pMAT MBP fusion vectors

```
     T7 promoter          lac operator          (XbaI) T7 ribosome binding site
1    TAATACGACTCACTATAGGGAATTGTGAGCGGATAACAATTCCTCTAGAAATAATTTTGTTTAACTTTAAGAAGGAGATATCC   85
                                          SpeI                  SpeI
86   ATGAACACCATTCATCACCATCACCATCACAACACTAGTATG — MBP — ACTAGTGGATCTGGTGGTGGTGGCGGCCGC  1327
     M  N  T  I  H  H  H  H  H  H  N  T  S  M                T  S  G  S  G  G  G  G  G  R
```

pMAT7

```
          StuI     BamHI     XhoI    SmaI   HindIII
CTGGTTCCGAGGCCTATCGGATCCATGGCTCGAGTTCCCGGGCAAGCTTGAGTGACTGAGCTT
L  V  P  R △P  I  G  S  M  A  R
         Thrombin
```

pMAT8

```
            (BamHI)         EcoRI  SalI XhoI (BamHI)                    NsiI HindIII
CTGGTTCCGAGGGGATCCATGGATATCGAATTCGTCGACCTCGAGGGATCCGGGCCCTCTAGATGCGGCCGCATGCATAAGCTT
L  V  P  R △G  S  M  D  I  E  F
         Thrombin
```

pMAT9

```
            (BamHI)
                 NcoI       EcoRI  SalI XhoI (BamHI)                    NsiI HindIII
CTGGTTCCGAGGGGATCCATGGATATCGAATTCGTCGACCTCGAGGGATCCGGGCCCTCTAGATGCGGCCGCATGCATAAGCTT
L  V  P  R △G  S  M  D  I  E  F
         Thrombin
```

pMAT10

```
             BamHI
                 NcoI       EcoRI  SalI XhoI                            NsiI HindIII
CTGGTTCCGAGGGGATCCATGGATATCGAATTCGTCGACCTCGAGGGATCGGGGCCCTCTAGATGCGGCCGCATGCATAAGCTT
L  V  P  R △G  S  M  D  I  E  F
         Thrombin
```

pMAT11

```
            (BamHI)                            NcoI       EcoRI SalI  XhoI (BamHI)
CTGGTTCCGAGGGGATCCATGTCTGAAAACCTGTACTTCCAGGGTTCCATGGATATCGAATTCGTCGACCTCGAGGGATCCGGG
L  V  P  R △G  S  M  S  E  N  L  Y  F  Q △G  S  M  D  I  E  F  V
         Thrombin     NsiI  HindIII         TEV
CCCTCTAGATGCGGCCGCATGCATAAGCTT
```

```
      SP6 promoter
GAGTATTCTATAGTGTCACCTAAATCCCAGCTTGATCCGGCTGCTAACAAAGCCCGAAAGGAAGCTGAGTTGGCTGCTGCCACC

        T7 transcription terminator
GCTGAGCAATAACTAGCATAACCCCTTGGGGCCTCTAAACGGGTCTTGAGGGGTTTTTTGCTGAAAGG
```

Feature table

	Position in pMAT10
T7 promoter	1 - 17
lac operator	21 - 42
T7 gene 10 RBS	50 - 80
His-tag	98 - 115
Maltose binding protein	125 - 1237
Polylinker	1280 - 1351
SP6 promoter	1358 - 1375
T7 transcription terminator	1454 - 1495
LacI gene (coding region)	1905 - 2986
β-lactamase (coding region)	3756 - 460
Origin of replication	4681 - 5376

Maltose binding protein, PDB:1MDQ

Fusion protein data

(until thrombin cleavage site in pMAT10)

Length	398 aa
Molecular weight	43540.14
pI	5.66
ε_{280} ($M^{-1}cm^{-1}$)	64720

References:

