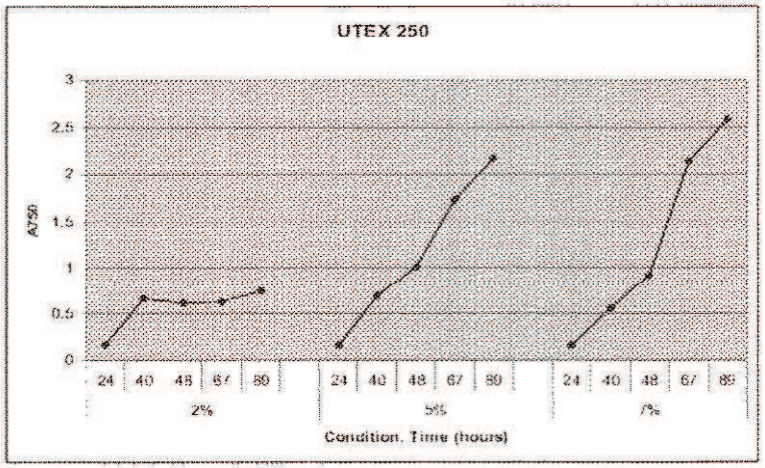

UTEX 31
A750
Condition, Time (hours)
2%
5%
7%

Figure 23


UTEX 249
A750
3
2.5
2
1.5
1
0.5
0
24 40 48 67 89 24 40 48 67 89 24 40 48 67 89
2% 5% 7%
Condition, Time (hours)


UTEX 264
A750
3
2.5
2
1.5
1
0.5
0
24 40 48 67 89 24 40 48 67 89 24 40 48 67 89
2% 5% 7%
Condition, Time (hours)


UTEX 250
A750
3
2.5
2
1.5
1
0.5
0
24 40 48 67 89 24 40 48 67 89 24 40 48 67 89
2% 5% 7%
Condition, Time (hours)

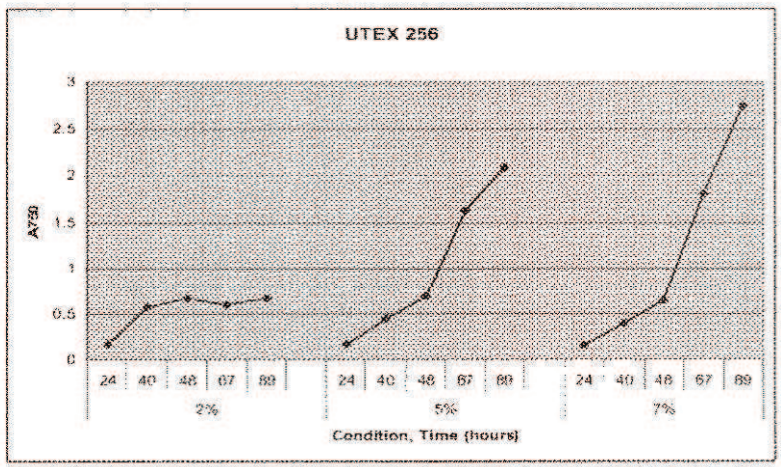

UTEX 256
A750
3
2.5
2
1.5
1
0.5
0
24 40 48 67 89 24 40 48 67 89 24 40 48 67 89
2% 5% 7%
Condition, Time (hours)

