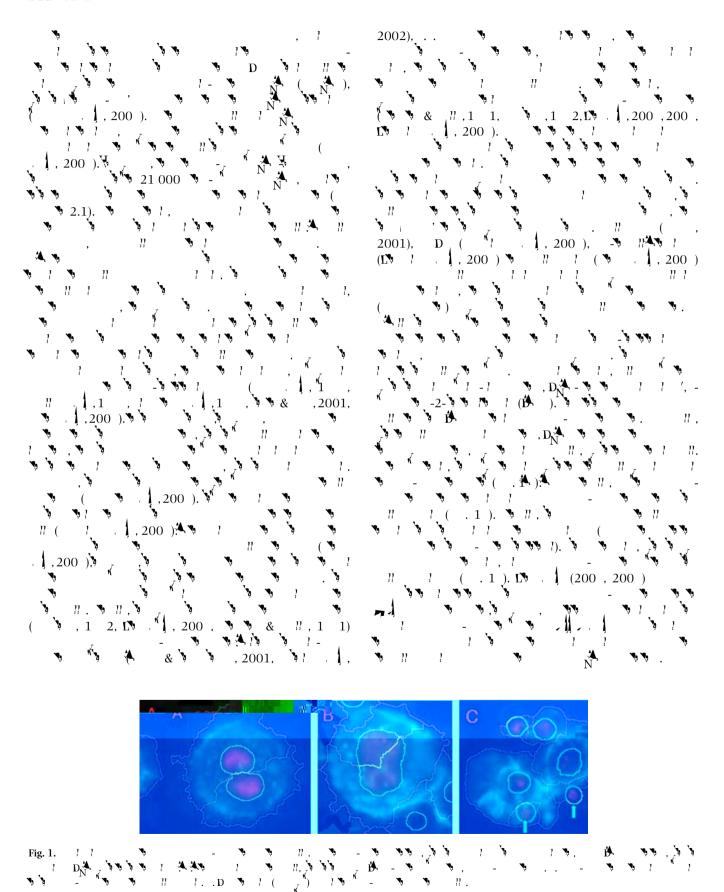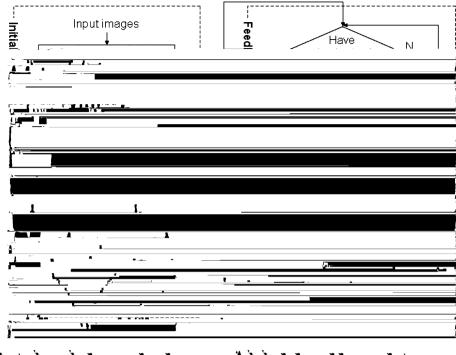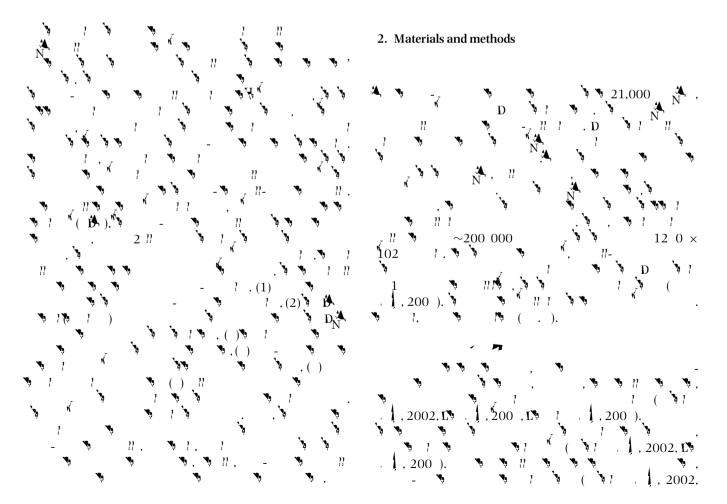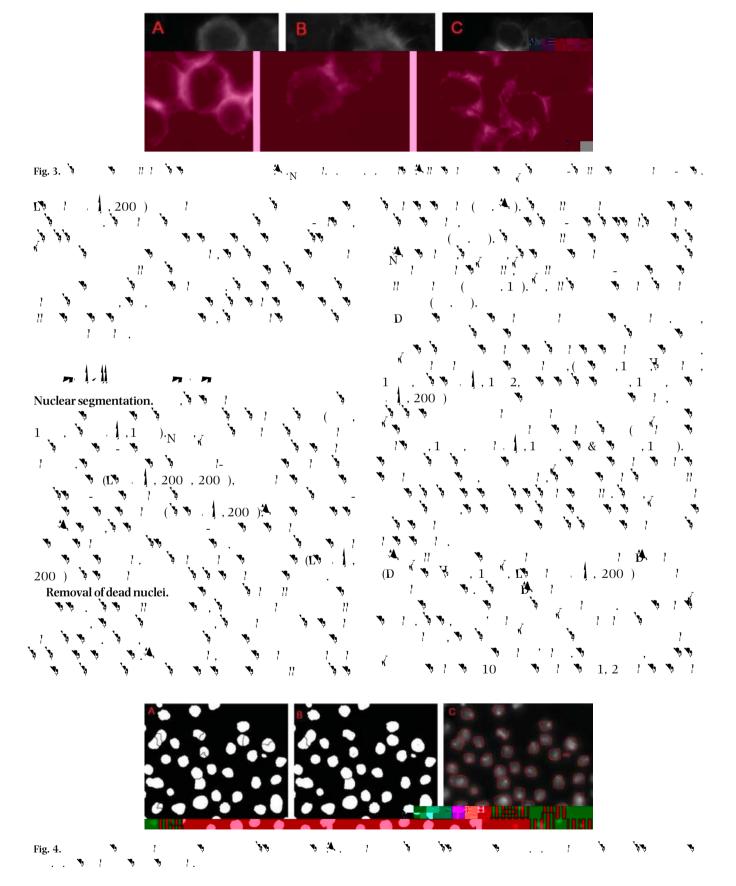# An automated feedback system with the hybrid model of scoring and classification for solving over-segmentation problems in RNAi high content screening

