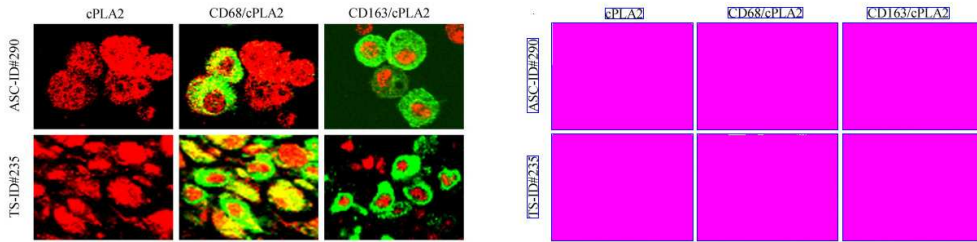


# A New Pivoting and Iterative Text Detection Algorithm for Biomedical Images: Appendix C

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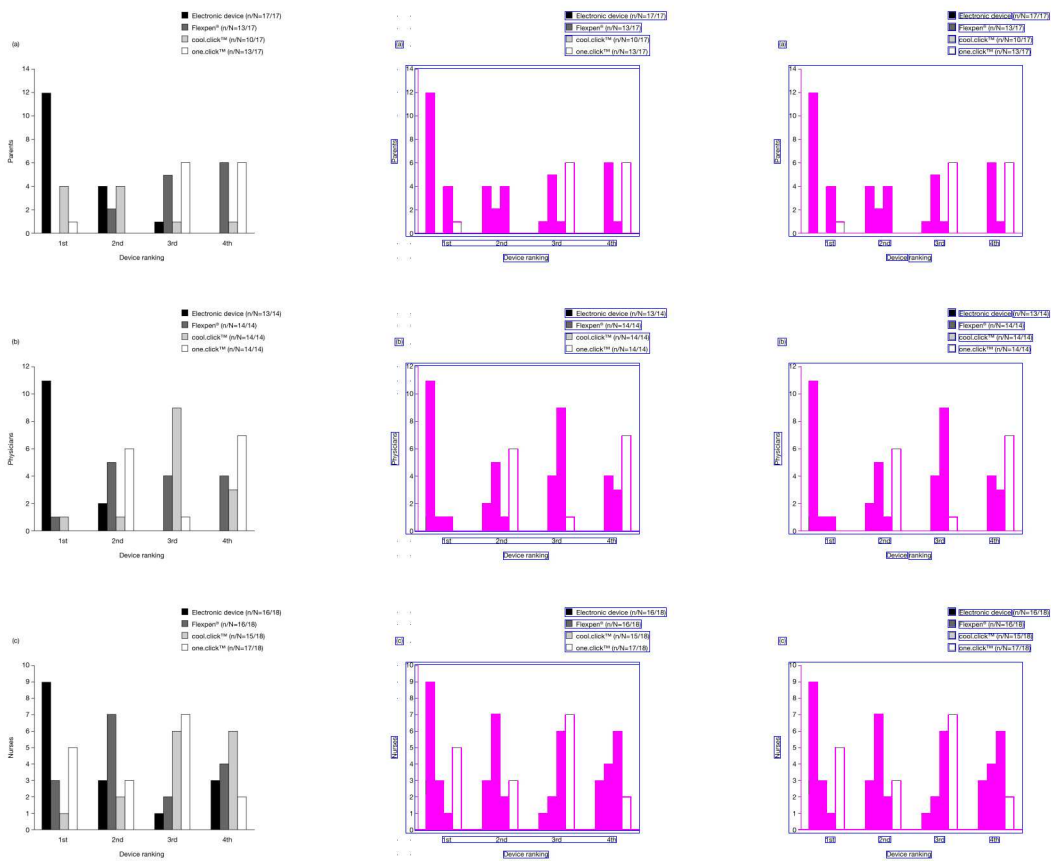
Below we will show more text detection examples.



(a) The original image

(b) Text detection result after the 1st round, i.e. the final result

Figure 1: A text detection example from [9].

