Restriction enzymes and their isoschizomers

Richard J. Roberts

Cold Spring Harbor Laboratory, Cold Spring Harbor, New York, NY 11724, USA

INTRODUCTION

Since the last compilation of restriction enzymes (1), 261 new entries have been added including 16 new specificities. With the growing size of this database and the recognition that the most widespread use of the information is as a database for computer programs predicting restriction enzyme cleavage patterns, the new format has been continued. This format is intended to contain the minimal amount of information required by a computer program. It should be noted that only enzymes for which the recognition sequence is known are included. This new list is shown in the first Table, while an alphabetical listing of all Type II enzymes, including those of unknown recognition sequence, is presented in the second Table. A copy of the restriction enzyme database in its previous format (2), including enzymes of unknown recognition sequence, will be available upon request. It should also be noted that an alternative compilation of these enzymes has recently been produced (3).

The database shown in these Tables is available, in a form that is easily reformatted, online through the GENBANK computer resource. It is also possible to get regular monthly updates, or specialized versions of the database by electronic mail. For instance, a file containing the database in a format that can be used directly by the UWGCG computer software package is available. Files to support other packages are either available or in preparation. Enquiries should be directed to roberts@cshlab.bitnet.

In forming this list, all endonucleases cleaving DNA at a specific sequence have been considered to be restriction enzymes, although in most cases there is no direct genetic evidence for the presence of a restriction-modification system. The endonucleases are named in accordance with the proposal of Smith and Nathans (4).

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REFERENCES

1. Roberts, R.J. (1989) Nucl. Acids Res. 17: r347-r387
2. Roberts, R.J. (1985) Nucl. Acids Res. 13: r165-r200
3. Kessler, C. and Holtke, H.-J. (1986) Gene 47: 1-153
4. Smith, H.O. and Nathans, D. (1973) J. Mol. Biol. 81: 419-423
5. Sugisaki, H., Maekawa, Y., Kanazawa, S., Takanami, M. (1982) Nucl. Acids Res. 10: 5747-5752
6. Zabeau, M., Roberts, R.J. unpublished observations.
7. Evans, L.R., Brown, N.L., Laue, F., Schoeler, H., Jarsch, M., Kessler, C. unpublished observations.
8. Degtyarev, S.K. unpublished observations.
9. de Waard, A., Korsuize, J., van Beveren, C.P., Maat, J. (1978) FEBS Lett. 96: 106-110
10. Whitehead, P.R., Brown, N.L. (1985) Arch. Microbiol. 141: 70-74
11. de Waard, A., Van Beveren, C.P., Duyvesteyn, M., Van Ormondt, H. (1979) FEBS Lett. 101: 71-76
12. de Waard, A., Duyvesteyn, M. (1980) Arch. Microbiol. 128: 242-247
13. Khosaka, T., Kiwaki, M. (1984) FEBS Lett. 177: 57-60
14. Wersig, U., Bolton, B., Frey, B., Jarsch, M., Kessler, C. unpublished observations.
15. Kroger, M., Hobom, G., Schutte, H., Mayer, H. (1984) Nucl. Acids Res. 12: 3127-3141
16. Whitehead, P.R., Jacobs, D., Brown, N.L. (1986) Nucl. Acids Res. 14: 7031-7045
17. Lazareviciute, L., Laucys, V., Maneliene, Z., Poliachenko, V., Bitinaite, J., Janulaitis, A.A. unpublished observations.
18. Lazareviciute, L., Bitinaite, J., Laucys, V., Poliachenko, V., Janulaitis, A.A. unpublished observations.
19. Camp, R., Visentin, L.P. unpublished observations.
20. Kumano, M., Sakakibara, M. (1988) Baioaiensu to Indasutori 46: 38-41
21. Whitehead, P.R., Brown, N.L. (1985) J. Gen. Microbiol. 131: 951-958
22. Janulaitis, A.A., Steponaviciene, D., Butkus, V., Maneliene, Z., Petrusyte, M. unpublished observations.
23. Yamada, Y., Mizuno, H., Sato, H., Akagawa, M., Yamasato, K. (1989) Agric. Biol. Chem. 53: 1747-1749
24. Whitehead, P.R., Brown, N.L. (1982) FEBS Lett. 143: 296-300
25. Purvis, I.J., Moseley, B.E.B. (1983) Nucl. Acids Res. 11: 5467-5474
26. Kramarov, V.M., Smolyaninov, V.V. (1981) Biokhimiya 46: 1526-1529
27. Roberts, R.J., Myers, P.A., Morrison, A., Murray, K. (1976) J. Mol. Biol. 102: 157-165
28. Yoon, H., Suh, H., Han, M.H., Yoo, O.J. (1985) Korean Biochem. J. 18: 82-87
29. Yoon, H., Suh, H., Kim, K., Han, M.H., Yoo, O.J. (1985) Korean Biochem. J. 18: 88-93
30. Wickberg, L., Schildkraut, I. unpublished observations.
31. Christ, C., Wickberg, L. unpublished observations.
32. Polisson, C. unpublished observations.
33. Hall, D. unpublished observations.
34. Stotz, A., Philippson, P. unpublished observations.
35. Morgan, R.D., Dalton, M., Stote, R. (1987) Nucl. Acids Res. 15: 7201
36. Seurinck, J., Van de Voorde, A., Van Montagu, M. (1983) Nucl. Acids Res. 11: 4409-4415
37. Trautner, T.A. unpublished observations.
38. Janulaitis, A.A., Gilvonauskaite, R., Petrusyte, M. unpublished observations.
39. Croft, R., Levin, B. unpublished observations.
40. Yamada, Y., Murakami, M. (1985) Agric. Biol. Chem. 49: 3627-3629
41. Jagelavicius, M., Bitinaite, J., Maneliene, Z., Butkus, V., Janulaitis, A.A. unpublished observations.
42. Eastlake, P. unpublished observations.
43. Brown, N.L. unpublished observations.
44. Degtyarev, S.K., Rechkunova, N.I., Netesova, N.A., Tchigikov, V. E., Malygin, E.G., Kochkin, A.V., Mikhajlov, V.V., Rasskazov, V.A. (1987) Bioorg. Khim. 13: 422-423
45. Hughes, S.G., Bruce, T., Murray, K. (1980) Biochem. J. 185: 59-63
46. Walker, J.N.B., Dean, P.G., Saunders, J.R. unpublished observations.
47. Sokolov, N.N., Fitsner, A.B., Anikeitcheva, N.V., Kalugin, A.A., Choroshoutina, E.B., Plutalov, O.V., Berlin, Y.A. unpublished observations.
48. Moissidou, A., Rina, M., Bouriatis, V. (1989) Nucl. Acids Res. 17: 8884
49. Mullings, R., Evans, L.R., Brown, N.L. (1986) FEMS Microbiol. Lett. 37: 237-240

50. Janulaitis, A.A., Stakenas, P.S., Bitinaite, J.B., Jaskeleviciene, B.P. (1983) Dokl. Akad. Nauk SSSR 271: 483–485
51. Janulaitis, A.A., Stakenas, P.S., Petrusyte, M.P., Bitinaite, J.B., Klimasauskas, S.I., Butkus, V.V. (1983) Mol. Biol. (Moscow) 18: 115–129
52. Bitinaite, J.B., Klimasauskas, S.J., Butkus, V.V., Janulaitis, A.A. (1985) FEBS Lett. 182: 509–513
53. Janulaitis, A.A., Lazareviciute, L., Lebionka, A. unpublished observations.
54. Janulaitis, A.A., Lazareviciute, L. unpublished observations.
55. Steponaviciene, D., Petrusyte, M., Janulaitis, A.A. unpublished observations.
56. Jagelavicius, M., Bitinaite, J., Janulaitis, A.A. unpublished observations.
57. Schneider, A. unpublished observations.
58. Janulaitis, A.A., Adomaviciute, L. unpublished observations.
59. Janulaitis, A.A., Petrusyte, M., Butkus, V. (1983) FEBS Lett. 161: 213–216
60. Janulaitis, A.A., Steponaviciene, D. unpublished observations.
61. Brand, P., de Waard, A. unpublished observations.
62. Zerler, B., Myers, P.A., Escalante, H., Roberts, R.J. unpublished observations.
63. Thomm, M. unpublished observations.
64. Stein, D.C. unpublished observations.
65. Camp, R., Schildkraut, I. unpublished observations.
66. Comb, D.G., Parker, P., Schildkraut, I. unpublished observations.
67. Reaston, J., Duyvesteyn, M.G.C., de Waard, A. (1982) Gene 20: 103–110
68. Karreman, C., de Waard, A. unpublished observations.
69. Wolk, C.P., Kraus, J. (1982) Arch. Microbiol. 131: 302–307
70. de Waard, A. unpublished observations.
71. Mulligan, B.J., Szekeres, M. unpublished observations.
72. Sussenbach, J.S., Steenbergh, P.H., Rost, J.A., van Leeuwen, W.J., van Embden, J.D.A. (1978) Nucl. Acids Res. 5: 1153–1163
73. Tsui, W-C. unpublished observations.
74. Qiang, B-Q., Schildkraut, I. unpublished observations.
75. Myers, P.A., Roberts, R.J. unpublished observations.
76. Hughes, S.G., Bruce, T., Murray, K. unpublished observations.
77. Calleja, F., de Waard, A. unpublished observations.
78. Clark, D. unpublished observations.
79. Janulaitis, A.A., Bitinaite, J., Grigaite, R., Jagelavicius, M. unpublished observations.
80. Chen, Z., Kong, H. unpublished observations.
81. Chen, Z. unpublished observations.
82. Schoenfeld, T., Mead, D.A., Fiant, M. (1989) Nucl. Acids Res. 17: 4417
83. Szekeres, M. unpublished observations.
84. Duyvesteyn, M.G.C., de Waard, A. (1980) FEBS Lett. 111: 423–426
85. Duyvesteyn, M.G.C., Korsuize, J., de Waard, A. Vonshak, A., Wolk, C.P. (1983) Arch. Microbiol. 134: 276–281
86. Veitinger, S., Kaluza, K., Schmitz, G.G., Jarsch, M., Kessler, C. unpublished observations.
87. Kaluza, K., Schmitz, G., Jarsch, M., Herz, G., Wagner, C., Veseley, Z., Berger, G., Kessler, C. unpublished observations.
88. Petrusyte, M., Maneliene, Z., Butkus, V., Janulaitis, A.A. unpublished observations.
89. Murray, K., Hughes, S.G., Brown, J.S., Bruce, S.A. (1976) Biochem. J. 159: 317–322
90. Hughes, S.G., Murray, K. (1980) Biochem. J. 185: 65–75
91. Lau, R.H., Doolittle, W.F. (1980) FEBS Lett. 121: 200–202
92. Karreman, C., Tandeau de Marsac, N., de Waard, A. (1986) Nucl. Acids Res. 14: 5199–5205
93. Rosenvold, E.C., Szybalski, W. unpublished observations.
94. Leung, S.M., Kam, K.M., Chan, K.Y., Shaw, P.C. (1990) FEMS Microbiol. Lett. 66: 153–156
95. Janulaitis, A.A., Kazlauskienė, R., Bagdonaviciute, V. unpublished observations.
96. Flores, E., Wolk, P. unpublished observations.
97. Dean, P.D.C., Walker, J.N.B. (1985) Biochem. Soc. Trans. 13: 1055–1058
98. Sutcliffe, J.G., Church, G.M. (1978) Nucl. Acids Res. 5: 2313–2319
99. Fuchs, C., Rosenvold, E.C., Honigman, A., Szybalski, W. (1978) Gene 4: 1–23
100. Kessler, C., Neumaier, P.S., Wolf, W. (1985) Gene 33: 1–102
101. Shibata, T., Ando, T. (1975) Mol. Gen. Genet. 138: 269–279
102. Shibata, T., Ando, T. (1976) Biochim. Biophys. Acta 442: 184–196
103. Ikawa, S., Shibata, T., Ando, T. (1979) Agric. Biol. Chem. 43: 873–875
104. Degtyarev, S.K., Rechkunova, N.I., Grinev, A.A., Dedkov, V.S. unpublished observations.
105. Kramarov, V.M., Pachkunov, D.M., Matvienko, N.I. (1983) Nek. Aspekty Fiziol. Mikroorg. Akad. Nauk. SSR. Nauchn. Tsentr Biol. Issled. 22–26
106. Matvienko, N.I., Kramarov, V.M., Pachkunov, D.M. (1987) Eur. J. Biochem. 165: 565–570
107. van Etten, J.L., Shields, S., Burbank, D.E. unpublished observations.
108. Azizbekyan, R.R., Rebentish, B.A., Stepanova, T.V., Netyksa, E.M., Bychkova, M.A. (1984) Dokl. Akad. Nauk SSSR 274: 742–744
109. Bingham, A.H.A., Darbyshire, J. (1982) Gene 18: 87–91
110. Molemans, F., van Emmelo, J., Fiers, W. (1982) Gene 18: 93–96
111. Smith, J., Comb, D. unpublished observations.
112. Sohail, A., Mushtaq, R., Khan, E., Maqbool, T., Riazuddin, S. (1987) Pak. J. Zool. 19: 371–391
113. Sohail, A. unpublished observations.
114. Butkus, V.V., Petrusyte, M.P., Janulaitis, A.A. (1985) Bioorg. Khim. 11: 987–988
115. van den Hondel, C.A.M.J.J., van Leen, R.W., van Arkel, G.A., Duyvesteyn, M., de Waard, A. (1983) FEMS Microbiol. Lett. 16: 7–12
116. Streips, U., Golemboski, B. unpublished observations.
117. Morgan, R., Reeve, J., Krzycki, J. unpublished observations.
118. Frey, G., Thomm, M., Frey, B., Schmitz, G.G., Jarsch, M., Kessler, C. unpublished observations.
119. Stote, R., Schildkraut, I. unpublished observations.
120. Lupker, H.S.C., Dekker, B.M.M. (1981) Biochim. Biophys. Acta 654: 297–299
121. Karreman, C., de Waard, A. (1988) J. Bacteriol. 170: 2533–2536
122. Miyahara, M., Mise, K. unpublished observations.
123. Bernal, W.M., Raven, N.D.H., Williams, R.A.D. (1986) Proceedings 14th Int. Congress Microbiol. 204
124. Roizes, G., Nardeux, P.C., Monier, R. (1979) FEBS Lett. 104: 39–44
125. Shimatake, H., Rosenberg, M. unpublished observations.
126. Mise, K., Nakajima, K., Terakado, N., Ishidate, M. (1986) Gene 44: 165–169
127. Comb, D.G., Parker, P., Grandoni, R., Schildkraut, I. unpublished observations.
128. Janulaitis, A., Petrusyte, M., Maneliene, Z., Capskaya, L., Kiuduliene, L., Butkus, V. unpublished observations.
129. Rosenvold, E.C. unpublished observations.
130. Gelinas, R.E., Myers, P.A., Weiss, G.H., Roberts, R.J., Murray, K. (1977) J. Mol. Biol. 114: 433–440
131. Polisson, C. (1989) Nucl. Acids Res. 17: 5858
132. Wilson, G.A., Young, F.E. (1975) J. Mol. Biol. 97: 123–125
133. Roberts, R.J., Wilson, G.A., Young, F.E. (1977) Nature 265: 82–84
134. Hattman, S., Keisler, T., Gottehrer, A. (1978) J. Mol. Biol. 124: 701–711
135. Brooks, J. unpublished observations.
136. Seurinck, J., van Montagu, M. unpublished observations.
137. Walker, J.N.B., Vivian, A., Saunders, J.R. unpublished observations.
138. Yamada, Y., Yoshioka, H., Sasaki, J., Tahara, Y. (1983) J. Gen. Appl. Microbiol. 29: 157–166
139. Yamada, Y., Sasaki, J. (1984) J. Gen. Appl. Microbiol. 30: 309–312
140. Shibata, T., Ikawa, S., Kim, C., Ando, T. (1976) J. Bacteriol. 128: 473–476
141. Kramarov, V.M., Skrypina, N.A., Smolyaninov, V.V., Smirnov, V.V., Resnik, S.R., Sorokulova, I.B., Matvienko, N.I. (1989) Mol. Genet. Mikrobiol. Virusol. 0: 42–45
142. Leung, S-M., Chan, K-Y., Suen, Y-K, Shaw, P-C. (1989) Nucl. Acids Res. 17: 10133
143. Kim, E.L., Maliuta, S.S. (1989) Gene 80: 363–368
144. Kim, E.L., Maliuta, S.S. (1989) FEBS Lett. 25: 361–364
145. Catterall, J.F., Welker, N.E. (1977) J. Bacteriol. 129: 1110–1120
146. Clarke, C.M., Hartley, B.S. (1979) Biochem. J. 177: 49–62
147. Makula, R.A. unpublished observations.
148. Sugisaki, H., Maekawa, Y., Kanazawa, S., Takanami, M. (1982) Bull. Inst. Chem. Res. Kyoto Univ. 60: 328–335
149. Hurlin, P., Schildkraut, I. unpublished observations.
150. Janulaitis, A.A., Petrusyte, M. unpublished observations.
151. Janulaitis, A., Dausaite, V., Maneliene, Z., Kiuduliene, L., Bitinaite, J., Butkus, V. unpublished observations.
152. Gingeras, T.R., Roberts, R.J. unpublished observations.
153. Gingeras, T.R., Milazzo, J.P., Roberts, R.J. (1978) Nucl. Acids Res. 5: 4105–4127
154. Schildkraut, I. unpublished observations.
155. Morgan, R., Ingalls, D. unpublished observations.
156. Kaluza, K. unpublished observations.
157. Janulaitis, A., Grigaite, R., Trinkunaite, L., Maneliene, Z., Bitinaite, J., Kiuduliene, L., Butkus, V. unpublished observations.
158. Matvienko, N.I., Pachkunov, D.M., Kramarov, V.M. (1984) FEBS Lett. 177: 23–26
159. Morgan, R. unpublished observations.

160. Venetianer, P., Orosz, A. (1988) Nucl. Acids Res. 16: 3053–3060
161. Kong, H. unpublished observations.
162. Bingham, A.H.A., Atkinson, T., Sciaky, D., Roberts, R.J. (1978) Nucl. Acids Res. 5: 3457–3467
163. Sciaky, D., Roberts, R.J. unpublished observations.
164. Zieger, M., Patillon, M., Roizes, G., Lerouge, T., Dupret, D., Jeltsch, J.M. (1987) Nucl. Acids Res. 15: 3919
165. Langdale, J.A., Myers, P.A., Roberts, R.J. unpublished observations.
166. Fisherman, J., Gingeras, T.R., Roberts, R.J. unpublished observations.
167. Choi, K.D., Kim, K., Yoo, O.J. (1987) Korean J. Appl. Microbiol. Bioeng. 15: 352–355
168. Faruqi, A.F., Ahmed, N. (1987) Pak. J. Sci. Ind. Res. 30: 390–392
169. Kuebbing, D., Blakesley, R.J. (1979) Fed. Proc. 38: 780
170. Lautenberger, J.A., White, C.T., Haigwood, N.L., Edgell, M.H., Hutchison, C.A. (1980) Gene 9: 213–231
171. Duncan, C.H., Wilson, G.A., Young, F.E. (1978) J. Bacteriol. 134: 338–344
172. Wilson, G.A., Young, F.E. (1976) Microbiology 1976 American Society for Microbiology 350–357
173. Bickle, T.A., Ineichen, K. (1980) Gene 9: 205–212
174. Van Heuverswyn, H., Fiers, W. (1980) Gene 9: 195–203
175. Wood, P. unpublished observations.
176. Pirrotta, V. (1976) Nucl. Acids Res. 3: 1747–1760
177. Lau, R.H., Visentin, L.P., Martin, S.M., Hofman, J.D., Doolittle, W.F. (1985) FEBS Lett. 179: 129–132
178. Khosaka, T., Kiwaki, M. (1984) Gene 31: 251–255
179. Khosaka, T. unpublished observations.
180. Degtyarev, S.K., Zilkin, P.A., Prihodko, G.G., Repin, V.E., Rechkunova, N.I. (1989) Molek. Biol. 23: 1051–1056
181. Frey, B. unpublished observations.
182. Striabel, H.M., Schmitz, G.G., Kaluza, K., Jarsch, M., Kessler, C. unpublished observations.
183. Schildkraut, I., Greenough, L. unpublished observations.
184. Janulaitis, A.A., Bitinaite, J. unpublished observations.
185. Degtyarev, S.K., Kolyhalov, A.A., Rechkunova, N.I., Zilkin, P.A., Dedkov, V.S. unpublished observations.
186. Gilvonauskaitė, R., Bitinaite, J., Petrusyte, M., Butkus, V., Maneliene, Z., Janulaitis, A.A. unpublished observations.
187. Hall, D., Camp, R., Morgan, R., Hoffman, L. unpublished observations.
188. Tsui, W.-C., Elgar, G., Merrill, C., Maunders, M. (1988) Nucl. Acids Res. 16: 4178
189. Morgan, R., Hoffman, L. unpublished observations.
190. Kita, K., Hiraoka, N., Oshima, A., Kadonishi, S., Obayashi, A. (1985) Nucl. Acids Res. 13: 8685–8694
191. Skryabin, N.A., Kramarov, V.M., Lyannaya, A.M., Smolyaninov, V.V., Goncharova, G.I. (1988) Mol. Genet. Mikrobiol. Virusol. 0: 15–16
192. Sokolov, N.N., Fitsner, A.B., Plutalov, O.V., Anikeitcheva, N.V., Choroshoutina, E.B., Kalugin, A.A., Samko, O.T., Berlin, Y.A. unpublished observations.
193. Thanos, D., Scarpelis, G., Papamatheakis, J., Bouriotis, V. (1989) Nucl. Acids Res. 17: 8881
194. Kramarov, V.M., Fomenkov, A.I., Matvienko, N.I., Ubieta, R.H., Smolianinov, V.V., Gorlenko, V.M. (1987) Bioorg. Khim. 13: 773–776
195. Gilvonauskaitė, R., Petrusyte, M., Butkus, V., Kersulyte, D., Janulaitis, A.A. unpublished observations.
196. Kato, F., Suetake, T., Murata, A., Mukai, T., Maekawa, N. unpublished observations.
197. Polisson, C., Morgan, R.D. (1988) Nucl. Acids Res. 16: 5205
198. Meagher, R.B. unpublished observations.
199. Lautenberger, J.A., Edgell, M.H., Hutchison, C.A. III (1980) Gene 12: 171–174
200. Hendrix, J.D., Welker, N.E. (1985) J. Bacteriol. 162: 682–692
201. Pugatsch, T., Weber, H. (1979) Nucl. Acids Res. 7: 1429–1444
202. Hobom, G., Schwarz, E., Melzer, M., Mayer, H. (1981) Nucl. Acids Res. 9: 4823–4832
203. Janulaitis, A.A., Kazlauskienė, R., Petrusyte, M. unpublished observations.
204. Naureckienė, S., Kazlauskienė, R., Vaitkevicius, D., Butkus, V., Kiudulienė, L., Janulaitis, A.A. unpublished observations.
205. Yoshida, Y., Mise, K. (1986) J. Bacteriol. 165: 357–362
206. Sohail, A., Khan, E., Mushtaq, R., Riazuddin, S. unpublished observations.
207. Schildkraut, I., Wise, R. unpublished observations.
208. Levi, C., Bickle, T. unpublished observations.
209. Polisson, C., Morgan, R.D. (1988) Nucl. Acids Res. 16: 10365
210. Janulaitis, A.A., Petrusyte, M.P., Jaskelaviciene, B.P., Krayev, A.S., Skryabin, K.G., Bayev, A.A. (1981) Dokl. Akad. Nauk SSSR 257: 749–750
211. Janulaitis, A.A., Petrusyte, M.A., Jaskelaviciene, B.P., Krayev, A.S., Skryabin, K.G., Bayev, A.A. (1982) FEBS Lett. 137: 178–180
212. Petrusyte, M.P., Janulaitis, A.A. (1982) Eur. J. Biochem. 121: 377–381
213. Janulaitis, A.A., Klimasauskas, S., Petrusyte, M., Butkus, V. (1983) FEBS Lett. 161: 131–134
214. Petrusyte, M.P., Janulaitis, A.A. (1981) Bioorg. Khim. 7: 1885–1887
215. Klimasauskas, S., Butkus, V., Janulaitis, A.A. (1987) Mol. Biol. (Moscow) 21: 87–92
216. Janulaitis, A.A., Gilvonauskaitė, R. unpublished observations.
217. Bolton, B.J., Comer, M.J., Kessler, C. unpublished observations.
218. Lazareviciute, L., Laucys, V., Poliachenko, V., Janulaitis, A.A. unpublished observations.
219. Watson, R., Zuker, M., Martin, S.M., Visentin, L.P. (1980) FEBS Lett. 118: 47–50
220. Hu, A.W., Marschel, A.H. (1982) Fed. Proc. 41: 1119
221. Janulaitis, A.A., Stakenas, P., Jaskelaviciene, B., Lebedenko, E.N., Berlin, Yu.A. (1980) Bioorg. Khim. 6: 1746–1748
222. Janulaitis, A.A., Stakenas, P.S., Lebedenko, E.N., Berlin, Yu.A. (1982) Nucl. Acids Res. 10: 6521–6530
223. Whitehead, P.R., Brown, N.L. (1983) FEBS Lett. 155: 97–101
224. Jacobs, D., Brown, N.L. (1986) Biochem. J. 238: 613–616
225. Janulaitis, A.A., Stakenas, P.S., Berlin, Y.A. (1983) FEBS Lett. 161: 210–212
226. Mayer, H., Grosschedl, R., Schutte, H., Hobom, G. (1981) Nucl. Acids Res. 9: 4833–4845
227. McClelland, M. (1981) Nucl. Acids Res. 9: 6795–6804
228. Sokolov, N.N., Butkus, V., Maneliene, Z., Fitsner, A.B., Anikeitcheva, N.V., Choroshoutina, E.B., Kalugin, A.A., Fodor, I.I., Janulaitis, A.A. unpublished observations.
229. Repin, V.E., Prichodko, E.A., Degtyarev, S.K. (1988) Izv Sib Otd Akad. Nauk SSSR Ser Biol Nauk 14: 110–113
230. Sokolov, N.N., Anikeitcheva, N.V., Samko, O.T., Choroshoutina, E.B., Kalugin, A.A., Fitsner, A.B. unpublished observations.
231. Tsvetkova, N.V., Mileikovskaya, M.M., Gruber, I.M., Polyachenko, V.M., Butkus, V.V., Janulaitis, A.A., Sudzhyuvene, O.F., Tarasov, A.P. (1987) Mol. Genet. Mikrobiol. Virusol. 0: 19–22
232. Kim, Y.-S., Rho, H.-M. (1986) Korean J. Microbiol. 24: 18–23
233. Mushtaq, R., Riazuddin, S. unpublished observations.
234. Gordon, R. unpublished observations.
235. Yan, P.F., Zhou, B. unpublished observations.
236. Prihodko, G.G., Petrov, N.A., Repin, V.E., Degtyarev, S.K. (1988) Izv. Sib. Otd. Akad. Nauk SSSR Ser Biol Nauk 14: 108–109
237. Azizbekyan, R.R., Rebentish, B.A., Netyksa, E.M. (1988) Biotekhnologiya 4: 197–198
238. Sokolov, N.N., Butkus, V., Maneliene, Z., Anikeitcheva, N.V., Kovalenko, N.A., Fodor, I.I., Eldarov, M.A., Fitsner, A.B., Janulaitis, A.A. unpublished observations.
239. Xia, Y., Burbank, D.E., Uher, L., Rabussay, D., Van Etten, J.L. (1987) Nucl. Acids Res. 15: 6075–6090
240. Xia, Y., Burbank, D.E., van Etten, J.L. unpublished observations.
241. Makula, R.A., Meagher, R.B. (1980) Nucl. Acids Res. 8: 3125–3131
242. Gelinis, R.E., Roberts, R.J. unpublished observations.
243. Howard, K.A., Card, C., Benner, J.S., Callahan, H.L., Maunus, R., Silber, K., Wilson, G., Brooks J.E. (1986) Nucl. Acids Res. 14: 7939–7951
244. Lacks, S., Greenberg, B. (1975) J. Biol. Chem. 250: 4060–4066
245. Geier, G.E., Modrich, P. (1979) J. Biol. Chem. 254: 1408–1413
246. Lacks, S., Greenberg, B. (1977) J. Mol. Biol. 114: 153–168
247. Janulaitis, A.A., Marcinkeviciene, L.Y., Petrusyte, M.P. (1982) Dokl. Akad. Nauk SSSR 262: 241–244
248. Butkus, V., Padegimienė, A., Laucys, V., Janulaitis, A.A. unpublished observations.
249. Dingman, C., Schildkraut, I. unpublished observations.
250. Duff, M.K., Davies, J.K. unpublished observations.
251. Hansen, R. unpublished observations.
252. Grosskopf, R., Wolf, W., Kessler, C. (1985) Nucl. Acids Res. 13: 1517–1528
253. de Wit, C.M., Dekker, B.M.M., Neele, A.C., de Waard, A. (1985) FEBS Lett. 180: 219–223
254. Mise, K., Nakajima, K. (1985) Gene 36: 363–367
255. Belle Isle, H. unpublished observations.
256. Polisson, C., Morgan, R.D. (1989) Nucl. Acids Res. 17: 3316
257. Polisson, C., Murray, R.G.E. unpublished observations.
258. Evans, L.R., Brown, N.L. unpublished observations.
259. Butkus, V., Bitinaite, J., Kersulyte, D., Janulaitis, A.A. (1985) Biochim. Biophys. Acta 826: 208–212
260. Janulaitis, A.A., Kazlauskienė, R., Gilvonauskaitė, R. unpublished