Figure 24

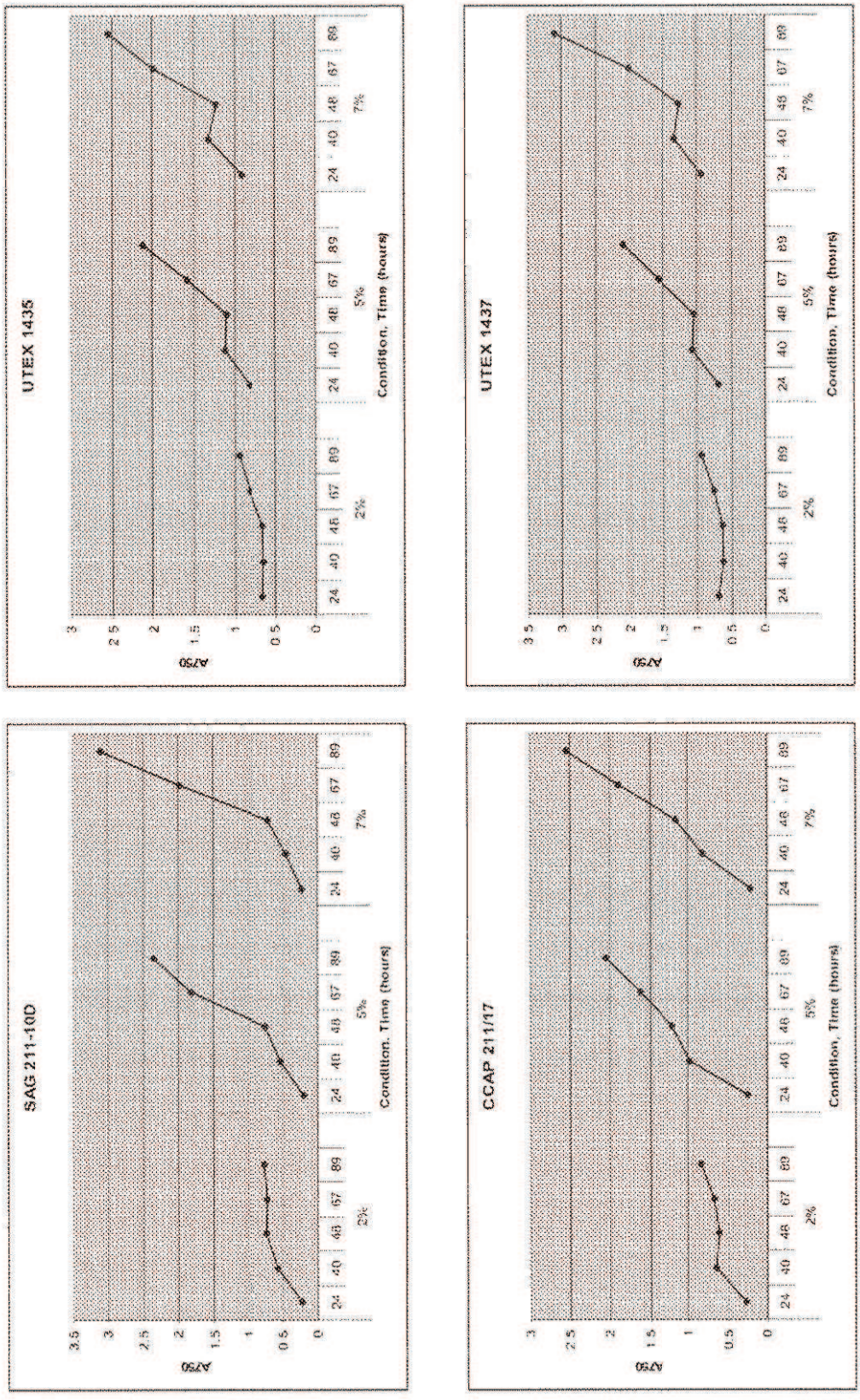

UTEX 1435
UTEX 1437
SAG 211-10D
CCAP 211/17
A750
Condition, Time (hours)
2%
5%
7%