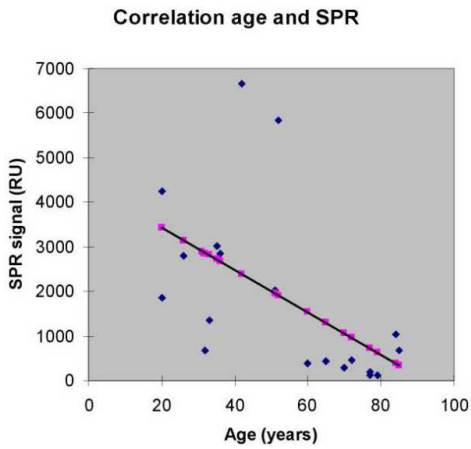


(a) The original image

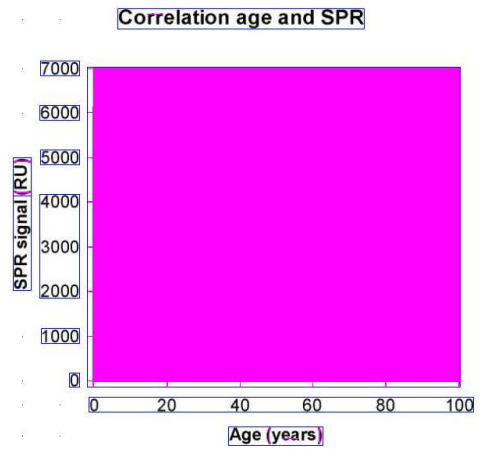
(b) Text detection result after the 1st round

(c) The final text detection result

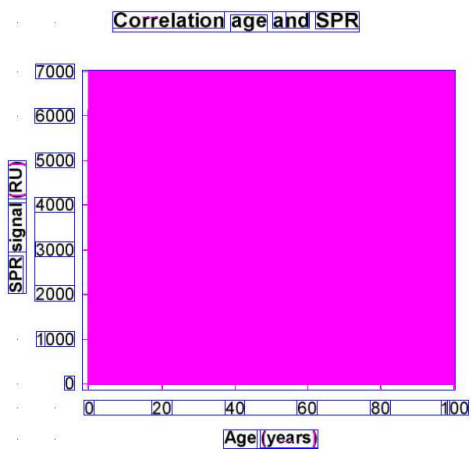
Figure 2: A text detection example from [3].



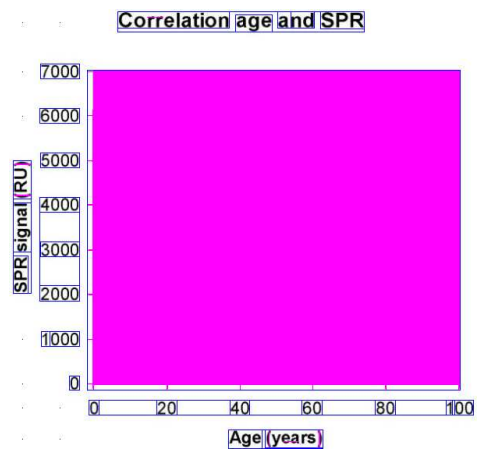
(a) The original image



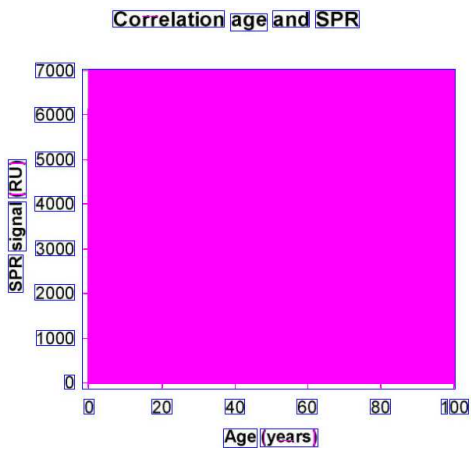
(b) Text detection result after the 1st round