- observations.
261. Janulaitis, A.A., Kazlauskienė, R. unpublished observations.
 262. Polisson, C., McMahon, M. unpublished observations.
 263. Petrusyte, M.P., Bitinaite, J.B., Kersulyte, D.R., Menkavicz, C.J., Butkus, V.V., Janulaitis, A.A. (1987) Dokl. Akad. Nauk SSSR 295: 1250–1253
 264. Morgan, R., Stote, R., Schildkraut, I. unpublished observations.
 265. Hall, D., Morgan, R. unpublished observations.
 266. Greene, P.J., Betlach, M.C., Boyer, H.W., Goodman, H.M. (1974) *Methods Mol. Biol.* 7: 87–105
 267. Hedgpeth, J., Goodman, H.M., Boyer, H.W. (1972) *Proc. Natl. Acad. Sci. USA* 69: 3448–3452
 268. Dugaiczky, A., Hedgpeth, J., Boyer, H.W., Goodman, H.M. (1974) *Biochemistry* 13: 503–512
 269. Gardner, J.F., Cohen, L.K., Lynn, S.P., Kaplan, S. unpublished observations.
 270. Aiken, C., Milarski-Brown, K., Gumpert, R.I. (1986) *Fed. Proc.* 45: 1914
 271. Greene, P.J., Ballard, B.T., Stephenson, F., Kohr, W.J., Rodriguez, H., Rosenberg, J.M., Boyer, H.W. (1988) *Gene* 68: 43–52
 272. Uporova, T.M., Kartasheva, I.M., Skripkin, E.A., Lopareva, E.N., Nikolskaya, I.I., Debov, S.S. (1985) *Vopr. Med. Khim.* 31: 131–136
 273. Lopatina, N.G., Kirnos, M.D., Suchkov, S.V., Vanyushin, B.F., Nikol'skaya, I.I., Debov, S.S. (1985) *Biokhimiya* 50: 495–502
 274. Yoshimori, R.N. (1971) Ph.D. thesis. University of California, San Francisco. 1–73
 275. Bigger, C.H., Murray, K., Murray, N.E. (1973) *Nature New Biol.* 244: 7–10
 276. Boyer, H.W., Chow, L.T., Dugaiczky, A., Hedgpeth, J., Goodman, H.M. (1973) *Nature New Biol.* 244: 40–43
 277. Polisson, C., Morgan, R. unpublished observations.
 278. DiLauro, R. unpublished observations.
 279. LeBon, J.M., Kado, C.I., Rosenthal, L.J., Chirikjian, J.G. (1978) *Proc. Natl. Acad. Sci. USA* 75: 4097–4101
 280. Roizes, G., Patillon, M., Kovoor, A. (1977) *FEBS Lett.* 82: 69–70
 281. Scarpelis, G., Moissidou, A., Rina, M., Bouriotis, V. (1989) *Nucl. Acids Res.* 17: 8883
 282. Schildkraut, I., Comb, D. unpublished observations.
 283. Choi, K.D., Yoo, O.J. unpublished observations.
 284. Kauc, L., Leszczynska, K. (1986) *Acta Microbiol. Pol.* 35: 317–320
 285. Hartmann, H., Goebel, W. (1977) *FEBS Lett.* 80: 285–287
 286. Janulaitis, A.A., Kazlauskienė, R., Steponaviciene, D. unpublished observations.
 287. Chiura, H., Noro, Y., Kanayama, S., Ueda, Y., Simidu, U., Takagi, J. (1988) *Agric. Biol. Chem.* 52: 2107–2109
 288. Jiang, B.D., Myers, P. unpublished observations.
 289. Butkus, V., Klimasauskas, S., Kersulyte, D., Vaitkevicius, D., Lebonka, A., Janulaitis, A.A. (1985) *Nucl. Acids Res.* 13: 5727–5746
 290. Janulaitis, A.A., Vaitkevicius, D.P. (1985) *Biotechnologiya* 1: 39–51
 291. Orekhov, A.V., Strokina, I.V., Foors, A.R. (1989) *Genetika* 25: 614–625
 292. Solodukhina, L.I., Manuvakhova, M.S., Korotayev, A.I. (1989) *Genetika* 25: 1571–1577
 293. Orekhov, A.V., Rebentish, B.A., Debov, V.G. (1982) *Dokl. Akad. Nauk SSSR* 263: 217–220
 294. Piechula, S. unpublished observations.
 295. Grachev, S.A., Mamaev, S.V., Gurevich, A.I., Igoshin, A.V., Kolosov, M.N., Slyusarenko, A.G. (1981) *Bioorg. Khim.* 7: 628–630
 296. Sun, D.K., Yoo, O.J. (1988) *Korean Biochem. J.* 21: 419–422
 297. Nwosu, V.U., Connolly, B.A., Halford, S.E., Garnett, J. (1988) *Nucl. Acids Res.* 16: 3705–3720
 298. Kholmina, G.V., Rebentish, B.A., Skoblov, Yu.S., Mironov, A.A., Yankovskii, N.K., Kozlov, Yu.I., Glatmann, L.I., Moroz, A.F., Debov, V.G. (1980) *Dokl. Akad. Nauk SSSR* 253: 495–497
 299. Schildkraut, I., Banner, C.D.B., Rhodes, C.S., Parekh, S. (1984) *Gene* 27: 327–329
 300. Duda, E.G., Izsvak, Z., Orosz, A. (1987) *Nucl. Acids Res.* 15: 1334
 301. Maneliene, Z., Bitinaite, J., Butkus, V., Janulaitis, A.A. unpublished observations.
 302. Danaher, R., Stein, D.C. (1988) *ASM Abstracts* 88: 213
 303. Maratea, E., Camp, R.R. unpublished observations.
 304. Sullivan, K.M., Macdonald, H.J., Saunders, J.R. (1987) *FEMS Microbiol. Lett.* 44: 389–393
 305. Calleja, F., Dekker, B.M.M., Coursin, T., de Waard, A. (1984) *FEBS Lett.* 178: 69–72
 306. Janulaitis, A., Steponaviciene, D., Trinkunaite, L., Maneliene, Z., Kiudulienė, L., Petrusyte, M., Butkus, V. unpublished observations.
 307. Degtyarev, S.K., Kolykhalov, A.A., Rechkunova, N.I., Dedkov, V.S. (1989) *Bioorg. Khim.* 15: 130–132
 308. Leung, D.W., Lui, A.C.P., Merilees, H., McBride, B.C., Smith, M. (1979) *Nucl. Acids Res.* 6: 17–25
 309. Gilvonauskaitė, R., Kazlauskienė, R., Padegimienė, A., Petrusyte, M., Butkus, V., Janulaitis, A.A. unpublished observations.
 310. Cocks, B.G., Finch, L.R. (1987) *Int. J. Syst. Bacteriol.* 37: 451–453
 311. Lui, A.C.P., McBride, B.C., Vovis, G.F., Smith, M. (1979) *Nucl. Acids Res.* 6: 1–15
 312. Kita, K., Hiraoka, N., Kimizuka, F., Obayashi, A. (1984) *Agric. Biol. Chem.* 48: 531–532
 313. Parker, P., Schildkraut, I. unpublished observations.
 314. Venetianer, P., Orosz, A. (1988) *Nucl. Acids Res.* 16: 350
 315. Kupper, D., Zhou, J.-G., Venetianer, P., Kiss, A. (1989) *Nucl. Acids Res.* 17: 1077–1088
 316. Kholmina, G.V., Rebentish, B.A., Kozlovskii, Yu.-E., Sorokin, A.V., Gol'denberg, D.S., Prozorov, A.A. (1986) *Mol. Genet. Mikrobiol. Virusol.* 0: 23–25
 317. Ikawa, S., Shibata, T., Ando, T., Saito, H. (1980) *Mol. Gen. Genet.* 177: 359–368
 318. Gaido, M.L., Prostko, C.R., Strobl, J.S. (1988) *J. Biol. Chem.* 263: 4832–4836
 319. Jentsch, S. (1983) *J. Bacteriol.* 156: 800–808
 320. Richards, D.F., Linnett, P.E., Oultram, J.D., Young, M. (1988) *J. Gen. Microbiol.* 134: 3151–3157
 321. Olson, J.A., Myers, P.A., Roberts, R.J. unpublished observations.
 322. Thomm, M., Frey, G., Bolton, B.J., Laue, F., Kessler, C., Stetter, K.O. (1988) *FEMS Microbiol. Lett.* 52: 229–234
 323. McConnell, D.J., Searcy, D.G., Sutcliffe, J.G. (1978) *Nucl. Acids Res.* 5: 1729–1739
 324. Sugisaki, H., Kanazawa, S. (1981) *Gene* 16: 73–78
 325. Posfai, G., Szybalski, W. (1988) *Gene* 69: 147–151
 326. Sugisaki, H., Kita, K., Takanami, M. (1989) *J. Biol. Chem.* 264: 5757–5761
 327. Landry, D., Looney, M.C., Feehery, G.R., Slatko, B.E., Jack, W.E., Schildkraut, I., Wilson, G.G. (1989) *Gene* 77: 1–10
 328. Smith, L., Blakesley, R., Chirikjian, J. unpublished observations.
 329. Nardone, G., Blakesley, R. (1981) *Fed. Proc.* 40: 1848
 330. Tolstoshev, C.M., Blakesley, R.W. (1982) *Nucl. Acids Res.* 10: 1–17
 331. Meyertons, J.L., Miceli, S., Lechevalier, M., Roberts, R.J. unpublished observations.
 332. van Montagu, M. unpublished observations.
 333. Janulaitis, A.A., Bitinaite, J., Jaskeleviciene, B. (1983) *FEBS Lett.* 151: 243–247
 334. Murray, K., Morrison, A., Cooke, H.W., Roberts, R.J. unpublished observations.
 335. Roberts, R.J., Breitmeyer, J.B., Tabachnik, N.F., Myers, P.A. (1975) *J. Mol. Biol.* 91: 121–123
 336. Tu, C.-P.D., Roychoudhury, R., Wu, R. (1976) *Biochem. Biophys. Res. Commun.* 72: 355–362
 337. Fomenkov, A.I., Kramarov, V.M., Andreev, L.V., Mochalov, V.V., Smolyaninov, V.V., Matvienko, N.I. (1988) *Nucl. Acids Res.* 16: 10399
 338. Takanami, M. (1974) *Methods Mol. Biol.* 7: 113–133
 339. Wilson, G.A., Young, F.E. unpublished observations.
 340. Middleton, J.H., Edgell, M.H., Hutchison, C.A., III (1972) *J. Virol.* 10: 42–50
 341. Bron, S., Murray, K. (1975) *Mol. Gen. Genet.* 143: 25–33
 342. Mann, M.B., Smith, H.O. (1977) *Nucl. Acids Res.* 4: 4211–4221
 343. Yan, P.-F., Ye, S.-Y., Wang, P.-Z., Li, Q.-L., Lu, Y.-Y., Zhou, B. (1982) *Acta Biochim. Biophys. Sin.* 14: 151–158
 344. Manachini, P.L., Parini, C., Fortina, M.G., Benazzi, L. (1987) *FEBS Lett.* 214: 305–307
 345. Shinomiya, T. unpublished observations.
 346. Vlatakis, G., Clark, D., Bouriotis, V. (1989) *Nucl. Acids Res.* 17: 8882
 347. Cruz, A.K., Pires, M.Q., Lima, V.G., Morel, C.M. (1989) *Brazilian J. Med. Biol. Res.* 22: 1321–1328
 348. Kiss, A., Sain, B., Csordas-Toth, E., Venetianer, P. (1977) *Gene* 1: 323–329
 349. Venetianer, P. unpublished observations.
 350. Koncz, C., Kiss, A., Venetianer, P. (1978) *Eur. J. Biochem.* 89: 523–529
 351. Gunther, U., Storm, K., Bald, R. (1978) *Eur. J. Biochem.* 90: 581–583
 352. Bron, S., Murray, K., Trautner, T.A. (1975) *Mol. Gen. Genet.* 143: 13–23
 353. Mayer, H., Schutte, H. unpublished observations.
 354. Hanberg, F., Myers, P.A., Roberts, R.J. unpublished observations.
 355. Clanton, D.J., Woodward, J.M., Miller, R.V. (1978) *J. Bacteriol.* 135: 270–273
 356. Stein, D.C., Gregoire, S., Piekarczyk, A. (1988) *Infect. Immun.* 56: 112–116

357. Qiang, B.-Q., Schildkraut, I. (1986) Nucl. Acids Res. 14: 1991–1999
358. Gelinas, R.E., Myers, P.A., Roberts, R.J. unpublished observations.
359. Rushizky, G.W. (1981) Gene Amplification and Analysis Elsevier North Holland 239–242
360. Wu, R., King, C.T., Jay, E. (1978) Gene 4: 329–336
361. Kawamura, M., Sakakibara, M., Watanabe, T., Kita, K., Hiraoka, N., Obayashi, A., Takagi, M., Yano, K. (1986) Nucl. Acids Res. 14: 1985–1989
362. Prangishvili, D.A., Vashakidze, R.P., Chelidze, M.G., Gabriadze, I. Yu. (1985) FEBS Lett. 192: 57–60
363. McWilliam, P. unpublished observations.
364. Ghufoor, K., Raven, N.D.H., Williams, R.A.D. unpublished observations.
365. Siegelman, B. unpublished observations.
366. Brown, N.L., Smith, M. (1977) Proc. Natl. Acad. Sci. USA 74: 3213–3216
367. Sugisaki, H. (1978) Gene 3: 17–28
368. Brown, N.L., McClelland, M., Whitehead, P.R. (1980) Gene 9: 49–68
369. Bolton, B.J., Holte, H.-J., Schmitz, G.G., Jarsch, M., Kessler, C. (1989) Nucl. Acids Res. 17: 9500
370. Schildkraut, I., Lynch, J., Morgan, R. (1987) Nucl. Acids Res. 15: 5492
371. Naureckiene, S., Kazlauskienė, R., Maneliene, Z., Vaitkevicius, D., Butkus, V., Janulaitis, A.A. unpublished observations.
372. Ikawa, S., Shibata, T., Ando, T. (1976) J. Biochem. 80: 1457–1460
373. Beaty, J.S., Mclean-Bowen, C.A., Brown, L.R. (1982) Gene 18: 61–67
374. Naureckiene, S., Bitinaite, J., Vaitkevicius, D., Menkevicius, S., Butkus, V., Janulaitis, A.A. unpublished observations.
375. Mise, K. unpublished observations.
376. Roberts, R.J., Myers, P.A., Morrison, A., Murray, K. (1976) J. Mol. Biol. 103: 199–208
377. Mann, M.B., Smith H.O. (1979) Proceedings of the Conference on Transmethylation Elsevier North Holland 483–492
378. Lazareviciute, L., Bitinaite, J., Laucys, V., Poliachenko, V., Padegimienė, A., Butkus, V., Janulaitis, A.A. unpublished observations.
379. Chirikjian, J.G., George, A., Smith, L.A. (1978) Fed. Proc. 37: 1415
380. Shen, S., Li, Q., Yan, P., Zhou, B., Ye, S. Lu, Y., Wang, D. (1980) Sci. Sin. 23: 1435–1442
381. Stephens, M.A. (1982) J. Bacteriol. 149: 508–514
382. Smith, H.O., Wilcox, K.W. (1970) J. Mol. Biol. 51: 379–391
383. Kelly, T.J. Jr., Smith, H.O. (1970) J. Mol. Biol. 51: 393–409
384. Roy, P.H., Smith, H.O. (1973) J. Mol. Biol. 81: 427–444
385. Roy, P.H., Smith, H.O. (1973) J. Mol. Biol. 81: 445–459
386. Endow, S.A., Roberts, R.J. unpublished observations.
387. Piekarowicz, A., Stasiak, A., Stanczak, J. (1980) Acta Microbiol. Pol. 29: 151–156
388. Landy, A., Ruedisueli, E., Robinson, L., Foeller, C., Ross, W. (1974) Biochemistry 13: 2134–2142
389. Old, R., Murray, K., Roizes, G. (1975) J. Mol. Biol. 92: 331–339
390. Bolton, B.J., Schmitz, G., Jarsch, M., Wagner, C., Veseley, Z., Berger, G., Kessler, C. unpublished observations.
391. Greenaway, P.J. (1980) Biochem. Biophys. Res. Commun. 95: 1282–1287
392. Kazennova, E.V., Tarasov, A.P., Mileikovskaya, M.M., Semina, I.E., Tsvetkova, N.V. (1982) Zh. Mikrobiol. Epidemiol. Immunobiol. 0: 56–57
393. Kong, H., Chen, Z. (1987) Nucl. Acids Res. 15: 7205
394. Mise, K., Nakajima, K. (1984) Gene 30: 79–85
395. Middleton, J.H., Stankus, P.V., Edgell, M.H., Hutchison, C.A. III unpublished observations.
396. Mann, M.B., Smith, H.O. unpublished observations.
397. Hutchison, C.A., Barrell, B.G. unpublished observations.
398. Murray, K., Morrison, A. unpublished observations.
399. Xia, Y., Burbank, D.E., Van Etten, J.L. (1986) Nucl. Acids Res. 14: 6017–6030
400. Mann, M.B., Rao, R.N., Smith, H.O. (1978) Gene 3: 97–112
401. Kelly, S., Kaddurah-Daouk, R., Smith, H.O. (1985) J. Biol. Chem. 260: 15339–15344
402. Smith, H.O. unpublished observations.
403. Visentin, L.P., Watson, R.J., Martin, S., Zuker, M. unpublished observations.
404. Visentin, L.P. unpublished observations.
405. Sharp, P.A., Sugden, B., Sambrook, J. (1973) Biochemistry 12: 3055–3063
406. Garfin, D.E., Goodman, H.M. (1974) Biochem. Biophys. Res. Commun. 59: 108–116
407. Agarwal, K. unpublished observations.
408. Dedkov, V.S., Prikhodko, G.G., Puchkova, L.I., Serov, G.D., Rechkunova, N.I., Degtyarev, S.Kh. (1989) Molec. Genet. Mikrobiol. Virusol. 11: 24–25
409. Sugisaki, H., Takanami, M. (1973) Nature New Biol. 246: 138–140
410. Baumstark, B.R., Roberts, R.J., RajBhandary, U.L. (1979) J. Biol. Chem. 254: 8943–8950
411. van Montagu, M., Sciaky, D., Myers, P.A., Roberts, R.J. unpublished observations.
412. Jentsch, S., Gunthert, U., Trautner, T.A. (1981) Nucl. Acids Res. 9: 2753–2759
413. Calleja, F., Tandeau de Marsac, N., Coursin, T., van Ormondt, H., de Waard, A. (1985) Nucl. Acids Res. 13: 6745–6751
414. Coll, E., Chirikjian, J. unpublished observations.
415. Kleid, D., Humayun, Z., Jeffrey, A., Ptashne, M. (1976) Proc. Natl. Acad. Sci. USA 73: 293–297
416. Nelson, M. unpublished observations.
417. Piekarowicz, A., Yuan, R., Stein, D.C. (1988) Nucl. Acids Res. 16: 9868
418. Piekarowicz, A., Yuan, R., Stein, D.C. (1988) Nucl. Acids Res. 16: 5957–5972
419. Smith, D.I., Blattner, F.R., Davies, J. (1976) Nucl. Acids Res. 3: 343–353
420. Tomassini, J., Roychoudhury, R., Wu, R., Roberts, R.J. (1978) Nucl. Acids Res. 5: 4055–4064
421. Bolton, B.J., Nesch, G., Comer, M.J., Wolf, W., Kessler, C. (1985) FEBS Lett. 182: 130–134
422. Comb, D.G., Schildkraut, I. unpublished observations.
423. Miyahara, M., Mise, K. (1988) Anal. Chim. Acta 213: 273–277
424. Matsui, M., Mise, K., Yoshida, Y., Ishidate, M. (1986) Bull. Natl. Inst. Hyg. Sci. (Tokyo) 104: 92–96
425. Bolton, B.J., Schmitz, G.G., Jarsch, M., Comer, M.J., Kessler, C. (1988) Gene 66: 31–43
426. Polisson, C., Morgan, R.D. (1988) Nucl. Acids Res. 16: 9872
427. Janulaitis, A., Kazlauskienė, R., Trinkunaitė, L., Kiudulienė, L., Maneliene, Z., Petrusyte, M., Butkus, V. unpublished observations.
428. Schmid, K., Thomm, M., Laminet, A., Laue, F.G., Kessler, C., Stetter, K.O., Schmitt, R. (1984) Nucl. Acids Res. 12: 2619–2628
429. Gelinas, R.E., Myers, P.A., Roberts, R.J. (1977) J. Mol. Biol. 114: 169–179
430. Cruz, A.K., Kidane, G., Pires, M.Q., Rabinovitch, L., Guaycurus, T.V., Morel, C.M. (1984) FEBS Lett. 173: 99–102
431. Akulinin, G.E., Getko, G.A., Repin, V.E., Degtyarev, S.K. (1988) Izv. Sib. Otd. Akad. Nauk SSSR Ser. Biol. Nauk 14: 105–108
432. Grandoni, R.P., Comb, D. unpublished observations.
433. Kuzin, A.I., Bolesnin, M.I., Smolyaninov, V.V., Azizbekyan, R.R. (1989) Mol. Genet. Mikrobiol. Virusol. 0: 36–39
434. Azeddoug, H., Hubert, J., Reyssat, G. (1989) FEMS Microbiol. Lett. 65: 323–326
435. Wen, T.N., Tung, P.H., Chen, C.S. (1989) Bot. Bull. Acad. Sinica 30: 91–98
436. Xia, Y., Van Etten, J.L. (1986) Mol. Cell. Biol. 6: 1440–1445
437. Xia, Y., Burbank, D.E., Uher, L., Rabussay, D., Van Etten, J.L. (1986) Mol. Cell. Biol. 6: 1430–1439
438. Hiraoka, N., Kita, K., Nakajima, H., Kimizuka, F., Obayashi, A. (1985) J. Ferment. Technol. 63: 151–157
439. Boyd, A.C., Charles, I.G., Keyte, J.W., Brammar, W.J. (1986) Nucl. Acids Res. 14: 5255–5274
440. Grandoni, R. unpublished observations.
441. Comb, D.G. unpublished observations.
442. Sussenbach, J.S., Monfoort, C.H., Schiphof, R., Stobberingh, E.E. (1976) Nucl. Acids Res. 3: 3193–3202
443. Klimasauskas, S., Leblonka, A., Butkus, V., Janulaitis, A.A. unpublished observations.
444. Arutyunyan, E.E., Gruber, I.M., Polyachenko, V.M., Kvachadze, L.J., Andriashvili, I.A., Chanishvili, T.G., Nikolskaya, I.I. (1985) Vopr. Med. Khim. 31: 127–132
445. Stobberingh, E.E., Schiphof, R., Sussenbach, J.S. (1977) J. Bacteriol. 131: 645–649
446. Brown, N.L., Hutchison, C.A. III, Smith, M. (1980) J. Mol. Biol. 140: 143–148
447. Endow, S.A. (1977) J. Mol. Biol. 114: 441–449
448. McClelland, M., Nelson, M., Cantor, C.R. (1985) Nucl. Acids Res. 13: 7171–7182
449. Brensing-Kuppers, J., Kaluza, K., Schmitz, G.G., Jarsch, M., Kessler, C. unpublished observations.
450. Halden, N.F., Wolf, J.B., Cross, S.L., Leonard, W.J. (1988) Clin. Res. 36: 404A
451. Zabeau, M., Greene, R., Myers, P.A., Roberts, R.J. unpublished observations.
452. Morgan, R.D. (1988) Nucl. Acids Res. 16: 3104
453. Comb, D.G., Schildkraut, I., Roberts, R.J. unpublished observations.
454. Christ, C., Ingalls, D. unpublished observations.