Figure 25

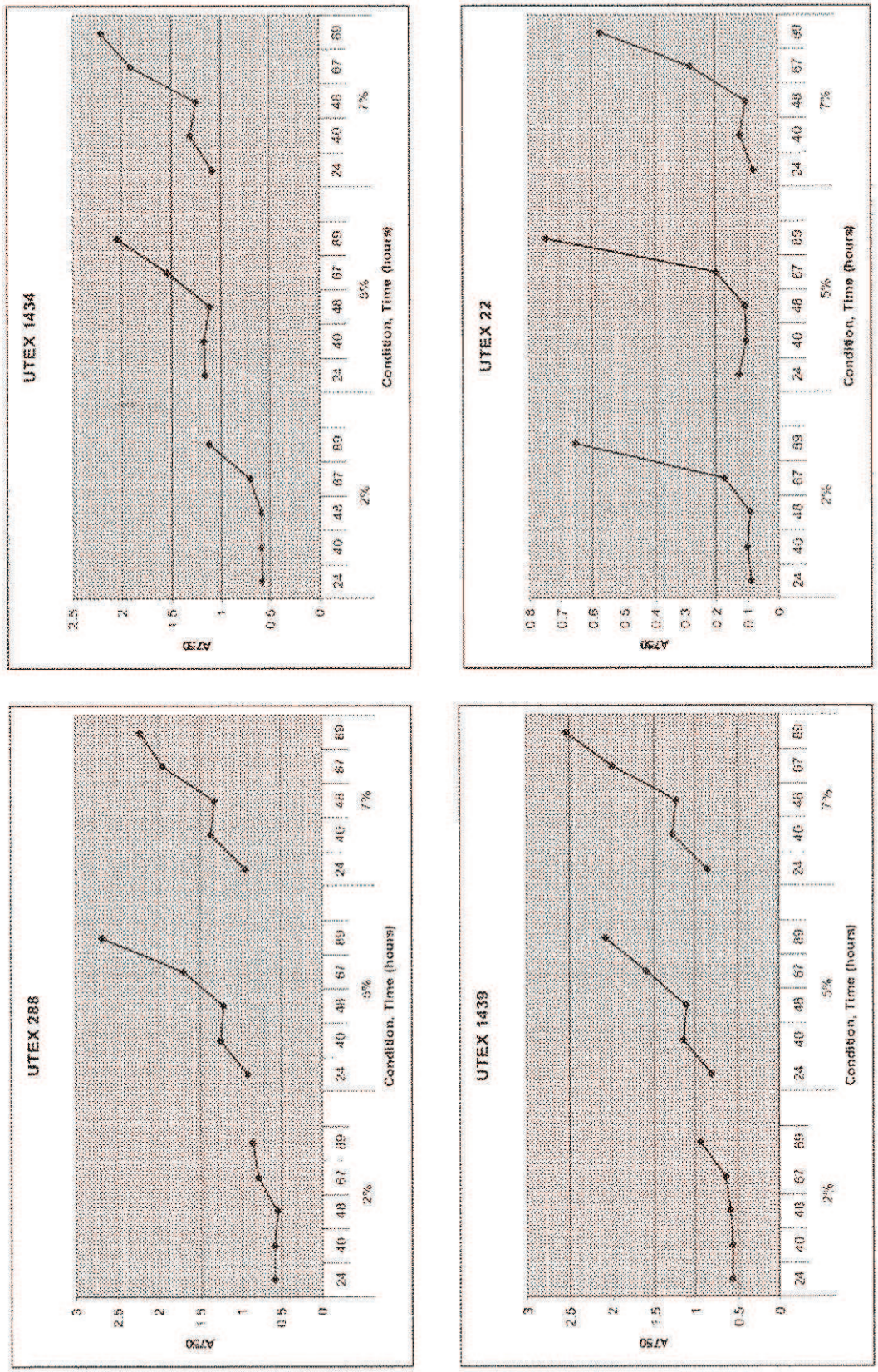

UTEX 1434
UTEX 22
UTEX 288
UTEX 1439
A750
Condition, Time (hours)
2%
5%
7%

Figure 26

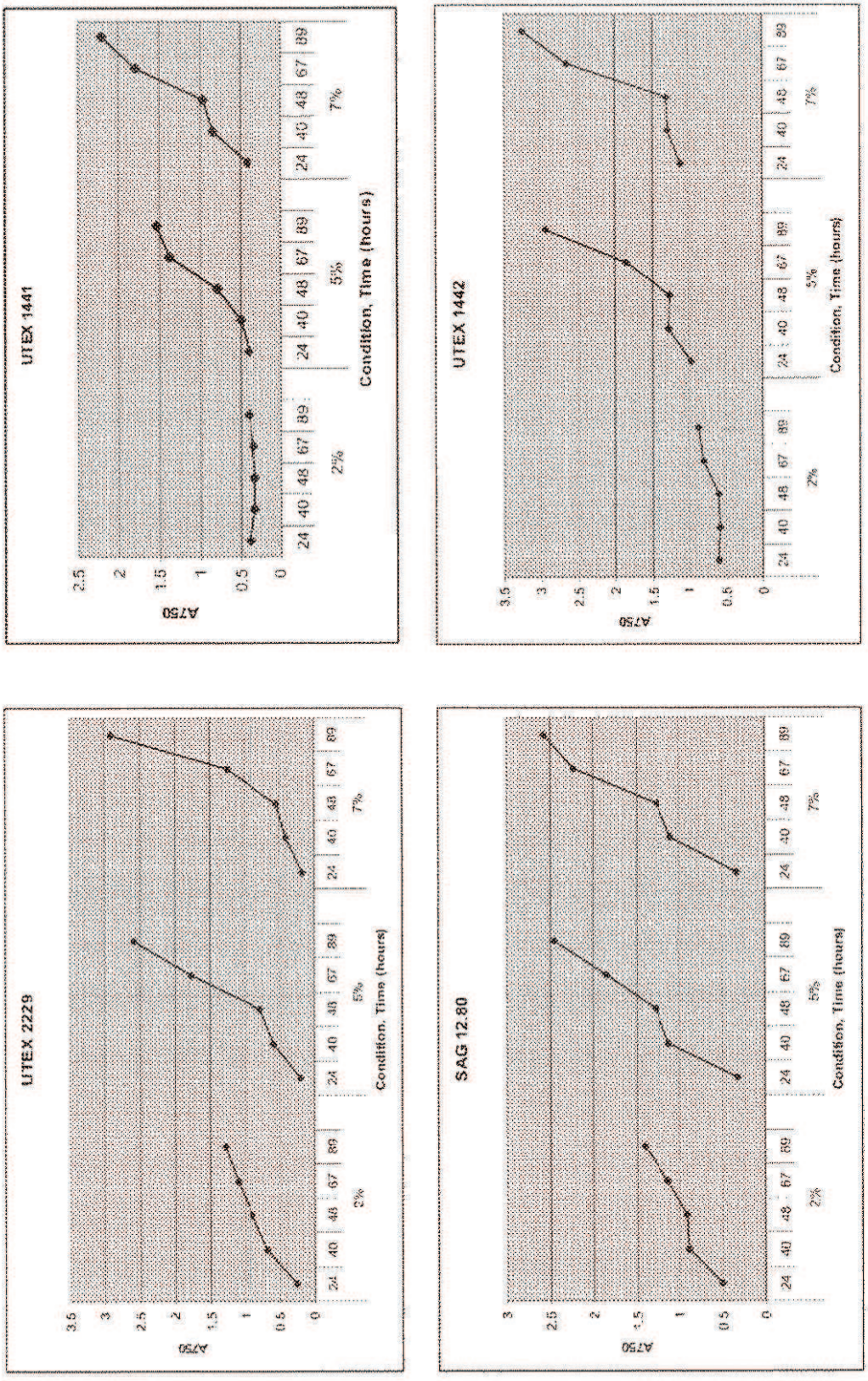

UTEX 1441
UTEX 1442
UTEX 2229
SAG 12.80
A750
Condition, Time (hours)
2%
5%
7%

Figure 27

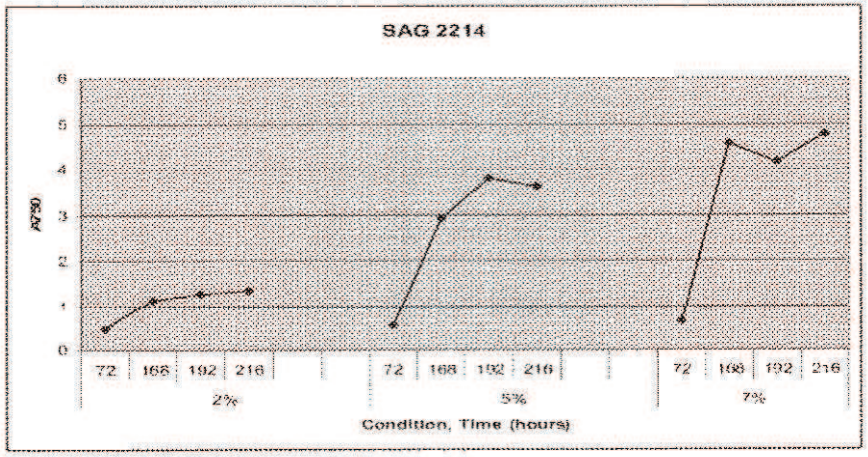


Figure 28

Diversity of Lipid Chains in Microalgal Species									
Strain # From Table 8	C:14:0	C:16:0	C:16:1	C:18:0	C:18:1	C:18:2	C:18:3	C:20:0	C:20:1
1	0.57	10.30	0	3.77	70.52	14.24	1.45	0.27	0
2	0.61	8.70	0.30	2.42	71.98	14.21	1.15	0.20	0.24
4	0.68	9.82	0	2.83	65.78	12.94	1.46	0	0
5	1.47	21.96	0	4.35	22.64	9.58	5.2	3.88	3.3
10	0	12.01	0	0	50.33	17.14	0	0	0
11	1.41	29.44	0.70	3.05	57.72	12.37	0.97	0.33	0
12	1.09	25.77	0	2.75	54.01	11.90	2.44	0	0

Figure 29a


Consensus
Identity
10
16
18
22
21
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09
04
01
03
02
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17
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08
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05
06

