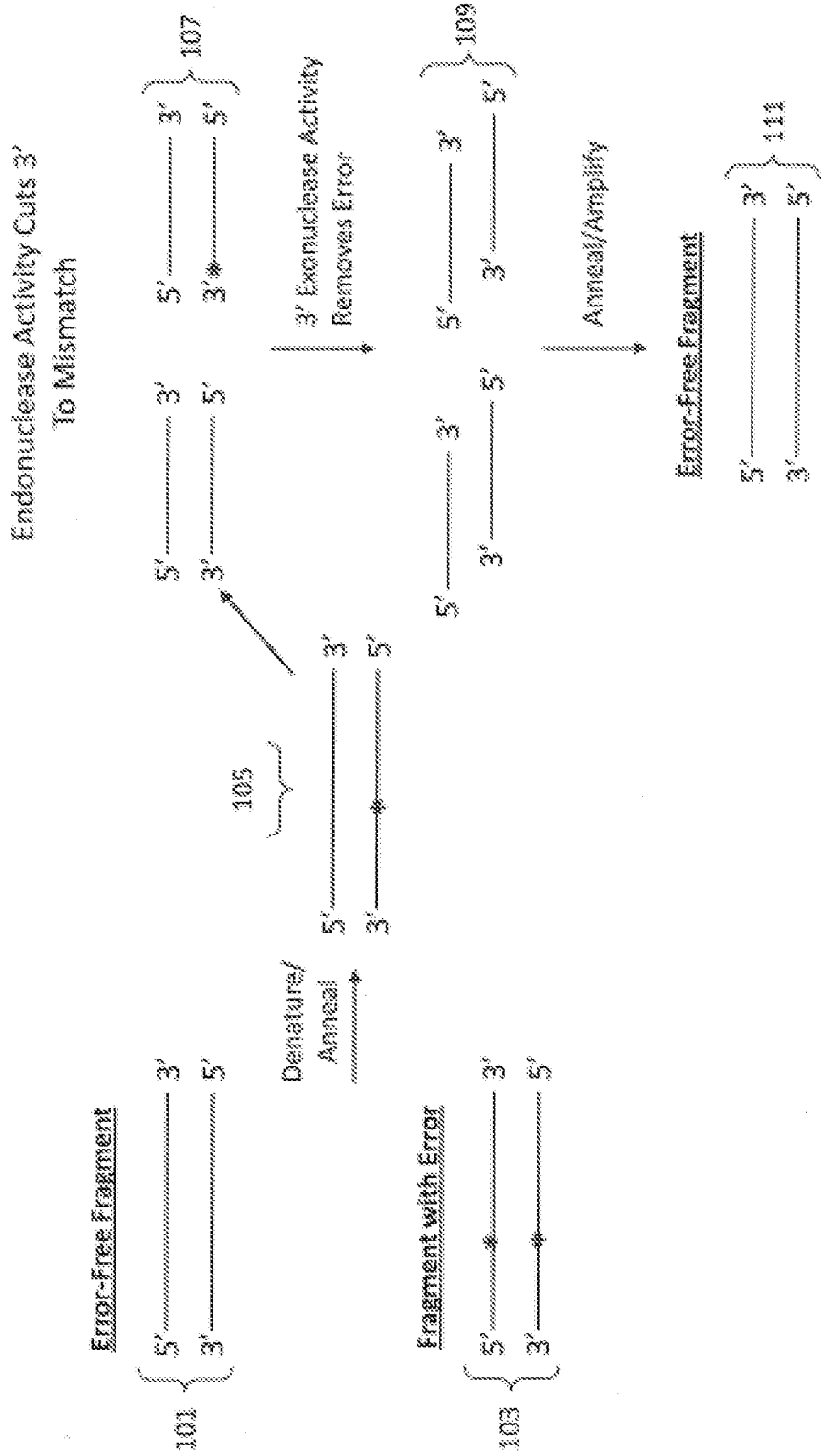

Error-Free Fragment
5'
3'
3'
5'
101
Denature/
Anneal
Fragment with Error
5'
3'
3'
5'
103
105
Endonuclease Activity Cuts 3'
To Mismatch
5'
3'
3'
5'
3' Exonuclease Activity
Removes Error
5'
3'
3'
5'
107
5'
3'
3'
5'
109
Anneal/Amplify
Error-Free Fragment
5'
3'
3'
5'
111