455. Lunnen, K.D., Morgan, R.D., Timan, C.J., Krzycki, J.A., Reeve, J.N., Wilson, G.G. (1989) *Gene* 77: 11–19
456. Comb, D.G., Wilson, G. unpublished observations.
457. Petrusyte, M., Padegimienė, A., Butkus, V., Janulaitis, A.A. unpublished observations.
458. Hammond, A.W., Gerard, G.F., Campbell, J.H., Chatterjee, D.K. (1989) *Nucl. Acids Res.* 17: 3320
459. Chien, R.H., Stein, D.C., Seifert, H.S., Floyd, K., So, M. (1988) *ASM Abstracts* 88: 213
460. Leary, J.V. unpublished observations.
461. Winkler, K. (1979) Ph. D. Thesis. Erlangen University.
462. Heumann, W. (1979) *Curr. Top. Microbiol. Immunol.* 88: 1–24
463. Sievert, U., Rosch, A. unpublished observations.
464. Stote, R., Morgan, R. unpublished observations.
465. Timko, J., Turna, J., Zelinka, J. (1987) *Metabolism and Enzymology of Nucleic Acids* Publishing House of the Slovak Academy of Science 107–118
466. Comb, D.G., Schildkraut, I., Wilson, G., Greenough, L. unpublished observations.
467. Khosaka, T., Sakurai, T., Takahashi, H., Saito, H. (1982) *Gene* 17: 117–122
468. Butkus, V., Kazlauskienė, R., Gilvonauskaitė, R., Petrusyte, M., Janulaitis, A.A. (1985) *Bioorg. Khim.* 11: 1572–1573
469. Vaitkevicius, D., Kulba, A., Chernov, S., Butkus, V., Fomichiov, J., Janulaitis, A.A. unpublished observations.
470. Kulba, A.M., Abdel-Sabur, M.S., Butkus, V.V., Janulaitis, A.A., Fomichev, Y.K. (1987) *Mol. Biol. (Moscow)* 21: 250–254
471. Hamablet, L., Meyertons, J.L., Roberts, R.J. unpublished observations.
472. Lin, P.-M., Roberts, R.J. unpublished observations.
473. Comb, D.G., Hess, E.J., Wilson, G. unpublished observations.
474. Watson, R.J., Schildkraut, I., Qiang, B.-Q., Martin, S.M., Visentin, L.P. (1982) *FEBS Lett.* 150: 114–116
475. Silber, K.R., Polisson, C., Rees, P.A., Benner, J.S. (1988) *Gene* 74: 43–44
476. Rees, P.A., Polisson, C., Silber, K.R., Moran, L.S., Slatko, B.E., Benner, J.S. unpublished observations.
477. Lazareviciute, L., Laucys, V., Maneliene, Z., Poliachenko, V., Butkus, V., Janulaitis, A.A. unpublished observations.
478. Borsetti, R., Wise, D., Schildkraut, I. unpublished observations.
479. Qiang, B.-Q., Schildkraut, I. (1987) *Methods Enzymol.* 155: 15–21
480. Morgan, R., Stote, R., Soltis, A. unpublished observations.
481. Walker, J.N.B., Dean, P.D.G., Saunders, J.R. (1986) *Nucl. Acids Res.* 14: 1293–1301
482. Vesely, Z., Schmitz, G.G., Jarsch, M., Kessler, C. unpublished observations.
483. Sokolov, N.N., Anikeitcheva, N.V., Kalugin, A.A., Samko, O.T., Choroshoutina, E.B., Eldarov, M.A., Fitsner, A.B., Fodor, I.I. unpublished observations.
484. Kazlauskienė, R., Maneliene, Z., Butkus, V., Petrusyte, M., Janulaitis, A.A. (1986) *Bioorg. Khim.* 12: 836–838
485. Tenkanen, T. unpublished observations.
486. Morgan, R., Hempstead, S.K. unpublished observations.
487. Miyahara, M., Shimada, T., Mise, K. unpublished observations.
488. Brown, N.L., Smith, M. (1976) *FEBS Lett.* 65: 284–287
489. Walder, R.Y., Walder, J.A., Donelson, J.E. (1984) *J. Biol. Chem.* 259: 8015–8026
490. Sasaki, J., Yamada, Y. (1984) *Agric. Biol. Chem.* 48: 3027–3034
491. Hoshino, T., Uozumi, T., Horinouchi, S., Ozaki, A., Beppu, T., Arima, K. (1977) *Biochim. Biophys. Acta* 479: 367–369
492. Bennett, S.P., Halford, S.E. (1987) *NATO ASI Ser.* 137: 239–250
493. Riazuddin, S., Sohail, A., Maqbool, T., Khan, E., Mushtaq, R. (1987) *Pak. J. Sci. Ind. Res.* 30: 819–824
494. Lebenka, A.Yu., Chitavichyus, D.B. (1988) *Biokhimiya* 53: 1895–1899
495. Jou, T.-W., Chen, C.-S. (1988) *Bot. Bull. Acad. Sinica* 29: 201–208
496. Sohail, A., Khan, E., Maqbool, T., Riazuddin, S. unpublished observations.
497. Weule, K., Roberts, R.J. unpublished observations.
498. Chater, K.F. (1977) *Nucl. Acids Res.* 4: 1989–1998
499. Carter, J.A., Chater, K.F., Bruton, C.J., Brown, N.L. (1980) *Nucl. Acids Res.* 8: 4943–4954
500. Endow, S.A., Roberts, R.J. (1977) *J. Mol. Biol.* 112: 521–529
501. Wang, R.Y.-H., Shedralski, J.G., Farber, M.B., Kuebbing, D., Ehrlich, M. (1980) *Biochim. Biophys. Acta* 606: 371–385
502. Bunina, Z.F., Kramarov, V.M., Smolyaninov, V.V., Tolstova, L.A. (1984) *Bioorg. Khim.* 10: 1333–1335
503. Miyahara, M., Maruyama, T., Wake, A., Mise, K. (1988) *Appl. Environ. Microbiol.* 54: 577–580
504. Gingeras, T.R., Greenough, L., Schildkraut, I., Roberts, R.J. (1981) *Nucl. Acids Res.* 9: 4525–4536
505. Kwon, Y.T., Jun, H.S., Rho, H.M. (1988) *Korean J. Microbiol.* 26: 1–5
506. Kwon, Y.T., Jun, H.S., Rho, H.M. (1988) *Korean J. Microbiol.* 26: 88–92
507. Maqbool, T., Sohail, A., Chaudry, S., Riazuddin, S. unpublished observations.
508. Lynn, S.P., Cohen, L.K., Gardner, J.F., Kaplan, S. (1979) *J. Bacteriol.* 138: 505–509
509. Bingham, A.H.A., Atkinson, A., Darbyshire, J. unpublished observations.
510. Croft, R. unpublished observations.
511. Butkus, V., Klimasauskas, S., Petrauskienė, L., Maneliene, Z., Lebionka, A., Janulaitis, A.A. (1987) *Biochim. Biophys. Acta* 909: 201–207
512. McEvoy, S., Roberts, R.J. unpublished observations.
513. Sokolov, N.N., Fitsner, A.B., Samko, O.T., Kalugin, A.A., Fodor, I.I., Anikeitcheva, N.V., Eldarov, M.A., Berlin, Y.A. unpublished observations.
514. Meyertons, J.L., Tilley, B.C., Lechevalier, M.P., Lechevalier, H.A. (1987) *J. Indust. Microbiol.* 2: 293–303
515. Muller, A., Vesely, Z., Kaluza, M., Schmitz, G.G., Jarsch, M., Kessler, C. unpublished observations.
516. Lynn, S.P., Cohen, L.K., Kaplan, S., Gardner, J.F. (1980) *J. Bacteriol.* 142: 380–383
517. Dou, D., Inagaki, K., Kita, K., Ohshima, A., Hiraoka, N., Kishimoto, N., Sugio, T., Tano, T. (1989) *Biochim. Biophys. Acta* 1009: 83–86
518. Xia, Y., Narva, K.E., VanEtten, J.L. (1987) *Nucl. Acids Res.* 15: 10063
519. O'Connor, C.D., Metcalf, E., Wrighton, C.J., Harris, T.J.R., Saunders, J.R. (1984) *Nucl. Acids Res.* 12: 6701–6708
520. Nelson, M., McClelland, M. unpublished observations.
521. Arrand, J.R., Myers, P.A., Roberts, R.J. unpublished observations.
522. Goff, S.P., Rambach, A. (1978) *Gene* 13: 347–352
523. Muller, F., Stoffel, S., Clarkson, S.G. unpublished observations.
524. Duyvesteyn, M.G.C., Korsuize, J., de Waard, A. (1981) *Plant Mol. Biol.* 1: 75–79
525. Croft, R., Murray, R.G.E. unpublished observations.
526. Mayer, H., Klaar, J. unpublished observations.
527. Miceli, S., Meyertons, J.L., Roberts, R.J. unpublished observations.
528. Sasaki, J., Murakami, M., Yamada, Y. (1985) *Agric. Biol. Chem.* 49: 3017–3022
529. Bolton, B.J., Schmitz, G.G., Jarsch, M., Kessler, C. (1989) *Nucl. Acids Res.* 17: 9476
530. Wani, A.A., Stephens, R.E., D'Ambrosio, S.M., Hart, R.W. (1982) *Biochim. Biophys. Acta* 697: 178–184
531. Norlander, L., Davies, J.K., Hagblom, P., Normark, S. (1981) *J. Bacteriol.* 145: 788–795
532. Hammond, A.W., Gerard, G.F., Chatterjee, D.K. (1989) *Nucl. Acids Res.* 17: 6750
533. Shimotsu, H., Takahashi, H., Saito, H. (1980) *Agric. Biol. Chem.* 44: 1665–1666
534. Takahashi, H. unpublished observations.
535. Walter, F., Hartmann, M., Roth, M. (1978) *Abstracts of 12th FEBS Symposium, Dresden.* 648
536. Arrand, J.R., Myers, P.A., Roberts, R.J. (1978) *J. Mol. Biol.* 118: 127–135
537. Morrison, M., White, B.A. unpublished observations.
538. Whang, Y., Yoo, O.J. unpublished observations.
539. Timko, J., Horwitz, A.H., Zelinka, J., Wilcox, G. (1981) *J. Bacteriol.* 145: 873–877
540. Yoshioka, H., Nakamura, H., Sasaki, J., Tahara, Y., Yamada, Y. (1983) *Agric. Biol. Chem.* 47: 2871–2879
541. Repin, V.E., Polshina, S.V., Bozhko, N.A., Degtyarev, S.Kh. (1989) *Izv. Sib. Otd. Akad. Nauk SSSR* 15: 108–111
542. Zhou, B., Li, Q. (1987) *Acta Biochim. Biophys. Sin.* 19: 537–540
543. Grosveld, G.C. unpublished observations.
544. Goossens, M.D., Dumez, Y., Kaplan, L., Lupker, M., Chabret, C., Henrion, R., Rosa, J. (1983) *New England J. Med.* 309: 831–833
545. Janulaitis, A.A., Kazlauskienė, R., Butkus, V., Petrauskienė, L., Petrusyte, M. unpublished observations.
546. Miyahara, M., Nakajima, K., Kawanishi, T., Mise, K. (1990) *FEMS Microbiol. Lett.* 66: 245–248
547. Takahashi, H., Kojima, H., Saito, H. (1985) *Biochem. J.* 231: 229–232
548. Grandoni, R.P., Schildkraut, I. unpublished observations.
549. Fitzgerald, G.F., Daly, C., Brown, L.R., Gingeras, T.R. (1982) *Nucl. Acids Res.* 10: 8171–8179
550. Janulaitis, A.A., Bagdonaviciute, V., Petrusyte, M. unpublished observations.
551. Nikolskaya, I.I., Karpetz, L.Z., Kartashova, M., Lopatina, N.G., Skripkin, E.A., Suchkov, S.V., Uporova, T.M., Gruber, I.M., Debov, S.S. (1983) *Mol. Genet. Mikrobiol. Virusol.* 0: 5–10
552. Janulaitis, A.A., Marcinkeviciene, L., Petrusyte, M., Mironov, A. (1981)

- FEBS Lett. 134: 172–174
553. Kraev, A.S., Zimin, A.A., Mironova, M.V., Janulaitis, A.A., Tanyashin, V.I., Skryabin, K.G., Bayev, A.A. (1983) Dokl. Akad. Nauk SSSR 270: 1495–1500
 554. Wagner, E., Schmitz, G.G., Jarsch, M., Kessler, C. unpublished observations.
 555. Schildkraut, I., Christ, C. unpublished observations.
 556. Chaudry, S., Sohail, A., Riazuddin, S. unpublished observations.
 557. Degtyarev, S.Kh., Prikhod'ko, G.G., Rechkunova, N.I. (1988) Bioorg. Khim. 14: 848–849
 558. Murakami, M., Ozawa, O., Kanematsu, T., Yamada, Y. (1990) Agric. Biol. Chem. 54: 275–277
 559. Qiang, B.-Q., Schildkraut, I. (1984) Nucl. Acids Res. 12: 4507–4515
 560. Tautz, N., Kaluza, K., Frey, B., Schmitz, G.G., Jarsch, M., Kessler, C. unpublished observations.
 561. Greene, R., Mulder, C. unpublished observations.
 562. Butkus, V., Petrauskienė, L., Maneliene, Z., Klimasauskas, S., Laucys, V., Janulaitis, A.A. (1987) Nucl. Acids Res. 15: 7091–7102
 563. Sokolov, N.N., Kolosha, V.O., Fitsner, A.B., Anikeitcheva, N.V., Choroshutina, E.B., Samko, O.T., Fodor, I.I., Votrin, I.I. unpublished observations.
 564. Froman, B.E., Tait, R.C., Kado, C.I., Rodriguez, R.L. (1984) Gene 28: 331–335
 565. Pope, A., Lynn, S.P., Gardner, J.F. unpublished observations.
 566. Morgan, R., Ellard, J. unpublished observations.
 567. Borsetti, R., Grandoni, R., Schildkraut, I. unpublished observations.
 568. Fuchs, L.Y., Covarrubias, L., Escalante, L., Sanchez, S., Bolivar, F. (1980) Gene 10: 39–46
 569. Aubert, E., Davies, J., Williams, R. unpublished observations.
 570. Sokolov, N.N., Fitsner, A.B., Anikeitcheva, N.V., Choroshutina, Yu.B., Samko, O.T., Kolosha, V.O., Fodor, I., Votrin, I.I. (1985) Mol. Biol. Rep. 10: 159–161
 571. Shimotsu, H., Takahashi, H., Saito, H. (1980) Gene 11: 219–225
 572. Gilvonauskaitė, R., Maneliene, Z., Padegimienė, A., Petrusyte, M., Janulaitis, A.A. unpublished observations.
 573. Mushtaq, R., Roberts, R.J. unpublished observations.
 574. Mise, K., Nakajima, K. (1985) Gene 33: 357–361
 575. Gilvonauskaitė, R., Padegimienė, A., Petrusyte, M., Butkus, V., Janulaitis, A. unpublished observations.
 576. Yoshida, Y., Mise, K. unpublished observations.
 577. Sato, S., Hutchison, C.A. III, Harris, J.I. (1977) Proc. Natl. Acad. Sci. USA 74: 542–546
 578. Sato, S., Nakazawa, K., Shinomiya, T. (1980) J. Biochem. 88: 737–747
 579. Sato, S., Shinomiya, T. (1978) J. Biochem. 84: 1319–1321
 580. Venegas, A., Vicuna, R., Alonso, A., Valdes, F., Yudelevich, A. (1980) FEBS Lett. 109: 156–158
 581. Uchida, Y. unpublished observations.
 582. Barker, D., Hoff, M., Oliphant, A., White, R. (1984) Nucl. Acids Res. 12: 5567–5581
 583. Cowan, D., Ward, J. and Morgan, R. unpublished observations.
 584. Raven, N.D.H., Sharp, R.J., Williams, R.A.D. unpublished observations.
 585. Raven, N.D.H., Ghufoor, K., Williams, R.A.D. unpublished observations.
 586. Shinomiya, T., Sato, S. (1980) Nucl. Acids Res. 8: 43–56
 587. Bolton, B.J., Schmitz, G.G., Jarsch, M., Kessler, C. unpublished observations.
 588. Shinomiya, T., Kobayashi, M., Sato, S. (1980) Nucl. Acids Res. 8: 3275–3285
 589. Janulaitis, A., Krikstulyte, V., Trinkunaite, L., Maneliene, Z., Kiuduliene, L., Petrusyte, M., Butkus, V. unpublished observations.
 590. Janulaitis, A., Dauksaite, V., Lazareviciute, L., Capskaya, L., Maneliene, Z., Kiuduliene, L., Bitinaite, J., Butkus, V. unpublished observations.
 591. Degtyarev, S.Kh., Repin, V.E., Rechkunova, N.I., Tchigikov, V.E., Malygin, E.G., Mikhajlov, V.V., Rasskazov, V.A. (1987) Bioorg. Khim. 13: 420–421
 592. Rexer, B.U., Jarsch, M., Sagmeister, C., Gluck, B., Berger, G., Kessler, C. (1988) FEBS Lett. 235: 241–246
 593. Zain, B.S., Roberts, R.J. (1977) J. Mol. Biol. 115: 249–255
 594. Gingeras, T.R., Myers, P.A., Olson, J.A., Hanberg, F.A., Roberts, R.J. (1978) J. Mol. Biol. 118: 113–122
 595. Schwabe, G., Posseckert, G., Klingmuller, W. (1985) Gene 39: 113–116
 596. Barra, R., Chiong, M., Gonzalez, E., Vasquez, C. (1988) Biochem. J. 255: 699–703
 597. Vasquez, C. (1985) Biochem. Int. 10: 655–662
 598. Vasquez, C. (1988) Arch. Biol. Med. Exp. 21: R338
 599. Syddall, R., Stachow, C. (1985) Biochim. Biophys. Acta 825: 236–243
 600. McDermott, P.F., Crawford, J.T. (1989) ASM Abstracts 89: 167
 601. Hinkle, N.F., Miller, R.V. (1979) Plasmid 2: 387–393
 602. Gingeras, T.R., Brooks, J.E. (1983) Proc. Natl. Acad. Sci. USA 80: 402–406
 603. Wang, T.-S. (1981) K'o Hsueh T'ung Pao 26: 815–817
 604. Gasperik, J., Godany, A., Hostinova, E., Zelinka, J. (1983) Biologia (Bratislava) 38: 315–319
 605. Simbochova, G., Timko, J., Zelinkova, E., Zelinka, J. (1986) Biologia (Bratislava) 41: 357–365
 606. Takahashi, H., Shimizu, M., Saito, H., Ikeda, Y., Sugisaki, H. (1979) Gene 5: 9–18
 607. Kramarov, V.M., Mazanov, A.L., Smolyaninov, V.V. (1982) Bioorg. Khim. 8: 220–223
 608. Chen, Z., Kong, H. (1988) FEBS Lett. 234: 169–171
 609. Hiraoka, N., Kita, K., Nakajima, H., Obayashi, A. (1984) J. Ferment. Technol. 62: 583–588
 610. Kunkel, L.M., Silberklang, M., McCarthy, B.J. (1979) J. Mol. Biol. 132: 133–139
 611. Tagami, H., Tayama, K., Tohyama, T., Fukaya, M., Okumura, H., Kawamura, Y., Horinouchi, S., Beppu, T. (1988) FEMS Microbiol. Lett. 56: 161–166
 612. Morgan, R., Camp, R., Soltis, A. unpublished observations.
 613. Bolton, B.J., Reischl, U., Holtke, H.-J., Schmitz, G.G., Jarsch, M., Kessler, C. (1990) Nucl. Acids Res. 18: 381
 614. Lin, B.-C., Chien, M.-C., Lou, S.-Y. (1980) Nucl. Acids Res. 8: 6189–6198
 615. Sokolov, N.N., Butkus, V., Vaitkevicius, D., Anikeitcheva, N.V., Fitsner, A.B., Kalugin, A.A., Janulaitis, A.A. unpublished observations.
 616. Daniel, A.S., Fuller-Pace, F.V., Legge, D.M., Murray, N.E. (1988) J. Bacteriol. 170: 1775–1782
 617. Kannan, P., Cowan, G.M., Daniel, A.S., Gann, A.A.F., Murray, N.E. (1989) J. Mol. Biol. 209: 335–344
 618. Suri, B., Shepherd, J.C.W., Bickle, T.A. (1984) EMBO J. 3: 575–579
 619. Kroger, M., Hobom, G. (1984) Nucl. Acids Res. 12: 887–899
 620. Eskin, B., Linn, S. (1972) J. Biol. Chem. 247: 6183–6191
 621. Lautenberger, J.A., Kan, N.C., Lackey, D., Linn, S., Edgell, M.H., Hutchison, C.A. III (1978) Proc. Natl. Acad. Sci. USA 75: 2271–2275
 622. Ravetch, J.V., Horiuchi, K., Zinder, N.D. (1978) Proc. Natl. Acad. Sci. USA 75: 2266–2270
 623. Lautenberger, J.A., Linn, S. (1972) J. Biol. Chem. 247: 6176–6182
 624. van Ormondt, H., Lautenberger, J.A., Linn, S., de Waard, A. (1973) FEBS Lett. 33: 177–180
 625. Nagaraja, V., Stieger, M., Nager, C., Hadi, S.M., Bickle, T.A. (1985) Nucl. Acids Res. 13: 389–399
 626. Piekarczyk, A., Goguen, J.D., Skrzypek, E. (1985) Eur. J. Biochem. 152: 387–393
 627. Piekarczyk, A., Goguen, J.D. (1986) Eur. J. Biochem. 154: 295–298
 628. Fuller-Pace, F.V., Cowan, G.M., Murray, N.E. (1985) J. Mol. Biol. 186: 65–75
 629. Cowan, G.M., Gann, A.A.F., Murray, N.E. (1989) Cell 56: 103–109
 630. Meselson, M., Yuan, R. (1968) Nature 217: 1110–1114
 631. Bickle, T., Yuan, R., Pirrotta, V., Ineichen, K. unpublished observations.
 632. Kan, N.C., Lautenberger, J.A., Edgell, M.H., Hutchison, C.A., III (1979) J. Mol. Biol. 130: 191–209
 633. Haberman, A., Heywood, J., Meselson, M. (1972) Proc. Natl. Acad. Sci. USA 69: 3138–3141
 634. Price, C., Shepherd, J.C.W., Bickle, T.A. (1987) EMBO J. 6: 1493–1497
 635. Nagaraja, V., Shepherd, J.C.W., Pripl, T., Bickle, T.A. (1985) J. Mol. Biol. 182: 579–587
 636. Gann, A.A.F., Campbell, A.J.B., Collins, J.F., Coulson, A.F.W., Murray, N.E. (1987) Mol. Microbiol. 1: 13–22
 637. Nagaraja, V., Shepherd, J.C.W., Bickle, T.A. (1985) Nature 316: 371–372
 638. Haberman, A. (1974) J. Mol. Biol. 89: 545–563
 639. Bachi, B., Reiser, J., Pirrotta, V. (1979) J. Mol. Biol. 128: 143–163
 640. Brockes, J.P. (1973) Biochem. J. 133: 629–633
 641. Brockes, J.P., Brown, P.R., Murray, K. (1972) Biochem. J. 127: 1–10
 642. Hattman, S., Brooks, J.E., Masurekar, M. (1978) J. Mol. Biol. 126: 367–380
 643. Reiser, J., Yuan, R. (1977) J. Biol. Chem. 252: 451–456
 644. Hadi, S.M., Bachi, B., Shepherd, J.C.W., Yuan, R., Ineichen, K., Bickle, T.A. (1979) J. Mol. Biol. 134: 655–666
 645. Kauc, L., Piekarczyk, A. (1978) Eur. J. Biochem. 92: 417–426
 646. Piekarczyk, A., Bickle, T.A., Shepherd, J.C.W., Ineichen, K. (1981) J. Mol. Biol. 146: 167–172
 647. Piekarczyk, A. (1982) J. Mol. Biol. 157: 373–381
 648. De Backer, O., Colson, C. (1989) J. Cell Biochem. Suppl. 0: 212

Type I enzymes

Enzyme	Recognition sequence	Me site ³	Reference
<i>Cfr</i> AI	GCANNNNNNNNGTGG		616,617
<i>Eco</i> AI	GAGNNNNNNNGTCA	2(6) -3(6)	618,619
<i>Eco</i> BI	TGANNNNNNNNTGCT	3(6) -4(6)	620-624
<i>Eco</i> DI	TTANNNNNNNNGTCY		625
<i>Eco</i> DXXI	TCANNNNNNNNATTC		626,627
<i>Eco</i> EI	GAGNNNNNNNNATGC		628,629
<i>Eco</i> KI	AACNNNNNNNGTGC	2(6) -3(6)	630-633
<i>Eco</i> R124I	GAANNNNNNNRTCG		634
<i>Eco</i> R124/3I	GAANNNNNNNRTCG	-3(6)	634
<i>Sty</i> SBI	GAGNNNNNNRTAYG	2(6) -4(6)	635
<i>Sty</i> SJI	GAGNNNNNNNGTRC		636
<i>Sty</i> SPI	AACNNNNNNNGTRC	2(6) -3(6)	635
<i>Sty</i> SQI	AACNNNNNNRTAYG		637

Type II enzymes

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
<i>Aat</i> II		GACGT↓C		EGMNOPRSUVX	5
<i>Acc</i> I		GT↓MKAC		ABEGIKMNOPRSUVX	6
	<i>Dsa</i> VI	GTMKAC			7
	<i>Fbl</i> I	GT↓MKAC			8
<i>Acyl</i>		GR↓CGYC		EMRV	9
	<i>Aha</i> II	GR↓CGYC		GN	10
	<i>Aos</i> II	GR↓CGYC			11
	<i>Ast</i> WI	GR↓CGYC			12
	<i>Asu</i> III	GR↓CGYC			12
	<i>Bbi</i> II	GR↓CGYC		AK	13
	<i>Hgi</i> I	GR↓CGYC			14
	<i>Hgi</i> DI	GR↓CGYC			15
	<i>Hgi</i> GI	GR↓CGYC			15
	<i>Hgi</i> HII	GR↓CGYC			16
	<i>Hin</i> I	GR↓CGYC		OU	17
	<i>Hin</i> 8I	GRCGYC			18
	<i>Nla</i> SII	GRCGYC			19
	<i>Ssp</i> JII	GRCGYC			20
	<i>Ssp</i> M1II	GRCGYC			20
	<i>Ssp</i> M2II	GRCGYC			20
<i>Afl</i> III		C↓TTAAG		AGKNU	21
	<i>Esp</i> 4I	C↓TTAAG			22
	<i>Vha</i> 464I	C↓TTAAG			8
<i>Afl</i> III		A↓CRYGT		GMU	21
<i>Age</i> I		A↓CCGGT			23
<i>Aha</i> III		TTT↓AAA		E	24
	<i>Dra</i> I	TTT↓AAA		ABEGIKMNOPRSUVX	25
<i>Alu</i> I		AG↓CT	3(5)	ABEGIKMNOPRSUVX	26-29
	<i>Mli</i> I	AG↓CT			30,31
	<i>Onu</i> I	AGCT			32
	<i>Otu</i> NI	AGCT			33
	<i>Oxa</i> I	AGCT			34
<i>Alw</i> NI		CAGNNN↓CTG		N	35
<i>Apa</i> I		GGGCC↓C	4(5)	BEGIKMNOPRUVX	36,37
	<i>Bsp</i> 120I	G↓GGCCC			38
	<i>Eci</i> EI	GGGCCC			39
<i>Apa</i> LI		G↓TGCAC		AEGKNX	40
	<i>Alw</i> 44I	G↓TGCAC		O	41
	<i>Am</i> I	GTGCAC			32
	<i>Sno</i> I	G↓TGCAC		MV	42,43
	<i>Vne</i> I	G↓TGCAC			44

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
<i>AsuI</i>		G↓GNCC		R	45
	<i>AhaBI</i>	G↓GNCC			8
	<i>ApuI</i>	GGNCC			46
	<i>Bac36I</i>	G↓GNCC			46
	<i>Bal228I</i>	G↓GNCC			14
	<i>BavAII</i>	G↓GNCC			47
	<i>Bce22I</i>	G↓GNCC			8
	<i>BshKI</i>	G↓GNCC			48
	<i>BspBII</i>	G↓GNCC			49
	<i>Cfr4I</i>	GGNCC			50,51
	<i>Cfr8I</i>	GGNCC			50,51
	<i>Cfr13I</i>	G↓GNCC	4(5)	AKOU	50,52
	<i>Cfr23I</i>	GGNCC			53
	<i>Cfr33I</i>	GGNCC			54
	<i>Cfr45I</i>	GGNCC			54
	<i>Cfr46I</i>	GGNCC			54
	<i>Cfr47I</i>	GGNCC			54
	<i>Cfr52I</i>	GGNCC			55
	<i>Cfr54I</i>	GGNCC			56
	<i>CfrNI</i>	GGNCC			57
	<i>Eco39I</i>	GGNCC			58
	<i>Eco47II</i>	GGNCC			59
	<i>Eco196II</i>	GGNCC			60
	<i>Eco201I</i>	GGNCC			60
	<i>GseI</i>	GGNCC			61
	<i>Hin5II</i>	GGNCC			18
	<i>MjaII</i>	GGNCC			62
	<i>Msp24I</i>	GGNCC			8
	<i>MthTI</i>	GGNCC			63
	<i>NlaDII</i>	GGNCC			64
	<i>NmuEII</i>	GGNCC			65
	<i>NmuSI</i>	GGNCC			66
	<i>NspIV</i>	G↓GNCC			67
	<i>NspLII</i>	GGNCC			68,69
	<i>Pde12I</i>	G↓GNCC			8
	<i>PseI</i>	GGNCC			70
	<i>PspI</i>	GGNCC			71
	<i>Sau96I</i>	G↓GNCC		BEGMNRVX	72
	<i>SauBI</i>	GGNCC			73
	<i>SdyI</i>	GGNCC			74
<i>AsuII</i>		TT↓CGAA		G	12,75
	<i>AcaI</i>	TTCGAA			76,77
	<i>AviI</i>	TTCGAA			70
	<i>Bim19I</i>	TT↓CGAA			8
	<i>Bpu14I</i>	TT↓CGAA			8
	<i>BstCI</i>	TTCGAA			78
	<i>Bsp82I</i>	TTCGAA			79
	<i>Bsp119I</i>	TTCGAA			55
	<i>BstBI</i>	TT↓CGAA		N	80,81
	<i>Csp45I</i>	TT↓CGAA		R	82
	<i>FspII</i>	TT↓CGAA			83
	<i>LspI</i>	TT↓CGAA		V	42,43
	<i>MlaI</i>	TT↓CGAA			84
	<i>NspV</i>	TTCGAA		AKOPU	67
	<i>NspBI</i>	TTCGAA			85
	<i>NspFI</i>	TTCGAA			61
	<i>NspJI</i>	TTCGAA			69,77
	<i>SfiI</i>	TT↓CGAA		M	86
	<i>Sgr1839I</i>	TTCGAA			87
	<i>SspII</i>	TT↓CGAA			88
	<i>Ssp152I</i>	TTCGAA			87
<i>AvaI</i>		C↓YCGRG		ABEGIKMNOPRSUVX	89,90
	<i>AcrI</i>	CYCGRG			77
	<i>Ama87I</i>	C↓YCGRG			8

