

1 *Supplementary Information*

2 **New method for the identification of arbuscular**
3 **mycorrhizal fungi by proteomic-based biotyping of spores**
4 **using MALDI-TOF-MS**

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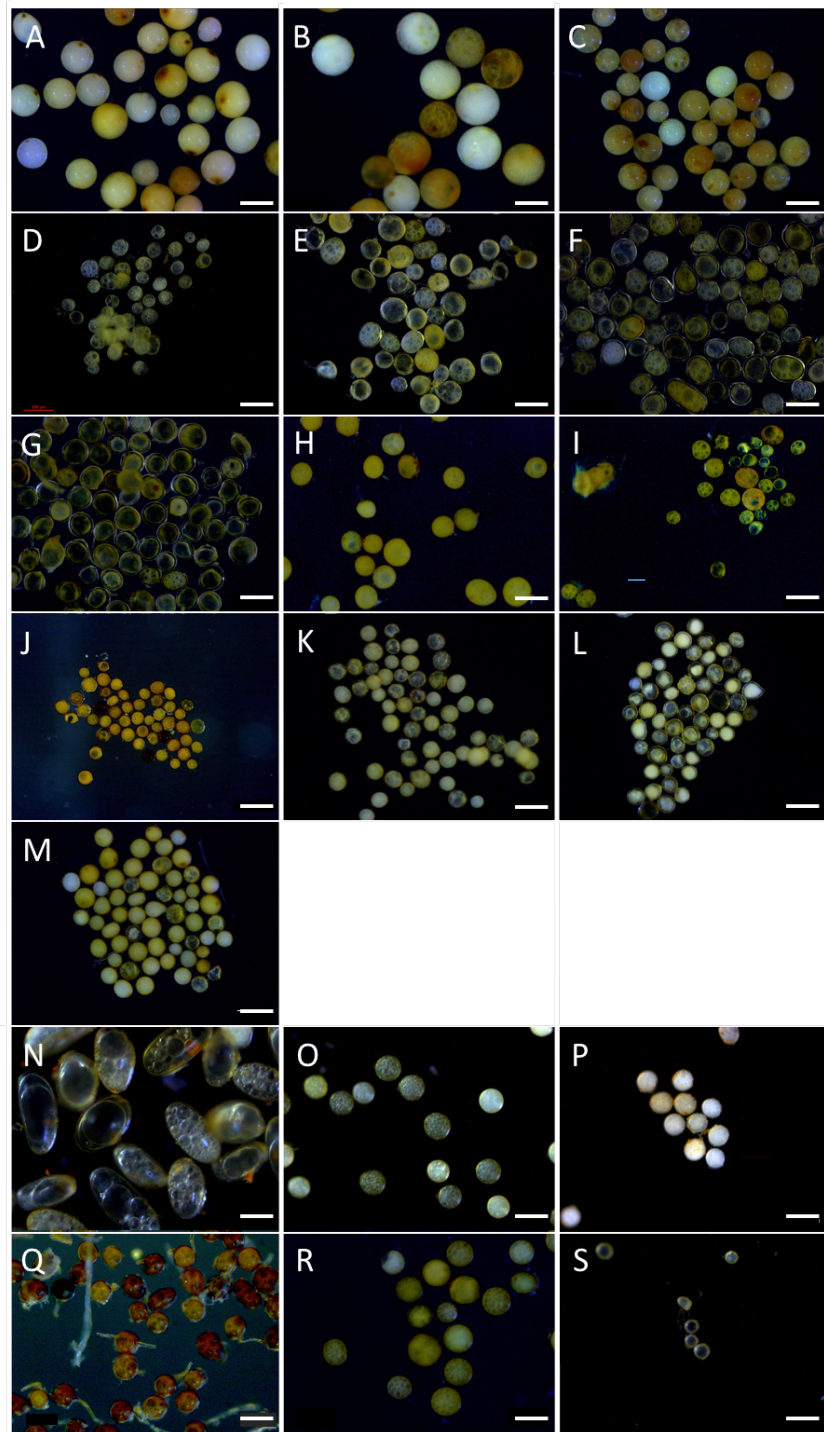
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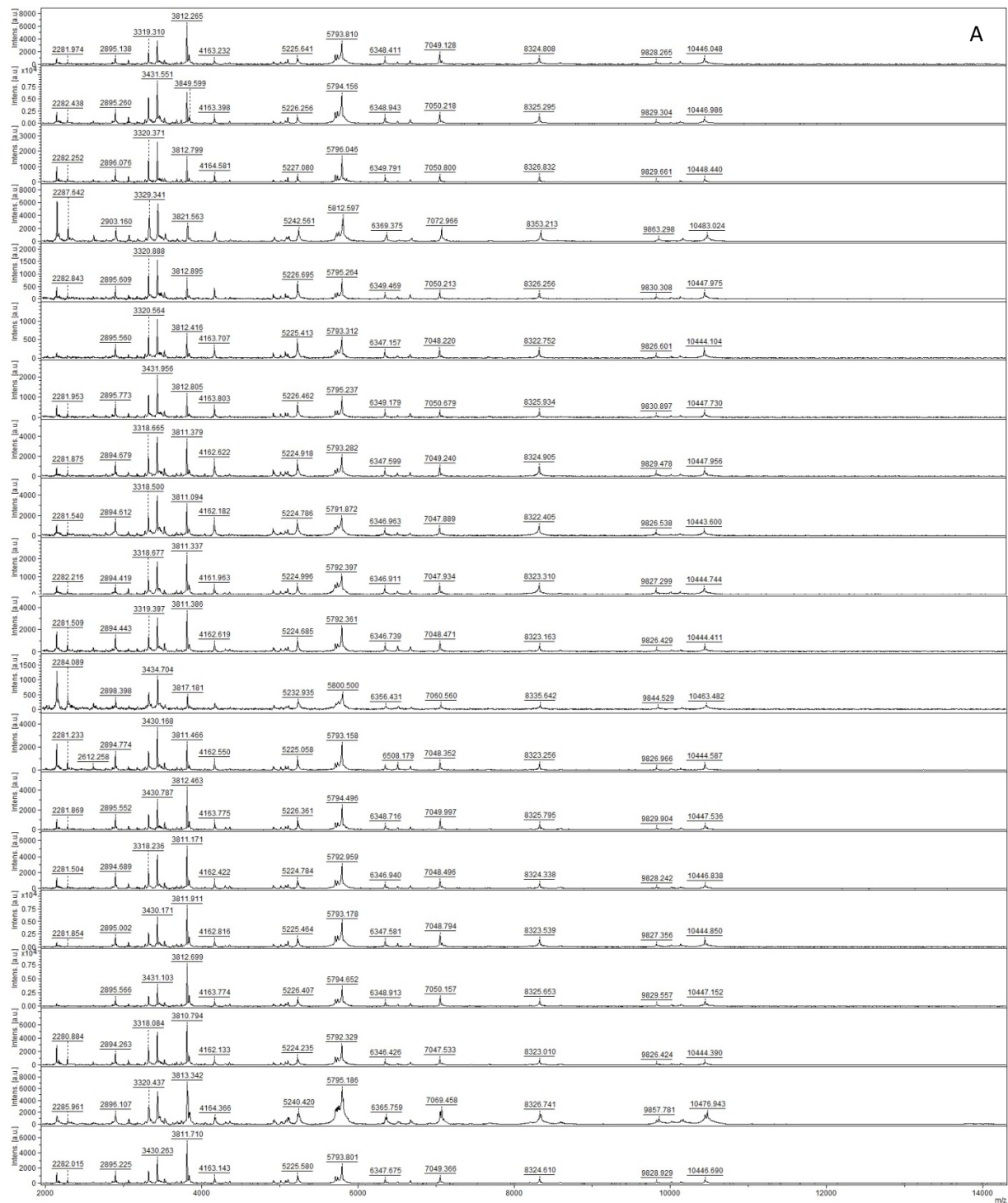
Isolates	Origin	Diameter of spore μm	Approximate volume of 1 spore μm^3	Nb spores per sample
<i>Gigaspora rosea</i> BEG 9	United States	250	8175040	1
<i>Gigaspora margarita</i> BEG 34	New Zealand	300	14126470	1
<i>Gigaspora candida</i> BEG 17	Taiwan	230	6365800	1
<i>Scutellospora calospora</i> BEG 32	England	115	795730	3
<i>Rhizophagus clarus</i> BEG 248	Brazil	150	1765810	1
<i>Rhizophagus clarus</i> BEG 149	China	150	1765810	1
<i>Rhizophagus clarus</i> BEG 142	Brazil	150	1765810	1
<i>Funneliformis mosseae</i> BEG 12	England	110	696380	4
<i>Funneliformis coronatum</i> BEG 22	Australia	150	1765810	1
<i>Claroideoglossum etunicatum</i> BEG 247	Brazil	85	321310	7
<i>Claroideoglossum claroideum</i> BEG 31	Finland	100	523200	4
<i>Claroideoglossum claroideum</i> BEG 14	Denmark	105	605672	4
<i>Claroideoglossum claroideum</i> BEG 23	Czech Republic	100	523200	4
<i>Scutellospora ovalis</i>	New Caledonia	100/219	1135350	2
<i>Acaulospora saccata</i>	New Caledonia	75	220730	10
<i>Acaulospora fragilissima</i>	New Caledonia	67	157360	14
<i>Rhizophagus neocaledonicus</i>	New Caledonia	75	220730	10
<i>Claroideoglossum etunicatum</i> nc	New Caledonia	92,5	414090	6
<i>Pervetustus simplex</i> nc	New Caledonia	53	77890	29

21 **Supplementary Table 1.** Species used, their origin, measured spore diameter (n=100),
 22 calculated volume of spores required for proteomic analysis, number of spores used per sample
 23 for proteomic analysis. New-Caledonian isolates were provided by the Laboratoire Insulaire du
 24 Vivant et de l'Environnement (LIVE), other isolates were provided by International Bank for
 25 the Glomeromycota (IBG).