(c) Text detection result after the 2nd round

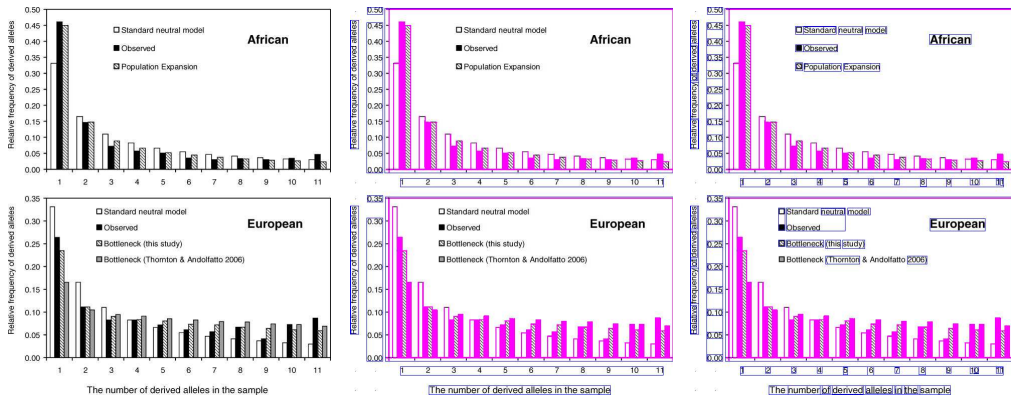


(d) Text detection result after the 3rd round

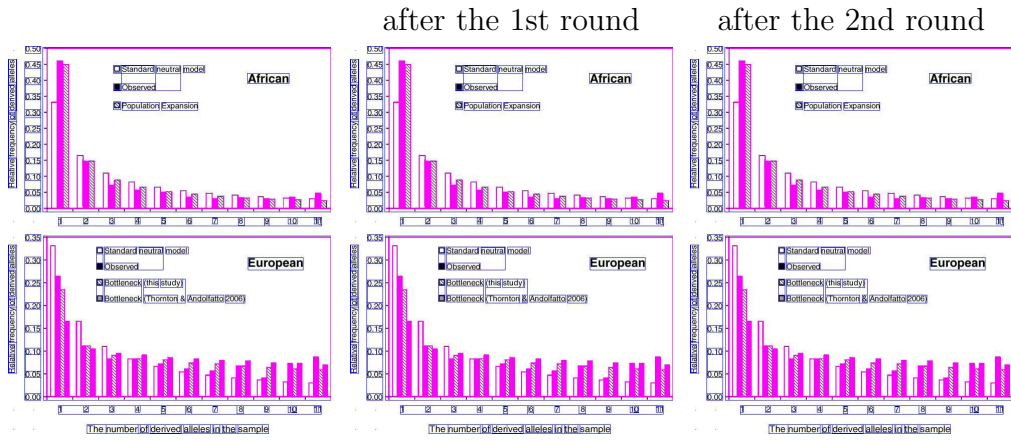


(e) The final text detection result

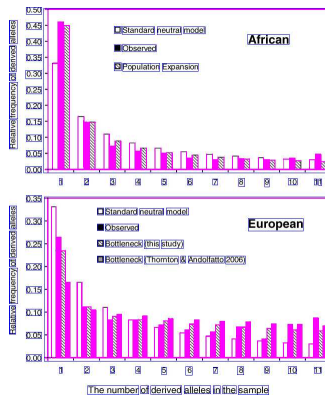
Figure 3: A text detection example from [7].