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
AvaII	<i>AquI</i>	C↓YCGRG	1(5)		91,92
	<i>AspBI</i>	CYCGRG			85
	<i>AspCI</i>	CYCGRG			85
	<i>AspDI</i>	CYCGRG			85
	<i>AvrI</i>	CYCGRG			93
	<i>BcoI</i>	C↓YCGRG			94
	<i>BstSI</i>	C↓YCGRG			80
	<i>Eco88I</i>	CYCGRG			95
	<i>NliI</i>	CYCGRG			85
	<i>NmuAI</i>	CYCGRG			85
	<i>NspIII</i>	C↓YCGRG		PV	67
	<i>NspDI</i>	CYCGRG			85
	<i>NspEI</i>	CYCGRG			96
	<i>NspSAI</i>	C↓YCGRG			97
		G↓GWCC		ABEGIKMNPRSVX	89,90,98,99
	<i>AflI</i>	G↓GWCC			21
	<i>Asp697I</i>	GGWCC			100
	<i>Asp745I</i>	G↓GWCC			14
	<i>AspBII</i>	GGWCC			85
	<i>AspCII</i>	GGWCC			85
	<i>AspDII</i>	GGWCC			85
	<i>BamNxiI</i>	G↓GWCC			101–103
	<i>Bme18I</i>	G↓GWCC			104
	<i>Bme216I</i>	G↓GWCC			105,106
	<i>Bsp100I</i>	GGWCC			38
	<i>BspJ105I</i>	GGWCC			107
	<i>BtiI</i>	GGWCC			108
	<i>CauI</i>	G↓GWCC			109,110
	<i>CliI</i>	GGWCC			68
	<i>ClnII</i>	GGWCC			111
	<i>DsaIV</i>	G↓GWCC			7
	<i>EagMI</i>	G↓GWCC			112,113
	<i>Eco47I</i>	G↓GWCC		OU	59,114
	<i>ErpI</i>	G↓GWCC			46
	<i>FdiI</i>	G↓GWCC			115,116
	<i>FspMSI</i>	G↓GWCC			46
	<i>GspAI</i>	GGWCC			78
	<i>HgiBI</i>	G↓GWCC			15
	<i>HgiCII</i>	G↓GWCC			15
	<i>HgiEI</i>	G↓GWCC			15
	<i>HgiHIII</i>	G↓GWCC			16
	<i>HgiJI</i>	G↓GWCC			16
	<i>Hsp2I</i>	GGWCC			55
	<i>Kzo49I</i>	G↓GWCC			8
	<i>MfoI</i>	GGWCC			117
	<i>MliI</i>	GGWCC			118
	<i>MspAI</i>	GGWCC			117
	<i>NliII</i>	GGWCC			85
	<i>NmuAII</i>	GGWCC			85
	<i>NspDII</i>	GGWCC			85
	<i>NspGI</i>	GGWCC			69,77
	<i>NspHII</i>	GGWCC			85
	<i>NspKI</i>	GGWCC			68,69
	<i>SfiI</i>	GGWCC			119
	<i>Sgh1835I</i>	GGWCC			87
	<i>SinI</i>	G↓GWCC	4(5)	RSV	70,120,121
	<i>SinAI</i>	GGWCC			122
	<i>SinBI</i>	GGWCC			122
	<i>SinCI</i>	GGWCC			122
	<i>SinDI</i>	GGWCC			122
	<i>SinEI</i>	GGWCC			122
	<i>SinFI</i>	GGWCC			122
	<i>SinGI</i>	GGWCC			122
	<i>SinHI</i>	GGWCC			122

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
	<i>Sin</i> JI	GGWCC			122
	<i>Tru</i> I	GGWCC			123
<i>Ava</i> III		ATGCAT		G	124,125
	<i>Eco</i> T22I	ATGCA↑T		KOU	126
	<i>Nsi</i> I	ATGCA↑T		BEMNRVX	127
	<i>Uba</i> 1103I	ATGCA↑T			128
	<i>Zsp</i> 2I	ATGCA↑T			8
<i>Avr</i> II		C↓CTAGG		N	93,129
<i>Bal</i> I		TGG↓CCA	4(5)	ABEGIKNRSVX	37,130
	<i>Msc</i> I	TGG↓CCA		N	32,131
	<i>Msp</i> 20I	TGG↓CCA			8
<i>Bam</i> HI		G↓GATCC	5(4)	ABEGIKMNOPRSUVX	132–135
	<i>Aac</i> I	GGATCC			136
	<i>Aae</i> I	GGATCC			136
	<i>Aca</i> II	GGATCC			77
	<i>Acc</i> EBI	G↓GATCC			137
	<i>Ain</i> II	GGATCC			77
	<i>Ali</i> I	G↓GATCC			138
	<i>Ali</i> 12257I	GGATCC			139
	<i>Ali</i> 12258I	GGATCC			139
	<i>Asp</i> TII	GGATCC			77
	<i>Bam</i> FI	GGATCC			140
	<i>Bam</i> KI	GGATCC			140
	<i>Bam</i> NI	GGATCC			102
	<i>Bca</i> 1259I	GGATCC			87
	<i>Bce</i> 751I	G↓GATCC			141
	<i>Bco</i> 10278I	GGATCC			142
	<i>Bna</i> I	G↓GATCC	5(5)		143,144
	<i>Bsp</i> 30I	GGATCC			38
	<i>Bsp</i> 46I	GGATCC			79
	<i>Bsp</i> 98I	GGATCC			38
	<i>Bst</i> I	G↓GATCC		GPV	145,146
	<i>Bst</i> 1126I	GGATCC			87
	<i>Bst</i> 2464I	GGATCC			87
	<i>Bst</i> 2902I	GGATCC			87
	<i>Bst</i> QI	GGATCC			80
	<i>Bsu</i> 90I	GG↓ATCC			141
	<i>Bsu</i> 8565I	GGATCC			142
	<i>Bsu</i> 8646I	GGATCC			142
	<i>Cel</i> I	GGATCC			77
	<i>Dds</i> I	GGATCC			147
	<i>Gdo</i> I	GGATCC			136
	<i>Gin</i> I	GGATCC			148
	<i>Gox</i> I	GGATCC			136
	<i>Gse</i> III	GGATCC			61
	<i>Mle</i> I	GGATCC			30
	<i>Mlu</i> 23I	G↓GATCC			8
	<i>Nas</i> BI	GGATCC			30
	<i>Nsp</i> SAIV	G↓GATCC			97
	<i>Pae</i> 177I	GGATCC			60
	<i>Rhs</i> I	GGATCC			149
	<i>Rlu</i> 4I	GGATCC			150
	<i>Sur</i> 2I	G↓GATCC			8
	<i>Uba</i> 1110I	GGATCC			151
<i>Bbv</i> I		GCAGC(8/12)	2(5), –2(5)	EGINX	134,152–154
	<i>Alw</i> XI	GCAGC(8/12)			155
	<i>Bsp</i> 423I	GCAGC			156
	<i>Uba</i> 1109I	GCAGC			157
<i>Bbv</i> II		GAAGAC(2/6)			158
	<i>Bbs</i> I	GAAGAC			159
	<i>Bbv</i> 16I	GAAGAC(2/6)			8
	<i>Bsp</i> VI	GAAGAC			156
<i>Bce</i> fl		ACGGC(12/13)			160
<i>Bcg</i> I ⁵		GCANNNNNNTCG			161

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
<i>Bcl</i> I		T↓GATCA		BEGINNOPRSUVX	162
	<i>Atu</i> CI	TGATCA			163
	<i>Bsi</i> QI	TGATCA			78
	<i>Bsp</i> XII	T↓GATCA			164
	<i>Bst</i> GI	TGATCA			165
	<i>Bst</i> KI	TGATCA			80
	<i>Cpe</i> I	TGATCA			166
	<i>Cth</i> I	TGATCA			167
	<i>Fba</i> I	TGATCA			119
	<i>Ksp</i> 22I	T↓GATCA			8
	<i>Pov</i> I	TGATCA			112,168
	<i>Sse</i> I	TGATCA			61
	<i>Ssr</i> IV	TGATCA			169
<i>Bgl</i> I		GCCNNNN↓NGGC		BEGINNOPRSUVX	170–174
	<i>Van</i> I	GCCNNNNNGGC			175
<i>Bgl</i> III		A↓GATCT		ABEGIKMNOPRSUVX	171,172,176
	<i>Nsp</i> MACI	A↓GATCT			177
<i>Bin</i> I		GGATC(4/5)			178
	<i>Alw</i> I	GGATC(4/5)	N		159
	<i>Bth</i> II	GGATC			179
<i>Bpu</i> 10I		CCTNAGC(–5/–2)			180
<i>Bsa</i> AI		YAC↓GTR	N		81
	<i>Msp</i> YI	YAC↓GTR			181
<i>Bsa</i> BI		GATNN↓NNATC	N		80
	<i>Mam</i> I	GATNN↓NNATC	M		182
<i>Bse</i> PI		GCGCGC			165
	<i>Bso</i> PI	GCGCGC			165
	<i>Bsr</i> HI	GCGCGC			165
	<i>Bss</i> HII	G↓CGCGC		EGMNOUVX	165,183
	<i>Eco</i> 143I	GCGCGC			150
	<i>Esp</i> 7I	GCGCGC			79
	<i>Esp</i> 8I	GCGCGC			79
	<i>Kpn</i> 30I	GCGCGC			184
<i>Bsi</i> I		CTCGTG(–5/–1)			185
<i>Bsm</i> I		GAATGC(1/–1)		EGNOUVX	75
<i>Bsm</i> AI		GTCTC(1/5)	N		
	<i>Alw</i> 26I	GTCTC(1/5)			186
<i>Bsp</i> CI		GCNN↓NNGC			156
<i>Bsp</i> GI		CTGGAC			156
<i>Bsp</i> HI		T↓CATGA	N		187
	<i>Rsp</i> XI	T↓CATGA	G		188
<i>Bsp</i> MI		ACCTGC(4/8)	N		159,189
<i>Bsp</i> MII		T↓CCGGA	N		159,189
	<i>Acc</i> III	T↓CCGGA		AEGKR	75,190
	<i>Bbf</i> 7411I	TCCGGA			191
	<i>Bbv</i> AIII	T↓CCGGA			192
	<i>Bla</i> 7920I	TCCGGA			191
	<i>Bse</i> AI	T↓CCGGA			193
	<i>Bsi</i> MI	TCCGGA			78
	<i>Bsi</i> OI	TCCGGA			78
	<i>Bsp</i> 13I	T↓CCGGA			8
	<i>Bsp</i> EI	T↓CCGGA			161
	<i>Bsu</i> 22I	TCCGGA			141
	<i>Cau</i> B3I	T↓CCGGA			194
	<i>Kpn</i> 2I	T↓CCGGA			38,195
	<i>Mro</i> I	T↓CCGGA		MOU	196
<i>Bsr</i> I		ACTGG(1/–1)	N		197
<i>Bst</i> EII		G↓GTNACC		BEGMNOPRSUVX	198,199
	<i>Acr</i> II	G↓GTNACC			77
	<i>Asp</i> AI	G↓GTNACC			43
	<i>Bsi</i> KI	GGTNACC			78
	<i>Bst</i> 31I	GGTNACC			200
	<i>Bst</i> DI	GGTNACC			80
	<i>Bst</i> PI	G↓GTNACC	K		201

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
	<i>Cfr</i> 7I	GGTNACC			50
	<i>Cfr</i> 19I	GGTNACC			54
	<i>Eca</i> I	G↓GTNACC	5(6)		202
	<i>Eco</i> 91I	G↓GTNACC			203,204
	<i>Eco</i> O65I	G↓GTNACC		G	73,205
	<i>Kox</i> I	GGTNACC			206
	<i>Nsp</i> SAII	G↓GTNACC			97
	<i>Sci</i> AI	GGTNACC			77
<i>Bst</i> XI		CCANNNNN↓NTGG		EGMNORUVX	165,207
	<i>Bss</i> GI	CCANNNNNNTGG			165
	<i>Bst</i> TI	CCANNNNNNTGG			165
<i>Cau</i> II		CC↓SGG			109,110,208
	<i>Aha</i> I	CC↓SGG			10
	<i>Ase</i> II	CC↓SGG			209
	<i>Asp</i> 1I	CCSGG			150
	<i>Bcn</i> I	CC↓SGG	2(4)	AK	210–215
	<i>Bsp</i> 7I	CCSGG			38
	<i>Bsp</i> 8I	CCSGG			38
	<i>Bsp</i> 55I	CCSGG			79
	<i>Bsp</i> J67I	CCSGG			107
	<i>Eci</i> DI	CCSGG			39
	<i>Eco</i> 121I	CCSGG			216
	<i>Eco</i> 179I	CCSGG			60
	<i>Eco</i> 190I	CCSGG			216
	<i>Hgi</i> S21I	CCSGG			217
	<i>Hgi</i> S22I	CC↓SGG			14
	<i>Hin</i> 3I	CCSGG			218
	<i>Nci</i> I	CC↓SGG		BEGMNOUVX	219,220
	<i>Pae</i> 181I	CCSGG			60
	<i>Rsh</i> II	CCSGG			105
	<i>Ssp</i> 2I	CCSGG			150
	<i>Tmu</i> 1I	CCSGG			203
<i>Cfr</i> I		Y↓GGCCR	4(5)		51,215,221,222
	<i>Cfr</i> 14I	YGGCCR			50
	<i>Cfr</i> 38I	YGGCCR			53
	<i>Cfr</i> 39I	YGGCCR			54
	<i>Cfr</i> 40I	YGGCCR			54
	<i>Eae</i> I	Y↓GGCCR	4(5)	EGKMN VX	223,224
	<i>Eci</i> BI	YGGCCR			39
	<i>Eco</i> 90I	YGGCCR			203
	<i>Eco</i> 164I	YGGCCR			150
	<i>Eco</i> HI	YGGCCR			33
<i>Cfr</i> 10I		R↓CCGGY	2(5)	AKMOU	50,51,215,225
	<i>Bsp</i> 21I	RCCGGY			203
<i>Cl</i> I		AT↓CGAT	5(6)	ABEGKMNPRSVX	226,227
	<i>Aag</i> I	AT↓CGAT			228
	<i>Apu</i> 16I	ATCGAT			229
	<i>Asp</i> 707I	ATCGAT			100
	<i>Ban</i> III	ATCGAT		OU	5
	<i>Bbv</i> AII	AT↓CGAT			230
	<i>Bcm</i> I	AT↓CGAT			231
	<i>Bdi</i> I	AT↓CGAT			232
	<i>Bli</i> 41I	AT↓CGAT			8
	<i>Bli</i> 86I	AT↓CGAT			141
	<i>Bli</i> RI	ATCGAT			233
	<i>Bsc</i> I	AT↓CGAT			43,234
	<i>Bsp</i> 2I	ATCGAT			38
	<i>Bsp</i> 4I	ATCGAT			38
	<i>Bsp</i> 84I	ATCGAT			79
	<i>Bsp</i> 106I	AT↓CGAT			235
	<i>Bsp</i> DI	AT↓CGAT			161
	<i>Bsp</i> XI	AT↓CGAT			164
	<i>Bsu</i> 15I	AT↓CGAT			229,236
	<i>Btu</i> I	ATCGAT			237

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
	<i>Csp4I</i>	ATCGAT			79
	<i>LplI</i>	AT↓CGAT			238
	<i>PglIB4I</i>	AT↓CGAT			8
<i>CviJI</i>		RG↓CY	3(5)		107,239
	<i>CviKI</i>	RGCY			240
	<i>CviLI</i>	RGCY			240
	<i>CviMI</i>	RGCY			240
	<i>CviNI</i>	RGCY			240
	<i>CviOI</i>	RGCY			240
<i>DdeI</i>		C↓TNAG	1(5)	BEGINNOPRUVX	241–243
<i>DpnI</i> *		GA↓TC		ABEGINNRSVX	244–246
	<i>CfuI</i> *	GA↓TC			247,248
	<i>NanII</i> *	GATC			249
	<i>NgoDIII</i> *	GATC			250
	<i>NmuDI</i> *	GATC			65
	<i>NmuEI</i> *	GATC			65
	<i>NsuDI</i> *	GATC			65
	<i>Uba1103II</i> *	GATC			128
<i>DraII</i>		RG↓GNCCY		EGM	251–253
	<i>EcoO109I</i>	RG↓GNCCY		AGKNOUVX	254
	<i>PssI</i>	RGGNC↓CY		I	147,255
	<i>VneAI</i>	RGGNCCY			175
<i>DraIII</i>		CACNNN↓GTG		EMNX	251–253
<i>DrdI</i>		GACNNNN↓NNGTC		N	256
<i>DrdII</i>		GAACCA			257
<i>DsaI</i>		C↓CRYGG		M	258
<i>EciI</i>		TCCGCC			39
<i>Eco31I</i>		GGTCTC(1/5)			259
	<i>Bli49I</i>	GGTCTC			141
	<i>BsaI</i>	GGTCTC(1/5)		N	81
	<i>Eco42I</i>	GGTCTC			216
	<i>Eco51I</i>	GGTCTC			150
	<i>Eco95I</i>	GGTCTC			260
	<i>Eco97I</i>	GGTCTC			261
	<i>Eco101I</i>	GGTCTC			216
	<i>Eco120I</i>	GGTCTC			216
	<i>Eco127I</i>	GGTCTC			60
	<i>Eco129I</i>	GGTCTC			60
	<i>Eco155I</i>	GGTCTC			216
	<i>Eco156I</i>	GGTCTC			216
	<i>Eco157I</i>	GGTCTC			216
	<i>Eco162I</i>	GGTCTC			60
	<i>Eco185I</i>	GGTCTC			60
	<i>Eco191I</i>	GGTCTC			216
	<i>Eco203I</i>	GGTCTC			216
	<i>Eco204I</i>	GGTCTC			216
	<i>Eco205I</i>	GGTCTC			216
	<i>Eco217I</i>	GGTCTC			55
	<i>Eco225I</i>	GGTCTC			150
	<i>Eco233I</i>	GGTCTC			38
	<i>Eco239I</i>	GGTCTC			150
	<i>Eco240I</i>	GGTCTC			55
	<i>Eco241I</i>	GGTCTC			55
	<i>Eco246I</i>	GGTCTC			38
	<i>Eco247I</i>	GGTCTC			38
	<i>EcoA4I</i>	GGTCTC(1/5)			8
	<i>PpaI</i>	GGTCTC			159
	<i>Sau12I</i>	GGTCTC			203
<i>Eco47III</i>		AGC↓GCT		AKMOU	59
	<i>AitI</i>	AGC↓GCT			262
<i>Eco57I</i>		CTGAAG(16/14)			263
	<i>Bsp6II</i>	CTGAAG			203
	<i>Eco125I</i>	CTGAAG			60
	<i>FsfI</i>	CTGAAG			264

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
<i>EcoNI</i>		CCTNN↓NNNAGG		N	265
	<i>BsrWI</i>	CCTNNNNNAGG			81
<i>EcoRI</i>		G↓AATTC	3(6)	ABEGIKMNOPRSUVX	266–268
	<i>Eco82I</i>	GAATTC			260
	<i>Eco159I</i>	GAATTC			60
	<i>Eco228I</i>	GAATTC			55
	<i>Eco237I</i>	GAATTC			150
	<i>Eco252I</i>	GAATTC			150
	<i>HalB6I</i>	G↓AATTC			8
	<i>RsrI</i>	G↓AATTC			269–271
	<i>SsoI</i>	G↓AATTC	2(6)		272,273
<i>EcoRII</i> ⁶		↓CCWGG	2(5)	BEGOV	274–276
	<i>Acc38I</i>	CCWGG			8
	<i>AeuI</i>	CC↓WGG			277
+	<i>AorI</i>	CC↓WGG			136
+	<i>ApyI</i>	CC↓WGG		M	278
	<i>AtuII</i>	CCWGG			279
	<i>AtuII</i>	CCWGG			203
	<i>AtuBI</i>	CCWGG			280
	<i>BinSI</i>	CCWGG			179
+	<i>BshGI</i>	CC↓WGG			281
+	<i>BsiLI</i>	CCWGG			78
+	<i>Bsp56I</i>	CCWGG			79
	<i>Bsp103I</i>	CCWGG			38
	<i>BstGII</i>	CCWGG			165
+	<i>BstNI</i>	CC↓WGG		ENX	282
	<i>BstOI</i>	CCWGG			80
	<i>Cdi27I</i>	CCWGG			184
	<i>Cfr5I</i>	CCWGG			50,51
	<i>Cfr11I</i>	CCWGG			50,51
	<i>Cfr20I</i>	CCWGG			54
	<i>Cfr22I</i>	CCWGG			54
	<i>Cfr24I</i>	CCWGG			54
	<i>Cfr25I</i>	CCWGG			54
	<i>Cfr27I</i>	CCWGG			54
	<i>Cfr28I</i>	CCWGG			54
	<i>Cfr29I</i>	CCWGG			54
	<i>Cfr30I</i>	CCWGG			54
	<i>Cfr31I</i>	CCWGG			54
	<i>Cfr35I</i>	CCWGG			54
	<i>CfrS37I</i>	CCWGG			217
	<i>CthII</i>	CC↓WGG			283
	<i>EagKI</i>	CCWGG			284
	<i>EcaII</i>	CCWGG			75
	<i>EclIII</i>	CCWGG			285
	<i>Ecl66I</i>	CCWGG			261
	<i>Ecl136I</i>	CCWGG			60
	<i>Ecl137II</i>	CCWGG			216
	<i>EclS39I</i>	CCWGG			217
	<i>Eco38I</i>	CCWGG			58
	<i>Eco40I</i>	CCWGG			58
	<i>Eco41I</i>	CCWGG			58
	<i>Eco60I</i>	CCWGG			51
	<i>Eco61I</i>	CCWGG			51
	<i>Eco67I</i>	CCWGG			260
	<i>Eco70I</i>	CCWGG			260
	<i>Eco71I</i>	CCWGG			286
	<i>Eco128I</i>	CCWGG			60
	<i>Eco170I</i>	CCWGG			150
	<i>Eco193I</i>	CCWGG			216
	<i>Eco206I</i>	CCWGG			38
	<i>Eco207I</i>	CCWGG			38
	<i>Esp2I</i>	CCWGG			38
	<i>Fsp1604I</i>	CC↓WGG			287

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
	<i>Kox165I</i>	CCWGG			150
	<i>Kpn10I</i>	CCWGG			60
	<i>Kpn13I</i>	CCWGG			60
	<i>Kpn14I</i>	CCWGG			216
	<i>Kpn16I</i>	CCWGG			216
	<i>Mlu2300I</i>	CCWGG			8
	<i>MphI</i>	CCWGG			288
+	<i>MvaI</i>	CC↓WGG	2(4)	AKOU	289,290
	<i>Scg2I</i>	CCWGG			291
	<i>Sft2aI</i>	CCWGG			292
	<i>Sft2bI</i>	CCWGG			292
	<i>Sgr20I</i>	CCWGG			293
	<i>SleI</i>	CCWGG			294
	<i>SspAI</i>	CCWGG			294
	<i>TaqXI</i>	CC↓WGG			295
	<i>ZanI</i>	CC↓WGG			296
<i>EcoRV</i>		GAT↓ATC	2(6)	ABEGIKMNOPRSUVX	297–299
	<i>Bsp16I</i>	GATATC			38
	<i>BstRI</i>	GATATC			80
	<i>CeqI</i>	GAT↓ATC			300
	<i>Eco32I</i>	GAT↓ATC			51,301
	<i>Eco178I</i>	GATATC			60
	<i>HjaI</i>	GAT↓ATC			302
	<i>NanI</i>	GATATC			249
	<i>NfiAI</i>	GATATC			303
	<i>NsiCI</i>	GAT↓ATC			304
<i>EspI</i>		GC↓TNAGC		EGU	305
	<i>CelII</i>	GCTNAGC		M	77
	<i>Uba1102I</i>	GC↓TNAGC			306
<i>Esp3I</i>		GAGACG(1/5)			79
<i>FauI</i>		CCCGC(4/6)			307
<i>FinI</i>		GTCCC			159
<i>Fnu4HI</i>		GC↓NGC		N	308
	<i>Bsp6I</i>	GC↓NGC			309
	<i>FbrI</i>	GC↓NGC			119
	<i>IspI</i>	GC↓NGC			181
	<i>Uur960I</i>	GC↓NGC			310
<i>FnuDII</i>		CG↓CG			311
	<i>AccII</i>	CG↓CG		AEGKVX	6,312
	<i>BceFI</i>	CGCG			313
	<i>BceRI</i>	CGCG			140
	<i>BepI</i>	CG↓CG	1(5)		314,315
	<i>Bpu95I</i>	CG↓CG			8
	<i>Bsp50I</i>	CG↓CG			79
	<i>Bsp70I</i>	CGCG			79
	<i>Bsp176I</i>	CGCG			107
	<i>BstUI</i>	CG↓CG		N	80
	<i>Bsu1192II</i>	CGCG			74
	<i>Bsu1193I</i>	CGCG			74,140
	<i>Bsu1532I</i>	CG↓CG			316
	<i>Bsu6633I</i>	CGCG			140,317
	<i>BsuEII</i>	CGCG	1(5)		74,318,319
	<i>Cpa1150I</i>	CGCG			87
	<i>CpaAI</i>	CGCG			320
	<i>FspMI</i>	CGCG			159
	<i>Hin1056I</i>	CGCG			321
	<i>MvaAI</i>	CGCG			117
	<i>MvnI</i>	CG↓CG		M	322
	<i>PfiAI</i>	CGCG			32
	<i>SceI</i>	CGCG			77
	<i>ThaI</i>	CG↓CG		BI	323
	<i>TmaI</i>	CGCG			63
<i>FokI</i>		GGATG(9/13)	3(6), –2(6)	AEGIKMNUVX	324–327
	<i>HinGUII</i>	GGATG			328–330

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
<i>FseI</i>		GGCCGG↓CC			331
<i>GdiII</i>		YGGCCG(−5/−1)			332
<i>GsuI</i>		CTGGAG(16/14)			263,333
	<i>Bco35I</i>	CTGGAG			55
	<i>Bsp22I</i>	CTGGAG			203
	<i>Bsp28I</i>	CTGGAG			38
	<i>BspJ74I</i>	CTGGAG			107
<i>HaeI</i>		WGG↓CCW			334
<i>HaeII</i>		RGCGC↓Y		ABEGIKMNOPRSUX	335,336
	<i>Bme142I</i>	RGC↓GCY			337
	<i>HinHI</i>	RGCGCY			338
	<i>NgoI</i>	RGCGCY			339
<i>HaeIII</i>		GG↓CC	3(5)	ABEGIKMNOPRSUVX	340–342
	<i>AcaIV</i>	GGCC			77
	<i>Asp742I</i>	GGCC			217
	<i>AspTIII</i>	GGCC			77
	<i>Bal475I</i>	GGCC			87
	<i>Bal3006</i>	GGCC			87
	<i>Bce71I</i>	GGCC			343
	<i>Bco33I</i>	GGCC			38
	<i>Bfi458I</i>	GGCC			87
	<i>Bim19II</i>	GG↓CC			8
	<i>BliI</i>	GGCC			344
	<i>BluII</i>	GGCC			332
	<i>BseI</i>	GGCC			345
	<i>BshI</i>	GGCC			78
	<i>BshAI</i>	GGCC			78
	<i>BshBI</i>	GGCC			78
	<i>BshCI</i>	GGCC			78
	<i>BshDI</i>	GGCC			78
	<i>BshEI</i>	GGCC			78
	<i>BshFI</i>	GG↓CC			346
	<i>BsiAI</i>	GGCC			78
	<i>BsiDI</i>	GGCC			78
	<i>BsiHI</i>	GGCC			78
	<i>Bsp71I</i>	GGCC			343
	<i>Bsp211I</i>	GG↓CC			343
	<i>Bsp226I</i>	GGCC			343
	<i>BspBRI</i>	GG↓CC			347
	<i>BspRI</i>	GG↓CC			348–350
	<i>BssCI</i>	GGCC			165
	<i>BstCI</i>	GGCC		G	165
	<i>BstJI</i>	GGCC			80
	<i>Bsu1076I</i>	GGCC			140
	<i>Bsu1114I</i>	GGCC			140
	<i>BsuRI</i>	GG↓CC	3(5)	G	341,351,352
	<i>BteI</i>	GGCC			233
	<i>ClmI</i>	GGCC			111
	<i>ClfI</i>	GG↓CC			353
	<i>Csp2I</i>	GGCC			56
	<i>DsaII</i>	GG↓CC			258
	<i>FinSI</i>	GGCC			119
	<i>FnuDI</i>	GG↓CC			311
	<i>HhgI</i>	GGCC			75
	<i>MniI</i>	GGCC			288
	<i>MnnII</i>	GGCC			354
	<i>NgoII</i>	GGCC			355
	<i>NgoPII</i>	GG↓CC			304
	<i>NgoSI</i>	GGCC			356
	<i>NlaI</i>	GGCC			357
	<i>PaiI</i>	GGCC			148
	<i>PalI</i>	GG↓CC		EPV	358,359
	<i>Pde133I</i>	GG↓CC			8
	<i>PpuI</i>	GGCC			148