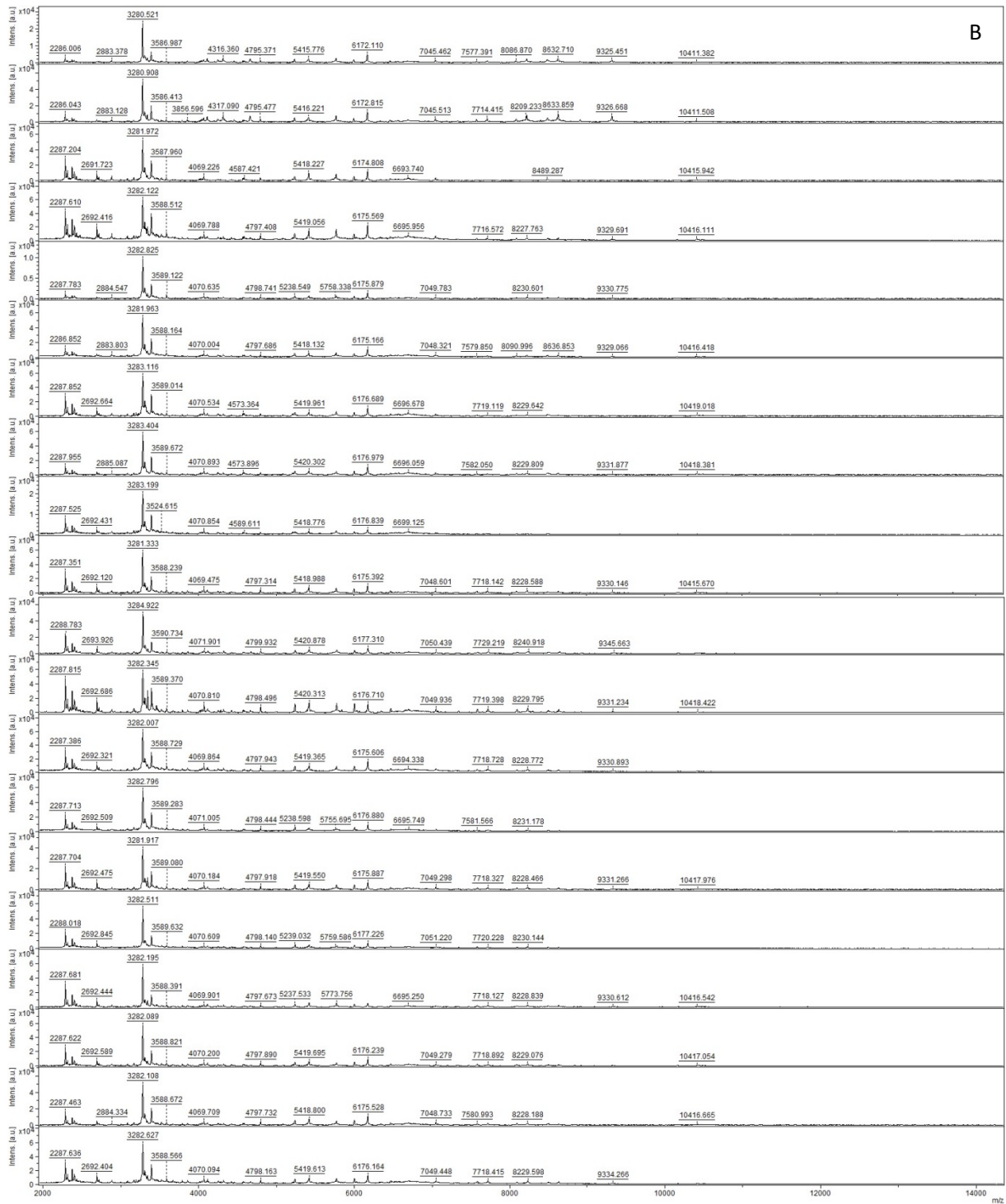


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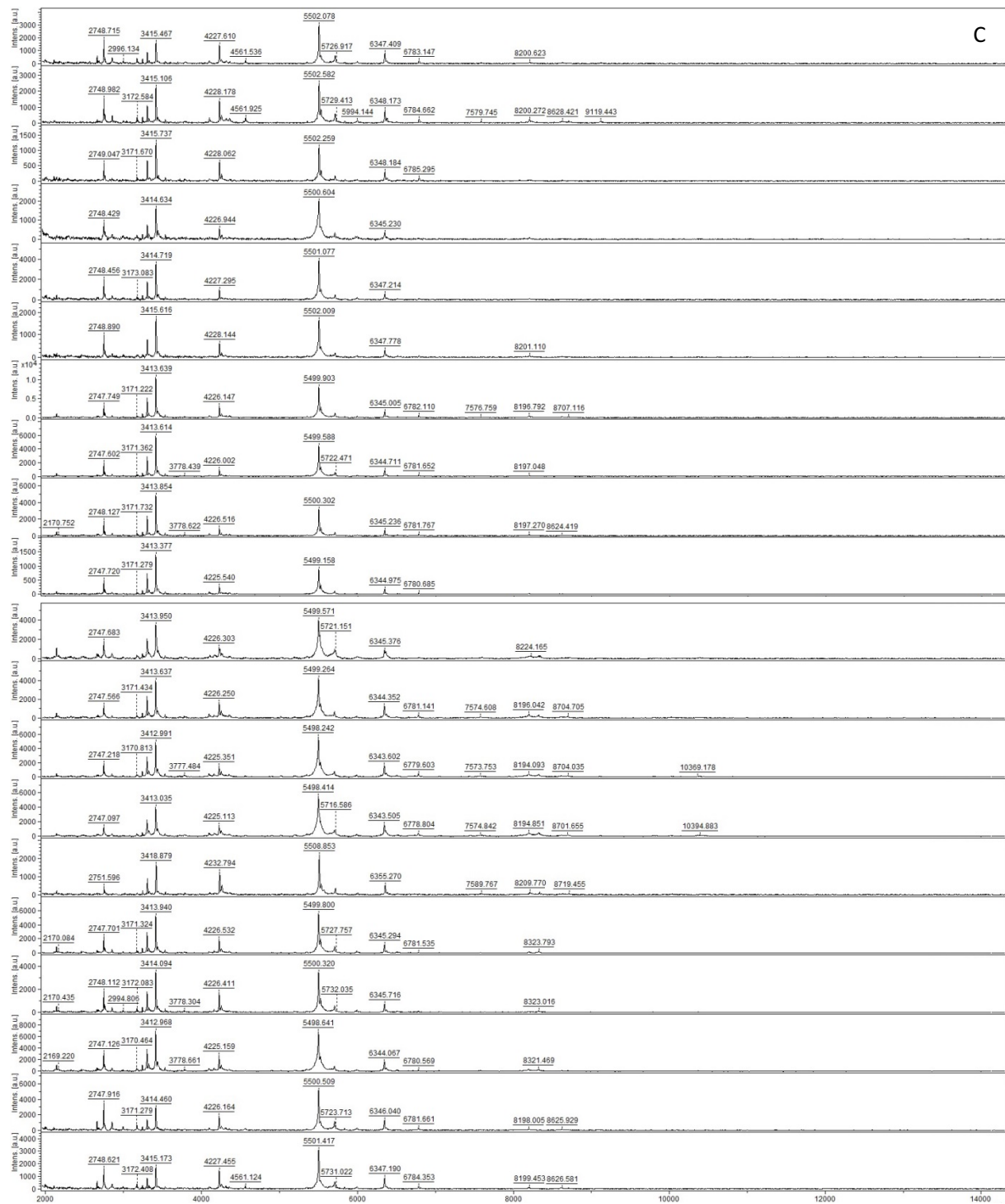
28 **Supplementary Figure 1.** Intact spores of studied isolates. A. *Gigaspora rosea* BEG9; B.
 29 *Gigaspora margarita* BEG34; C. *Gigaspora candida* BEG17; D. *Scutellospora calospora*
 30 BEG32; E. *Rhizophagus clarus* BEG248; F. *Rhizophagus clarus* BEG149; G. *Rhizophagus*
 31 *clarus* BEG142; H. *Funneliformis coronatum* BEG22; I. *Funneliformis mosseae* BEG12; J.
 32 *Claroideoglomus etunicatum* BEG247; K. *Claroideoglomus claroideum* BEG31; L.
 33 *Claroideoglomus claroideum* BEG14; M. *Claroideoglomus claroideum* BEG23. N.
 34 *Scutellospora ovalis*; O. *Acaulospora saccata*; P. *Acaulospora fragilissima*; Q. *Rhizophagus*
 35 *neocaledonicus*; R. *Claroideoglomus etunicatum nc*; S. *Pervetustus simplex nc*. A-M scale bars
 36 = 250 μm; N-S scale bars = 100 μm.