FIG. 1

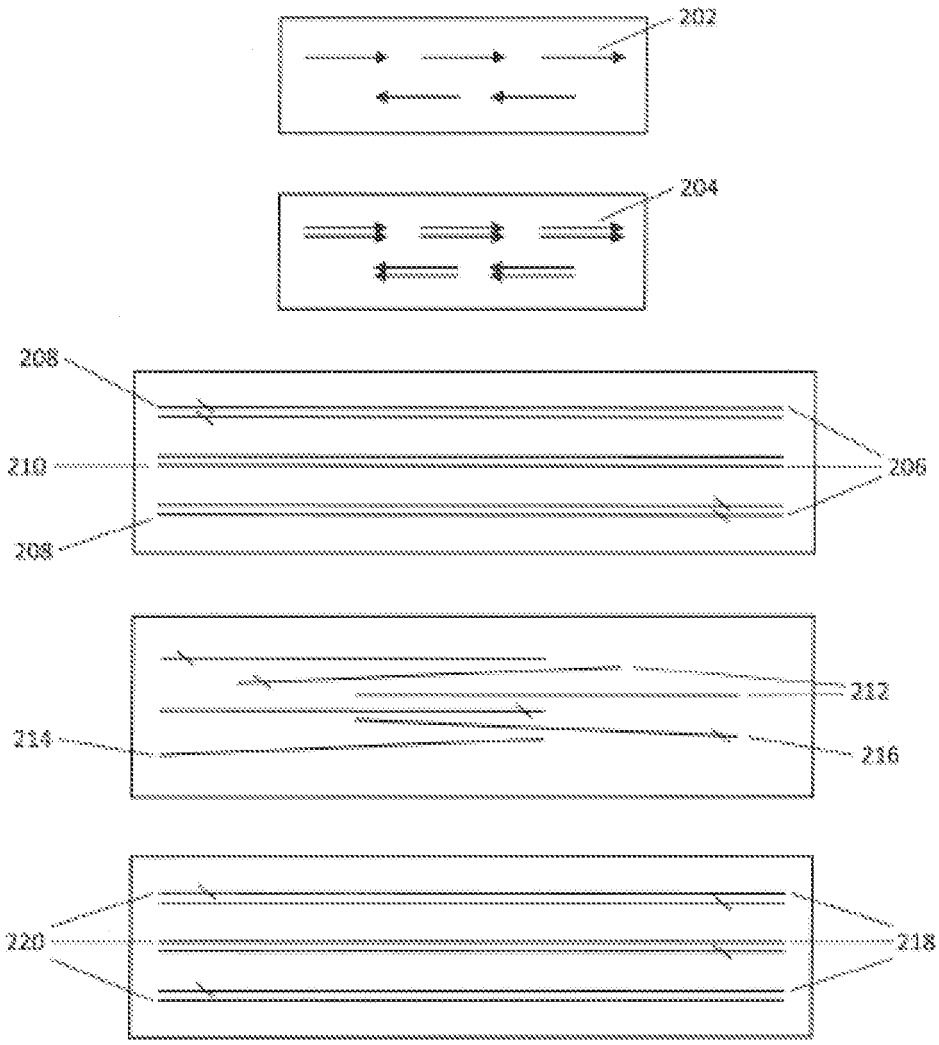


FIG. 2

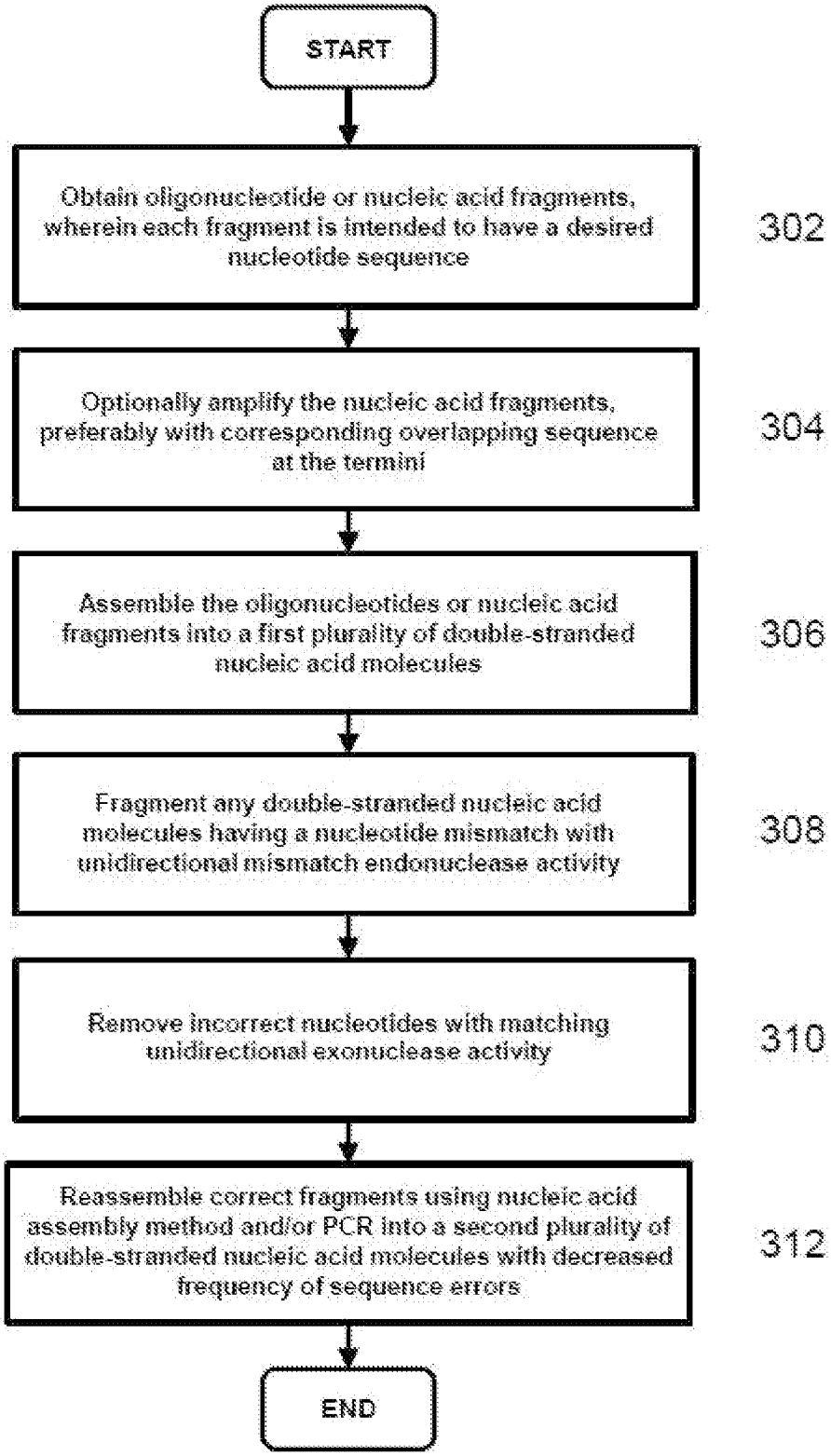

START
Obtain oligonucleotide or nucleic acid fragments, wherein each fragment is intended to have a desired nucleotide sequence
302
Optionally amplify the nucleic acid fragments, preferably with corresponding overlapping sequence at the termini
304
Assemble the oligonucleotides or nucleic acid fragments into a first plurality of double-stranded nucleic acid molecules
306
Fragment any double-stranded nucleic acid molecules having a nucleotide mismatch with unidirectional mismatch endonuclease activity
308
Remove incorrect nucleotides with matching unidirectional exonuclease activity
310
Reassemble correct fragments using nucleic acid assembly method and/or PCR into a second plurality of double-stranded nucleic acid molecules with decreased frequency of sequence errors
312
END