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
	<i>SfaI</i>	GG↓CC			360
	<i>SpIII</i>	GGCC			361
	<i>SuaI</i>	GG↓CC			362
	<i>SulI</i>	GGCC			363
	<i>TspZNI</i>	GGCC			364
	<i>TteAI</i>	GGCC			365
	<i>TniI</i>	GGCC			116
	<i>VhaI</i>	GGCC			149
	<i>VniI</i>	GGCC			175
<i>HgaI</i>		GACGC(5/10)		NX	338,366,367
<i>HgiAI</i>		GWGCW↓C		NX	368
	<i>Alw21I</i>	GWGCW↓C			41
	<i>AspHI</i>	GWGCW↓C		M	369
	<i>Bbv12I</i>	GWGCW↓C			8
	<i>Pph3215I</i>	GWGCW↓C			87
<i>HgiCI</i>		G↓GYRCC			15,370
	<i>AccB1I</i>	G↓GYRCC			8
	<i>BanI</i>	G↓GYRCC		EGIMNOPUVX	5,370
	<i>Eco50I</i>	GGYRCC			150
	<i>Eco64I</i>	G↓GYRCC			260,371
	<i>Eco168I</i>	GGYRCC			216
	<i>Eco169I</i>	GGYRCC			150
	<i>Eco171I</i>	GGYRCC			60
	<i>Eco173I</i>	GGYRCC			60
	<i>Eco195I</i>	GGYRCC			216
	<i>Esp1I</i>	GGYRCC			55
	<i>Esp6I</i>	GGYRCC			79
	<i>Esp9I</i>	GGYRCC			79
	<i>Esp10I</i>	GGYRCC			79
	<i>Esp11I</i>	GGYRCC			79
	<i>Esp12I</i>	GGYRCC			79
	<i>Esp13I</i>	GGYRCC			79
	<i>Esp14I</i>	GGYRCC			79
	<i>Esp15I</i>	GGYRCC			150
	<i>Esp22I</i>	GGYRCC			150
	<i>HgiHI</i>	G↓GYRCC			16
	<i>MspB4I</i>	G↓GYRCC			8
	<i>SspM1III</i>	GGYRCC			20
<i>HgiEII</i>		ACCNNNNNNGGT			15
<i>HgiJII</i>		GRG↓CYC			16
	<i>BanII</i>	GRG↓CYC		EGIKMNOPRSUVX	5
	<i>BpuI</i>	GRG↓CYC			161,372
	<i>Bsp117I</i>	GRG↓CYC			38
	<i>Bsp519I</i>	GRG↓CYC			8
	<i>Bsu1854I</i>	GRG↓CYC			316
	<i>BvuI</i>	GRG↓CYC			373
	<i>Cfr48I</i>	GRG↓CYC			54
	<i>Eco24I</i>	GRG↓CYC			184,374
	<i>Eco25I</i>	GRG↓CYC			184
	<i>Eco26I</i>	GRG↓CYC			51
	<i>Eco35I</i>	GRG↓CYC			184
	<i>Eco68I</i>	GRG↓CYC			261
	<i>Eco113I</i>	GRG↓CYC			216
	<i>Eco180I</i>	GRG↓CYC			60
	<i>Eco211I</i>	GRG↓CYC			38
	<i>Eco215I</i>	GRG↓CYC			203
	<i>Eco216I</i>	GRG↓CYC			203
	<i>Eco232I</i>	GRG↓CYC			55
	<i>EcoT38I</i>	GRG↓CYC			126
	<i>EcoT88I</i>	GRG↓CYC			375
	<i>EcoT93I</i>	GRG↓CYC			375
	<i>EcoT95I</i>	GRG↓CYC			375
	<i>KoxII</i>	GRG↓CYC			206
<i>HhaI</i>		G↓CG↓C	2(5)	ABEGKNOPRSUX	376,377
	<i>BcaI</i>	G↓CG↓C			33

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
	<i>CfoI</i>	GCG C		BIMRV	147
	<i>Csp1470I</i>	GCGC			87
	<i>FnuDIII</i>	GCG C			311
	<i>Hin6I</i>	G CGC			378
	<i>Hin7I</i>	GCGC			18
	<i>HinGUI</i>	GCGC			328,379
	<i>HinPII</i>	G CGC		NX	380
	<i>HinSI</i>	GCGC			380
	<i>HinS2I</i>	GCGC			380
	<i>MnnIV</i>	GCGC			354
	<i>SciNI</i>	G CGC			381
<i>HindII</i>		GTY rac	5(6)	M	382–385
	<i>ChuII</i>	GTyrAC			386
	<i>Hin1160II</i>	GTyrAC			321
	<i>Hin1161II</i>	GTyrAC			321
	<i>HinJCI</i>	GTy rac			387
	<i>HincII</i>	GTy rac		ABEGIKNOPRSUVX	388
	<i>MnnI</i>	GTyrAC			354
<i>HindIII</i>		A AGCTT	1(6)	ABEGIKMNOPRSUVX	384,385,389
	<i>Asp52I</i>	AAGCTT			217
	<i>Asp3065I</i>	AAGCTT			390
	<i>BbrI</i>	AAGCTT			75
	<i>BpeI</i>	AAGCTT			391,392
	<i>BstFI</i>	A AGCTT			393
	<i>Cfr32I</i>	AAGCTT			54
	<i>ChuI</i>	AAGCTT			386
	<i>EcoVIII</i>	A AGCTT			394
	<i>Eco65I</i>	AAGCTT			261
	<i>Eco98I</i>	AAGCTT			261
	<i>Eco188I</i>	AAGCTT			216
	<i>Eco231I</i>	AAGCTT			55
	<i>Hin5III</i>	AAGCTT			18
	<i>Hin173I</i>	AAGCTT			328
	<i>Hin1076III</i>	AAGCTT			321
	<i>HinJCII</i>	AAGCTT			387
	<i>HinbIII</i>	AAGCTT			75,395
	<i>HinFI</i>	AAGCTT			396
	<i>HsuI</i>	A AGCTT			75
	<i>MkiI</i>	AAGCTT			288
<i>HinfI</i>		G ANTC		ABEGIKMNOPRSUVX	395,397,398
	<i>CviBI</i>	G ANTC			399
	<i>CviCI</i>	GANTC			399
	<i>CviDI</i>	GANTC			399
	<i>CviEI</i>	GANTC			399
	<i>CviFI</i>	GANTC			399
	<i>CviGI</i>	GANTC			399
	<i>FnuAI</i>	G ANTC			311
	<i>HhaII</i>	G ANTC	2(6)		400–402
	<i>NciI</i>	GANTC			403
	<i>NovII</i>	GANTC			403
	<i>NsiHI</i>	GANTC			404
<i>HpaI</i>		GTT AAC	5(6)	ABEGIKMNOPRSUVX	405–407
	<i>BseII</i>	GTTAAC			345
	<i>SsrI</i>	GTT AAC			408
	<i>SsrB6I</i>	GTT AAC			8
<i>HpaII</i>		C CGG	2(5)	BEGMNOPRSUVX	342,405,406
	<i>Asp748I</i>	CCGG			217
	<i>BsiSI</i>	CCGG			78
	<i>Bsp5I</i>	CCGG			38
	<i>Bsp47I</i>	CCGG			79
	<i>Bsp48I</i>	CCGG			79
	<i>Bsp116I</i>	CCGG			38
	<i>Bst40I</i>	C CGG			8
	<i>Bsu1192I</i>	CCGG			74,140
	<i>BsuFI</i>	CCGG	1(5)		74,140,319

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
	<i>FinII</i>	CCGG			159
	<i>HapII</i>	C↓CGG		AGIK	338,409
	<i>Hin2I</i>	CCGG			218
	<i>Hin5I</i>	CCGG			18
	<i>MniII</i>	CCGG			288
	<i>MnoI</i>	C↓CGG			75,410
	<i>MspI</i>	C↓CGG	1(5)	ABEGIKMNOPRSUVX	154,411,412
	<i>Pde137I</i>	C↓CGG			8
	<i>SecII</i>	CCGG			413
	<i>SfaG</i>	CCGG			414
<i>HphI</i>		GGTGA(8/7)	−2(5)	NVX	395,415,416
	<i>NgoBI</i>	GGTGA	−2(5)		417,418
<i>KpnI</i>		GGTAC↓C		ABEGIKMNOPRSUVX	419,420
	<i>Acc65I</i>	G↓GTACC			8
	<i>AhaB8I</i>	G↓GTACC			8
	<i>Asp718I</i>	G↓GTACC		M	421
	<i>BspJ106I</i>	GGTACC			107
	<i>Eco149I</i>	GGTACC			60
	<i>Esp19I</i>	GGTACC			55
	<i>KpnK14I</i>	GGTACC			217
	<i>NmiI</i>	GGTACC			422
	<i>Sau10I</i>	GGTACC			203
	<i>SthI</i>	G↓GTACC			423,424
	<i>SthAI</i>	GGTACC			122
	<i>SthBI</i>	GGTACC			122
	<i>SthCI</i>	GGTACC			122
	<i>SthDI</i>	GGTACC			122
	<i>SthEI</i>	GGTACC			122
	<i>SthFI</i>	GGTACC			122
	<i>SthGI</i>	GGTACC			122
	<i>SthHI</i>	GGTACC			122
	<i>SthJI</i>	GGTACC			122
	<i>SthKI</i>	GGTACC			122
	<i>SthLI</i>	GGTACC			122
	<i>SthMI</i>	GGTACC			122
	<i>SthNI</i>	GGTACC			375,424
<i>Ksp632I</i>		CTCTTC(1/4)		M	425
	<i>EarI</i>	CTCTTC(1/4)		N	426
	<i>Uba1104I</i>	CTCTTC(1/5)			427
<i>MaeI</i>		C↓TAG		M	428
	<i>MjaI</i>	CTAG			62
<i>MaeII</i>		A↓CGT		M	428
<i>MaeIII</i>		↓GTNAC		M	428
<i>MboI</i> ⁷		↓GATC		BEGIKNOPRSVX	429
+	<i>Bce243I</i>	↓GATC			430
+	<i>Bme12I</i>	GATC			431
	<i>BsaPI</i>	GATC			165
	<i>Bsp9I</i>	GATC			38
	<i>Bsp18I</i>	GATC			38
+	<i>Bsp49I</i>	GATC			79
+	<i>Bsp51I</i>	GATC			79
+	<i>Bsp52I</i>	GATC			79
+	<i>Bsp54I</i>	GATC			79
+	<i>Bsp57I</i>	GATC			79
+	<i>Bsp58I</i>	GATC			79
+	<i>Bsp59I</i>	GATC			79
+	<i>Bsp60I</i>	GATC			79
+	<i>Bsp61I</i>	GATC			79
+	<i>Bsp64I</i>	GATC			343
+	<i>Bsp65I</i>	GATC			79
+	<i>Bsp66I</i>	GATC			79
+	<i>Bsp67I</i>	↓GATC			343
+	<i>Bsp72I</i>	GATC			79
	<i>Bsp74I</i>	GATC			343

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
	<i>Bsp</i> 76I	GATC			343
+	<i>Bsp</i> 91I	GATC			79
	<i>Bsp</i> 105I	↑GATC			343
+	<i>Bsp</i> 122I	GATC			79
+	<i>Bsp</i> 2095I	↑GATC			8
+	<i>Bsp</i> AI	↑GATC			49
+	<i>Bsp</i> J64I	GATC			79
	<i>Bsr</i> PII	GATC			165
	<i>Bss</i> GII	GATC			165
	<i>Bst</i> EIII	GATC			75,198,432
	<i>Bst</i> XII	GATC			165
+	<i>Btc</i> I	GATC			433
	<i>Cac</i> I	↑GATC			434
+	<i>Ccy</i> I	↑GATC			435
	<i>Cin</i> 1467I	GATC			87
	<i>Cpa</i> I	GATC			349
+	<i>Cpf</i> I	↑GATC			251
+	<i>Csp</i> 5I	GATC			79
	<i>Cte</i> 1179I	GATC			87
	<i>Cte</i> 1180	GATC			87
	<i>Cry</i> I	GATC			320
	<i>Cvi</i> AI	↑GATC	2(6)		436,437
	<i>Cvi</i> HI	GATC			240
	<i>Dpn</i> II	GATC			244,246
	<i>Fnu</i> AI	GATC			75,311
	<i>Fnu</i> CI	↑GATC			311
+	<i>Fnu</i> EI	↑GATC			311
	<i>Hac</i> I	↑GATC			438
+	<i>Kzo</i> 9I	↑GATC			104
	<i>Meu</i> I	GATC			30
	<i>Mkr</i> AI	GATC			233
	<i>Mme</i> II	GATC			439
	<i>Mno</i> III	GATC			75
	<i>Mos</i> I	GATC			429
	<i>Msp</i> 67II	GATC			46
+	<i>Msp</i> BI	GATC			117
	<i>Mth</i> I	GATC			165
	<i>Mth</i> 1047I	GATC			87
	<i>Mth</i> AI	GATC			117
	<i>Nde</i> II	↑GATC		BGM	403
	<i>Nfi</i> I	GATC			403
	<i>Nfi</i> AI	GATC			303
	<i>Nfi</i> BI	GATC			440
	<i>Nla</i> II	↑GATC			357
	<i>Nla</i> DI	GATC			64
	<i>Nme</i> CI	↑GATC			304
	<i>Nph</i> I	↑GATC			304
	<i>Nsi</i> AI	GATC			441
	<i>Nsp</i> AI	GATC			30
	<i>Nsu</i> I	GATC			65
+	<i>Pei</i> 9403I	GATC			142
	<i>Pfa</i> I	GATC			411
	<i>Rlu</i> 1I	GATC			203
	<i>Sal</i> AI	GATC			265
	<i>Sal</i> HI	GATC			265
+	<i>Sau</i> 3AI	↑GATC	4(5)	ABEGIKMNOPRSUVX	442,443
	<i>Sau</i> 6782I	GATC			444
+	<i>Sau</i> CI	GATC			445
+	<i>Sau</i> DI	GATC			445
+	<i>Sau</i> EI	GATC			445
+	<i>Sau</i> FI	GATC			445
+	<i>Sau</i> GI	GATC			445
+	<i>Sau</i> MI	GATC			233
	<i>Sin</i> MI	GATC			65

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
<i>Mbo</i> II	<i>Tru</i> II	GATC	5(6)	BGIKNPRSUVX	123
		GAAGA(8/7)			429,446–448
	<i>Ncu</i> I	GAAGA			65
	<i>Tce</i> I	GAAGA			363
<i>Mcr</i> I		C↓GRYCG			449
<i>Mfe</i> I		CAATTG			450
<i>Mlu</i> I		A↓CGCGT		ABEGIKMNOPRUVX	324
	<i>Ape</i> I	ACGCGT			265
	<i>Uba</i> 6I	ACGCGT			55
<i>Mly</i> I		GASTC			42
<i>Mme</i> I		TCCRAC(20/18)			439
<i>Mnl</i> II		CCTC(7/7)		EGNX	154,451
<i>Mse</i> I		T↓TAA		N	452
	<i>Tru</i> 9I	T↓TAA			8
<i>Mst</i> I		TGC↓GCA		X	153,453
	<i>Aca</i> III	TGCGCA			77
	<i>Aos</i> I	TGC↓GCA		G	11
	<i>Avi</i> II	TGC↓GCA		M	70
	<i>Clc</i> II	TGCGCA			77
	<i>Cli</i> II	TGCGCA			68
	<i>Fdi</i> II	TGC↓GCA		U	115,116
	<i>Fsp</i> I	TGC↓GCA		EGNS	83,454
	<i>Gsp</i> AII	TGCGCA			78
	<i>Nsp</i> HIII	TGCGCA			70
	<i>Nsp</i> LI	TGCGCA			68,69
	<i>Nsp</i> MI	TGCGCA			69,77
<i>Mwo</i> I		GCNNNNN↓NNGC			455
<i>Nae</i> I		GCC↓GGC		EGKMNOUVX	456
	<i>Ame</i> II	GCCGGC			32
	<i>Ani</i> MI	GCCGGC			159
	<i>Ape</i> AI	GCCGGC			32
	<i>Apr</i> I	GCCGGC			30
	<i>Eco</i> 56I	G↓CCGGC			51,457
	<i>Esp</i> 5I	GCCGGC			203
	<i>Mis</i> I	GCCGGC			198
	<i>Nas</i> WI	GCCGGC			30
	<i>Nba</i> I	GCCGGC			74
	<i>Nbr</i> I	GCCGGC			74
	<i>Ngo</i> AIV	G↓CCGGC			458
	<i>Ngo</i> MI	GCCGGC			459
	<i>Nmu</i> I	GCCGGC			403
	<i>Nmu</i> FI	GCCGGC			65
	<i>Nsp</i> WI	GCCGGC			30
	<i>Nta</i> SII	GCCGGC			119
	<i>Pgl</i> I	GCCGGC			460
	<i>Psp</i> 61I	GCCGGC			46
	<i>Rlu</i> I	GCCGGC			461–463
	<i>Sac</i> AI	GCCGGC			57
	<i>Sal</i> CI	GCCGGC			32
	<i>Sao</i> I	GCCGGC			464
	<i>Sau</i> AI	GCCGGC			440
	<i>Sau</i> BMKI	GCC↓GGC			465
	<i>Ska</i> I	GCCGGC			65
	<i>Slu</i> 177I	GCC↓GGC			87
<i>Nar</i> I		GG↓CGCC		BEGMNOPVX	466
	<i>Bbe</i> I	GGCGC↓C		AK	467
	<i>Bbe</i> AI	GGCGCC			179
	<i>Bin</i> SII	GGCGCC			179
	<i>Eco</i> 78I	GGC↓GCC			468
	<i>Ehe</i> I	GGC↓GCC		OU	469,470
	<i>Mch</i> I	GG↓CGCC			471
	<i>Mly</i> 113I	GG↓CGCC			8
	<i>Nam</i> I	GGCGCC			472
	<i>Nda</i> I	GG↓CGCC			473

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
	<i>NunII</i>	GG↓CGCC		G	165
	<i>SfoI</i>	GGCGCC			159
<i>NcoI</i>		C↓CATGG		ABEGIKMNOPRUVX	165
	<i>Bsp19I</i>	C↓CATGG			8
	<i>NspSAIII</i>	CCATGG			97
<i>NdeI</i>		CA↓TATG	4(6)	BEGMNPSVX	474-476
<i>NheI</i>		G↓CTAGC		BEGMNOPRUVX	422
<i>NlaIII</i>		CATG↓		N	357
	<i>Hin1II</i>	CATG↓			477
	<i>Hin8II</i>	CATG			18
<i>NlaIV</i>		GGN↓NCC		N	357
	<i>AspNI</i>	GGN↓NCC			181
	<i>BcrI</i>	GGNNCC			262
	<i>Bsp29I</i>	GGNNCC			38
	<i>BssI</i>	GGNNCC			81
	<i>Rlu3I</i>	GGNNCC			55
<i>NotI</i>		GC↓GGCCGC		ABEGIKMNOPRSUVX	478,479
<i>NruI</i>		TCG↓CGA		ABEGIKMNOPUV	422
	<i>AmaI</i>	TCGCGA			149
	<i>Bsp68I</i>	TCGCGA			79
	<i>MluB2I</i>	TCG↓CGA			8
	<i>SalDI</i>	TCGCGA			32
	<i>Sbo13I</i>	TCG↓CGA			126
	<i>Sna3286I</i>	TCGCGA			87
	<i>SpoI</i>	TCG↓CGA		R	416
<i>NspI</i>		RCATG↓Y		AKMU	67
	<i>NspHI</i>	RCATG↓Y		G	85
<i>NspBII</i>		CMG↓CKG		G	85
	<i>MspA1I</i>	CMG↓CKG			8
<i>PflMI</i>		CCANNNN↓NTGG		N	159
	<i>AccB7I</i>	CCANNNN↓NTGG			8
	<i>Van91I</i>	CCANNNN↓NTGG			128
<i>PleI</i>		GAGTC(4/5)		N	480
<i>PmaCI</i>		CAC↓GTG		K	481
	<i>BbrPI</i>	CAC↓GTG		M	482
	<i>BcoAI</i>	CAC↓GTG			483
	<i>Bsp87I</i>	CACGTG			79
	<i>Eco72I</i>	CAC↓GTG			484
	<i>PmlI</i>	CAC↓GTG		N	485
<i>PpuMI</i>		RG↓GWCCY		N	159,486
	<i>Uba1I</i>	RG↓GWCCY			22
	<i>Uba1106I</i>	RGGWCCY			128
<i>PshAI</i>		GACNN↓NNGTC			487
<i>PstI</i>		CTGCA↓G	5(6)	ABEGIKMNOPRSUVX	419,488,489
	<i>AinI</i>	CTGCAG			77
	<i>Ali2882I</i>	CTGCAG			139
	<i>AliAJI</i>	CTGCA↓G			490
	<i>Asp36I</i>	CTGCAG			184
	<i>Asp708I</i>	CTGCAG			100
	<i>Asp713I</i>	CTGCA↓G			14
	<i>AspTI</i>	CTGCAG			77
	<i>BbiI</i>	CTGCAG			13
	<i>Bce170I</i>	CTGCAG			140
	<i>Bsp17I</i>	CTGCAG			38
	<i>Bsp43I</i>	CTGCAG			55
	<i>Bsp63I</i>	CTGCA↓G			343
	<i>Bsp78I</i>	CTGCAG			343
	<i>Bsp81I</i>	CTGCAG			79
	<i>Bsp93I</i>	CTGCAG			79
	<i>Bsp107I</i>	CTGCAG			38
	<i>Bsp108I</i>	CTGCAG			38
	<i>BspBI</i>	CTGCA↓G			49
	<i>BsuBI</i>	CTGCAG			140,491
	<i>CauIII</i>	CTGCAG			492

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
	<i>Cfl</i>	CTGCA↓G			438
	<i>CfrA4I</i>	CTGCA↓G			493
	<i>CfuII</i>	CTGCA↓G			494
	<i>ClcI</i>	CTGCAG			77
	<i>CstI</i>	CTGCA↓G			495
	<i>EaePI</i>	CTGCAG			313
	<i>Ecl77I</i>	CTGCAG			261
	<i>Ecl133I</i>	CTGCAG			60
	<i>Ecl593I</i>	CTGCAG			217
	<i>Eco48I</i>	CTGCAG			150
	<i>Eco49I</i>	CTGCAG			150
	<i>Eco83I</i>	CTGCAG			261
	<i>Eco161I</i>	CTGCAG			60
	<i>Eco167I</i>	CTGCAG			60
	<i>Esp5II</i>	CTGCAG			203
	<i>Esp141I</i>	CTGCAG			216
	<i>GseII</i>	CTGCAG			61
	<i>HalB6II</i>	CTGCA↓G			8
	<i>Kpn12I</i>	CTGCAG			60
	<i>MauI</i>	CTGCAG			148
	<i>MkrI</i>	CTGCAG			30
	<i>NasI</i>	CTGCAG			119
	<i>NgbI</i>	CTGCAG			30
	<i>NocI</i>	CTGCAG			422
	<i>PmaI</i>	CTGCAG			154
	<i>Pma44I</i>	CTGCAG			496
	<i>PmyI</i>	CTGCAG			497
	<i>SalPI</i>	CTGCA↓G			498,499
	<i>SfiI</i>	CTGCA↓G			288
	<i>SkaII</i>	CTGCAG			65
	<i>XmaII</i>	CTGCAG			500
	<i>XorI</i>	CTGCAG			501
	<i>XphI</i>	CTGCAG			502
	<i>YenI</i>	CTGCA↓G			503
	<i>YenAI</i>	CTGCAG			503
	<i>YenBI</i>	CTGCAG			503
	<i>YenCI</i>	CTGCAG			503
	<i>YenDI</i>	CTGCAG			503
	<i>YenEI</i>	CTGCAG			503
<i>PvuI</i>		CGAT↓CG		ABEGKMNOPRSUVX	504
	<i>BmaI</i>	CGATCG			32,505,506
	<i>BmaAI</i>	CGATCG			33
	<i>BmaBI</i>	CGATCG			32
	<i>BmaCI</i>	CGATCG			32
	<i>BmaDI</i>	CGATCG			32
	<i>Cfr51I</i>	CGATCG			38
	<i>DraIII</i>	CGATCG			257
	<i>EclII</i>	CGATCG			507
	<i>ErhB9I</i>	CGAT↓CG			8
	<i>NbII</i>	CGAT↓CG			154
	<i>Ple19I</i>	CGAT↓CG			8
	<i>Psu161I</i>	CGAT↓CG			8
	<i>RshI</i>	CGAT↓CG			508
	<i>RspI</i>	CGATCG			509
	<i>SmaAIII</i>	CGATCG			20
	<i>SplAIII</i>	CGATCG			20
	<i>Xgl3216I</i>	CGATCG			87
	<i>Xgl3217I</i>	CGATCG			87
	<i>Xgl3218I</i>	CGATCG			87
	<i>Xgl3219I</i>	CGATCG			87
	<i>Xgl3220I</i>	CGATCG			87
	<i>XmlI</i>	CGATCG			510
	<i>XmlAI</i>	CGATCG			510
	<i>XniI</i>	CGATCG			354
	<i>XorII</i>	CGAT↓CG	B		501,504