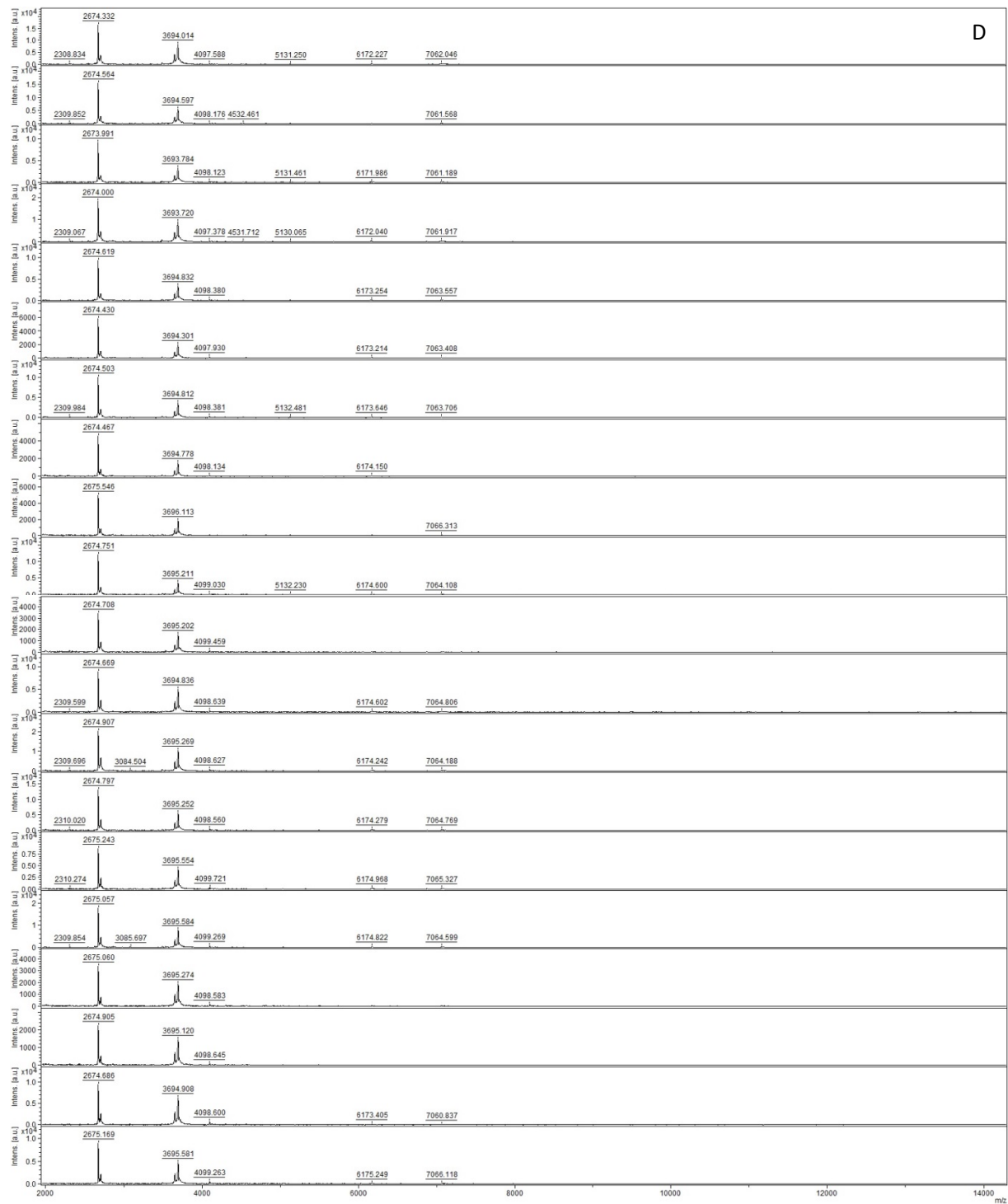
Supplementary Figure 2A. *Gigaspora rosea* BEG9



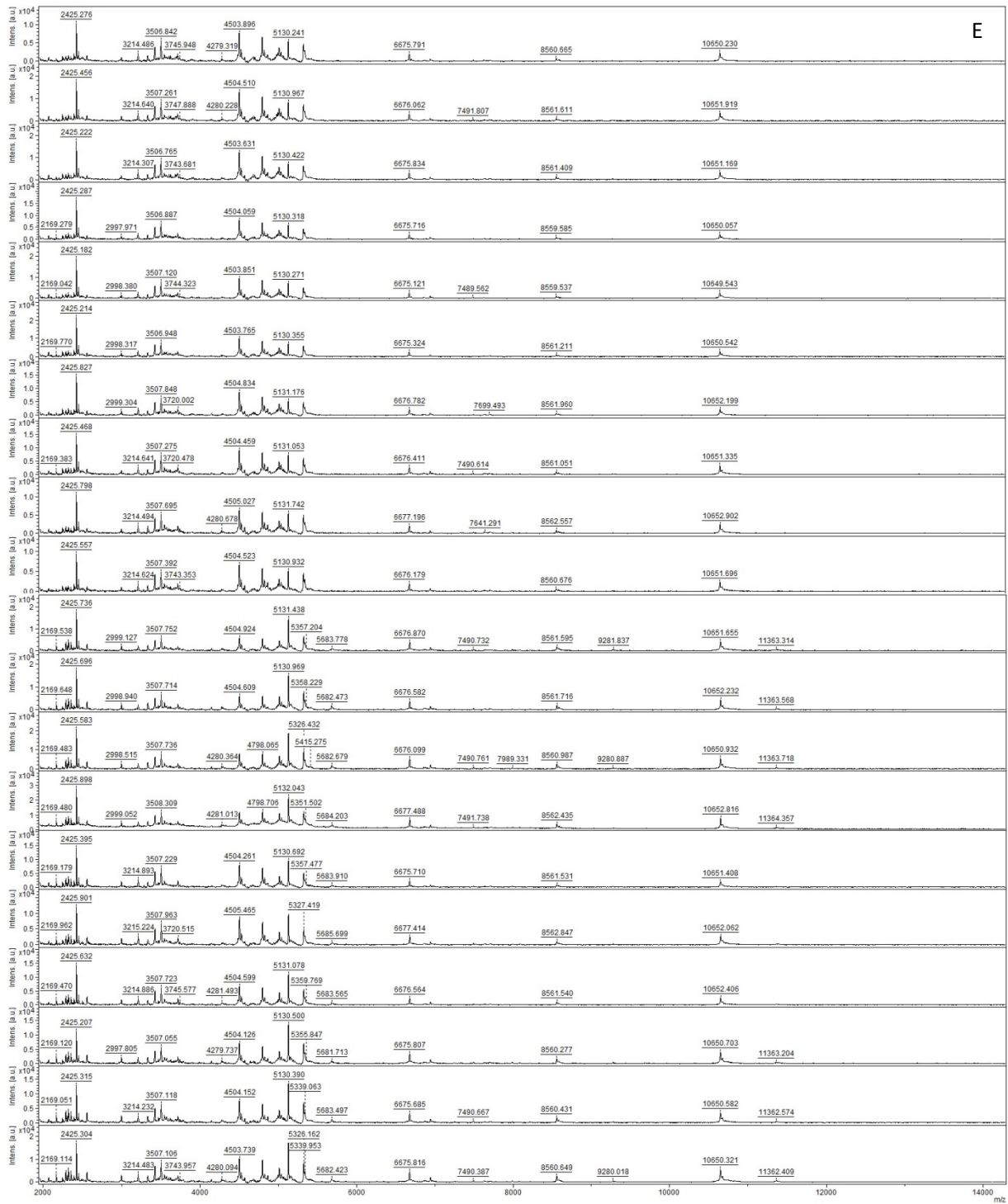
Supplementary Figure 2B. *Gigaspora margarita* BEG34