Figure 29b

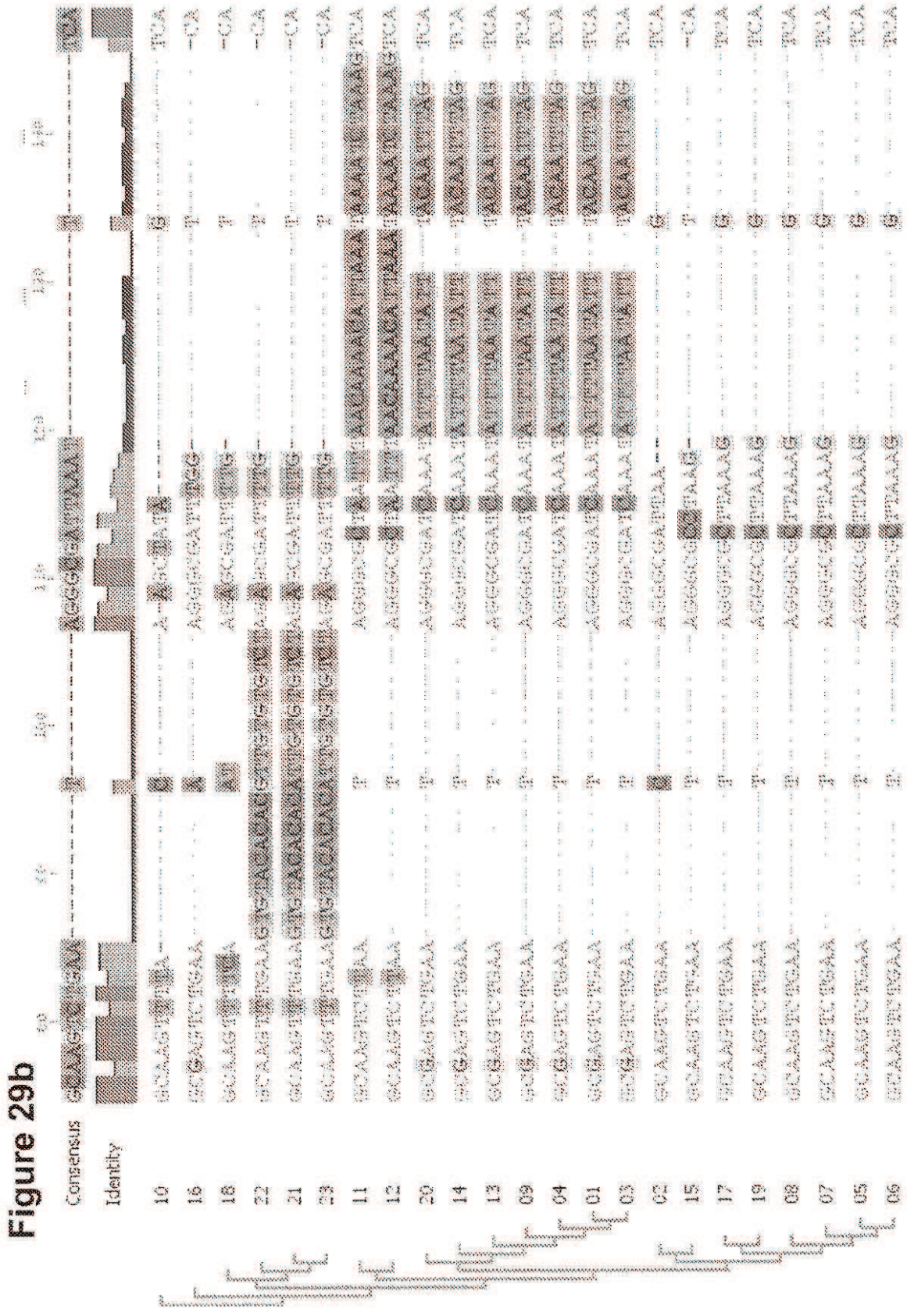

Consensus
Identity
10
16
18
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04
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08
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05
06

Figure 29c

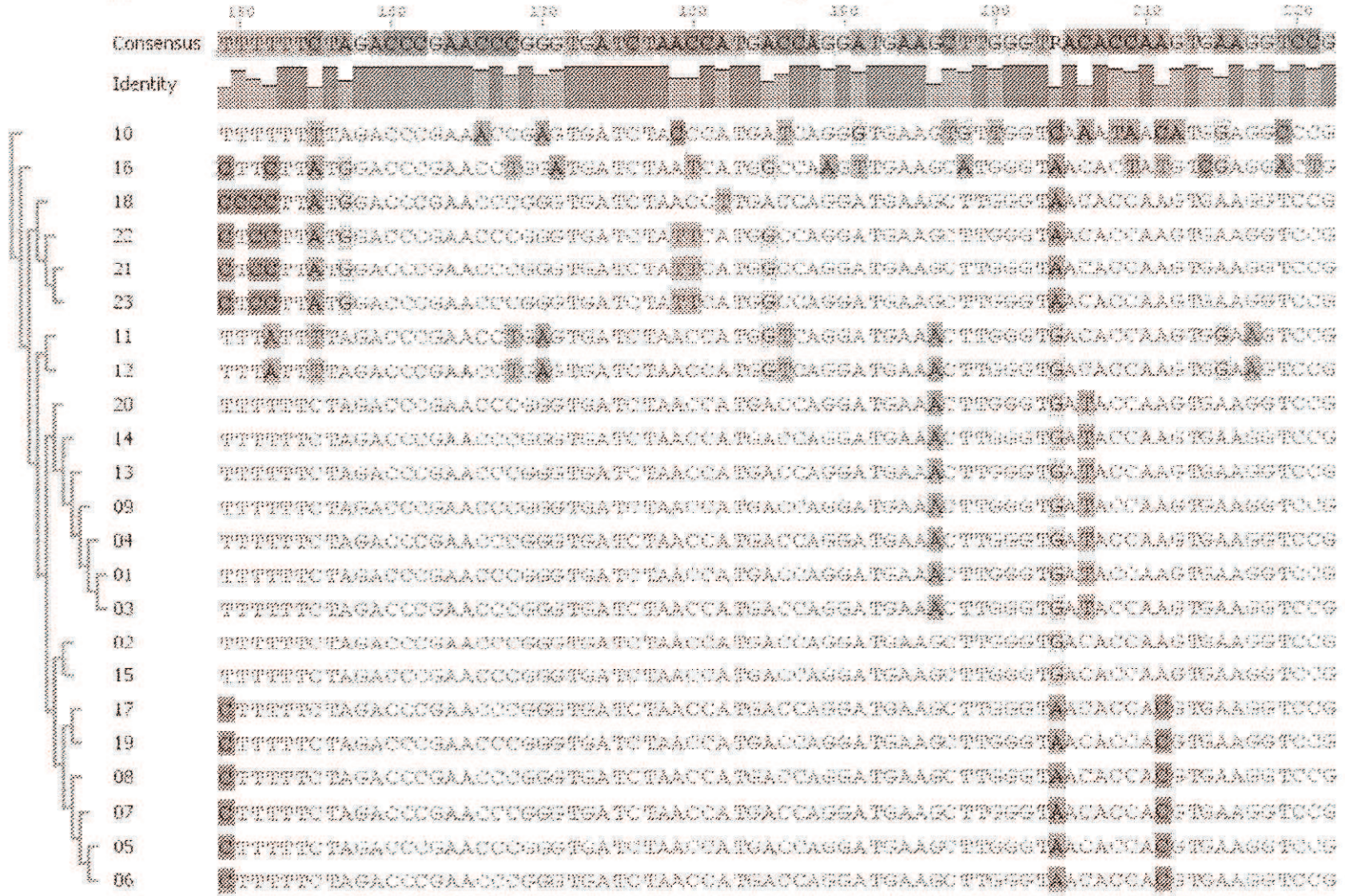

Consensus
Identity
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Figure 29d


