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<110> Nomad Bioscience GmbH

<120> Production, storage and use of cell wall-degrading enzymes

<130> PCT-15987

<150> EP2011008353

<151> 2011-10-17

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<170> PatentIn version 3.3

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 <213> Artificial

<220>
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<220>
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 <213> Artificial

<220>
 <223> T-DNA of PhiC31 integrase expressing construct

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<400> 10	
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gcactggaag caccaaatga aggtgattgg ggcgtagtca tcaaggatga gttctttgat	120
attataaaaag aagcgggttt ctcacacgtt aggataccta ttcgctggtc tacacacgca	180
tacgccttcc caccttataa gataatggat agattcttta agcgtgttga cgaagtcac	240
aacggagctt tgaaaagagg attagccgtg gttattaaca tccatcatta tgaagagctc	300
atgaacgacc cagaggaaca taaagagaga tttctcgctt tatggaagca aatagctgat	360
aggtacaagg actatcctga gactttgttc ttcgagattc tcaatgagcc tcatggaaat	420
ctaacgcctg agaagtggaa tgaacttttg gaagaggcgc taaaggttat tagaagcatc	480
gataagaagc atacgataat cataggtact gcagaatggg gagggatctc tgctcttgag	540
aagttgagtg ttcccaagtg ggagaaaaac tcaattgtga ctatccacta ctacaatcca	600
ttcgagttta ctcaccaagg tgctgaatgg gtcgaaggat cagaaaagtg gcttggaaga	660
aaatggggat ctccggatga tcagaaacac ctcatagagg aattcaactt tatcgaagag	720
tggtcgaaaa agaacaaacg gccgatttat attggggaat ttggggctta cagaaaagct	780
gacctggaaa gccgaattaa gtggacatcc tttgtggtcc gagagatgga gaagcgtcgt	840
tggagttggg cctattggga gttctgtagt ggctttgggg tgtatgatac actaagaaaag	900
acctggaata aagacctgct tgaagccttg attggcgggg atagtatcga ataa	954

<210> 11
 <211> 1566
 <212> DNA
 <213> Artificial

<220>
 <223> optimised coding sequence of endoglucanase E1 from *Acidothermus cellulolyticus* (P54583.1) mature part without signal peptide

```

<400> 11
gcaggtggcg gatattggca cacttctggt agagaaatcc tagatgcaaa caatgtgcct      60
gttcgcatag ctgggattaa ctggttcggc ttcgagactt gtaactacgt agtccacgga      120
ctttggagtc gggactatag aagcatgctc gatcaaatca aaagcctggg atacaacacg      180
attcgactgc catactctga tgacattctg aaacctggaa ccatgccgaa ctccatcaac      240
ttctatcaaa tgaaccaaga tctgcaaggg ctgactagct tgcaagtgat ggataagata      300
gtagcctacg ctggccaaat tgggcttaga ataatcctcg atagacatcg tcttgattgc      360
tctggacaat ctgcactctg gtatacatcc tctgtctctg aagctacctg gatttccgat      420
ttgcaagcac tagcccagag atacaaagga aatccaaccg tagtcggctt tgacttgcac      480
aacgaaccac atgatcctgc ttgttgggga tgtggtgatc catcaattga ctggcgttta      540
gctgctgaaa gagctggaaa cgctgtctta tccgtgaatc ccaatcttct catcttcgta      600
gagggagttc agtcatacaa tggcgattct tactgggtggg gaggggaatct acaaggcgct      660
ggacaatacc ctgtagttct aaacgtaccc aaccgattgg tgtattctgc ccatgactat      720
gcaacatccg tttatccgca aacctgggtt tctgatccca catttccgaa caatatgcct      780
ggcatttgga acaagaactg gggatatctg ttcaacaaaa acattgctcc cgtatggctt      840
ggcgagtttg gaacaacttt acaaagcaca acggaccaga cctggcttaa gacattagtg      900
caatatctta gaccgaccgc acaatatggt gctgatagct ttcaatggac gttctggagt      960
tggaatcctg attctggcga tacgggtgga atacttaagg atgactggca aaccgttgac     1020
actgtaaagg acggatacct tgctcccata aagtctagca tctttgatcc cgttgggtgca     1080
tctgcttctc caagttcaca accaagtccc tctgtttcac caagtccatc accatcacct     1140
agtgcttcta gaacaccaac tctactcca acaccaactg catctccaac tctacattg      1200
acacctaccg caacacctac acctactgct tcacctactc catcacctac tgccgcttct     1260
ggagctagat gcactgcttc ttatcaagtc aactctgatt ggggaaacgg ctttactgtg      1320
accgttgctg tcacgaattc tggaagtgtg gcaacaaaga cttggactgt ttcttggacg      1380
tttgggggaa atcaaaccat tacgaactct tggaatgctg ccgtaacaca aaatgggcaa      1440
tccgttaccg ctcggaacat gtcatacaat aacgtcatcc aacctgggca aaacacaacg      1500
ttcggttttc aagcctccta taccggttca aatgctgcac ctactgttgc ttgcgctgca      1560
tcttaa                                           1566