(a) The original image (b) Text detection result (c) Text detection result

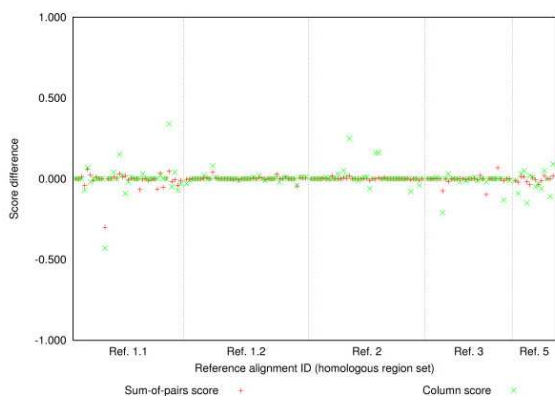


(d) Text detection result after the 1st round (e) Text detection result after the 2nd round (f) Text detection result after the 3rd round

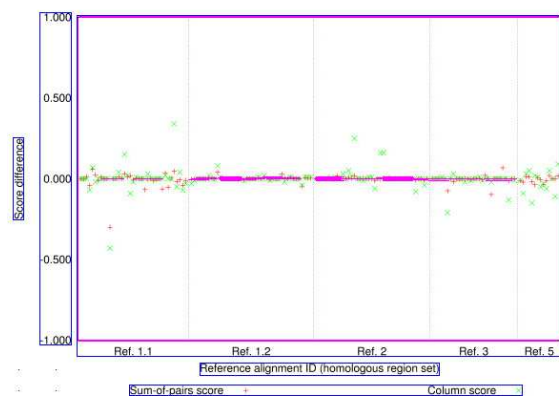


(g) The final text detection result

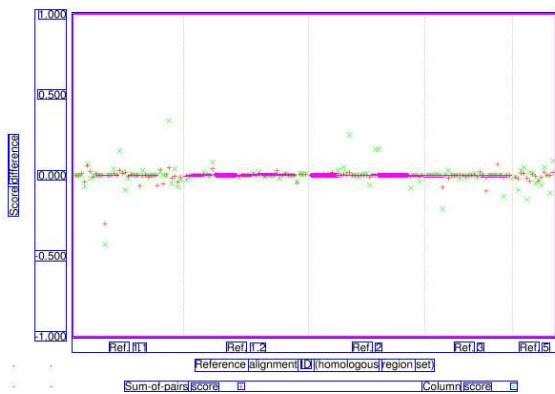
Figure 4: A text detection example from [4].



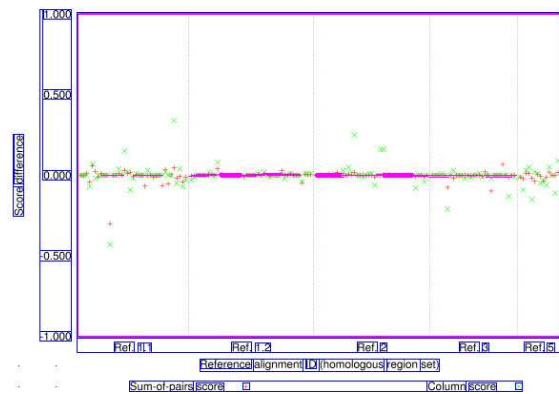
(a) The original image



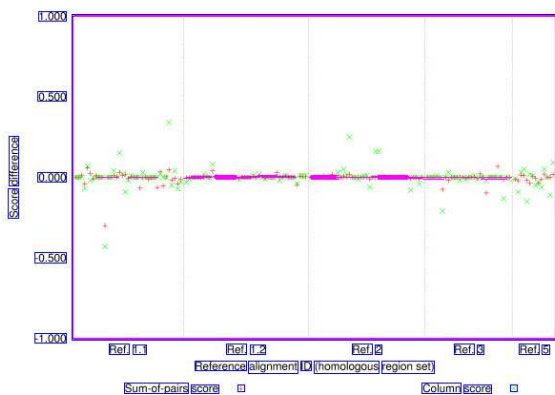
(b) Text detection result after the 1st round



(c) Text detection result after the 2nd round



(d) Text detection result after the 3rd round



(e) The final text detection result

Figure 5: A text detection example from [10].