Consensus
Identity
10
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Figure 29e

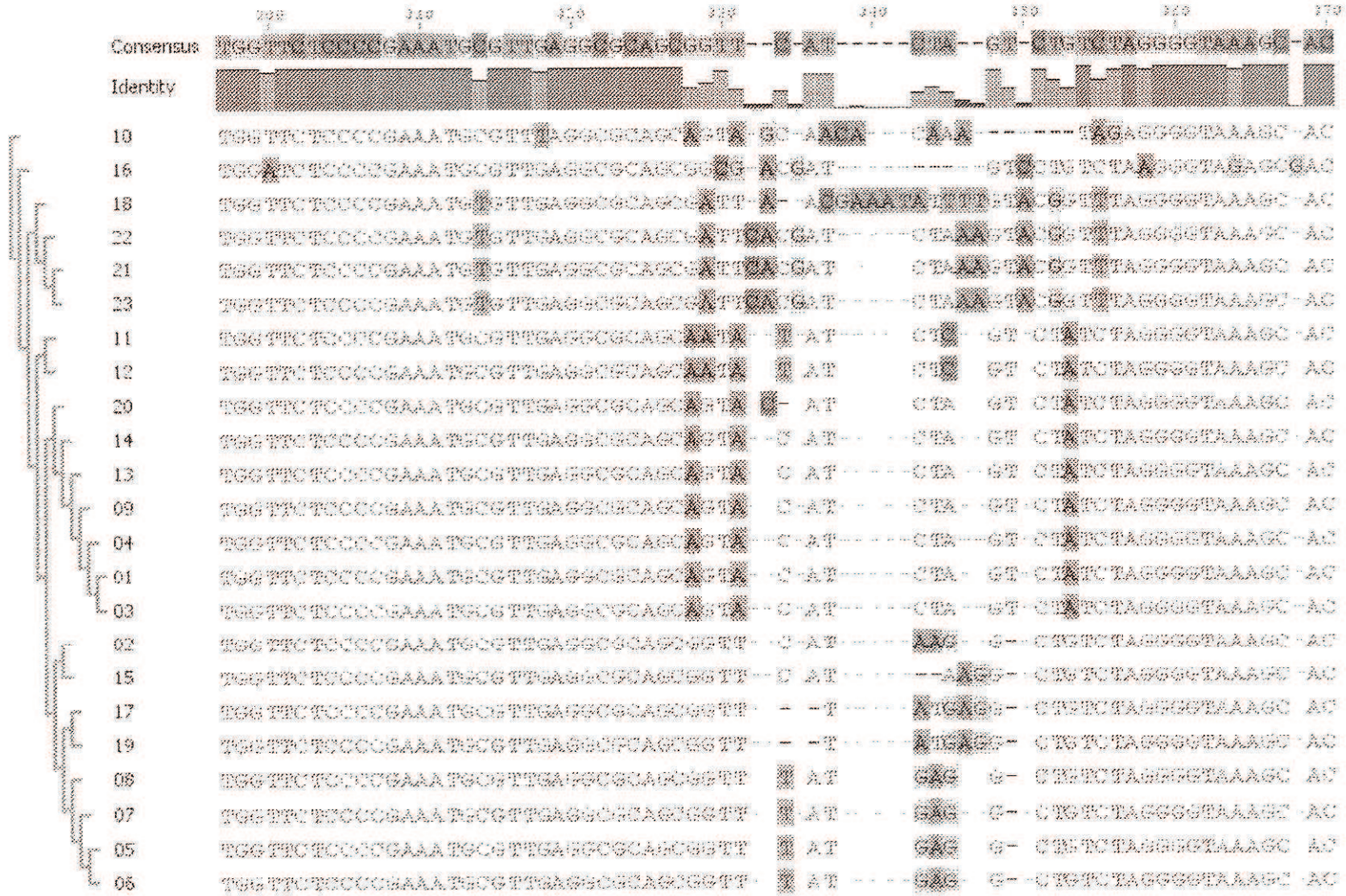

Consensus
Identity
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Figure 29f


Consensus
Identity
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Figure 29g