FIG. 3

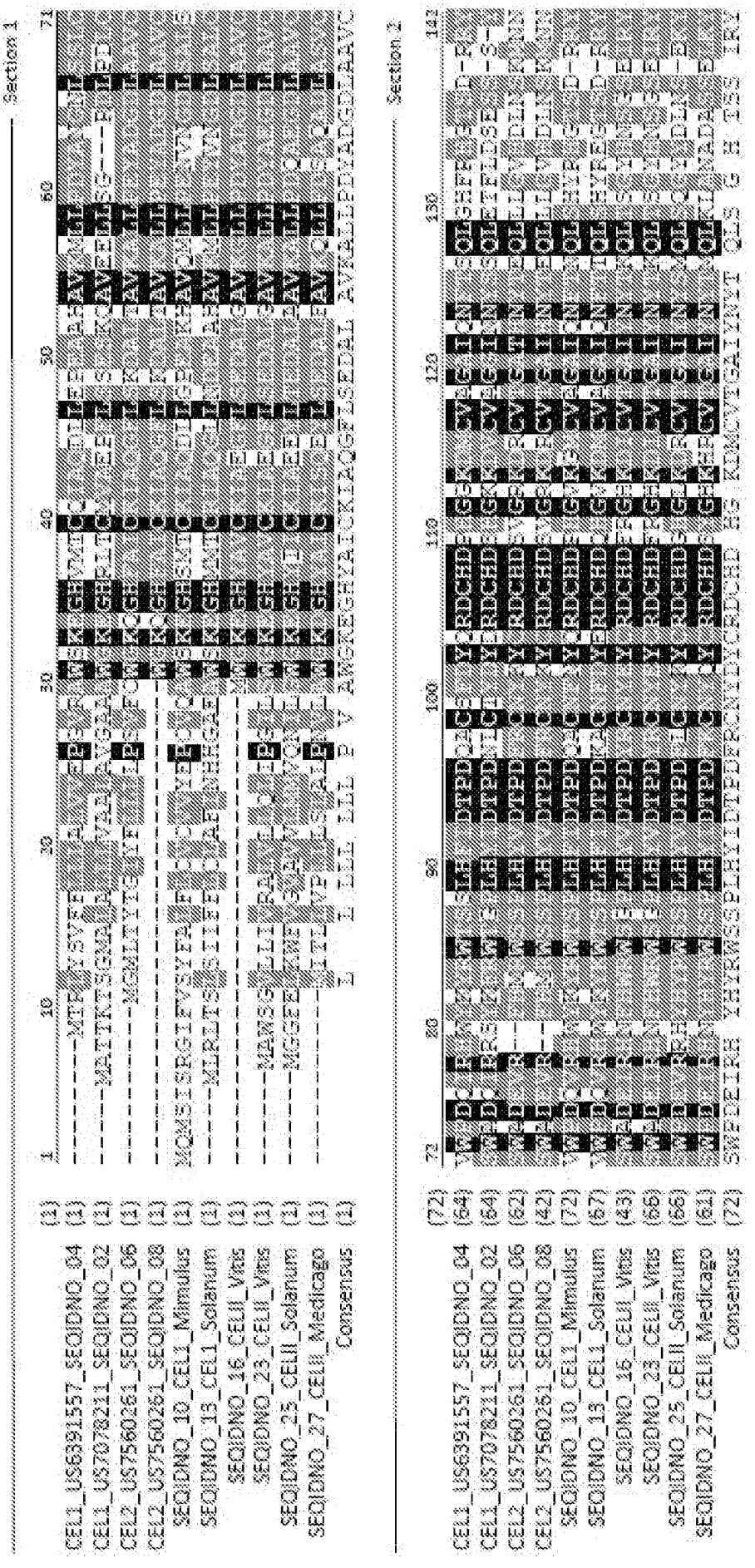


FIG. 4
(SHEET 1 OF 3)