```

```

<210> 12
<211> 1491
<212> DNA
<213> Artificial

```

```

<220>
<223> optimised coding sequence of exoglucanase 1 (CBHI) from
      Trichoderma reesei (P62694.1) mature part without signal peptide

```

```

<400> 12

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caatctgctt gcactctgca atccgaaacg catccacctt tgacttggca aaagtgttcc	60
tctggtggaa cgtgtaccca gcaaaccggt tctgtagtga ttgacgcaaa ttggagatgg	120
acacacgcta ccaatagctc tacgaactgc tatgatggga atacctgggc tagcacacta	180
tgccctgata acgaaacctg tgcaaagaat tgctgtcttg atggtgctgc ctatgcttca	240
acttacggtg tcacaactag cggcaattct ctttccatcg gcttcgtcac acaaagtgcc	300
caaaagaacg ttggagcacg gctttacctt atggcttccg acacgacctt tcaagaattc	360
acgctgcttg ggaatgagtt ttcctttgat gtggacgttt ctcaactccc atgcggactt	420
aacggagcac tttactttgt gtctatggac gctgatggag gcgtttctaa gtatccgact	480
aacactgctg gtgctaagta cggaaaccggt tactgcgatt cacaatgccc tagagatctg	540
aagttcatca acggacaagc aaacgtcgag ggctgggaac cttcttccaa taacgcaaac	600
actggcattg gtggccacgg atcatgttgt tctgagatgg acatttggga agcaaactca	660
atctccgaag cacttacccc acatccgtgt acaactgttg gccaaagaaat ctgtgagggg	720
gatggatgtg gtggcactta ctctgacaat cgctatgggtg gaacctgtga tccagatgga	780
tgcgattgga acccctatag gcttggaaac acgtctttct atggacctgg ctctagcttt	840
acccttgata ccactaagaa actcaccgtg gtaacgcaat tcgagactag cggagccata	900
aaccgatatt acgtacagaa tggcggttacg tttcaacaac ccaatgccga gttgggctca	960
tactctggga atgagttgaa tgatgactac tgtactgctg aagaggctga attcgggtgga	1020
agttccttta gcgataaggg aggcctaacc cagtttaaga aagcaacgtc tgggtgggatg	1080
gttctcgtca tgagtctatg ggatgactac tatgctaaca tgctgtggct cgattccaca	1140
tatcccacca atgagactag ttcaactcct ggagctgttc gtggatcctg ttcaactagc	1200
tctggtgttc ctgccaagt agaattctca agtcccaacg caaagggtgac cttttccaac	1260
ataaagtctg gaccgattgg ctcaactgga aatccatctg ggggaaatcc acctggtggc	1320
aatagaggaa caactacaac tagaaggcct gctactacca ctggttcatc tcctggtcca	1380
actcaatctc attatggcca atgcggtggc attggtctatt ctggtcctac tgtgtgtgct	1440
agtggaacca catgccaaagt tctcaacccc tattactccc aatgcctcta a	1491

<210> 13
 <211> 1524
 <212> DNA
 <213> Artificial

<220>
 <223> optimised coding sequence of exoglucanase 1 (CBHI) from *Hemicola grisea* (D63515) mature part without signal peptide

<400> 13	
cagcaggctt gttcactcac cacagaacgg catccaagcc tatcatggaa gaaatgtact	60
gctggcggtc agtgtcaaac tgttcaggcc tcgatcacct tagatagcaa ttggcgggtg	120
acacatcaag ttagtggctc aacgaattgt tatacgggaa ataagtggga cacctctatt	180

tgtaccgatg ctaa	atcatg cgctcaaa	at tgctgcgttg	acggtgctga	ctacacctcc	240
acttatggga tt	accaccaa cggagata	gt ctctctctga	agttcgtcac	caaggggtcag	300
tattctacga ac	gtaggctc gaggacgt	at ctgatggatg	gagaggacaa	ataccaaaca	360
ttcgagcttt tg	ggggaacga gtttacgt	tc gacgtggacg	ttagtaacat	cggttggtggc	420
cttaacggcg ct	ctctctat	ttt tgtgagcatg	gacgcagatg	ggggattgag	480
gggaacaaaag cc	ggagctaa gtatgg	tact ggggtattgcg	acgcgcaatg	cccgagggac	540
attaagttca taa	atgggga agcgaacat	c gaaggctgga	ctggatcaac	gaacgatccg	600
aacgctggag ct	ggtcgata cgggacct	gt tgttctgaga	tggatatttg	ggaagcgaac	660
aatatggcaa ct	gcgtttac tcctcacc	cg tgtaccatta	taggtcagtc	ccgctgtgaa	720