a) Common ESTs between SSH and microarray for each comparison

Comparison	1332/1332 bm3	5361/5361 bm3	F2/ F2 bm1	F2/ F2 bm2	F2/ F2 bm3	FD-pop	DD1-pop	DD2-pop	AS 20/ AS 21
EST number	49	102	42	43	25	34	8	33	31

b) Differentially expressed ESTs with at least five-fold change for each comparison

Comparison	1332/1332 bm3	5361/5361 bm3	F2/ F2 bm1	F2/ F2 bm2	F2/ F2 bm3	FD-pop	DD1-pop	DD2-pop	AS 20/ AS 21
EST number	18	90	25	30	83	42	78	42	80

c) EST homologs of the genes involved in lignin biosynthesis pathway

Lignin gene	PAL	4CL	C3H	CcCoAOMT	CCR	COMT	CAD
EST number	10	22	9	5	19	18	17

d) *In silico* mapped ESTs located in chromosome 5, 1, and 4

Chromosome	1	4	5
EST number	95	47	26

e) Commonly differentially expressed ESTs in all three bm3-isogenic comparisons (1332/1332 bm3, 5361/5361 bm3, and F2/F2 bm3)

f) Commonly differentially expressed ESTs in all three isogenic comparisons (bm1, bm2, bm3) in F2 background

g) Commonly differentially expressed ESTs in FD, DD1, and DD2 mapping populations

(a) The original image

a) Common ESTs between SSH and microarray for each comparison

Comparison	1332/1332 bm3	5361/5361 bm3	F2/ F2 bm1	F2/ F2 bm2	F2/ F2 bm3	FD-pop	DD1-pop	DD2-pop	AS 20/ AS 21
EST number	49	102	42	43	25	34	8	33	31

b) Differentially expressed ESTs with at least five-fold change for each comparison

Comparison	1332/1332 bm3	5361/5361 bm3	F2/ F2 bm1	F2/ F2 bm2	F2/ F2 bm3	FD-pop	DD1-pop	DD2-pop	AS 20/ AS 21
EST number	18	90	25	30	83	42	78	42	80

c) EST homologs of the genes involved in lignin biosynthesis pathway

Lignin gene	PAL	4CL	C3H	CcCoAOMT	CCR	COMT	CAD
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d) *In silico* mapped ESTs located in chromosome 5, 1, and 4

Chromosome	1	4	5
EST number	95	47	26

e) Commonly differentially expressed ESTs in all three bm3-isogenic comparisons (1332/1332 bm3, 5361/5361 bm3, and F2/F2 bm3)

f) Commonly differentially expressed ESTs in all three isogenic comparisons (bm1, bm2, bm3) in F2 background

g) Commonly differentially expressed ESTs in FD, DD1, and DD2 mapping populations

(b) Text detection result after the 1st round

a) Common ESTs between SSH and microarray for each comparison

Comparison	1332/1332 bm3	5361/5361 bm3	F2/ F2 bm1	F2/ F2 bm2	F2/ F2 bm3	FD-pop	DD1-pop	DD2-pop	AS 20/ AS 21
EST number	49	102	42	43	25	34	8	33	31

b) Differentially expressed ESTs with at least five-fold change for each comparison

Comparison	1332/1332 bm3	5361/5361 bm3	F2/ F2 bm1	F2/ F2 bm2	F2/ F2 bm3	FD-pop	DD1-pop	DD2-pop	AS 20/ AS 21
EST number	18	90	25	30	83	42	78	42	80

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EST number	10	22	9	5	19	18	17

d) *In silico* mapped ESTs located in chromosome 5, 1, and 4

Chromosome	1	4	5
EST number	95	47	26

e) Commonly differentially expressed ESTs in all three bm3-isogenic comparisons (1332/1332 bm3, 5361/5361 bm3, and F2/F2 bm3)

f) Commonly differentially expressed ESTs in all three isogenic comparisons (bm1, bm2, bm3) in F2 background

g) Commonly differentially expressed ESTs in FD, DD1, and DD2 mapping populations