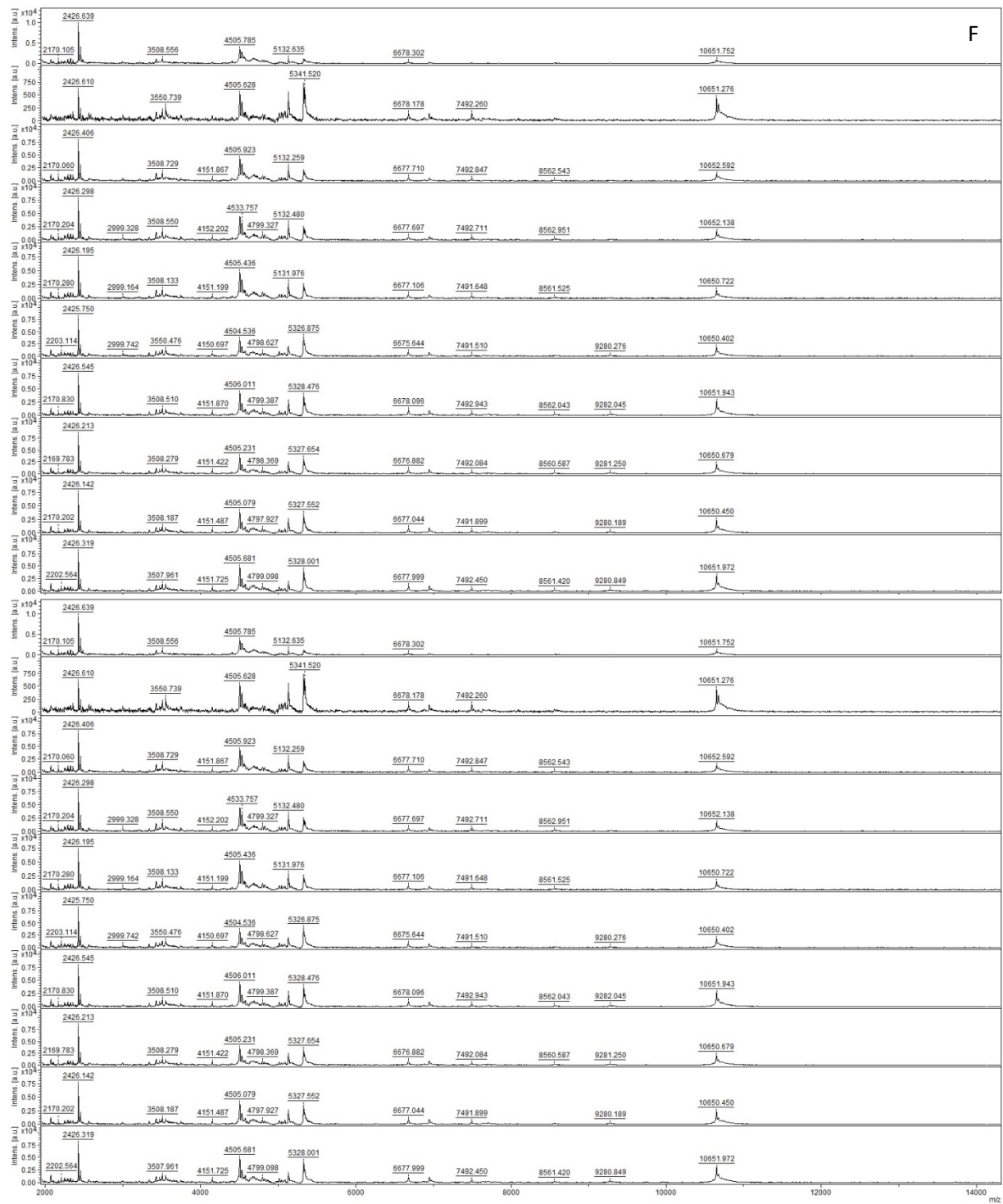
Supplementary Figure 2C. *Gigaspora candida* BEG17



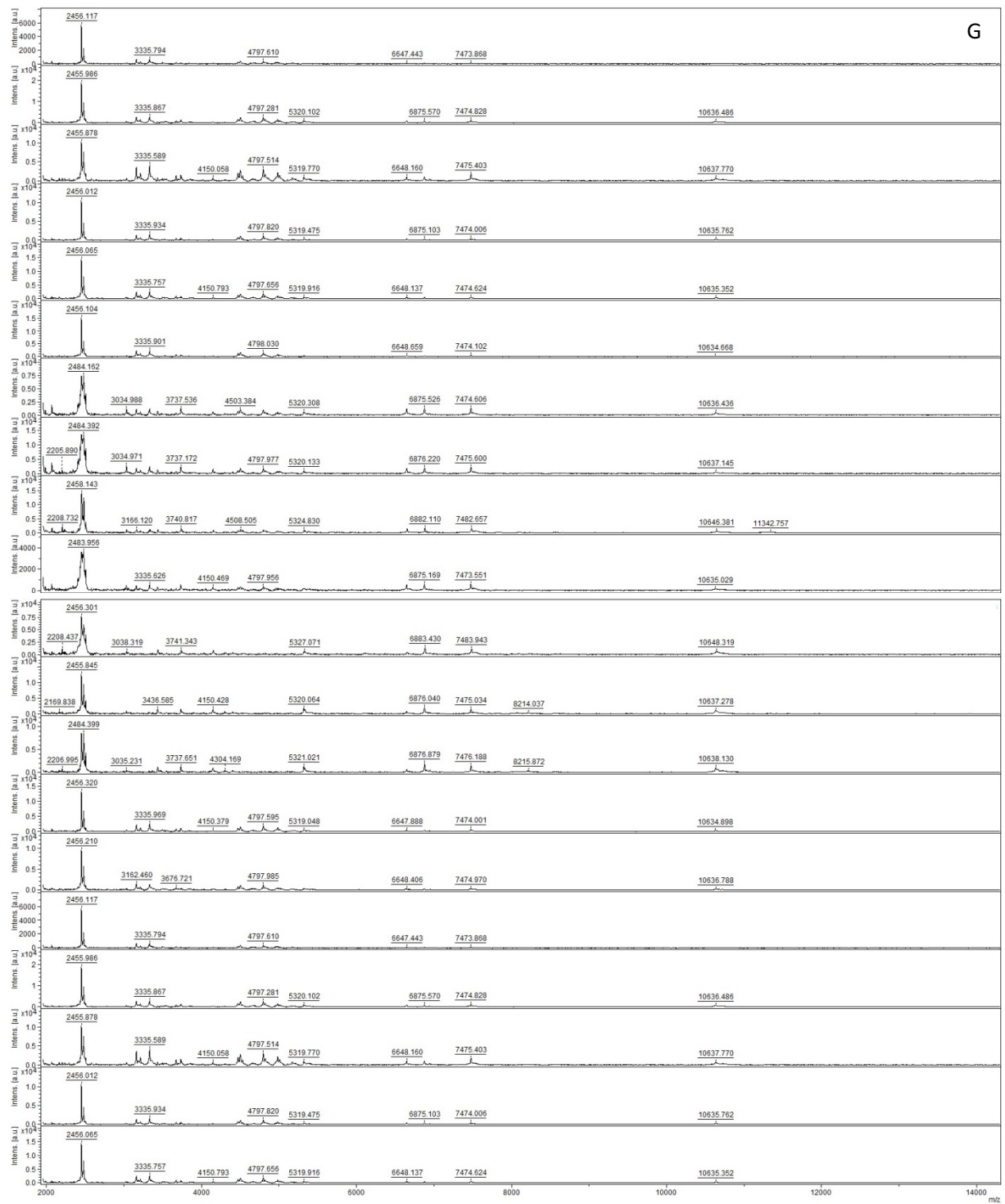
Supplementary Figure 2D. *Scutellospora calospora* BEG32