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
<i>PvuII</i>		CAG↓CTG	4(4)	ABEGIKMNOPRSUVX	504,511
	<i>BavI</i>	CAG↓CTG			512
	<i>BavAI</i>	CAG↓CTG			513
	<i>Cfr6I</i>	CAG↓CTG	4(4)		50,51,511
	<i>EclI</i>	CAG↓CTG			8,285
	<i>GspI</i>	CAGCTG			77
	<i>MziI</i>	CAGCTG			514
	<i>NmeRI</i>	CAGCTG			233
	<i>PvuHKUI</i>	CAGCTG			142
	<i>SbaI</i>	CAGCTG			375,424
	<i>SciAI</i>	CAGCTG			77
	<i>SmaAIV</i>	CAGCTG			20
	<i>Sol3335I</i>	CAGCTG			142
	<i>SplAIV</i>	CAGCTG			20
<i>RleAI</i>		CCCACA(12/9)			515
<i>RsaI</i>		GT↓AC		ABEGIMNOPRSUVX	516
	<i>AfaI</i>	GT↓AC			517
	<i>Csp6I</i>	G↓TAC			150
	<i>CviQI</i>	G↓TAC			518
<i>RsrII</i>		CG↓GWCCG		BEGNX	519
	<i>CpoI</i>	CGGWCCG			32
	<i>CspI</i>	CGGWCCG		R	520
<i>SacI</i>		GAGCT↓C		AEGIKMNOPRSUVX	521
	<i>Ecl136II</i>	GAG↓CTC			22
	<i>Ecl137I</i>	GAGCTC			216
	<i>EcoICRI</i>	GAGCTC			148
	<i>NasSI</i>	GAGCTC			119
	<i>ScoI</i>	GAGCTC			464
	<i>SstI</i>	GAGCT↓C		B	522,523
<i>SacII</i>		CCGC↓GG		EINOPRUVX	521
	<i>AosIII</i>	CCGCGG			70
	<i>BacI</i>	CCGCGG			75,353
	<i>Bac465I</i>	CCGCGG			87
	<i>Bsp12I</i>	CCGCGG			38
	<i>Cfr37I</i>	CCGCGG			53
	<i>Cfr41I</i>	CCGCGG			53
	<i>Cfr42I</i>	CCGC↓GG			17
	<i>Cfr43I</i>	CCGCGG			54
	<i>Cfr45II</i>	CCGCGG			54
	<i>CscI</i>	CCGC↓GG			524
	<i>DrdAI</i>	CCGCGG			257
	<i>DrdBI</i>	CCGCGG			257
	<i>DrdCI</i>	CCGCGG			257
	<i>DrdEI</i>	CCGCGG			525
	<i>DrdFI</i>	CCGCGG			257
	<i>Dsp1I</i>	CCGCGG			55
	<i>Eae46I</i>	CCGC↓GG			8
	<i>EccI</i>	CCGCGG			75,526
	<i>Ecl28I</i>	CCGCGG			184
	<i>Ecl37I</i>	CCGCGG			58
	<i>Eco55I</i>	CCGCGG			150
	<i>Eco92I</i>	CCGCGG			261
	<i>Eco96I</i>	CCGCGG			261
	<i>Eco99I</i>	CCGCGG			261
	<i>Eco100I</i>	CCGCGG			216
	<i>Eco104I</i>	CCGCGG			286
	<i>Eco134I</i>	CCGCGG			60
	<i>Eco135I</i>	CCGCGG			60
	<i>Eco158I</i>	CCGCGG			216
	<i>Eco182I</i>	CCGCGG			60
	<i>Eco196I</i>	CCGCGG			60
	<i>Eco208I</i>	CCGCGG			38
	<i>FseI</i>	CCGCGG			527
	<i>GalI</i>	CCGC↓GG			438
	<i>GceI</i>	CCGC↓GG			438

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
	<i>Gce</i> GLI	CCGC↓GG			528
	<i>Ksp</i> I	CCGC↓GG		EM	529
	<i>Mra</i> I	CCGCGG		G	530
	<i>Ngo</i> III	CCGCGG			531
	<i>Ngo</i> AIII	CCGC↓GG			532
	<i>Ngo</i> DI	CCGCGG			250
	<i>Ngo</i> PIII	CCGC↓GG			304
	<i>Nla</i> DIII	CCGCGG			64
	<i>Nla</i> SI	CCGCGG			19
	<i>Pae</i> AI	CCGC↓GG			113,493
	<i>Saa</i> I	CCGCGG			159
	<i>Sab</i> I	CCGCGG			464
	<i>Sak</i> I	CCGCGG			57
	<i>Sbo</i> I	CCGCGG			533,534
	<i>Sfr</i> I	CCGCGG			533,534
	<i>Sfr</i> 303I	CCGC↓GG			8
	<i>Sfr</i> 382I	CCGCGG			87
	<i>Shy</i> I	CCGCGG			535
	<i>Sse</i> II	CCGCGG			61
	<i>Ssp</i> 1725I	CCGCGG			87
	<i>Sst</i> II	CCGC↓GG		B	522
	<i>Tgl</i> II	CCGCGG			152
<i>Sal</i> I		G↓TCGAC		ABEGIKMNOPRSUVX	536
	<i>Hgi</i> CIII	G↓TCGAC			15
	<i>Hgi</i> DII	G↓TCGAC			15
	<i>Koy</i> I	GTCGAC			32
	<i>Nop</i> I	G↓TCGAC			154
	<i>Rfl</i> FI	GTCGAC			537
	<i>Rhe</i> I	GTCGAC			149
	<i>Rhp</i> I	GTCGAC			149
	<i>Rrh</i> I	GTCGAC			74
	<i>Rro</i> I	GTCGAC			74
	<i>Xam</i> I	GTCGAC			536
	<i>Xci</i> I	G↓TCGAC			538
<i>Sau</i> I		CC↓TNAGG		M	539
	<i>Aoc</i> I	CC↓TNAGG		E	70
	<i>Axy</i> I	CC↓TNAGG		GV	540
	<i>Bse</i> 21I	CC↓TNAGG			541
	<i>Bsu</i> 36I	CC↓TNAGG		N	542
	<i>Cvn</i> I	CC↓TNAGG		B	543,544
	<i>Eci</i> CI	CCTNAGG			39
	<i>Eco</i> 76I	CCTNAGG			261
	<i>Eco</i> 81I	CC↓TNAGG		AKOU	545
	<i>Eco</i> 115I	CCTNAGG			216
	<i>Eco</i> 118I	CCTNAGG			216
	<i>Lmu</i> 60I	CC↓TNAGG			8
	<i>Mst</i> II	CC↓TNAGG		EX	154
	<i>Oxa</i> NI	CC↓TNAGG			155
	<i>Sec</i> III	CCTNAGG			413
	<i>Ssh</i> AI	CC↓TNAGG			546
<i>Sca</i> I		AGT↓ACT		ABEGIKMNOPRSUVX	547,548
	<i>Asp</i> 763I	AGTACT			217
	<i>Bst</i> MI	AGTACT			80
<i>Scr</i> FI		CC↓NGG		EGMNOSVX	549
	<i>Bsp</i> 53I	CCNGG			79
	<i>Bsp</i> 73I	CCNGG			79
	<i>Dsa</i> V	↓CCNGG		M	7
	<i>Eco</i> 43I	CCNGG			550
	<i>Eco</i> 51II	CCNGG			150
	<i>Eco</i> 80I	CCNGG			261
	<i>Eco</i> 85I	CCNGG			550
	<i>Eco</i> 93I	CCNGG			261
	<i>Eco</i> 153I	CCNGG			216
	<i>Eco</i> 200I	CCNGG			60

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
	<i>Msp</i> 67I	CC↓NGG			46
	<i>Sso</i> II	↓CCNGG	2(5)		272,551
<i>Sdu</i> I		GDGCH↓C			552,553
	<i>Aoc</i> II	GDGCH↓C			70
	<i>Bka</i> 1125I	GDGCHC			87
	<i>Bmy</i> I	GDGCH↓C		M	554
	<i>Bsp</i> 1286I	GDGCH↓C		EGKNRUX	75,140,555
	<i>Nsp</i> II	GDGCH↓C			67
<i>Sec</i> I		C↓CNNGG			413
	<i>Bsa</i> JI	C↓CNNGG		N	80
<i>Sfa</i> NI		GCATC(5/9)		NX	163
	<i>Bsc</i> AI	GCATC			556
<i>Sfe</i> I		C↓TRYAG			557
	<i>Bdi</i> SI	C↓TRYAG			558
<i>Sfi</i> I		GGCCNNNN↓NGGCC		BEGINOPRSUVX	559
<i>Sgr</i> AI		CR↓CCGGYG			560
<i>Sma</i> I		CCC↓GGG	3(5)	ABEGIKMNOPRSUVX	500,561,562
	<i>Ahy</i> I	C↓CCGGG			485
	<i>Cfr</i> 9I	C↓CCGGG	2(4)	O	50,51,562
	<i>Cfr</i> 14I	CCC↓GGG			233
	<i>Ecl</i> RI	CCCGGG			233
	<i>Pae</i> BI	CCC↓GGG			563
	<i>Xcy</i> I	C↓CCGGG			564
	<i>Xma</i> I	C↓CCGGG		EINRVX	500
<i>Sna</i> I		GTATAC			565
	<i>Uba</i> 1107I	GTA↓TAC			427
	<i>Xca</i> I	GTA↓TAC			566
<i>Sna</i> BI		TAC↓GTA		EGMNVX	567
	<i>Eci</i> AI	TACGTA			39
	<i>Eco</i> 105I	TAC↓GTA		OU	22
	<i>Eco</i> 158II	TACGTA			216
	<i>Ssp</i> JI	TACGTA			20
	<i>Ssp</i> M1I	TACGTA			20
	<i>Ssp</i> M2I	TACGTA			20
<i>Spe</i> I		A↓CTAGT		BEGKMNORSUX	422
<i>Sph</i> I		GCATG↓C		ABEGIKMNOPRSUVX	568
	<i>Bbu</i> I	GCATG↓C		R	569
	<i>Bsp</i> 121I	GCATGC			38
	<i>Pae</i> I	GCATG↓C			570
	<i>Spa</i> XI	GCATGC			148
<i>Sp</i> I		CCGC			32
<i>Sp</i> II		C↓GTACG		AK	361
	<i>Pfi</i> I	CGTACG			32
	<i>Sma</i> AI	CGTACG			20
	<i>Spl</i> AI	CGTACG			20
	<i>Ssp</i> KI	CGTACG			20
<i>Ssp</i> I		AAT↓ATT		BEGMNORVX	548
<i>Stu</i> I		AGG↓CCT		ABEGIKMNPRVX	571
	<i>Aat</i> I	AGG↓CCT		OU	5
	<i>Asp</i> 78I	AGGCCT			217
	<i>Chy</i> I	AGGCCT			33
	<i>Eco</i> 147I	AGG↓CCT			38,572
	<i>Gdi</i> I	AGG↓CCT			332
	<i>Nta</i> SI	AGGCCT			119
	<i>Pme</i> 55I	AGG↓CCT			8
	<i>Sar</i> I	AGGCCT			556
	<i>Ssv</i> I	AGGCCT			573
	<i>Ste</i> I	AGGCCT			573
<i>Sry</i> I		C↓CWWGG		BEGMNRVX	574
	<i>Bss</i> T1I	C↓CWWGG			8
	<i>Eco</i> 130I	C↓CWWGG		U	38,575
	<i>Eco</i> 208II	CCWWGG			38
	<i>Eco</i> T14I	C↓CWWGG		AK	576
	<i>Eco</i> T104I	CCWWGG			576

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
	<i>ErhB9II</i>	C↓CWWGG			8
	<i>SblAI</i>	CCWWGG			375
	<i>SblBI</i>	CCWWGG			375
	<i>SblCI</i>	CCWWGG			375
<i>TaqI</i>		T↓CGA	4(6)	BEGINOPRSUVX	577,578
	<i>TfiI</i>	TCGA			578
	<i>TthHB8I</i>	T↓CGA	4(6)	AK	578–581
<i>TaqII</i> ⁸		GACCGA(11/9)			75,582
		CACCCA(11/9)			
<i>TfiI</i>		GAWTC			583
<i>Tsp45I</i>		GTSAC			584
<i>TspEI</i>		AATT			585
<i>Tth111I</i>		GACN↓NNGTC		AEGIKNPVX	586
	<i>AspI</i>	GACN↓NNGTC		M	587
	<i>FsuI</i>	GACNNNGTC			464
	<i>NtaI</i>	GACNNNGTC			119
	<i>SmaAII</i>	GACNNNGTC			20
	<i>SpfII</i>	GACNNNGTC			361
	<i>SplAII</i>	GACNNNGTC			20
	<i>TspI</i>	GACNNNGTC			81
	<i>TteI</i>	GACNNNGTC			586
	<i>TtrI</i>	GACNNNGTC			586
<i>Tth111II</i>		CAARCA(11/9)			588
<i>Uba1105I</i>		GACNNN↓NNGTC			589
<i>Uba1108I</i>		TCGTAG			590
<i>VspI</i>		AT↓TAAT			591
	<i>AseI</i>	AT↓TAAT		N	209
	<i>AsnI</i>	AT↓TAAT		M	592
<i>XbaI</i>		T↓CTAGA		ABEGIKMNOPRSUVX	593
<i>XcmI</i>		CCANNNNN↓NNNNTGG		N	32
<i>XhoI</i>		C↓TCGAG		ABEGIKMNOPRSUVX	594
	<i>AbrI</i>	C↓TCGAG			595
	<i>Asp47I</i>	CTCGAG			217
	<i>Asp703I</i>	CTCGAG			100
	<i>BadI</i>	CTCGAG			191
	<i>BbfI</i>	CTCGAG			191
	<i>BbiIII</i>	CTCGAG			13
	<i>BluI</i>	C↓TCGAG			594
	<i>Bsp92I</i>	CTCGAG			79
	<i>BssHI</i>	CTCGAG			165
	<i>BstHI</i>	CTCGAG			165
	<i>BstLI</i>	CTCGAG			80
	<i>BstVI</i>	C↓TCGAG	5(6)	G	596–598
	<i>BsuMI</i>	CTCGAG	3(5)		140,319
	<i>BthI</i>	CTCGAG			179
	<i>CcrI</i>	C↓TCGAG		X	599
	<i>CjaI</i>	CTCGAG			471
	<i>DdeII</i>	CTCGAG			75
	<i>DrdDI</i>	CTCGAG			525
	<i>MavI</i>	C↓TCGAG			600
	<i>McaI</i>	CTCGAG			100
	<i>MecI</i>	CTCGAG			514
	<i>MlaAI</i>	CT↓CGAG			471
	<i>MpuI</i>	CTCGAG			514
	<i>MrhI</i>	CTCGAG			471
	<i>MsiI</i>	CTCGAG			75,395
	<i>OcoI</i>	CTCGAG			32
	<i>PaeR7I</i>	C↓TCGAG	5(6)	NX	601,602
	<i>PanI</i>	C↓TCGAG			148
	<i>PflNI</i>	CTCGAG			33
	<i>PflWI</i>	CTCGAG			603
	<i>SalI974I</i>	CTCGAG			87
	<i>Sau3239I</i>	C↓TCGAG			604,605
	<i>Sca1827I</i>	CTCGAG			87

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
	<i>SciI</i>	CTC↓GAG			46
	<i>Sci183II</i>	CTCGAG			87
	<i>ScoI</i>	CTCGAG			533
	<i>SexI</i>	CTCGAG			533
	<i>Sfi274I</i>	C↓TCGAG			8
	<i>Sfu1762I</i>	CTCGAG			87
	<i>SgaI</i>	CTCGAG			533
	<i>SgoI</i>	CTCGAG			533
	<i>Sgr184II</i>	CTCGAG			87
	<i>Shy1766I</i>	CTCGAG			87
	<i>SlaI</i>	C↓TCGAG			606
	<i>SluI</i>	CTCGAG			534
	<i>SpaI</i>	CTCGAG			533
	<i>Sph1719I</i>	CTCGAG			87
	<i>Ssp4I</i>	CTCGAG			55
	<i>Sve194I</i>	CTCGAG			87
	<i>XpaI</i>	C↓TCGAG			594
<i>XhoII</i>		R↓GATCY		EGMVX	152,321,607
	<i>AitII</i>	RGATCY			262
	<i>AitAI</i>	RGATCY			32
	<i>BstYI</i>	R↓GATCY		N	608
	<i>DsaIII</i>	R↓GATCY			7
	<i>MflI</i>	R↓GATCY		AK	609
	<i>Tru201I</i>	R↓GATCY			8
<i>XmaIII</i>		C↓GGCCG	4(5)	B	37,610
	<i>AaaI</i>	C↓GGCCG			611
	<i>BstZI</i>	CGGCCG			80
	<i>EagI</i>	C↓GGCCG		N	612
	<i>EclXI</i>	C↓GGCCG		M	613
	<i>Eco52I</i>	C↓GGCCG		AEKOU	51,114
<i>XmnI</i>		GAANN↓NNTTC		EGNX	74,614
	<i>Asp700I</i>	GAANN↓NNTTC		M	100
	<i>BbvAI</i>	GAANN↓NNTTC			615

Type III enzymes

Enzyme	Isoschizomers	Recognition Sequence	Me ³ site	Reference
<i>EcoPI</i>		AGACC	3(6)	638-642
<i>EcoP15I</i>		CAGCAG		643,644
<i>HinfIII</i>		CGAAT		645,646
	<i>HineI</i>	CGAAT		647
<i>SryLTI</i>		CAGAG	4(6)	648

FOOTNOTES

1. * signifies that *DpnI* and its isoschizomers require the presence of 6-methyladenosine within the recognition sequence GATC.

2. Recognition sequences are given using the standard abbreviations (Eur. J. Biochem. 150: 1-5, 1985) to represent ambiguity:

R = G or A
Y = C or T
M = A or C
K = G or T
S = G or C
W = A or T
H = A or C or T
B = G or T or C
V = G or C or A
D = G or A or T
N = A or C or G or T

3. The site of methylation by the cognate methylase when known is indicated as follows. The first number shows the base within the recognition sequence that is modified. A negative number indicates the complementary strand, numbered from the 5' base of that strand. The number in parentheses indicates the specific methylation involved. (6) = N6-methyladenosine; (5) = 5-methylcytosine; (4) = N4-methylcytosine.

4. Commercial sources of restriction enzymes are abbreviated as follows:

A	Amersham (2/90)
B	BRL (7/89)
E	Stratagene (2/90)
G	Anglian Biotechnology (10/89)
I	IBI (2/90)
K	Takara (1/88)
M	Boehringer Mannheim (2/90)
N	New England Biolabs (3/90)
O	Toyobo (3/90)
P	PL-Pharmacia-LKB (4/89)
R	Promega Biotec (2/90)
S	Sigma (8/89)
U	USB (3/90)
V	Serva (2/90)
X	New York Biolabs (2/90)

5. *BcgI* cleaves on both sides of the recognition sequence: 10 bases 5' to the recognition sequence and 12 bases 3' to it on both strands. Thus the recognition site is excised in a fragment, 34 base pairs long, with 2-base 3'-extensions at each end.
6. *EcoRII* isoschizomers fall into two classes based upon their sensitivity to methylation. *EcoRII* will not cleave when the second cytosine in the recognition sequence is methylated to 5-methylcytosine whereas *MvaI* will cleave such a sequence. Isoschizomers of *EcoRII* that are like *MvaI* are indicated by +.
7. *MboI* isoschizomers fall into two classes based upon their sensitivity to methylation. *MboI* will not cleave when the recognition sequence contains 6-methyladenosine whereas *Sau3AI* will not cleave when its recognition sequence contains 5-methylcytosine. Isoschizomers of *MboI* that are like *Sau3AI* are indicated by +.
8. *TaqII* differs from other restriction enzymes in recognizing two distinct sequences: GACCGA(11/9) and CACCCA(11/9).

Alphabetical listing of Type II restriction enzymes

known recognition sequences

<i>Aa</i> I (<i>Xma</i> III)	<i>Aac</i> I (<i>Bam</i> HI)	<i>Aae</i> I (<i>Bam</i> HI)	<i>Aag</i> I (<i>Cla</i> I)
<i>Aat</i> I (<i>Stu</i> I)	<i>Aat</i> II	<i>Abr</i> I (<i>Xho</i> I)	<i>Aca</i> I (<i>Asu</i> II)
<i>Aca</i> II (<i>Bam</i> HI)	<i>Aca</i> III (<i>Mst</i> I)	<i>Aca</i> IV (<i>Hae</i> III)	<i>Acc</i> I
<i>Acc</i> II (<i>Fnu</i> DII)	<i>Acc</i> III (<i>Bsp</i> MII)	<i>Acc</i> 38I (<i>Eco</i> RII)	<i>Acc</i> 65I (<i>Kpn</i> I)
<i>Acc</i> B1I (<i>Hgi</i> CI)	<i>Acc</i> B7I (<i>Pfi</i> MI)	<i>Acc</i> EBI (<i>Bam</i> HI)	<i>Acr</i> I (<i>Ava</i> I)
<i>Acr</i> II (<i>Bst</i> EII)	<i>Acy</i> I	<i>Aeu</i> I (<i>Eco</i> RII)	<i>Afa</i> I (<i>Rsa</i> I)
<i>Afl</i> I (<i>Ava</i> II)	<i>Afl</i> III	<i>Afl</i> III	<i>Age</i> I
<i>Aha</i> I (<i>Cau</i> II)	<i>Aha</i> II (<i>Acy</i> I)	<i>Aha</i> III	<i>Aha</i> B1I (<i>Asu</i> I)
<i>Aha</i> B8I (<i>Kpn</i> I)	<i>Ahy</i> I (<i>Sma</i> I)	<i>Ain</i> I (<i>Pst</i> I)	<i>Ain</i> II (<i>Bam</i> HI)
<i>Ait</i> I (<i>Eco</i> 47III)	<i>Ait</i> II (<i>Xho</i> II)	<i>Ait</i> AI (<i>Xho</i> II)	<i>Ali</i> I (<i>Bam</i> HI)
<i>Ali</i> 2882I (<i>Pst</i> I)	<i>Ali</i> 12257I (<i>Bam</i> HI)	<i>Ali</i> 12258I (<i>Bam</i> HI)	<i>Ali</i> AJ1 (<i>Pst</i> I)
<i>Alu</i> I	<i>Alw</i> I (<i>Bin</i> I)	<i>Alw</i> 21I (<i>Hgi</i> AI)	<i>Alw</i> 26I (<i>Bsm</i> AI)
<i>Alw</i> 44I (<i>Apa</i> LI)	<i>Alw</i> NI	<i>Alw</i> XI (<i>Bbv</i> I)	<i>Ama</i> I (<i>Nru</i> I)
<i>Ama</i> 87I (<i>Ava</i> I)	<i>Ame</i> I (<i>Apa</i> LI)	<i>Ame</i> II (<i>Nae</i> I)	<i>Ani</i> MI (<i>Nae</i> I)
<i>Aoc</i> I (<i>Sau</i> I)	<i>Aoc</i> II (<i>Sdu</i> I)	<i>Aor</i> I (<i>Eco</i> RII)	<i>Aos</i> I (<i>Mst</i> I)
<i>Aos</i> II (<i>Acy</i> I)	<i>Aos</i> III (<i>Sac</i> II)	<i>Apa</i> I	<i>Apa</i> LI
<i>Ape</i> I (<i>Mlu</i> I)	<i>Ape</i> AI (<i>Nae</i> I)	<i>Apr</i> I (<i>Nae</i> I)	<i>Apu</i> I (<i>Asu</i> I)
<i>Apu</i> 16I (<i>Cla</i> I)	<i>Apy</i> I (<i>Eco</i> RII)	<i>Aqu</i> I (<i>Ava</i> I)	<i>Ase</i> I (<i>Vsp</i> I)
<i>Ase</i> II (<i>Cau</i> II)	<i>Asn</i> I (<i>Vsp</i> I)	<i>Asp</i> I (<i>Tih</i> 111I)	<i>Asp</i> 1I (<i>Cau</i> II)
<i>Asp</i> 36I (<i>Pst</i> I)	<i>Asp</i> 47I (<i>Xho</i> I)	<i>Asp</i> 52I (<i>Hind</i> III)	<i>Asp</i> 78I (<i>Stu</i> I)
<i>Asp</i> 697I (<i>Ava</i> II)	<i>Asp</i> 700I (<i>Xmn</i> I)	<i>Asp</i> 703I (<i>Xho</i> I)	<i>Asp</i> 707I (<i>Cla</i> I)
<i>Asp</i> 708I (<i>Pst</i> I)	<i>Asp</i> 713I (<i>Pst</i> I)	<i>Asp</i> 718I (<i>Kpn</i> I)	<i>Asp</i> 742I (<i>Hae</i> III)
<i>Asp</i> 745I (<i>Ava</i> II)	<i>Asp</i> 748I (<i>Hpa</i> II)	<i>Asp</i> 763I (<i>Scal</i> I)	<i>Asp</i> 3065I (<i>Hind</i> III)
<i>Asp</i> AI (<i>Bst</i> EII)	<i>Asp</i> BI (<i>Ava</i> I)	<i>Asp</i> BII (<i>Ava</i> II)	<i>Asp</i> CI (<i>Ava</i> I)
<i>Asp</i> CII (<i>Ava</i> II)	<i>Asp</i> DI (<i>Ava</i> I)	<i>Asp</i> DII (<i>Ava</i> II)	<i>Asp</i> HI (<i>Hgi</i> AI)
<i>Asp</i> NI (<i>Nla</i> IV)	<i>Asp</i> TI (<i>Pst</i> I)	<i>Asp</i> TII (<i>Bam</i> HI)	<i>Asp</i> TIII (<i>Hae</i> III)
<i>Ast</i> WI (<i>Acy</i> I)	<i>Asu</i> I	<i>Asu</i> II	<i>Asu</i> III (<i>Acy</i> I)
<i>Atu</i> II (<i>Eco</i> RII)	<i>Atu</i> 1I (<i>Eco</i> RII)	<i>Atu</i> BI (<i>Eco</i> RII)	<i>Atu</i> CI (<i>Bcl</i> II)
<i>Ava</i> I	<i>Ava</i> II	<i>Ava</i> III	<i>Avi</i> I (<i>Asu</i> II)
<i>Avi</i> II (<i>Mst</i> I)	<i>Avr</i> I (<i>Ava</i> I)	<i>Avr</i> II	<i>Axy</i> I (<i>Sau</i> I)
<i>Bac</i> I (<i>Sac</i> II)	<i>Bac</i> 36I (<i>Asu</i> I)	<i>Bac</i> 465I (<i>Sac</i> II)	<i>Bad</i> I (<i>Xho</i> I)
<i>Bal</i> I	<i>Bal</i> 228I (<i>Asu</i> I)	<i>Bal</i> 475I (<i>Hae</i> III)	<i>Bal</i> 3006 (<i>Hae</i> III)
<i>Bam</i> FI (<i>Bam</i> HI)	<i>Bam</i> HI	<i>Bam</i> KI (<i>Bam</i> HI)	<i>Bam</i> NI (<i>Bam</i> HI)
<i>Bam</i> NxI (<i>Ava</i> II)	<i>Ban</i> I (<i>Hgi</i> CI)	<i>Ban</i> II (<i>Hgi</i> III)	<i>Ban</i> III (<i>Cla</i> I)
<i>Bav</i> I (<i>Pvu</i> II)	<i>Bav</i> AI (<i>Pvu</i> II)	<i>Bav</i> AII (<i>Asu</i> I)	<i>Bbe</i> I (<i>Nar</i> I)
<i>Bbe</i> AI (<i>Nar</i> I)	<i>Bbf</i> I (<i>Xho</i> I)	<i>Bbf</i> 7411I (<i>Bsp</i> MII)	<i>Bbi</i> I (<i>Pst</i> I)
<i>Bbi</i> II (<i>Acy</i> I)	<i>Bbi</i> III (<i>Xho</i> I)	<i>Bbr</i> I (<i>Hind</i> III)	<i>Bbr</i> PI (<i>Pma</i> CI)
<i>Bbs</i> I (<i>Bbv</i> II)	<i>Bbu</i> I (<i>Sph</i> I)	<i>Bbv</i> I	<i>Bbv</i> II
<i>Bbv</i> 12I (<i>Hgi</i> AI)	<i>Bbv</i> 16I (<i>Bbv</i> II)	<i>Bbv</i> AI (<i>Xmn</i> I)	<i>Bbv</i> AII (<i>Cla</i> I)
<i>Bbv</i> AIII (<i>Bsp</i> MII)	<i>Bca</i> I (<i>Hha</i> I)	<i>Bca</i> 1259I (<i>Bam</i> HI)	<i>Bce</i> 22I (<i>Asu</i> I)
<i>Bce</i> 11I (<i>Hae</i> III)	<i>Bce</i> 170I (<i>Pst</i> I)	<i>Bce</i> 243I (<i>Mbo</i> I)	<i>Bce</i> 751I (<i>Bam</i> HI)