(c) Text detection result after the 2nd round

a) Common ESTs between SSH and microarray for each comparison

Comparison	1332/1332 bm3	5361/5361 bm3	F2/ F2 bm1	F2/ F2 bm2	F2/ F2 bm3	FD-pop	DD1-pop	DD2-pop	AS 20/ AS 21
EST number	49	102	42	43	25	34	8	33	31

b) Differentially expressed ESTs with at least five-fold change for each comparison

Comparison	1332/1332 bm3	5361/5361 bm3	F2/ F2 bm1	F2/ F2 bm2	F2/ F2 bm3	FD-pop	DD1-pop	DD2-pop	AS 20/ AS 21
EST number	18	90	25	30	83	42	78	42	80

c) EST homologs of the genes involved in lignin biosynthesis pathway

Lignin gene	PAL	4CL	C3H	CcCoAOMT	CCR	COMT	CAD
EST number	10	22	9	5	19	18	17

d) *In silico* mapped ESTs located in chromosome 5, 1, and 4

Chromosome	1	4	5
EST number	95	47	26

e) Commonly differentially expressed ESTs in all three bm3-isogenic comparisons (1332/1332 bm3, 5361/5361 bm3, and F2/F2 bm3)

f) Commonly differentially expressed ESTs in all three isogenic comparisons (bm1, bm2, bm3) in F2 background

g) Commonly differentially expressed ESTs in FD, DD1, and DD2 mapping populations

(d) Text detection result after the 3rd round

a) Common ESTs between SSH and microarray for each comparison

Comparison	1332/1332 bm3	5361/5361 bm3	F2/ F2 bm1	F2/ F2 bm2	F2/ F2 bm3	FD-pop	DD1-pop	DD2-pop	AS 20/ AS 21
EST number	49	102	42	43	25	34	8	33	31

b) Differentially expressed ESTs with at least five-fold change for each comparison

Comparison	1332/1332 bm3	5361/5361 bm3	F2/ F2 bm1	F2/ F2 bm2	F2/ F2 bm3	FD-pop	DD1-pop	DD2-pop	AS 20/ AS 21
EST number	18	90	25	30	83	42	78	42	80

c) EST homologs of the genes involved in lignin biosynthesis pathway

Lignin gene	PAL	4CL	C3H	CcCoAOMT	CCR	COMT	CAD
EST number	10	22	9	5	19	18	17

d) *In silico* mapped ESTs located in chromosome 5, 1, and 4

Chromosome	1	4	5
EST number	95	47	26

e) Commonly differentially expressed ESTs in all three bm3-isogenic comparisons (1332/1332 bm3, 5361/5361 bm3, and F2/F2 bm3)

f) Commonly differentially expressed ESTs in all three isogenic comparisons (bm1, bm2, bm3) in F2 background

g) Commonly differentially expressed ESTs in FD, DD1, and DD2 mapping populations

(e) Text detection result after the 4th round

a) Common ESTs between SSH and microarray for each comparison

Comparison	1332/1332 bm3	5361/5361 bm3	F2/ F2 bm1	F2/ F2 bm2	F2/ F2 bm3	FD-pop	DD1-pop	DD2-pop	AS 20/ AS 21
EST number	49	102	42	43	25	34	8	33	31

b) Differentially expressed ESTs with at least five-fold change for each comparison

Comparison	1332/1332 bm3	5361/5361 bm3	F2/ F2 bm1	F2/ F2 bm2	F2/ F2 bm3	FD-pop	DD1-pop	DD2-pop	AS 20/ AS 21
EST number	18	90	25	30	83	42	78	42	80