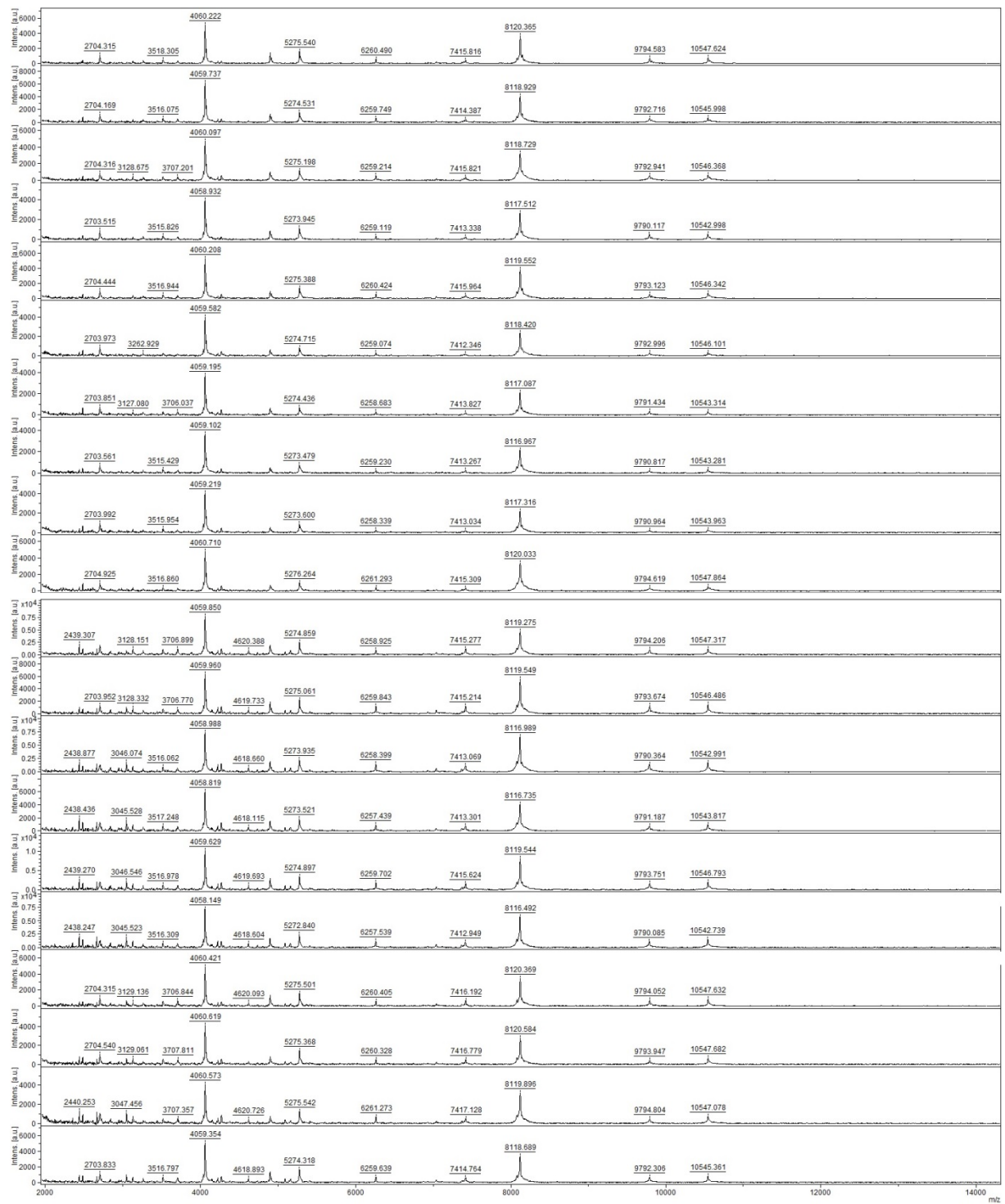
Supplementary Figure 2E. *Rhizophagus clarus* BEG248



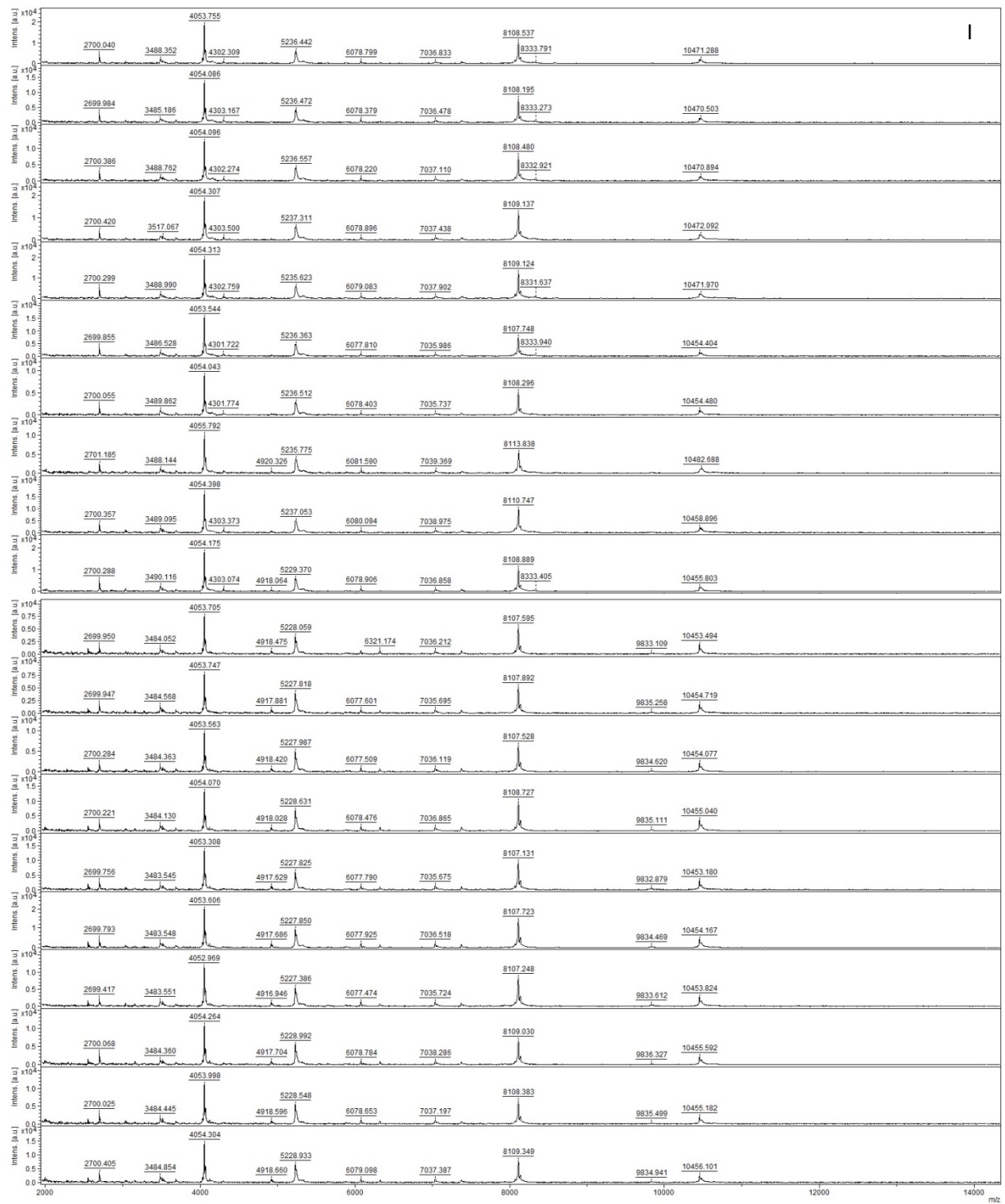
Supplementary Figure 2F. *Rhizophagus clarus* BEG149