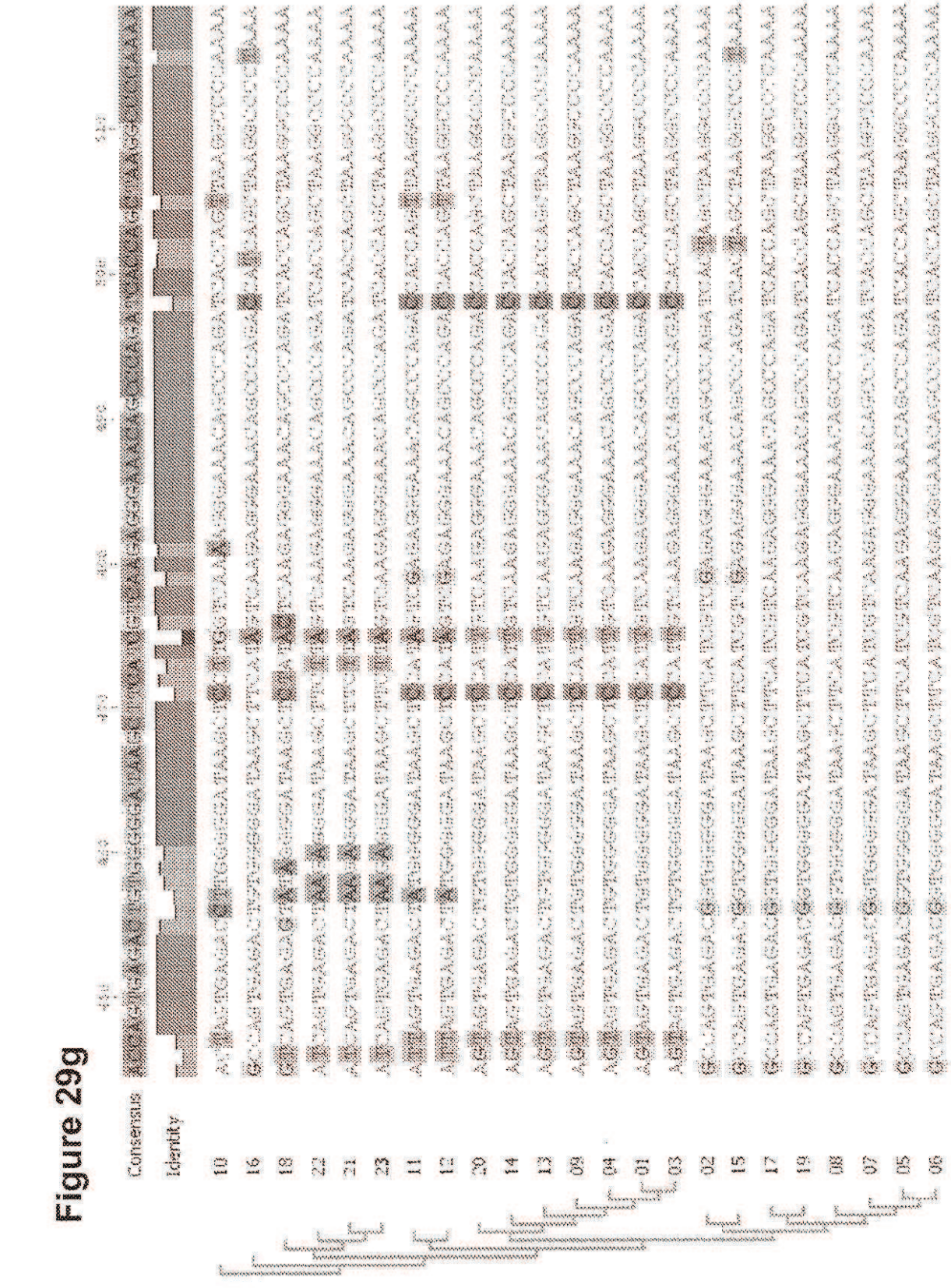

Consensus
Identity
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17
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Figure 29h