c) EST homologs of the genes involved in lignin biosynthesis pathway

Lignin gene	PAL	4CL	C3H	CcCoAOMT	CCR	COMT	CAD
EST number	10	22	9	5	19	18	17

d) *In silico* mapped ESTs located in chromosome 5, 1, and 4

Chromosome	1	4	5
EST number	95	47	26

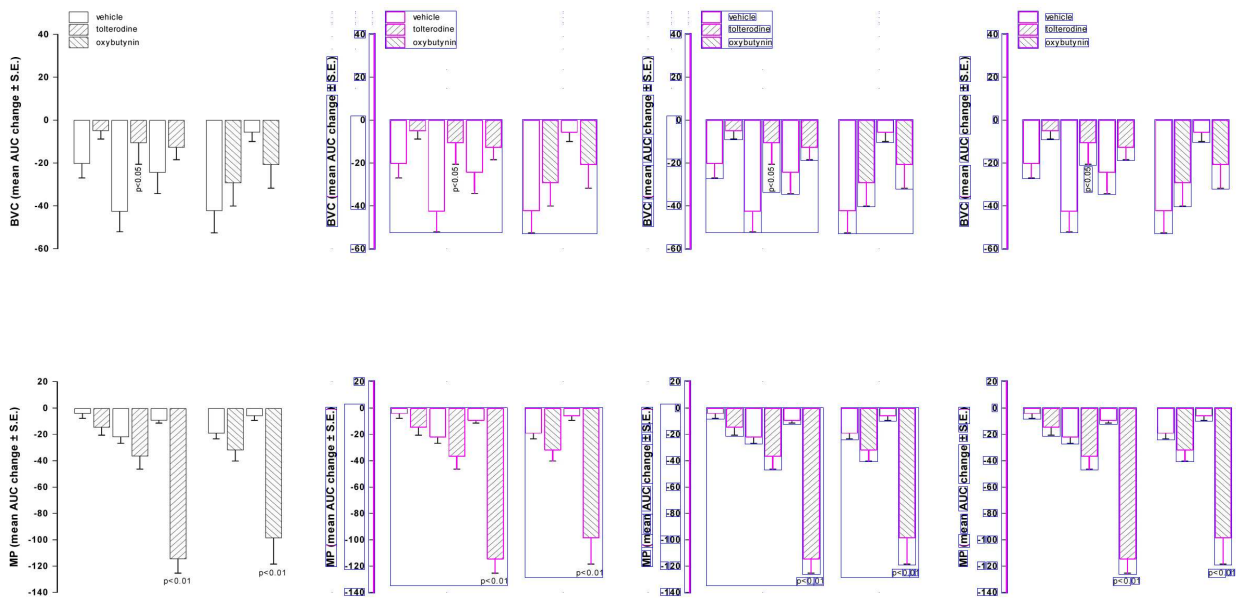
e) Commonly differentially expressed ESTs in all three bm3-isogenic comparisons (1332/1332 bm3, 5361/5361 bm3, and F2/F2 bm3)

f) Commonly differentially expressed ESTs in all three isogenic comparisons (bm1, bm2, bm3) in F2 background

g) Commonly differentially expressed ESTs in FD, DD1, and DD2 mapping populations

(f) The final text detection result

Figure 6: A text detection example from [8].



(a) The original image      (b) Text detection result (1st round)      (c) Text detection result (2nd round)      (d) Final text detection result

Figure 7: A text detection example from [1].

```
bcTopo IIIId 601 VEMSEKMDFTGLHVESLERKGSKPTTGKKVGSCKKIDGDVIDKSTFYGCSNYNTTQDFPTISKKILSKTISQKNSKKLLK
bcTopo IIIId 681 CEKTDLIKPKKCEKTFDAKLEWAKDKINPVEFN
```

(a) The original image

```
bcTopo IIIId 603 VEMSEKMDFTGLHVESLERKGSKPTTGKKVGSCKKIDGDVIDKSTFYGCSNYNTTQDFPTISKKILSKTISQKNSKKLLK
bcTopo IIIId 683 CEKTDLIKPKKCEKTFDAKLEWAKDKINPVEFN
```