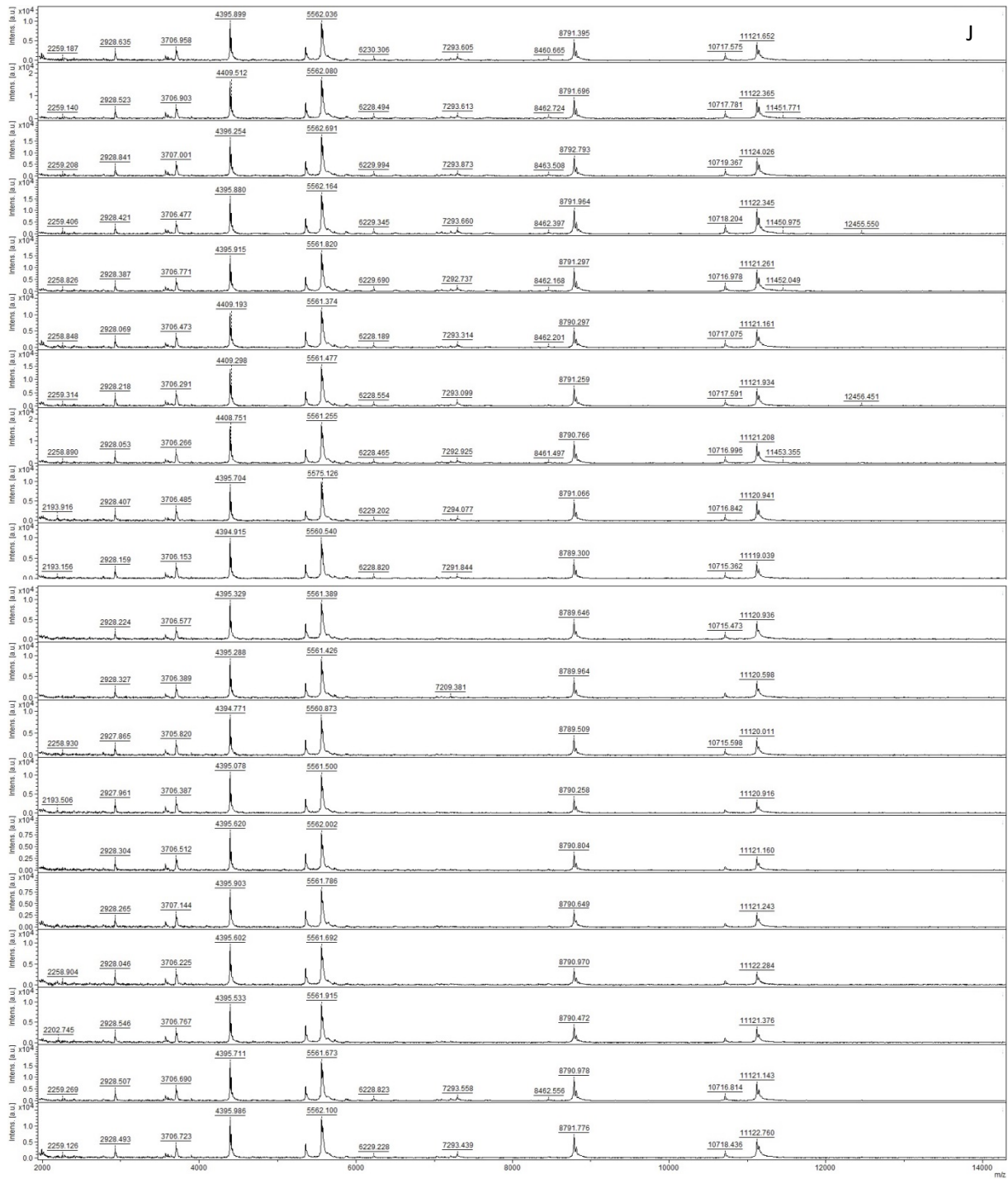
Supplementary Figure 2G. *Rhizopus clarus* BEG142



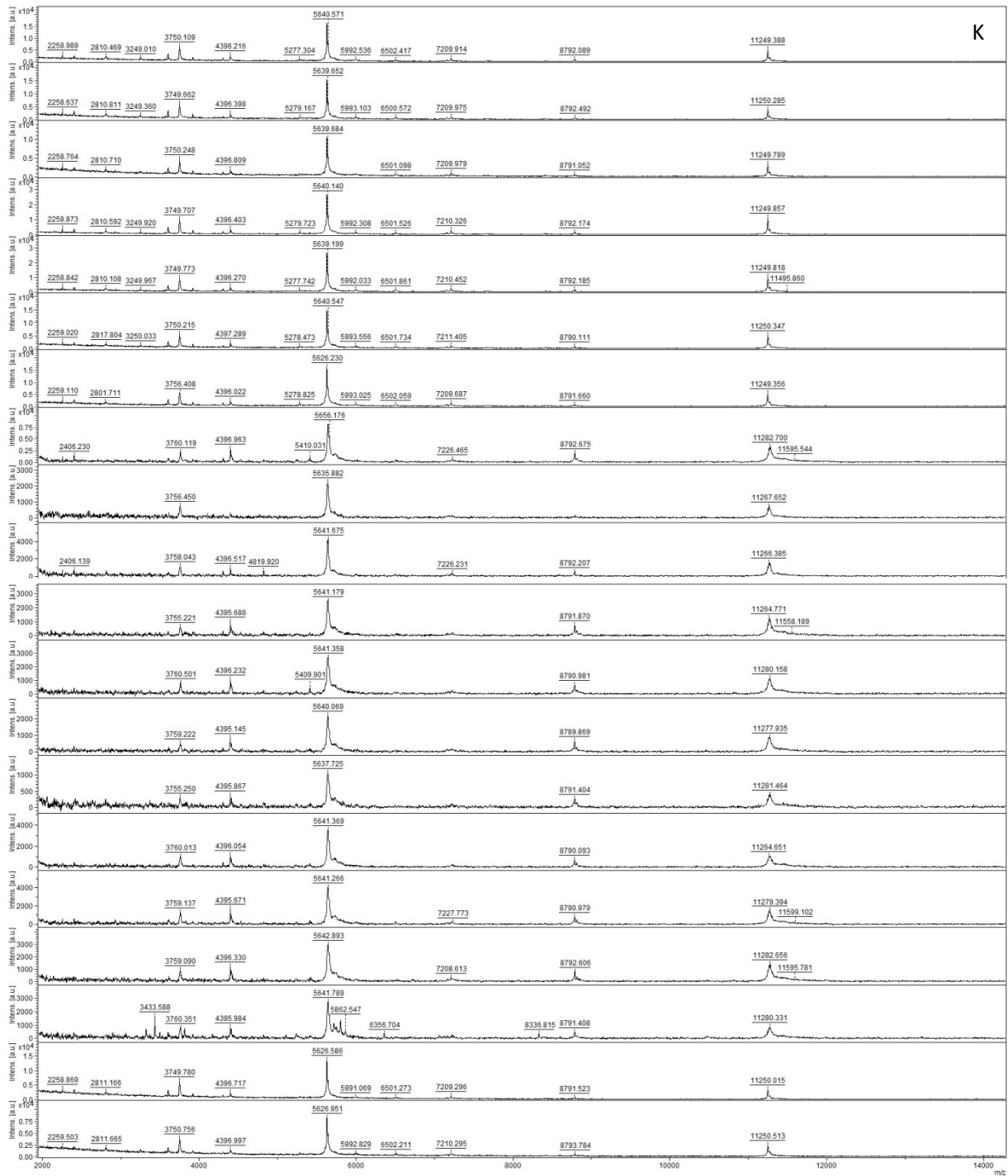
Supplementary Figure 2H. *Funneliformis coronatum* BEG22



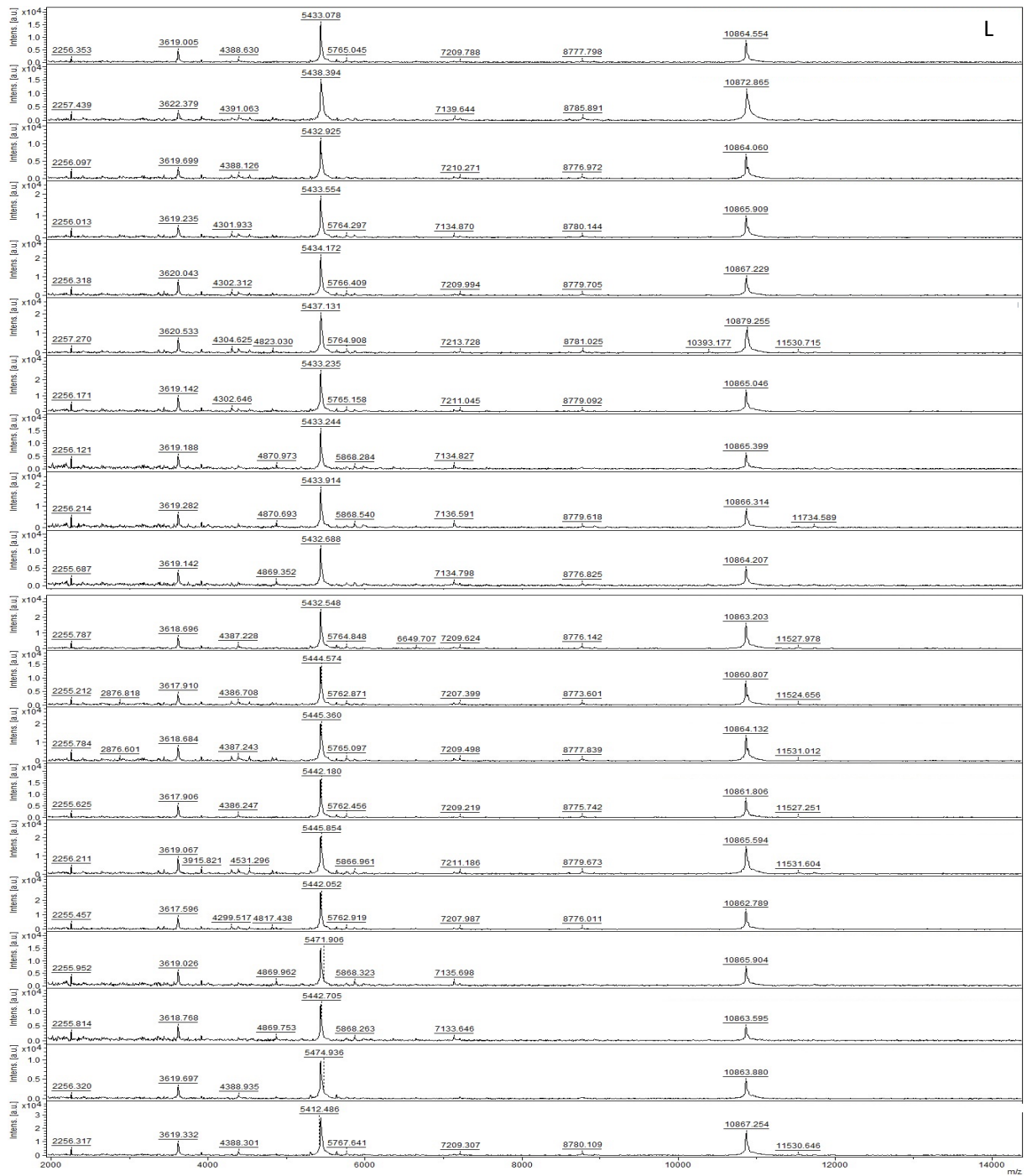
Supplementary Figure 2I. *Funneliformis mosseae* BEG12