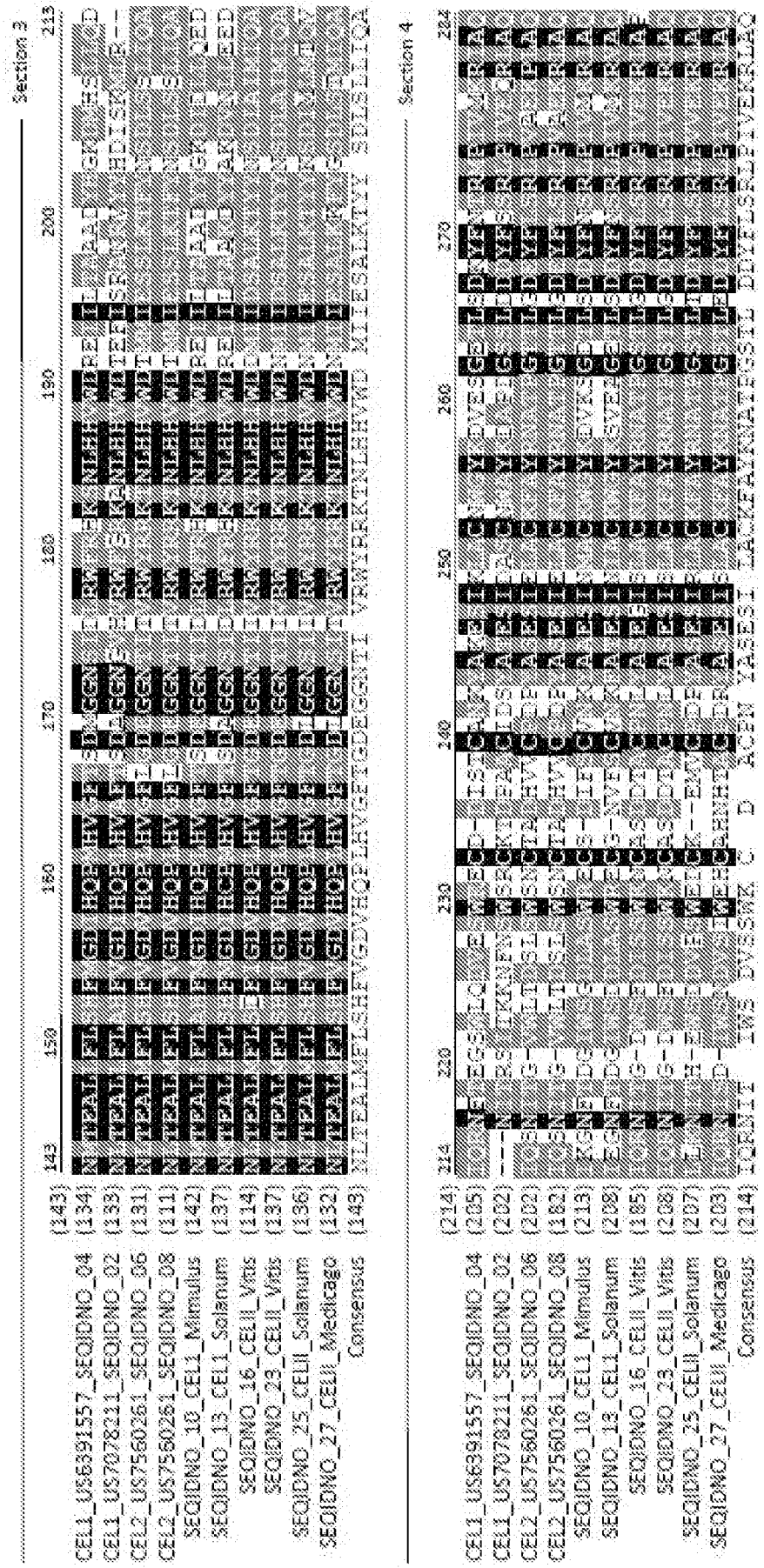


FIG. 4
(SHEET 2 OF 3)