(b) Text detection result after the 1st round

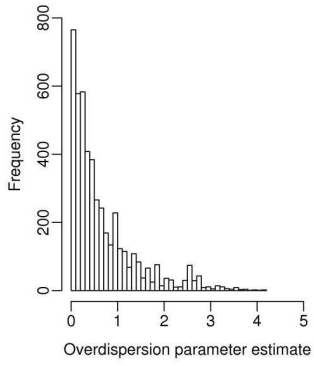
```
bcTopo IIIId 503 VEMSEKMDFTGLHVESLERKGSKPTTGKKVGSCKKIDGDVIDKSTFYGCSNYNTTQDFPTISKKILSKTISQKNSKKLLK
bcTopo IIIId 353 CEKTDLIKPKKCEKTFDAKLEWAKDKINPVEFN
```

(c) The final text detection result

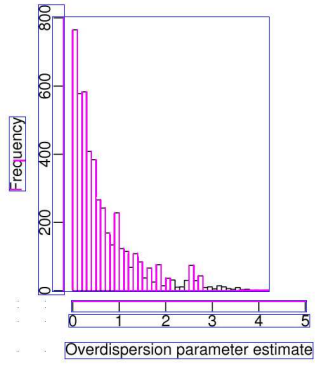
Figure 8: A text detection example from [5].



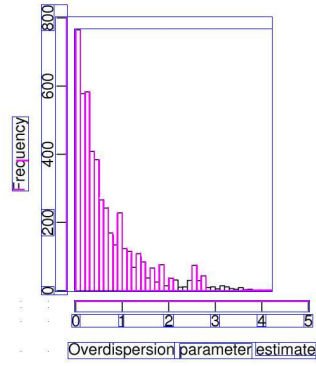




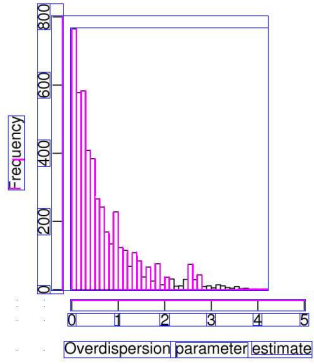
(a) The original image



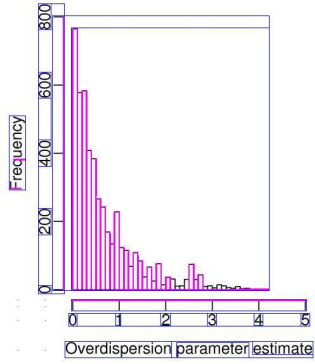
(b) Text detection result  
after the 1st round



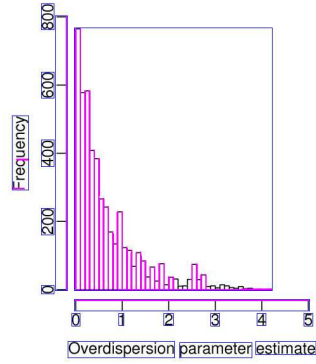
(c) Text detection result  
after the 2nd round



(d) Text detection result  
after the 3rd round



(e) Text detection result  
after the 4th round



(f) The final text detection  
result

Figure 10: A text detection example from [6].

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- [2] Doi, Y., Katafuchi, A., Fujiwara, Y., Hitomi, K., Tainer, J. A., Ide, H., and Iwai, S. (2006). Synthesis and characterization of oligonucleotides containing 2-fluorinated thymidine glycol as inhibitors of the endonuclease III reaction. *Nucleic Acids Research*, **34**(5), 1540–1551. PMID: 16547199 PMCID: 1409675.
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- [9] Wang, X., Deavers, M., Patenia, R., Bassett, R. L., Mueller, P., Ma, Q., Wang, E., and Freedman, R. S. (2006). Monocyte/macrophage and t-cell infiltrates in peritoneum of patients with ovarian cancer or benign pelvic disease. *Journal of Translational Medicine*, **4**, 30–30. PMID: 16824216 PMCID: 1550428.
- [10] Yamada, S., Gotoh, O., and Yamana, H. (2006). Improvement in accuracy of multiple sequence alignment using novel group-to-group sequence alignment algorithm with piecewise linear gap cost. *BMC Bioinformatics*, **7**, 524–524. PMID: 17137519 PMCID: 1769516.