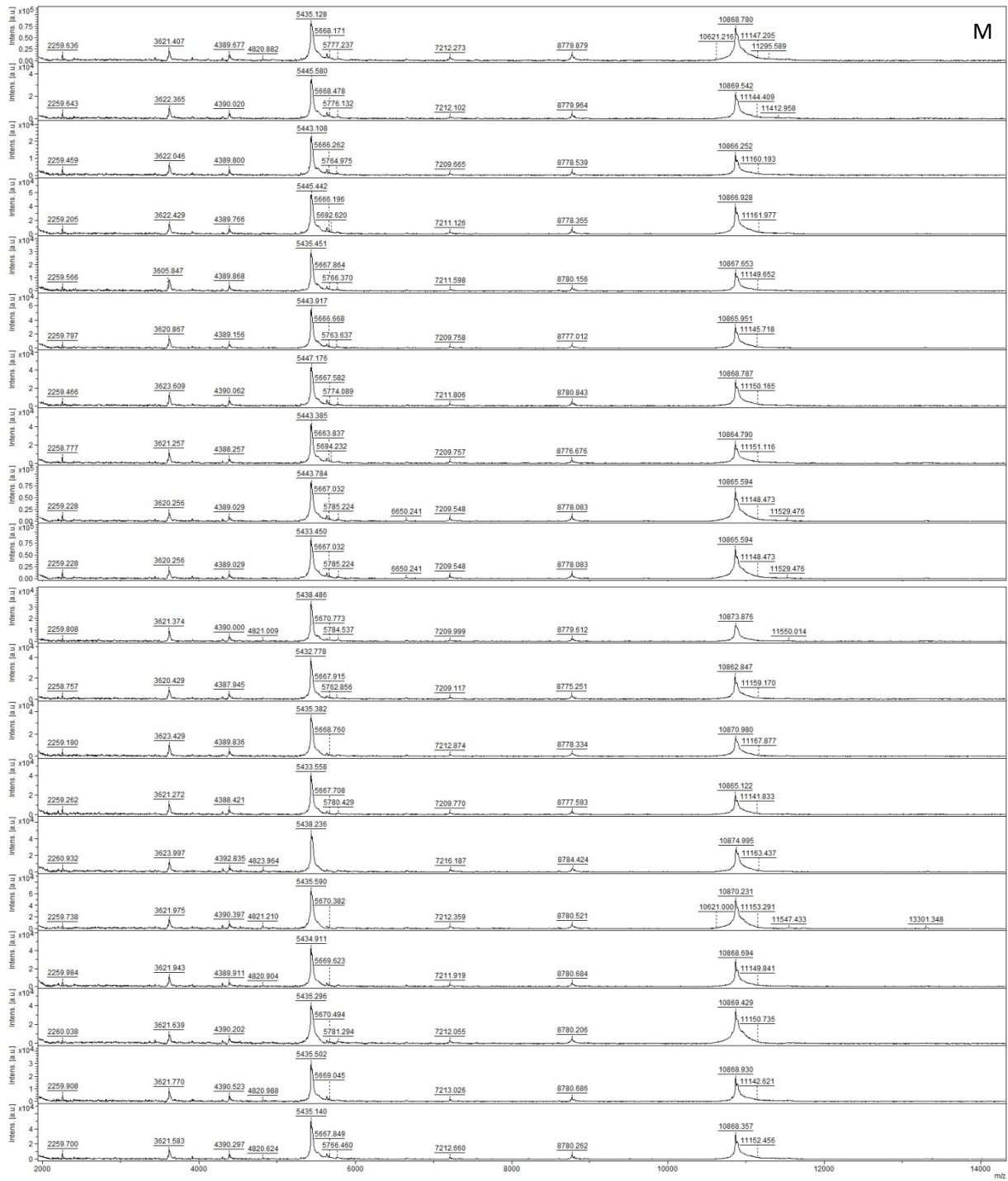
Supplementary Figure 2J. *Claroideoglossus etunicatum* BEG247



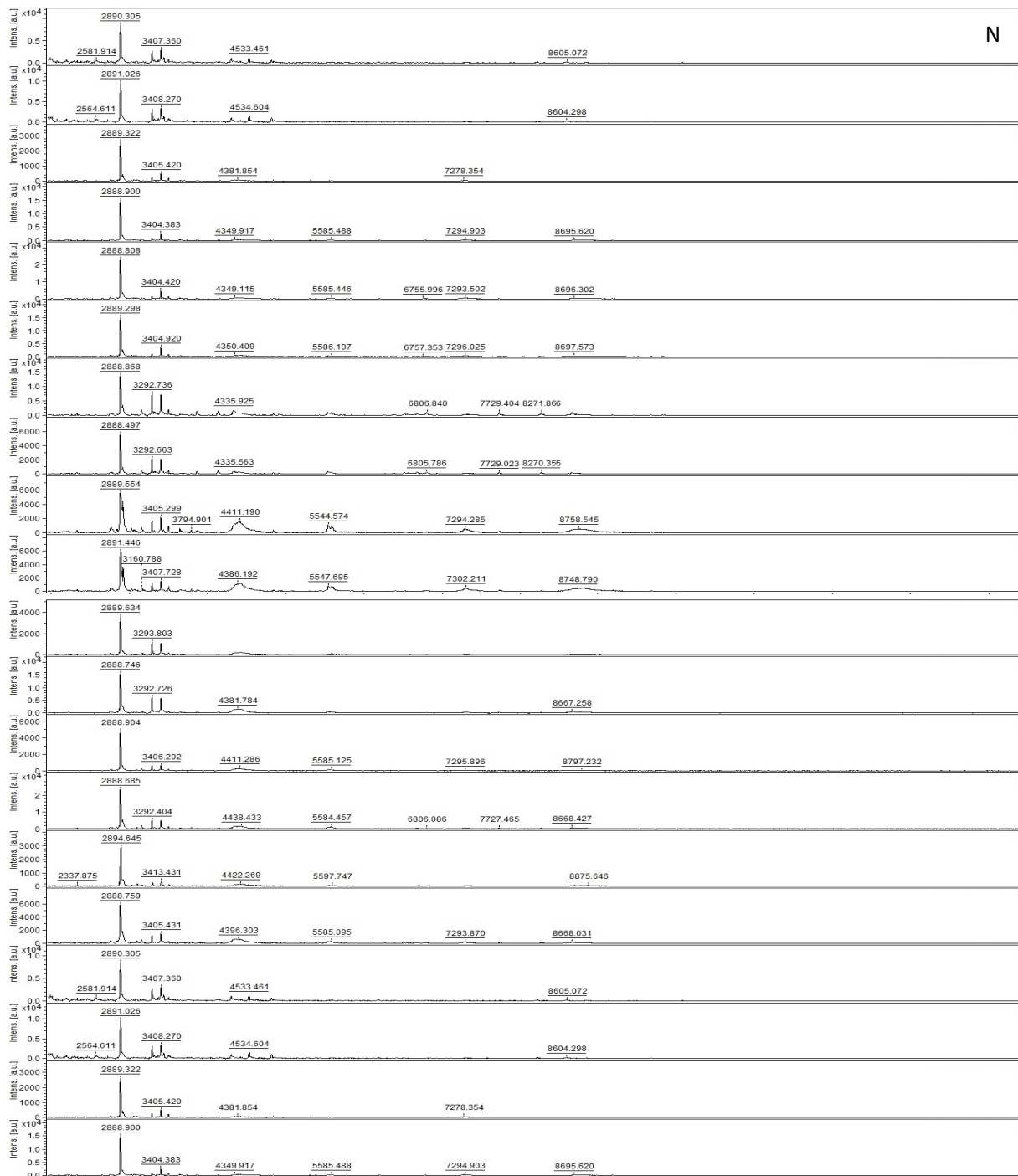
Supplementary Figure 2K. *Clarioideoglomus clarioideum* BEG31