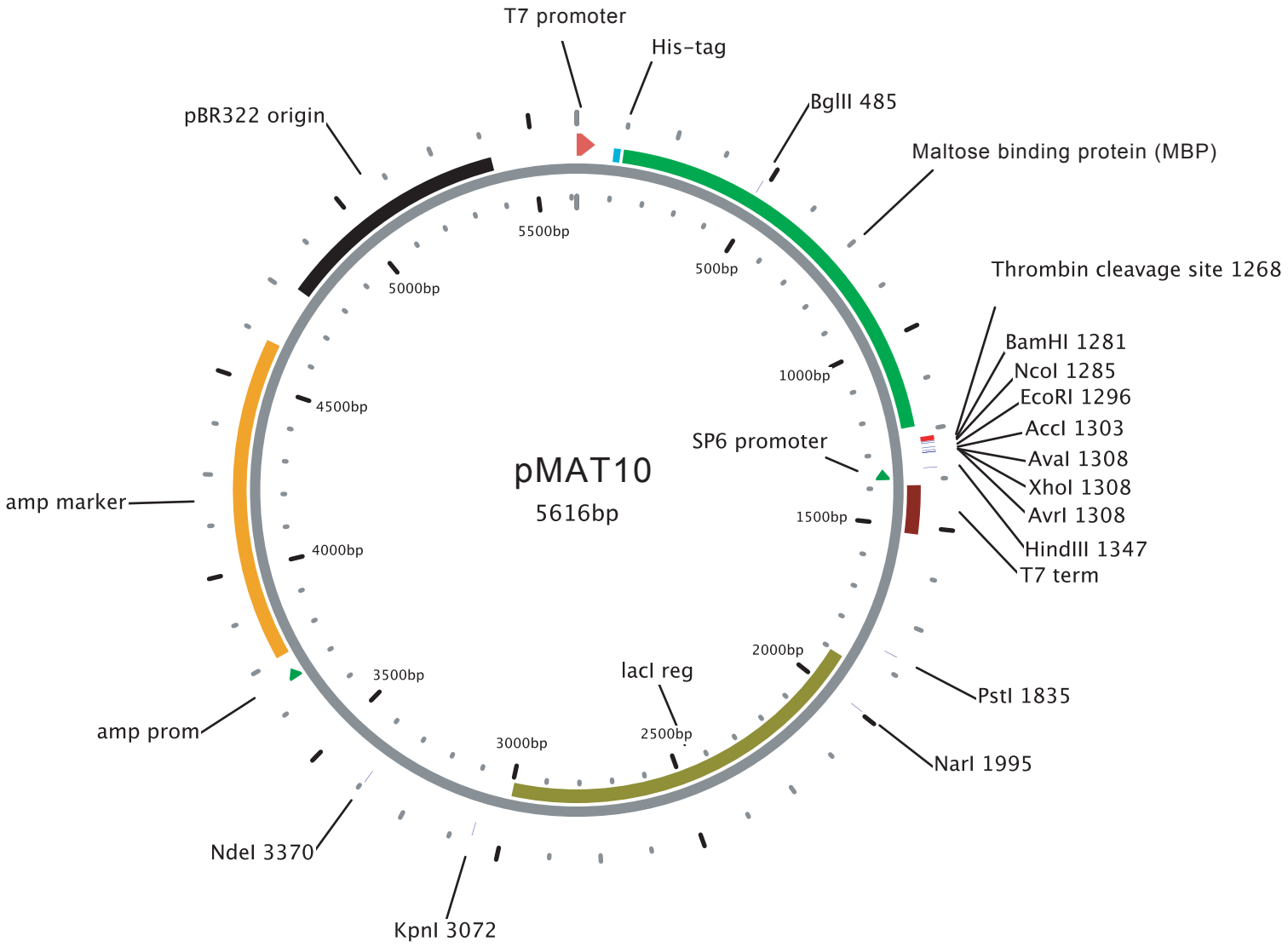
pMAT7 was created by Johan Peränen, and should be cited as: J. Peränen, unpublished.
pMAT8 was created by Elliott Stollar from pMAT7, and should be cited as: E. Stollar, unpublished.
pMAT9 was created by Jenny Reed and Marko Hyvönen from pMAT8 by mutating the internal NcoI site from MBP, and should be cited as: J. Reed and M. Hyvönen, unpublished.
pMAT10 was created by Keily Littlefield and Darerca Owen from pMAT9 by mutating the second BamHI site in the middle of the polylinker, and should be cited as: Keily Littlefield and Darerca Owen, unpublished.
pMAT11 was created by Sheena Gordon by inserting MBP to pHAT4 and should be cited as Sheena Gordon, unpublished

Reference for the original non-fusion and His-tag vectors is:
Peränen J., Rikkonen M.,Hyvönen M., Kääriäinen L. (1996)
T7 vectors with modified T7*lac* promoter for expression of proteins in *Escherichia coli*. Anal. Biochem., 236:371-373

For more information see http://www-cryst.bioc.cam.ac.uk/~marko/vector, or email marko@cryst.bioc.cam.ac.uk

Notes:
All the data on this page is correct to the best of our knowledge, yet you should use it at your own risk.
Restriction sites indicated in paranthesis cut the vector twice, but are thought to be useful in some instances and shown to your benefit.
Plasmid map on page 2 was orginally created using Plasmapper web server at http://wishart.biology.ualberta.ca/PlasMapper/ and edited by hand.

Marko Hyvonen, University of Cambridge


T7 promoter
His-tag
BglII 485
Maltose binding protein (MBP)
Thrombin cleavage site 1268
BamHI 1281
NcoI 1285
EcoRI 1296
AccI 1303
AvaI 1308
XhoI 1308
AvrI 1308
HindIII 1347
T7 term
PstI 1835
NarI 1995
KpnI 3072
NdeI 3370
amp prom
amp marker
pBR322 origin
SP6 promoter
lacI reg
pMAT10
5616bp
500bp
1000bp
1500bp
2000bp
2500bp
3000bp
3500bp
4000bp
4500bp
5000bp
5500bp