<i>BceFI</i> (<i>FnuDII</i>)	<i>BceRI</i> (<i>FnuDII</i>)	<i>Bcefl</i>	<i>BcgI</i>
<i>BcII</i>	<i>BcmI</i> (<i>Clal</i>)	<i>Bcni</i> (<i>CauII</i>)	<i>BcoI</i> (<i>AvaI</i>)
<i>Bco33I</i> (<i>HaeIII</i>)	<i>Bco35I</i> (<i>GsuI</i>)	<i>Bco10278I</i> (<i>BamHI</i>)	<i>BcoAI</i> (<i>PmaCI</i>)
<i>BcrI</i> (<i>NlaIV</i>)	<i>BdiI</i> (<i>Clal</i>)	<i>BdiSI</i> (<i>SfeI</i>)	<i>BepI</i> (<i>FnuDII</i>)
<i>Bfi458I</i> (<i>HaeIII</i>)	<i>BfrI</i> (<i>AflI</i>)	<i>BglI</i>	<i>BglII</i>
<i>Bim19I</i> (<i>AsuII</i>)	<i>Bim19II</i> (<i>HaeIII</i>)	<i>BinI</i>	<i>BinSI</i> (<i>EcoRII</i>)
<i>BinSII</i> (<i>NarI</i>)	<i>Bka1125I</i> (<i>SduI</i>)	<i>Bla7920I</i> (<i>BspMII</i>)	<i>BliI</i> (<i>HaeIII</i>)
<i>Bli41I</i> (<i>Clal</i>)	<i>Bli49I</i> (<i>Eco31I</i>)	<i>Bli86I</i> (<i>Clal</i>)	<i>BliRI</i> (<i>Clal</i>)
<i>BluI</i> (<i>XhoI</i>)	<i>BluII</i> (<i>HaeIII</i>)	<i>BmaI</i> (<i>PvuI</i>)	<i>BmaAI</i> (<i>PvuI</i>)
<i>BmaBI</i> (<i>PvuI</i>)	<i>BmaCI</i> (<i>PvuI</i>)	<i>BmaDI</i> (<i>PvuI</i>)	<i>Bme12I</i> (<i>MboI</i>)
<i>Bme18I</i> (<i>AvaII</i>)	<i>Bme142I</i> (<i>HaeII</i>)	<i>Bme216I</i> (<i>AvaII</i>)	<i>BmyI</i> (<i>SduI</i>)
<i>BnaI</i> (<i>BamHI</i>)	<i>BpeI</i> (<i>HindIII</i>)	<i>BpuI</i> (<i>HgiII</i>)	<i>Bpu10I</i>
<i>Bpu14I</i> (<i>AsuII</i>)	<i>Bpu95I</i> (<i>FnuDII</i>)	<i>BsaI</i> (<i>Eco31I</i>)	<i>BsaAI</i>
<i>BsaBI</i>	<i>BsaJI</i> (<i>SecI</i>)	<i>BsaPI</i> (<i>MboI</i>)	<i>Bscl</i> (<i>Clal</i>)
<i>BscAI</i> (<i>SfaNI</i>)	<i>BseI</i> (<i>HaeIII</i>)	<i>BseII</i> (<i>HpaI</i>)	<i>Bse21I</i> (<i>SauI</i>)
<i>BseAI</i> (<i>BspMII</i>)	<i>BsePI</i>	<i>BshI</i> (<i>HaeIII</i>)	<i>BshAI</i> (<i>HaeIII</i>)
<i>BshBI</i> (<i>HaeIII</i>)	<i>BshCI</i> (<i>HaeIII</i>)	<i>BshDI</i> (<i>HaeIII</i>)	<i>BshEI</i> (<i>HaeIII</i>)
<i>BshFI</i> (<i>HaeIII</i>)	<i>BshGI</i> (<i>EcoRII</i>)	<i>BshKI</i> (<i>AsuI</i>)	<i>BsiI</i>
<i>BsiAI</i> (<i>HaeIII</i>)	<i>BsiCI</i> (<i>AsuII</i>)	<i>BsiDI</i> (<i>HaeIII</i>)	<i>BsiHI</i> (<i>HaeIII</i>)
<i>BsiKI</i> (<i>BstEII</i>)	<i>BsiLI</i> (<i>EcoRII</i>)	<i>BsiMI</i> (<i>BspMII</i>)	<i>BsiOI</i> (<i>BspMII</i>)
<i>BsiQI</i> (<i>BclI</i>)	<i>BsiSI</i> (<i>HpaII</i>)	<i>BsmI</i>	<i>BsmAI</i>
<i>BsoPI</i> (<i>BsePI</i>)	<i>Bsp2I</i> (<i>Clal</i>)	<i>Bsp4I</i> (<i>Clal</i>)	<i>Bsp5I</i> (<i>HpaII</i>)
<i>Bsp6I</i> (<i>Fnu4HI</i>)	<i>Bsp6II</i> (<i>Eco57I</i>)	<i>Bsp7I</i> (<i>CauII</i>)	<i>Bsp8I</i> (<i>CauII</i>)
<i>Bsp9I</i> (<i>MboI</i>)	<i>Bsp12I</i> (<i>SacII</i>)	<i>Bsp13I</i> (<i>BspMII</i>)	<i>Bsp16I</i> (<i>EcoRV</i>)
<i>Bsp17I</i> (<i>PstI</i>)	<i>Bsp18I</i> (<i>MboI</i>)	<i>Bsp19I</i> (<i>NcoI</i>)	<i>Bsp21I</i> (<i>Cfr10I</i>)
<i>Bsp22I</i> (<i>GsuI</i>)	<i>Bsp28I</i> (<i>GsuI</i>)	<i>Bsp29I</i> (<i>NlaIV</i>)	<i>Bsp30I</i> (<i>BamHI</i>)
<i>Bsp43I</i> (<i>PstI</i>)	<i>Bsp46I</i> (<i>BamHI</i>)	<i>Bsp47I</i> (<i>HpaII</i>)	<i>Bsp48I</i> (<i>HpaII</i>)
<i>Bsp49I</i> (<i>MboI</i>)	<i>Bsp50I</i> (<i>FnuDII</i>)	<i>Bsp51I</i> (<i>MboI</i>)	<i>Bsp52I</i> (<i>MboI</i>)
<i>Bsp53I</i> (<i>ScrFI</i>)	<i>Bsp54I</i> (<i>MboI</i>)	<i>Bsp55I</i> (<i>CauII</i>)	<i>Bsp56I</i> (<i>EcoRII</i>)
<i>Bsp57I</i> (<i>MboI</i>)	<i>Bsp58I</i> (<i>MboI</i>)	<i>Bsp59I</i> (<i>MboI</i>)	<i>Bsp60I</i> (<i>MboI</i>)
<i>Bsp61I</i> (<i>MboI</i>)	<i>Bsp63I</i> (<i>PstI</i>)	<i>Bsp64I</i> (<i>MboI</i>)	<i>Bsp65I</i> (<i>MboI</i>)
<i>Bsp66I</i> (<i>MboI</i>)	<i>Bsp67I</i> (<i>MboI</i>)	<i>Bsp68I</i> (<i>NruI</i>)	<i>Bsp70I</i> (<i>FnuDII</i>)
<i>Bsp71I</i> (<i>HaeIII</i>)	<i>Bsp72I</i> (<i>MboI</i>)	<i>Bsp73I</i> (<i>ScrFI</i>)	<i>Bsp74I</i> (<i>MboI</i>)
<i>Bsp76I</i> (<i>MboI</i>)	<i>Bsp78I</i> (<i>PstI</i>)	<i>Bsp81I</i> (<i>PstI</i>)	<i>Bsp82I</i> (<i>AsuII</i>)
<i>Bsp84I</i> (<i>Clal</i>)	<i>Bsp87I</i> (<i>PmaCI</i>)	<i>Bsp91I</i> (<i>MboI</i>)	<i>Bsp92I</i> (<i>XhoI</i>)
<i>Bsp93I</i> (<i>PstI</i>)	<i>Bsp98I</i> (<i>BamHI</i>)	<i>Bsp100I</i> (<i>AvaII</i>)	<i>Bsp103I</i> (<i>EcoRII</i>)
<i>Bsp105I</i> (<i>MboI</i>)	<i>Bsp106I</i> (<i>Clal</i>)	<i>Bsp107I</i> (<i>PstI</i>)	<i>Bsp108I</i> (<i>PstI</i>)
<i>Bsp116I</i> (<i>HpaII</i>)	<i>Bsp117I</i> (<i>HgiII</i>)	<i>Bsp119I</i> (<i>AsuII</i>)	<i>Bsp120I</i> (<i>ApaI</i>)
<i>Bsp121I</i> (<i>SphI</i>)	<i>Bsp122I</i> (<i>MboI</i>)	<i>Bsp211I</i> (<i>HaeIII</i>)	<i>Bsp226I</i> (<i>HaeIII</i>)
<i>Bsp423I</i> (<i>BbvI</i>)	<i>Bsp519I</i> (<i>HgiII</i>)	<i>Bsp1286I</i> (<i>SduI</i>)	<i>Bsp2095I</i> (<i>MboI</i>)
<i>BspAI</i> (<i>MboI</i>)	<i>BspBI</i> (<i>PstI</i>)	<i>BspBII</i> (<i>AsuI</i>)	<i>BspBRI</i> (<i>HaeIII</i>)
<i>BspCI</i>	<i>BspDI</i> (<i>Clal</i>)	<i>BspEI</i> (<i>BspMII</i>)	<i>BspGI</i>
<i>BspHI</i>	<i>BspJ64I</i> (<i>MboI</i>)	<i>BspJ67I</i> (<i>CauII</i>)	<i>BspJ74I</i> (<i>GsuI</i>)
<i>BspJ76I</i> (<i>FnuDII</i>)	<i>BspJ105I</i> (<i>AvaII</i>)	<i>BspJ106I</i> (<i>KpnI</i>)	<i>BspMI</i>
<i>BspMII</i>	<i>BspRI</i> (<i>HaeIII</i>)	<i>BspVI</i> (<i>BbvII</i>)	<i>BspXI</i> (<i>Clal</i>)
<i>BspXII</i> (<i>BclI</i>)	<i>BsrI</i>	<i>BsrHI</i> (<i>BsePI</i>)	<i>BsrPII</i> (<i>MboI</i>)
<i>BssI</i> (<i>NlaIV</i>)	<i>BssCI</i> (<i>HaeIII</i>)	<i>BssGI</i> (<i>BstXI</i>)	<i>BssGII</i> (<i>MboI</i>)
<i>BssHI</i> (<i>XhoI</i>)	<i>BssHII</i> (<i>BsePI</i>)	<i>BssT1I</i> (<i>Styl</i>)	<i>BstI</i> (<i>BamHI</i>)
<i>Bst31I</i> (<i>BstEII</i>)	<i>Bst40I</i> (<i>HpaII</i>)	<i>Bst1126I</i> (<i>BamHI</i>)	<i>Bst2464I</i> (<i>BamHI</i>)
<i>Bst2902I</i> (<i>BamHI</i>)	<i>BstBI</i> (<i>AsuII</i>)	<i>BstCI</i> (<i>HaeIII</i>)	<i>BstDI</i> (<i>BstEII</i>)
<i>BstEII</i>	<i>BstEIII</i> (<i>MboI</i>)	<i>BstFI</i> (<i>HindIII</i>)	<i>BstGI</i> (<i>BclI</i>)
<i>BstGII</i> (<i>EcoRII</i>)	<i>BstHI</i> (<i>XhoI</i>)	<i>BstJI</i> (<i>HaeIII</i>)	<i>BstKI</i> (<i>BclI</i>)
<i>BstLI</i> (<i>XhoI</i>)	<i>BstMI</i> (<i>ScaI</i>)	<i>BstNI</i> (<i>EcoRII</i>)	<i>BstOI</i> (<i>EcoRII</i>)
<i>BstPI</i> (<i>BstEII</i>)	<i>BstQI</i> (<i>BamHI</i>)	<i>BstRI</i> (<i>EcoRV</i>)	<i>BstSI</i> (<i>AvaI</i>)
<i>BstTI</i> (<i>BstXI</i>)	<i>BstUI</i> (<i>FnuDII</i>)	<i>BstVI</i> (<i>XhoI</i>)	<i>BstWI</i> (<i>EcoNI</i>)
<i>BstXI</i>	<i>BstXII</i> (<i>MboI</i>)	<i>BstYI</i> (<i>XhoII</i>)	<i>BstZI</i> (<i>XmaIII</i>)
<i>Bsu15I</i> (<i>Clal</i>)	<i>Bsu22I</i> (<i>BspMII</i>)	<i>Bsu36I</i> (<i>SauI</i>)	<i>Bsu90I</i> (<i>BamHI</i>)
<i>Bsu1076I</i> (<i>HaeIII</i>)	<i>Bsu1114I</i> (<i>HaeIII</i>)	<i>Bsu1192I</i> (<i>HpaII</i>)	<i>Bsu1192II</i> (<i>FnuDII</i>)
<i>Bsu1193I</i> (<i>FnuDII</i>)	<i>Bsu1532I</i> (<i>FnuDII</i>)	<i>Bsu1854I</i> (<i>HgiII</i>)	<i>Bsu6633I</i> (<i>FnuDII</i>)
<i>Bsu8565I</i> (<i>BamHI</i>)	<i>Bsu8646I</i> (<i>BamHI</i>)	<i>BsuBI</i> (<i>PstI</i>)	<i>BsuEII</i> (<i>FnuDII</i>)
<i>BsuFI</i> (<i>HpaII</i>)	<i>BsuMI</i> (<i>XhoI</i>)	<i>BsuRI</i> (<i>HaeIII</i>)	<i>Btcl</i> (<i>MboI</i>)
<i>BteI</i> (<i>HaeIII</i>)	<i>BthI</i> (<i>XhoI</i>)	<i>BthII</i> (<i>BinI</i>)	<i>BtiI</i> (<i>AvaII</i>)
<i>BtuI</i> (<i>Clal</i>)	<i>BvuI</i> (<i>HgiII</i>)	<i>CacI</i> (<i>MboI</i>)	<i>Caul</i> (<i>AvaII</i>)
<i>CauII</i>	<i>CauIII</i> (<i>PstI</i>)	<i>CauB3I</i> (<i>BspMII</i>)	<i>CcrI</i> (<i>XhoI</i>)
<i>Ccyl</i> (<i>MboI</i>)	<i>Cdi27I</i> (<i>EcoRII</i>)	<i>Cell</i> (<i>BamHI</i>)	<i>CellI</i> (<i>EspI</i>)
<i>CeqI</i> (<i>EcoRV</i>)	<i>CflI</i> (<i>PstI</i>)	<i>Cfol</i> (<i>HhaI</i>)	<i>CfrI</i>
<i>Cfr4I</i> (<i>AsuI</i>)	<i>Cfr5I</i> (<i>EcoRII</i>)	<i>Cfr6I</i> (<i>PvuII</i>)	<i>Cfr7I</i> (<i>BstEII</i>)
<i>Cfr8I</i> (<i>AsuI</i>)	<i>Cfr9I</i> (<i>SmaI</i>)	<i>Cfr10I</i>	<i>Cfr11I</i> (<i>EcoRII</i>)
<i>Cfr13I</i> (<i>AsuI</i>)	<i>Cfr14I</i> (<i>CfrI</i>)	<i>Cfr19I</i> (<i>BstEII</i>)	<i>Cfr20I</i> (<i>EcoRII</i>)

<i>Cfr22I (EcoRII)</i>	<i>Cfr23I (AsuI)</i>	<i>Cfr24I (EcoRII)</i>	<i>Cfr25I (EcoRII)</i>
<i>Cfr27I (EcoRII)</i>	<i>Cfr28I (EcoRII)</i>	<i>Cfr29I (EcoRII)</i>	<i>Cfr30I (EcoRII)</i>
<i>Cfr31I (EcoRII)</i>	<i>Cfr32I (HindIII)</i>	<i>Cfr33I (AsuI)</i>	<i>Cfr35I (EcoRII)</i>
<i>Cfr37I (SacII)</i>	<i>Cfr38I (CfrI)</i>	<i>Cfr39I (CfrI)</i>	<i>Cfr40I (CfrI)</i>
<i>Cfr41I (SacII)</i>	<i>Cfr42I (SacII)</i>	<i>Cfr43I (SacII)</i>	<i>Cfr45I (AsuI)</i>
<i>Cfr45II (SacII)</i>	<i>Cfr46I (AsuI)</i>	<i>Cfr47I (AsuI)</i>	<i>Cfr48I (HgiIII)</i>
<i>Cfr51I (PvuI)</i>	<i>Cfr52I (AsuI)</i>	<i>Cfr54I (AsuI)</i>	<i>CfrA4I (PstI)</i>
<i>CfrJ4I (SmaI)</i>	<i>CfrNI (AsuI)</i>	<i>CfrS37I (EcoRII)</i>	<i>CfuI (DpnI)</i>
<i>CfuII (PstI)</i>	<i>ChuI (HindIII)</i>	<i>ChuII (HindII)</i>	<i>ChyI (StuI)</i>
<i>Cin1467I (MboI)</i>	<i>CjaI (XhoI)</i>	<i>Clal</i>	<i>ClcI (PstI)</i>
<i>ClcII (MstI)</i>	<i>Clil (AvaII)</i>	<i>ClilI (MstI)</i>	<i>Clml (HaeIII)</i>
<i>ClmlI (AvaII)</i>	<i>Cltl (HaeIII)</i>	<i>CpaI (MboI)</i>	<i>Cpa1150I (FnuDII)</i>
<i>CpaAI (FnuDII)</i>	<i>CpeI (BclI)</i>	<i>Cpfl (MboI)</i>	<i>CpoI (RsrII)</i>
<i>CscI (SacII)</i>	<i>CspI (RsrII)</i>	<i>Csp2I (HaeIII)</i>	<i>Csp4I (Clal)</i>
<i>Csp5I (MboI)</i>	<i>Csp6I (RsaI)</i>	<i>Csp45I (AsuI)</i>	<i>Csp1470I (HhaI)</i>
<i>CstI (PstI)</i>	<i>Cte1179I (MboI)</i>	<i>Cte1180 (MboI)</i>	<i>CthI (BclI)</i>
<i>CthII (EcoRII)</i>	<i>CtyI (MboI)</i>	<i>CviAI (MboI)</i>	<i>CviBI (HinfI)</i>
<i>CviCI (HinfI)</i>	<i>CviDI (HinfI)</i>	<i>CviEI (HinfI)</i>	<i>CviFI (HinfI)</i>
<i>CviGI (HinfI)</i>	<i>CviHI (MboI)</i>	<i>CviJI</i>	<i>CviKI (CviJI)</i>
<i>CviLI (CviJI)</i>	<i>CviMI (CviJI)</i>	<i>CviNI (CviJI)</i>	<i>CviOI (CviJI)</i>
<i>CviQI (RsaI)</i>	<i>CvnI (Saul)</i>	<i>DdeI</i>	<i>DdeII (XhoI)</i>
<i>DdsI (BamHI)</i>	<i>DpnI</i>	<i>DpnII (MboI)</i>	<i>DraI (AhaIII)</i>
<i>DraII</i>	<i>DraIII</i>	<i>DrdI</i>	<i>DrdII</i>
<i>DrdIII (PvuI)</i>	<i>DrdAI (SacII)</i>	<i>DrdBI (SacII)</i>	<i>DrdCI (SacII)</i>
<i>DrdDI (XhoI)</i>	<i>DrdEI (SacII)</i>	<i>DrdFI (SacII)</i>	<i>DsaI</i>
<i>DsaII (HaeIII)</i>	<i>DsaIII (XhoII)</i>	<i>DsaIV (AvaII)</i>	<i>DsaV (ScrFI)</i>
<i>DsaVI (AccI)</i>	<i>DspII (SacII)</i>	<i>EaeI (CfrI)</i>	<i>Eae46I (SacII)</i>
<i>EaePI (PstI)</i>	<i>EagI (XmaIII)</i>	<i>EagKI (EcoRII)</i>	<i>EagMI (AvaII)</i>
<i>EarI (Ksp632I)</i>	<i>Ecal (BstEII)</i>	<i>EcalI (EcoRII)</i>	<i>EccI (SacII)</i>
<i>EciI</i>	<i>EciAI (SnaBI)</i>	<i>EciBI (CfrI)</i>	<i>EciCI (Saul)</i>
<i>EciDI (CauII)</i>	<i>EciEI (ApaI)</i>	<i>EclI (PvuII)</i>	<i>EclII (EcoRII)</i>
<i>Ecl28I (SacII)</i>	<i>Ecl37I (SacII)</i>	<i>Ecl66I (EcoRII)</i>	<i>Ecl77I (PstI)</i>
<i>Ecl133I (PstI)</i>	<i>Ecl136I (EcoRII)</i>	<i>Ecl136II (SacI)</i>	<i>Ecl137I (SacI)</i>
<i>Ecl137II (EcoRII)</i>	<i>Ecl593I (PstI)</i>	<i>EclJI (PvuI)</i>	<i>EclRI (SmaI)</i>
<i>EclS39I (EcoRII)</i>	<i>EclXI (XmaIII)</i>	<i>EcoVIII (HindIII)</i>	<i>Eco24I (HgiIII)</i>
<i>Eco25I (HgiIII)</i>	<i>Eco26I (HgiIII)</i>	<i>Eco31I</i>	<i>Eco32I (EcoRV)</i>
<i>Eco35I (HgiIII)</i>	<i>Eco38I (EcoRII)</i>	<i>Eco39I (AsuI)</i>	<i>Eco40I (EcoRII)</i>
<i>Eco41I (EcoRII)</i>	<i>Eco42I (Eco31I)</i>	<i>Eco43I (ScrFI)</i>	<i>Eco47I (AvaII)</i>
<i>Eco47II (AsuI)</i>	<i>Eco47III</i>	<i>Eco48I (PstI)</i>	<i>Eco49I (PstI)</i>
<i>Eco50I (HgiCI)</i>	<i>Eco51I (Eco31I)</i>	<i>Eco51II (ScrFI)</i>	<i>Eco52I (XmaIII)</i>
<i>Eco55I (SacII)</i>	<i>Eco56I (NaeI)</i>	<i>Eco57I</i>	<i>Eco60I (EcoRII)</i>
<i>Eco61I (EcoRII)</i>	<i>Eco64I (HgiCI)</i>	<i>Eco65I (HindIII)</i>	<i>Eco67I (EcoRII)</i>
<i>Eco68I (HgiIII)</i>	<i>Eco70I (EcoRII)</i>	<i>Eco71I (EcoRII)</i>	<i>Eco72I (PmaCI)</i>
<i>Eco76I (Saul)</i>	<i>Eco78I (NarI)</i>	<i>Eco80I (ScrFI)</i>	<i>Eco81I (Saul)</i>
<i>Eco82I (EcoRI)</i>	<i>Eco83I (PstI)</i>	<i>Eco85I (ScrFI)</i>	<i>Eco88I (AvaI)</i>
<i>Eco90I (CfrI)</i>	<i>Eco91I (BstEII)</i>	<i>Eco92I (SacII)</i>	<i>Eco93I (ScrFI)</i>
<i>Eco95I (Eco31I)</i>	<i>Eco96I (SacII)</i>	<i>Eco97I (Eco31I)</i>	<i>Eco98I (HindIII)</i>
<i>Eco99I (SacII)</i>	<i>Eco100I (SacII)</i>	<i>Eco101I (Eco31I)</i>	<i>Eco104I (SacII)</i>
<i>Eco105I (SnaBI)</i>	<i>Eco113I (HgiIII)</i>	<i>Eco115I (Saul)</i>	<i>Eco118I (Saul)</i>
<i>Eco120I (Eco31I)</i>	<i>Eco121I (CauII)</i>	<i>Eco125I (Eco57I)</i>	<i>Eco127I (Eco31I)</i>
<i>Eco128I (EcoRII)</i>	<i>Eco129I (Eco31I)</i>	<i>Eco130I (SryI)</i>	<i>Eco134I (SacII)</i>
<i>Eco135I (SacII)</i>	<i>Eco143I (BsePI)</i>	<i>Eco147I (StuI)</i>	<i>Eco149I (KpnI)</i>
<i>Eco153I (ScrFI)</i>	<i>Eco155I (Eco31I)</i>	<i>Eco156I (Eco31I)</i>	<i>Eco157I (Eco31I)</i>
<i>Eco158I (SacII)</i>	<i>Eco158II (SnaBI)</i>	<i>Eco159I (EcoRI)</i>	<i>Eco161I (PstI)</i>
<i>Eco162I (Eco31I)</i>	<i>Eco164I (CfrI)</i>	<i>Eco167I (PstI)</i>	<i>Eco168I (HgiCI)</i>
<i>Eco169I (HgiCI)</i>	<i>Eco170I (EcoRII)</i>	<i>Eco171I (HgiCI)</i>	<i>Eco173I (HgiCI)</i>
<i>Eco178I (EcoRV)</i>	<i>Eco179I (CauII)</i>	<i>Eco180I (HgiIII)</i>	<i>Eco182I (SacII)</i>
<i>Eco185I (Eco31I)</i>	<i>Eco188I (HindIII)</i>	<i>Eco190I (CauII)</i>	<i>Eco191I (Eco31I)</i>
<i>Eco193I (EcoRII)</i>	<i>Eco195I (HgiCI)</i>	<i>Eco196I (SacII)</i>	<i>Eco196II (AsuI)</i>
<i>Eco200I (ScrFI)</i>	<i>Eco201I (AsuI)</i>	<i>Eco203I (Eco31I)</i>	<i>Eco204I (Eco31I)</i>
<i>Eco205I (Eco31I)</i>	<i>Eco206I (EcoRII)</i>	<i>Eco207I (EcoRII)</i>	<i>Eco208I (SacII)</i>
<i>Eco208II (SryI)</i>	<i>Eco211I (HgiIII)</i>	<i>Eco215I (HgiIII)</i>	<i>Eco216I (HgiIII)</i>
<i>Eco217I (Eco31I)</i>	<i>Eco225I (Eco31I)</i>	<i>Eco228I (EcoRI)</i>	<i>Eco231I (HindIII)</i>
<i>Eco232I (HgiIII)</i>	<i>Eco233I (Eco31I)</i>	<i>Eco237I (EcoRI)</i>	<i>Eco239I (Eco31I)</i>
<i>Eco240I (Eco31I)</i>	<i>Eco241I (Eco31I)</i>	<i>Eco246I (Eco31I)</i>	<i>Eco247I (Eco31I)</i>
<i>Eco252I (EcoRI)</i>	<i>EcoA4I (Eco31I)</i>	<i>EcoHI (CfrI)</i>	<i>EcoICRI (SacI)</i>
<i>EcoNI</i>	<i>EcoO65I (BstEII)</i>	<i>EcoO109I (DraII)</i>	<i>EcoRI</i>
<i>EcoRII</i>	<i>EcoRV</i>	<i>EcoT14I (SryI)</i>	<i>EcoT22I (AvaIII)</i>
<i>EcoT38I (HgiIII)</i>	<i>EcoT88I (HgiIII)</i>	<i>EcoT93I (HgiIII)</i>	<i>EcoT95I (HgiIII)</i>