. L *†, . *‡, . † & N . N *‡

Summary

Background:

Methods:

Results:

Conclusions:

1. Introduction

... 2002), ...

(, 200).

(, 200).

21 000

(2.1).

(& , 1 1, , 1 2, L , 200 , 200 , L , 200).

(, 2001), D (, 200), (L , 200) (, 200)

(, 1 , 1 , & , 2001, , 200).

(, 200).

(, 200).

(, 200),

(, 1 2, L , 200 , & , 1 1)

& , 2001, , ,

Fig. 1. ...

Initial | Input images | Feed | Have | N

Fig. 2. A A ... N ...

2. Materials and methods

N

...21,000 N ,
D
. D
N .
N , "
N
~200 000 12 0 ×
102 .
1 , 200). D
(B), 2 "
. ( ) . (1)
- , (2) D 1 , 200).
D N
. ( )
. ( ) ( )
, 2002, L , 200 L , 200).
(, 2002, L
, 200).
(, 2002,

Fig. 3.

Nuclear segmentation.

Removal of dead nuclei.

Fig. 4.

Fig. 5.

Initial cell body segmentation:

$$= (\ ) = (\ _D,\ ,\ ) \qquad (1)$$

○ 200

, 226, 121 1 2

211

MD model and MD score.

$$x^2 = (\vec{} - \vec{})' \Sigma^{-1} (\vec{} - \vec{}) \qquad (2)$$

$$_D = \frac{(x^1 + x^2)}{2 \times x}, \qquad ( )$$

Fig. 6.

Fig. 7.

Fig. 8.

EI model and EI score.

$$ = \{ (_1), (_2)\}$$

$$(,) = !\quad \pi \quad -\frac{1}{2}, \quad -\mu \quad ^{-1}, \quad -\mu$$

$$-\frac{1}{2}!\left| \quad \right| \right), \quad = 1, 2, \ldots, \quad \quad ( )$$

$\mu \quad , \Sigma \quad \pi$

$, \quad = 2.$

$= (\quad , \quad , \quad _E)' \ldots \quad = .$

$$= \begin{cases} 0, & _1(,) \geq {}_2(,), \\ 1, & _1(,) < {}_2(,). \end{cases} \quad ( )$$

$= 0,$

$= 1,$

Merging procedure – feedback System.

$(\quad . 10).$

$(D \quad \& \quad ,$
$1 \quad , L \quad , 200),$

00

200

00

$\{, {}_1, , {}_2, \ldots, , _{\blacksquare} |, \in \},$

$, \quad = 1, 2, \ldots, . L$

π

$$(\quad |,) = \frac{(\quad ,)}{(,)} = \propto \pi, \quad (, \mid). \quad ( )$$

Table 1.

	D	L
	. %	.1 %
	. %	.1 %

$_0$ $\in (1, 2, \ldots)$

(1)

3. Results

E

D

1 1 10

. %, .1 %

E

, 00
200
00 , 200 -

D . 2

Table 3.

	. 0%	. 0%
	. %	.2 %

Table 4.

D	1. %	0. %	2 .12%
	. %	0. %	. %
	.2%	. 0%	1 . 2%
	. 0%	.2 %	.00%

D
11

1. 0%
2. 0%

.12.

Table 2.

D						
N - D	1	1	1	2	0	. %
- D	1	1	0	2	1	0. %
- D	1	1	1	1	1	1. %

Fig. 11.

4. Conclusion and discussion

Table 5.

#	2	0	1
#	2	1	12 (1. 0%)
#			1 (2. 0%)
#	1	1	1	1

○ 200

○ 200 , **226**, 121 1 2

Fig. 12.

Acknowledgments

References