ggcgatagtt gc	ggagggac ttactcta	at gagaggtatg	ctggcgtttg	tgaccctgat	780
ggctgcgatt tca	actccta cagacagggg	aataagacgt	tctacggaaa	ggggatgact	840
gtcgacacca cg	aaaaagat tacggtg	gtc actcagttct	tgaaagacgc	aaatggcgat	900
ctggggggaga taa	agcgttt ctatgtg	caa gatgggaaga	ttatcccgaa	ttctgagagc	960
acgatacctg gag	tagaagg gaactcaat	t actcaagatt	ggtgcgatcg	gcaaaaaagt	1020
gcatttggcg ac	atcgacga cttcaatcg	c aaggagggta	tgaagcagat	ggggaaagct	1080
ctagccggtc ca	atgggtact tgtcatgt	ca atctgggatg	accacgcttc	taacatgctt	1140
tggcttgact ca	acctttcc ggttgacg	ca gccggaaaac	ctggagccga	acgaggcgct	1200
tgcccaacta cat	ctggagt tcctgccga	a gtggaagcag	aggcacccaa	ttcgaacgta	1260
gttttctcca ac	attcgatt cggcccgata	g gttctaccg	tcgccggctt	acctggagct	1320
ggaaatggag gca	ataatgg agggaatcca	ccccaccta	ctacaacgac	gagttctgca	1380
cctgccacta cc	acaactgc tagcgccgg	t ccaaaagctg	ggcgttggca	acaatgcggg	1440
ggaattggat tca	ctggacc taccagtg	c gaagagccct	acacctgtac	aaaactgaat	1500
gattggtact cc	cagtgctt ataa				1524

<210> 14
 <211> 1677
 <212> DNA
 <213> Artificial

<220>
 <223> optimised coding sequence of exocellulase E3 from Thermobifida fusca (AAA62211.1) mature part without signal peptide

<400> 14	
gcaggctggt ct	ggttgatta caccgtgaat
tcttggggaa ct	ggattcac ggctaacgtt
	60
accatcacga at	cttggttc tgccataaac
ggatggacat ta	gagtgggga cttccctggc
	120
aaccagcaag tt	accaacct gtggaatggc
acgtataccc ag	tctggggca acacgtttct
	180
gtttctaatg ct	ccttaciaa cgcattatc
cctgcaaattg g	caactgtcga attcggtttt
	240
aatgggagct at	tctggaag caacgacata
cctagctctt tta	agctgaa cggtgtaaca
	300

tgtgacggga gcgacgatcc agatcctgaa ccttctccat caccttctcc atctcccagc	360
cctactgata ctgatgaacc tgggtggacca accaatcctc caacaaaccc tggcgagaaa	420
gtggacaatc ccttcgaggg tgccaaactt tacgtaaacc ctgtatggag tgctaaagct	480
gcagctgaac ctgggtggatc tgctgtagcc aatgaatcta ctgctgtttg gctggataga	540
atcgggtgcca tagagggaaa cgattctcct acaactgggt ctatgggtct tagagatcat	600
ctcgaggaag ccgtaagaca aagtgggtggc gatcccccta ccatccaagt tgtgatctac	660
aatctacctg gtcgcgactg tgctgcactt gcttctaata gagaattggg acctgatgaa	720
ctggatagat acaagtccga gtacattgat ccatttgctg acatcatgtg ggacttcgct	780
gactatgaga acctacgaat cgtcgccatc attgagatag actccctccc taatctagtc	840
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tacgtcaatg gagttggcta tgcccttaga aagttgggtg agattcctaa cgtctacaac	960
tacatcgatg ccgctcacca tggtctggata ggctgggatt ctaactttgg accctccgtg	1020
gacatcttct acgaagctgc aaatgcctct ggtagcaccg ttgactatgt gcatggattc	1080
atctctaaca cggcaaacta tagcgctact gttgaaccgt atctagacgt aaacggcacc	1140
gtgaatgggc aactgataag gcaatctaag tgggtcgact ggaaccaata cgttgatgag	1200
ttgagtttcg tccaagactt gaggcaagct ctcatagcca aagggtttcg ttctgatatc	1260
ggcatgctca tagacacttc tagaaacgga tggggaggcc ctaatcgctc aactggacct	1320
agctcatcta cggaccttaa cacatacggt gacgagtcac gaattgatag acgcatacac	1380
cctggaaact ggtgcaacca agctggtgct ggcttgggtg aaagacctac cgtgaacca	1440
gctcctggtg ttgacgcata cgtttgggtt aagcctccgg gagaatctga tggagcttcc	1500
gaggaaatcc ctaatgatga ggggaagggc ttcatagaa tgtgcgatcc tacttaccaa	1560
ggcaacgcta gaaacggcaa caatccatct ggtgctctac ctaatgctcc catatctggg	1620
cactggtttt ctgccaatt tcgggagctt ctagctaata cttaccctcc cctctaa	1677