<i>EcoT104I</i> (StyI)	<i>EheI</i> (NarI)	<i>ErhB9I</i> (PvuI)	<i>ErhB9II</i> (StyI)
<i>ErfI</i> (AvaII)	<i>EspI</i>	<i>Esp1I</i> (HgiCI)	<i>Esp2I</i> (EcoRII)
<i>Esp3I</i>	<i>Esp4I</i> (AflII)	<i>Esp5I</i> (NaeI)	<i>Esp5II</i> (PstI)
<i>Esp6I</i> (HgiCI)	<i>Esp7I</i> (BsePI)	<i>Esp8I</i> (BsePI)	<i>Esp9I</i> (HgiCI)
<i>Esp10I</i> (HgiCI)	<i>Esp11I</i> (HgiCI)	<i>Esp12I</i> (HgiCI)	<i>Esp13I</i> (HgiCI)
<i>Esp14I</i> (HgiCI)	<i>Esp15I</i> (HgiCI)	<i>Esp19I</i> (KpnI)	<i>Esp22I</i> (HgiCI)
<i>Esp141I</i> (PstI)	<i>FauI</i>	<i>FbaI</i> (BclI)	<i>FblI</i> (AccI)
<i>FbrI</i> (Fnu4HI)	<i>FdiI</i> (AvaII)	<i>FdiII</i> (MstI)	<i>FinI</i>
<i>FinII</i> (HpaII)	<i>FinSI</i> (HaeIII)	<i>Fnu4HI</i>	<i>FnuAI</i> (HinfI)
<i>FnuAII</i> (MboI)	<i>FnuCI</i> (MboI)	<i>FnuDI</i> (HaeIII)	<i>FnuDII</i>
<i>FnuDIII</i> (HhaI)	<i>FnuEI</i> (MboI)	<i>FokI</i>	<i>FscI</i> (SacII)
<i>FseI</i>	<i>FsfI</i> (Eco57I)	<i>FspI</i> (MstI)	<i>FspII</i> (AsuII)
<i>Fsp1604I</i> (EcoRII)	<i>FspMI</i> (FnuDII)	<i>FspMSI</i> (AvaII)	<i>FsuI</i> (Tth111I)
<i>GaII</i> (SacII)	<i>GceI</i> (SacII)	<i>GceGLI</i> (SacII)	<i>GdiI</i> (StuI)
<i>GdiII</i>	<i>GdoI</i> (BamHI)	<i>GinI</i> (BamHI)	<i>GoxI</i> (BamHI)
<i>GseI</i> (AsuI)	<i>GseII</i> (PstI)	<i>GseIII</i> (BamHI)	<i>GspI</i> (PvuII)
<i>GspAI</i> (AvaII)	<i>GspAII</i> (MstI)	<i>GsuI</i>	<i>HacI</i> (MboI)
<i>HaeI</i>	<i>HaeII</i>	<i>HaeIII</i>	<i>HalB6I</i> (EcoRI)
<i>HalB6II</i> (PstI)	<i>HapII</i> (HpaII)	<i>HgaI</i>	<i>HgiI</i> (AcyI)
<i>HgiAI</i>	<i>HgiBI</i> (AvaII)	<i>HgiCI</i>	<i>HgiCII</i> (AvaII)
<i>HgiCIII</i> (SalI)	<i>HgiDI</i> (AcyI)	<i>HgiDII</i> (SalI)	<i>HgiEI</i> (AvaII)
<i>HgiEII</i>	<i>HgiGI</i> (AcyI)	<i>HgiHI</i> (HgiCI)	<i>HgiHII</i> (AcyI)
<i>HgiHIII</i> (AvaII)	<i>HgiJI</i> (AvaII)	<i>HgiIII</i>	<i>HgiS21I</i> (CauII)
<i>HgiS22I</i> (CauII)	<i>HhaI</i>	<i>HhaII</i> (HinfI)	<i>HhgI</i> (HaeIII)
<i>Hin1I</i> (AcyI)	<i>Hin1II</i> (NlaIII)	<i>Hin2I</i> (HpaII)	<i>Hin3I</i> (CauII)
<i>Hin5I</i> (HpaII)	<i>Hin5II</i> (AsuI)	<i>Hin5III</i> (HindIII)	<i>Hin6I</i> (HhaI)
<i>Hin7I</i> (HhaI)	<i>Hin8I</i> (AcyI)	<i>Hin8II</i> (NlaIII)	<i>Hin173I</i> (HindIII)
<i>Hin1056I</i> (FnuDII)	<i>Hin1076III</i> (HindIII)	<i>Hin1160II</i> (HindII)	<i>Hin1161II</i> (HindII)
<i>HinGUI</i> (HhaI)	<i>HinGUII</i> (FokI)	<i>HinHI</i> (HaeII)	<i>HinJCI</i> (HindII)
<i>HinJCI</i> (HindIII)	<i>HinP1I</i> (HhaI)	<i>HinS1I</i> (HhaI)	<i>HinS2I</i> (HhaI)
<i>HinbIII</i> (HindIII)	<i>HincII</i> (HindII)	<i>HindII</i>	<i>HindIII</i>
<i>HinfI</i>	<i>HinfII</i> (HindIII)	<i>HjaI</i> (EcoRV)	<i>HpaI</i>
<i>HpaII</i>	<i>HphI</i>	<i>Hsp2I</i> (AvaII)	<i>HsuI</i> (HindIII)
<i>IspI</i> (Fnu4HI)	<i>KoxI</i> (BstEII)	<i>KoxII</i> (HgiJII)	<i>Kox165I</i> (EcoRII)
<i>KoYI</i> (SalI)	<i>KpnI</i>	<i>Kpn2I</i> (BspMII)	<i>Kpn10I</i> (EcoRII)
<i>Kpn12I</i> (PstI)	<i>Kpn13I</i> (EcoRII)	<i>Kpn14I</i> (EcoRII)	<i>Kpn16I</i> (EcoRII)
<i>Kpn30I</i> (BsePI)	<i>KpnK14I</i> (KpnI)	<i>KspI</i> (SacII)	<i>Ksp22I</i> (BclI)
<i>Ksp632I</i>	<i>Kzo9I</i> (MboI)	<i>Kzo49I</i> (AvaII)	<i>Lmu60I</i> (SauI)
<i>LpII</i> (ClaI)	<i>LspI</i> (AsuII)	<i>MaeI</i>	<i>MaeII</i>
<i>MaeIII</i>	<i>MamI</i> (BsaBI)	<i>MauI</i> (PstI)	<i>MavI</i> (XhoI)
<i>MboI</i>	<i>MboII</i>	<i>McaI</i> (XhoI)	<i>MchI</i> (NarI)
<i>McrI</i>	<i>MecI</i> (XhoI)	<i>MeuI</i> (MboI)	<i>MfeI</i>
<i>MffI</i> (XhoII)	<i>MfoI</i> (AvaII)	<i>MisI</i> (NaeI)	<i>MjaI</i> (MaeI)
<i>MjaII</i> (AsuI)	<i>MkiI</i> (HindIII)	<i>MkrI</i> (PstI)	<i>MkrAI</i> (MboI)
<i>MlaI</i> (AsuII)	<i>MlaAI</i> (XhoI)	<i>MleI</i> (BamHI)	<i>MliI</i> (AvaII)
<i>MhiI</i> (AluI)	<i>MluI</i>	<i>Mlu23I</i> (BamHI)	<i>Mlu2300I</i> (EcoRII)
<i>MluB2I</i> (NruI)	<i>MlyI</i>	<i>Mly113I</i> (NarI)	<i>MmeI</i>
<i>MmeII</i> (MboI)	<i>MniI</i> (HaeIII)	<i>MniII</i> (HpaII)	<i>MnII</i>
<i>MnnI</i> (HindII)	<i>MnnII</i> (HaeIII)	<i>MnnIV</i> (HhaI)	<i>MnoI</i> (HpaII)
<i>MnoIII</i> (MboI)	<i>MosI</i> (MboI)	<i>MphI</i> (EcoRII)	<i>MpuI</i> (XhoI)
<i>MraI</i> (SacII)	<i>MrhI</i> (XhoI)	<i>MroI</i> (BspMII)	<i>MscI</i> (BalI)
<i>MseI</i>	<i>MsiI</i> (XhoI)	<i>MspI</i> (HpaII)	<i>Msp20I</i> (BalI)
<i>Msp24I</i> (AsuI)	<i>Msp67I</i> (ScrFI)	<i>Msp67II</i> (MboI)	<i>MspAI</i> (AvaII)
<i>MspA1I</i> (NspBII)	<i>MspBI</i> (MboI)	<i>MspB4I</i> (HgiCI)	<i>MspYI</i> (BsaAI)
<i>MstI</i>	<i>MstII</i> (SauI)	<i>MthI</i> (MboI)	<i>Mth1047I</i> (MboI)
<i>MthAI</i> (MboI)	<i>MthTI</i> (AsuI)	<i>MvaI</i> (EcoRII)	<i>MvaAI</i> (FnuDII)
<i>MvnI</i> (FnuDII)	<i>MwoI</i>	<i>MziI</i> (PvuII)	<i>NaeI</i>
<i>NamI</i> (NarI)	<i>NanI</i> (EcoRV)	<i>NanII</i> (DpnI)	<i>NarI</i>
<i>NasI</i> (PstI)	<i>NasBI</i> (BamHI)	<i>NasSI</i> (SacI)	<i>NasWI</i> (NaeI)
<i>NbaI</i> (NaeI)	<i>NbII</i> (PvuI)	<i>NbrI</i> (NaeI)	<i>NcaI</i> (HinfI)
<i>NciI</i> (CauII)	<i>NcoI</i>	<i>NcuI</i> (MboII)	<i>NdaI</i> (NarI)
<i>NdeI</i>	<i>NdeII</i> (MboI)	<i>NfiI</i> (MboI)	<i>NfiAI</i> (EcoRV)
<i>NfiAI</i> (MboI)	<i>NfjBI</i> (MboI)	<i>Ngbl</i> (PstI)	<i>NgoI</i> (HaeII)
<i>NgoII</i> (HaeIII)	<i>NgoIII</i> (SacII)	<i>NgoAIII</i> (SacII)	<i>NgoAIV</i> (NaeI)
<i>NgoBI</i> (HphI)	<i>NgoDI</i> (SacII)	<i>NgoDIII</i> (DpnI)	<i>NgoMI</i> (NaeI)
<i>NgoPII</i> (HaeIII)	<i>NgoPIII</i> (SacII)	<i>NgoSI</i> (HaeIII)	<i>NheI</i>
<i>NlaI</i> (HaeIII)	<i>NlaII</i> (MboI)	<i>NlaIII</i>	<i>NlaIV</i>
<i>NlaDI</i> (MboI)	<i>NlaDII</i> (AsuI)	<i>NlaDIII</i> (SacII)	<i>NlaSI</i> (SacII)
<i>NlaSII</i> (AcyI)	<i>NliI</i> (AvaI)	<i>NliII</i> (AvaII)	<i>NmeCI</i> (MboI)

<i>NmeRI</i> (PvuII)	<i>NmiI</i> (KpnI)	<i>NmuI</i> (NaeI)	<i>NmuAI</i> (AvaI)
<i>NmuAII</i> (AvaII)	<i>NmuDI</i> (DpnI)	<i>NmuEI</i> (DpnI)	<i>NmuEII</i> (AsuI)
<i>NmuFI</i> (NaeI)	<i>NmuSI</i> (AsuI)	<i>NocI</i> (PstI)	<i>NopI</i> (SalI)
<i>NorI</i>	<i>NovII</i> (HinfI)	<i>NphI</i> (MboI)	<i>NruI</i>
<i>NsiI</i> (AvaIII)	<i>NsiAI</i> (MboI)	<i>NsiCI</i> (EcoRV)	<i>NsiHI</i> (HinfI)
<i>NspI</i>	<i>NspII</i> (SduI)	<i>NspIII</i> (AvaI)	<i>NspIV</i> (AsuI)
<i>NspV</i> (AsuII)	<i>NspAI</i> (MboI)	<i>NspBI</i> (AsuII)	<i>NspBII</i>
<i>NspDI</i> (AvaI)	<i>NspDII</i> (AvaII)	<i>NspEI</i> (AvaI)	<i>NspFI</i> (AsuII)
<i>NspGI</i> (AvaII)	<i>NspHI</i> (NspI)	<i>NspHII</i> (AvaII)	<i>NspHIII</i> (MstI)
<i>NspJI</i> (AsuII)	<i>NspKI</i> (AvaII)	<i>NspLI</i> (MstI)	<i>NspLII</i> (AsuI)
<i>NspMI</i> (MstI)	<i>NspMACI</i> (BglII)	<i>NspSAI</i> (AvaI)	<i>NspSAII</i> (BstEII)
<i>NspSAIII</i> (NcoI)	<i>NspSAIV</i> (BamHI)	<i>NspWI</i> (NaeI)	<i>NsuI</i> (MboI)
<i>NsuDI</i> (DpnI)	<i>NtaI</i> (Tth111I)	<i>NtaSI</i> (StuI)	<i>NtaSII</i> (NaeI)
<i>NunII</i> (NarI)	<i>OcoI</i> (XhoI)	<i>OtuI</i> (AluI)	<i>OtuNI</i> (AluI)
<i>OxaI</i> (AluI)	<i>OxaNI</i> (SauI)	<i>PaeI</i> (SphI)	<i>Pae177I</i> (BamHI)
<i>Pae181I</i> (CauII)	<i>PaeAI</i> (SacII)	<i>PaeBI</i> (SmaI)	<i>Paer7I</i> (XhoI)
<i>PaII</i> (HaeIII)	<i>PalI</i> (HaeIII)	<i>PanI</i> (XhoI)	<i>Pde12I</i> (AsuI)
<i>Pde133I</i> (HaeIII)	<i>Pde137I</i> (HpaII)	<i>Pei9403I</i> (MboI)	<i>PfaI</i> (MboI)
<i>PflAI</i> (FnuDII)	<i>PflMI</i>	<i>PflNI</i> (XhoI)	<i>PflWI</i> (XhoI)
<i>PfuI</i> (SphI)	<i>PglI</i> (NaeI)	<i>PglB4I</i> (ClaI)	<i>PleI</i>
<i>Ple19I</i> (PvuI)	<i>PmaI</i> (PstI)	<i>Pma44I</i> (PstI)	<i>PmaCI</i>
<i>Pme55I</i> (StuI)	<i>PmII</i> (PmaCI)	<i>PmyI</i> (PstI)	<i>PovI</i> (BclI)
<i>PpaI</i> (Eco31I)	<i>Pph3215I</i> (HgiAI)	<i>PpuI</i> (HaeIII)	<i>PpuMI</i>
<i>PseI</i> (AsuI)	<i>PshAI</i>	<i>PspI</i> (AsuI)	<i>Psp61I</i> (NaeI)
<i>PssI</i> (DraII)	<i>PstI</i>	<i>Psu161I</i> (PvuI)	<i>PvuI</i>
<i>PvuII</i>	<i>PvuHKUI</i> (PvuII)	<i>RffFI</i> (SalI)	<i>RheI</i> (SalI)
<i>RhpI</i> (SalI)	<i>RhsI</i> (BamHI)	<i>RleAI</i>	<i>RluI</i> (NaeI)
<i>Rlu1I</i> (MboI)	<i>Rlu3I</i> (NlaIV)	<i>Rlu4I</i> (BamHI)	<i>RrhI</i> (SalI)
<i>RroI</i> (SalI)	<i>RsaI</i>	<i>RshI</i> (PvuI)	<i>RshII</i> (CauII)
<i>RspI</i> (PvuI)	<i>RspXI</i> (BspHI)	<i>RsrI</i> (EcoRI)	<i>RsrII</i>
<i>SaaI</i> (SacII)	<i>SabI</i> (SacII)	<i>SacI</i>	<i>SacII</i>
<i>SacAI</i> (NaeI)	<i>SakI</i> (SacII)	<i>SalI</i>	<i>Sal1974I</i> (XhoI)
<i>SalAI</i> (MboI)	<i>SalCI</i> (NaeI)	<i>SalDI</i> (NruI)	<i>SalHI</i> (MboI)
<i>SalPI</i> (PstI)	<i>SaoI</i> (NaeI)	<i>SarI</i> (StuI)	<i>SauI</i>
<i>Sau10I</i> (KpnI)	<i>Sau12I</i> (Eco31I)	<i>Sau96I</i> (AsuI)	<i>Sau3239I</i> (XhoI)
<i>Sau6782I</i> (MboI)	<i>SauAI</i> (NaeI)	<i>Sau3AI</i> (MboI)	<i>SauBI</i> (AsuI)
<i>SauBMKI</i> (NaeI)	<i>SauCI</i> (MboI)	<i>SauDI</i> (MboI)	<i>SauEI</i> (MboI)
<i>SauFI</i> (MboI)	<i>SauGI</i> (MboI)	<i>SauMI</i> (MboI)	<i>SbaI</i> (PvuII)
<i>SblAI</i> (SlyI)	<i>SblBI</i> (SryI)	<i>SblCI</i> (SryI)	<i>SboI</i> (SacII)
<i>Sbo13I</i> (NruI)	<i>ScaI</i>	<i>Sca1827I</i> (XhoI)	<i>SceI</i> (FnuDII)
<i>Scg2I</i> (EcoRII)	<i>SciI</i> (XhoI)	<i>Sci1831I</i> (XhoI)	<i>SciAI</i> (BstEII)
<i>SciAII</i> (PvuII)	<i>SciNI</i> (HhaI)	<i>ScoI</i> (SacI)	<i>ScrFI</i>
<i>Scul</i> (XhoI)	<i>SduI</i>	<i>SdyI</i> (AsuI)	<i>SecI</i>
<i>SecII</i> (HpaII)	<i>SecIII</i> (SauI)	<i>SexI</i> (XhoI)	<i>SfaI</i> (HaeIII)
<i>SfaGUI</i> (HpaII)	<i>SfaNI</i>	<i>Sfel</i>	<i>Sfil</i>
<i>SflI</i> (PstI)	<i>Sfl2aI</i> (EcoRII)	<i>Sfl2bI</i> (EcoRII)	<i>Sfil</i> (AvaII)
<i>SfoI</i> (NarI)	<i>SfrI</i> (SacII)	<i>Sfr274I</i> (XhoI)	<i>Sfr303I</i> (SacII)
<i>Sfr382I</i> (SacII)	<i>SfuI</i> (AsuI)	<i>Sfu1762I</i> (XhoI)	<i>SgaI</i> (XhoI)
<i>Sgh1835I</i> (AvaII)	<i>SgoI</i> (XhoI)	<i>Sgr20I</i> (EcoRII)	<i>Sgr1839I</i> (AsuII)
<i>Sgr1841I</i> (XhoI)	<i>SgrAI</i>	<i>ShyI</i> (SacII)	<i>Shy1766I</i> (XhoI)
<i>SinI</i> (AvaII)	<i>SinAI</i> (AvaII)	<i>SinBI</i> (AvaII)	<i>SinCI</i> (AvaII)
<i>SinDI</i> (AvaII)	<i>SinEI</i> (AvaII)	<i>SinFI</i> (AvaII)	<i>SinGI</i> (AvaII)
<i>SinHI</i> (AvaII)	<i>SinJI</i> (AvaII)	<i>SinMI</i> (MboI)	<i>Skal</i> (NaeI)
<i>SkaII</i> (PstI)	<i>SlaI</i> (XhoI)	<i>SleI</i> (EcoRII)	<i>SluI</i> (XhoI)
<i>Slu1777I</i> (NaeI)	<i>SmaI</i>	<i>SmaAI</i> (SplI)	<i>SmaAII</i> (Tth111I)
<i>SmaAIII</i> (PvuI)	<i>SmaAIV</i> (PvuII)	<i>SnaI</i>	<i>Sna3286I</i> (NruI)
<i>SnaBI</i>	<i>SnoI</i> (ApaLI)	<i>Sol3335I</i> (PvuII)	<i>SpaI</i> (XhoI)
<i>SpaXI</i> (SphI)	<i>SpeI</i>	<i>SphI</i>	<i>Sph1719I</i> (XhoI)
<i>Spil</i>	<i>SplI</i>	<i>SplII</i> (Tth111I)	<i>SplIII</i> (HaeIII)
<i>SplAI</i> (SplI)	<i>SplAII</i> (Tth111I)	<i>SplAIII</i> (PvuI)	<i>SplAIV</i> (PvuII)
<i>Spol</i> (NruI)	<i>SseI</i> (BclI)	<i>SseII</i> (SacII)	<i>SshAI</i> (SauI)
<i>SsoI</i> (EcoRI)	<i>SsoII</i> (ScrFI)	<i>SspI</i>	<i>Ssp1I</i> (AsuII)
<i>Ssp2I</i> (CauII)	<i>Ssp4I</i> (XhoI)	<i>Ssp152I</i> (AsuII)	<i>Ssp1725I</i> (SacII)
<i>SspAI</i> (EcoRII)	<i>SspJI</i> (SnaBI)	<i>SspJII</i> (AcyI)	<i>SspKI</i> (SplI)
<i>SspM1I</i> (SnaBI)	<i>SspM1II</i> (AcyI)	<i>SspM1III</i> (HgiCI)	<i>SspM2I</i> (SnaBI)
<i>SspM2II</i> (AcyI)	<i>SsrI</i> (HpaI)	<i>SsrB6I</i> (HpaI)	<i>SstI</i> (SacI)
<i>SstII</i> (SacII)	<i>SstIV</i> (BclI)	<i>SsvI</i> (StuI)	<i>SreI</i> (StuI)
<i>SthI</i> (KpnI)	<i>SthAI</i> (KpnI)	<i>SthBI</i> (KpnI)	<i>SthCI</i> (KpnI)
<i>SthDI</i> (KpnI)	<i>SthEI</i> (KpnI)	<i>SthFI</i> (KpnI)	<i>SthGI</i> (KpnI)

<i>Sth</i> HI (<i>Kpn</i> I)	<i>Sth</i> JI (<i>Kpn</i> I)	<i>Sth</i> KI (<i>Kpn</i> I)	<i>Sth</i> LI (<i>Kpn</i> I)
<i>Sth</i> MI (<i>Kpn</i> I)	<i>Sth</i> NI (<i>Kpn</i> I)	<i>Stu</i> I	<i>Sty</i> I
<i>Sua</i> I (<i>Hae</i> III)	<i>Sul</i> I (<i>Hae</i> III)	<i>Sur</i> 2I (<i>Bam</i> HI)	<i>Sve</i> 194I (<i>Xho</i> I)
<i>Taq</i> I	<i>Taq</i> II	<i>Taq</i> XI (<i>Eco</i> RII)	<i>Tce</i> I (<i>Mbo</i> II)
<i>Tfi</i> I	<i>Tfi</i> I (<i>Taq</i> I)	<i>Tgi</i> I (<i>Sac</i> II)	<i>Tha</i> I (<i>Fnu</i> DII)
<i>Tma</i> I (<i>Fnu</i> DII)	<i>Tmu</i> 1I (<i>Cau</i> II)	<i>Tru</i> I (<i>Ava</i> II)	<i>Tru</i> II (<i>Mbo</i> I)
<i>Tru</i> 9I (<i>Mse</i> I)	<i>Tru</i> 201I (<i>Xho</i> II)	<i>Tsp</i> I (<i>Tth</i> 111I)	<i>Tsp</i> 45I
<i>Tsp</i> EI	<i>Tsp</i> ZNI (<i>Hae</i> III)	<i>Tte</i> I (<i>Tth</i> 111I)	<i>Tte</i> AI (<i>Hae</i> III)
<i>Tth</i> 111I	<i>Tth</i> 111II	<i>Tth</i> HB8I (<i>Taq</i> I)	<i>Tmi</i> I (<i>Hae</i> III)
<i>Ttr</i> I (<i>Tth</i> 111I)	<i>Uba</i> 1I (<i>Ppu</i> MI)	<i>Uba</i> 6I (<i>Mlu</i> I)	<i>Uba</i> 1102I (<i>Esp</i> I)
<i>Uba</i> 1103I (<i>Ava</i> III)	<i>Uba</i> 1103II (<i>Dpn</i> I)	<i>Uba</i> 1103II (<i>Dpn</i> I)	<i>Uba</i> 1104I (<i>Ksp</i> 632I)
<i>Uba</i> 1105I	<i>Uba</i> 1106I (<i>Ppu</i> MI)	<i>Uba</i> 1107I (<i>Sna</i> I)	<i>Uba</i> 1108I
<i>Uba</i> 1109I (<i>Bbv</i> I)	<i>Uba</i> 1110I (<i>Bam</i> HI)	<i>Uur</i> 960I (<i>Fnu</i> 4HI)	<i>Van</i> I (<i>Bgi</i> I)
<i>Var</i> 91I (<i>Pfi</i> MI)	<i>Vha</i> I (<i>Hae</i> III)	<i>Vha</i> 464I (<i>Afi</i> II)	<i>Vne</i> I (<i>Apa</i> LI)
<i>Vne</i> AI (<i>Dra</i> II)	<i>Vni</i> I (<i>Hae</i> III)	<i>Vsp</i> I	<i>Xam</i> I (<i>Sal</i> I)
<i>Xba</i> I	<i>Xca</i> I (<i>Sna</i> I)	<i>Xci</i> I (<i>Sal</i> I)	<i>Xcm</i> I
<i>Xcy</i> I (<i>Sma</i> I)	<i>Xgl</i> 3216I (<i>Pvu</i> I)	<i>Xgl</i> 3217I (<i>Pvu</i> I)	<i>Xgl</i> 3218I (<i>Pvu</i> I)
<i>Xgl</i> 3219I (<i>Pvu</i> I)	<i>Xgl</i> 3220I (<i>Pvu</i> I)	<i>Xho</i> I	<i>Xho</i> II
<i>Xma</i> I (<i>Sma</i> I)	<i>Xma</i> II (<i>Pst</i> I)	<i>Xma</i> III	<i>Xmi</i> I (<i>Pvu</i> I)
<i>Xmi</i> AI (<i>Pvu</i> I)	<i>Xmn</i> I	<i>Xni</i> I (<i>Pvu</i> I)	<i>Xor</i> I (<i>Pst</i> I)
<i>Xor</i> II (<i>Pvu</i> I)	<i>Xpa</i> I (<i>Xho</i> I)	<i>Xph</i> I (<i>Pst</i> I)	<i>Yen</i> I (<i>Pst</i> I)
<i>Yen</i> AI (<i>Pst</i> I)	<i>Yen</i> BI (<i>Pst</i> I)	<i>Yen</i> CI (<i>Pst</i> I)	<i>Yen</i> DI (<i>Pst</i> I)
<i>Yen</i> EI (<i>Pst</i> I)	<i>Zan</i> I (<i>Eco</i> RII)	<i>Zsp</i> 2I (<i>Ava</i> III)	

unknown recognition sequences

<i>Aam</i> I	<i>Acy</i> II	<i>Aim</i> I	<i>Ani</i> I
<i>Atu</i> AI	<i>Atu</i> BVI	<i>Atu</i> LAMI	<i>Bbe</i> II
<i>Bbe</i> AI	<i>Bbe</i> SI	<i>Bbi</i> IV	<i>Bce</i> 1229I
<i>Bce</i> 14579I	<i>Blo</i> I	<i>Bme</i> I	<i>Bme</i> 205I
<i>Bme</i> 899I	<i>Bpr</i> I	<i>Bsi</i> BI	<i>Bsi</i> EI
<i>Bsi</i> FI	<i>Bsi</i> GI	<i>Bsi</i> JI	<i>Bsi</i> NI
<i>Bsi</i> PI	<i>Bsi</i> RI	<i>Bsi</i> TI	<i>Bsi</i> UI
<i>Bsi</i> VI	<i>Bsi</i> YI	<i>Bsp</i> 12II	<i>Bsr</i> PI
<i>Bss</i> PI	<i>Bst</i> AI	<i>Bst</i> EI	<i>Bsu</i> 1145I
<i>Bsu</i> 1259I	<i>Cal</i> I	<i>Chi</i> I	<i>Cl</i> III
<i>Clu</i> I	<i>Csu</i> I	<i>Cve</i> I	<i>Cvi</i> I
<i>Cvi</i> PI	<i>Cvi</i> QII	<i>Dmo</i> I	<i>Eco</i> CKI
<i>Eco</i> O34I	<i>Eco</i> O44I	<i>Esp</i> II	<i>Fnu</i> 48I
<i>Fsa</i> I	<i>Ggi</i> I	<i>Gsp</i> AIII	<i>Hag</i> I
<i>Hap</i> I	<i>Hcu</i> I	<i>Hgi</i> FI	<i>Hgi</i> KI
<i>Hhl</i> II	<i>Hin</i> 1056II	<i>Hsa</i> I	<i>Lpn</i> I
<i>Lpn</i> II	<i>Mbv</i> I	<i>Mgi</i> II	<i>Mgi</i> II
<i>Mnn</i> III	<i>Mno</i> II (<i>Mnn</i> III)	<i>Msi</i> II	<i>Mvi</i> I
<i>Mvi</i> II	<i>Nfi</i> II	<i>Nfi</i> III	<i>Ngo</i> DII
<i>Nme</i> I	<i>Nme</i> II	<i>Nme</i> III	<i>Nme</i> IV
<i>Nop</i> II	<i>Nov</i> I	<i>Nsp</i> EII	<i>Nsp</i> LIII
<i>Nsp</i> LIV	<i>Nun</i> I	<i>Oxa</i> II	<i>Pfi</i> I
<i>Pgi</i> II	<i>Pmi</i> I	<i>Pss</i> II	<i>Rhp</i> II
<i>Rle</i> I	<i>Rme</i> I	<i>Rrb</i> I	<i>Rrh</i> II
<i>ft2Rru</i> AI	<i>Sac</i> III	<i>Sal</i> II	<i>San</i> I
<i>Sbr</i> I	<i>Sex</i> II	<i>Sgr</i> I	<i>Shy</i> TI
<i>Sin</i> MII	<i>Sis</i> I	<i>Sod</i> I	<i>Sod</i> II
<i>Ssa</i> I	<i>Ssc</i> I	<i>Ssp</i> XI	<i>Sst</i> III (<i>Sac</i> III)
<i>Stm</i> I	<i>Sry</i> D4I	<i>Tmi</i> I	<i>Tru</i> III