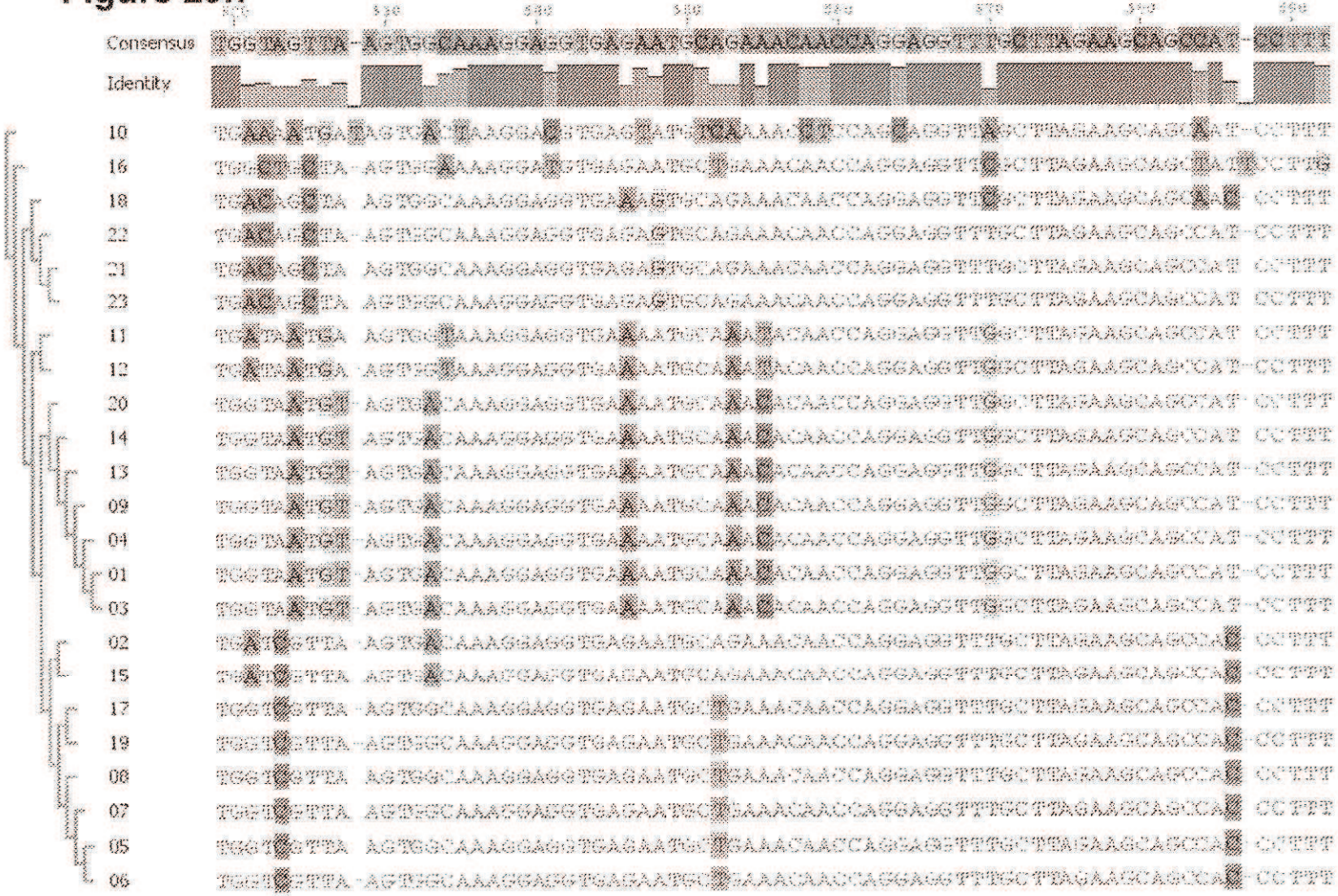
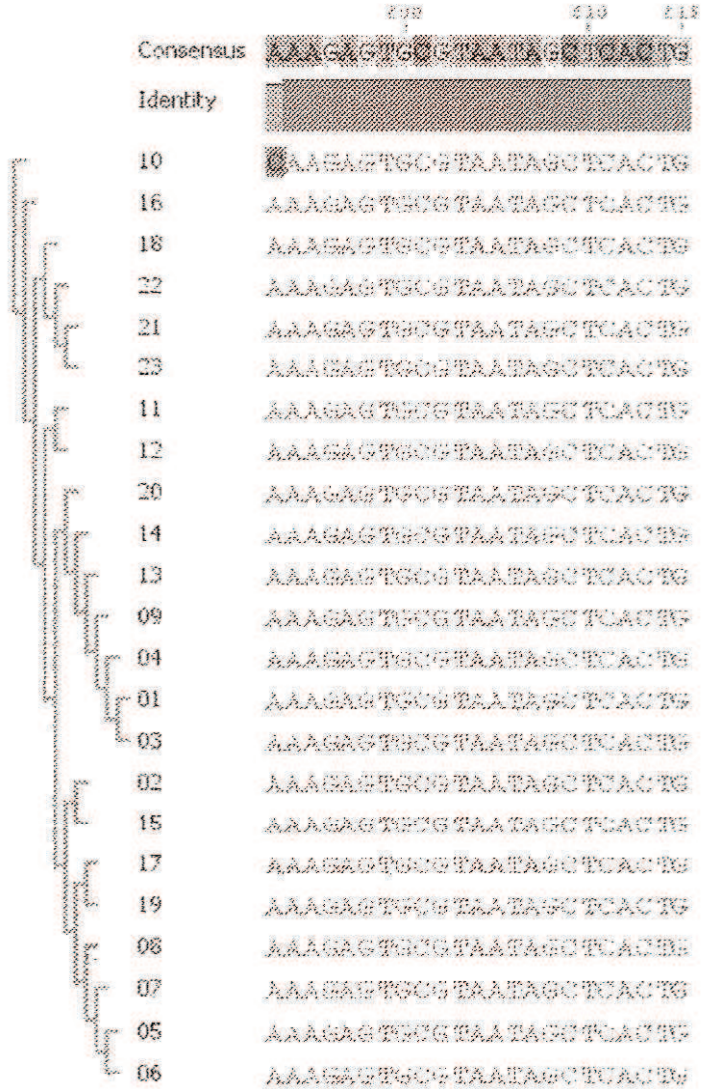

Consensus
Identity
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Figure 29i


Consensus
Identity
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