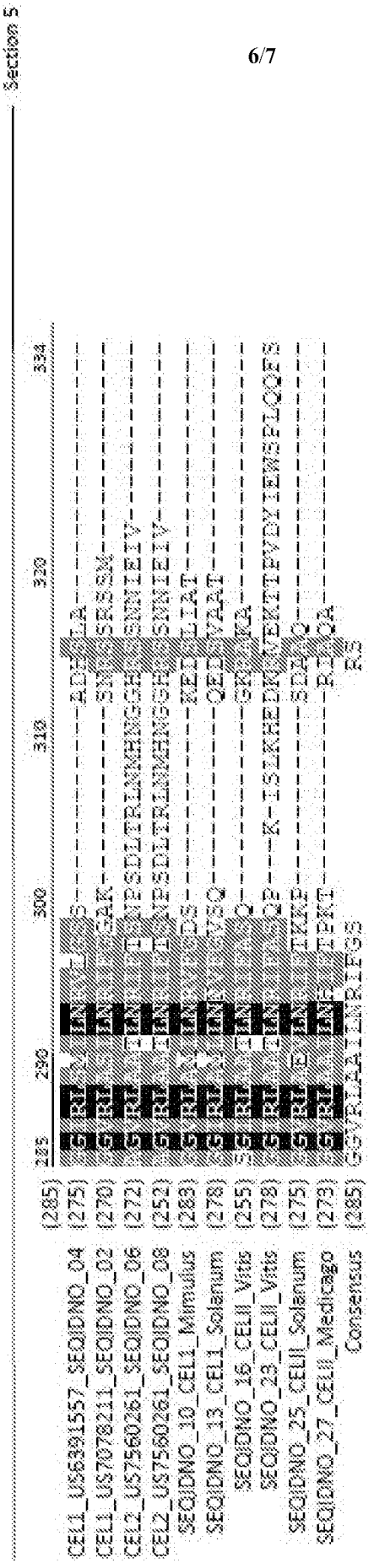


FIG. 4
(SHEET 3 OF 3)

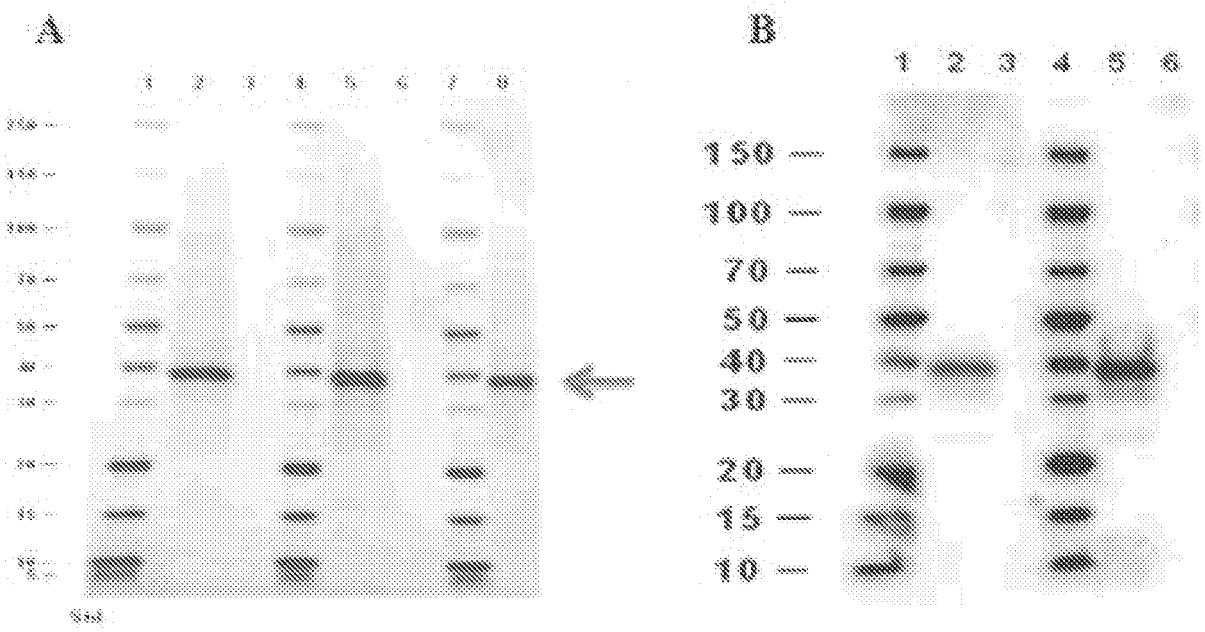


FIG. 5