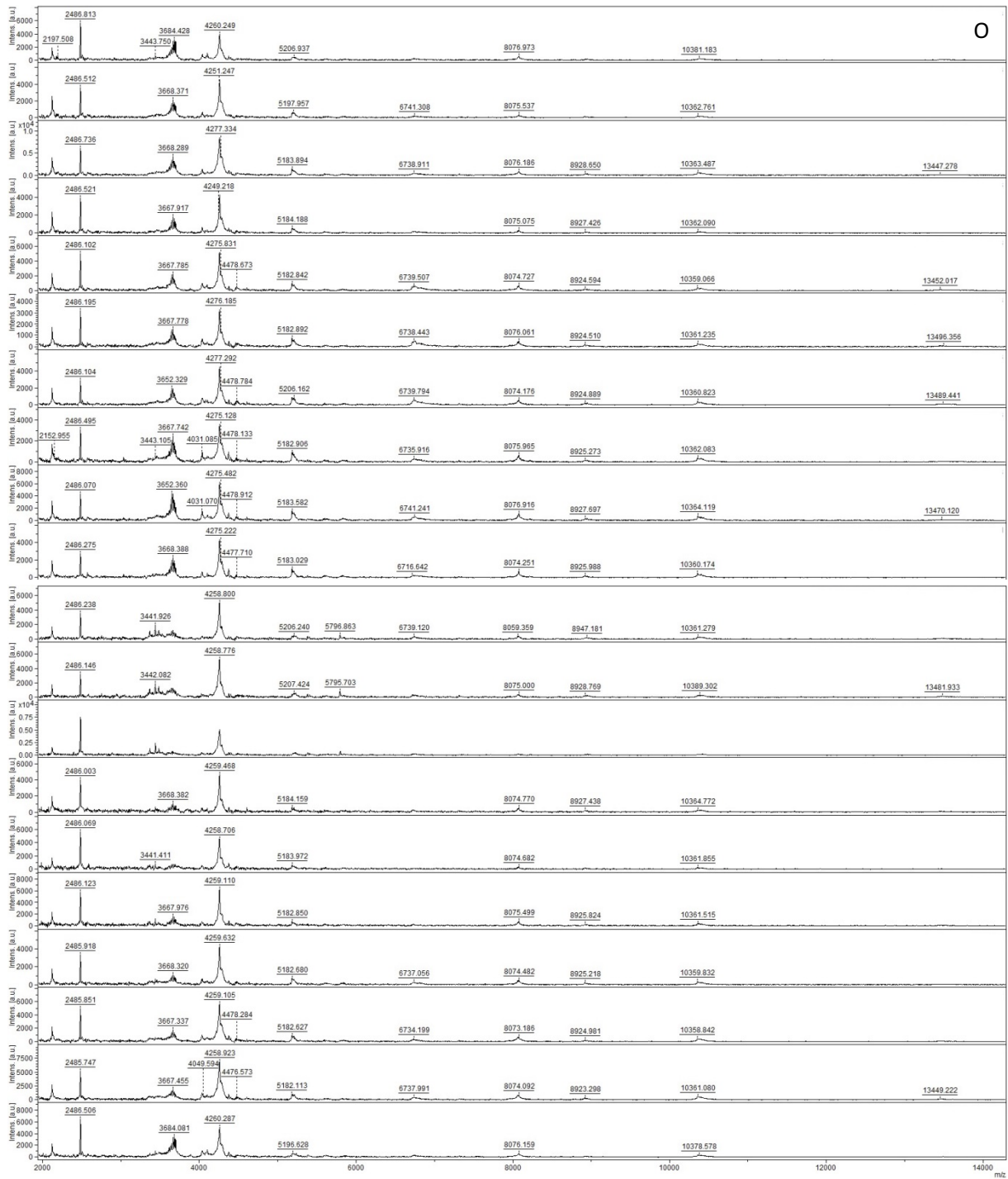
Supplementary Figure 2L. *Clarioideoglomerum clarioideum* BEG14



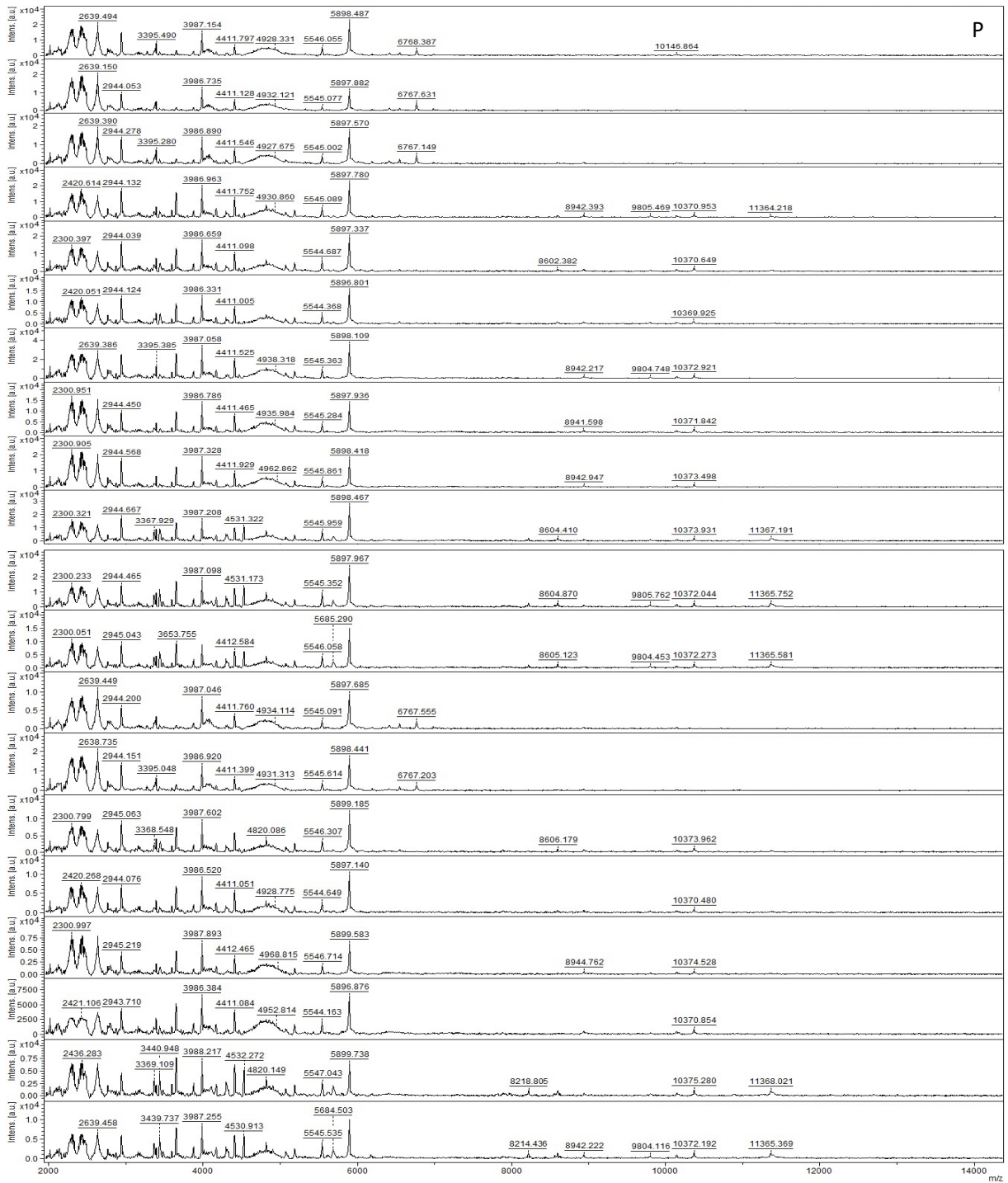
Supplementary Figure 2M. *Clarioideoglomus clarioideum* BEG23



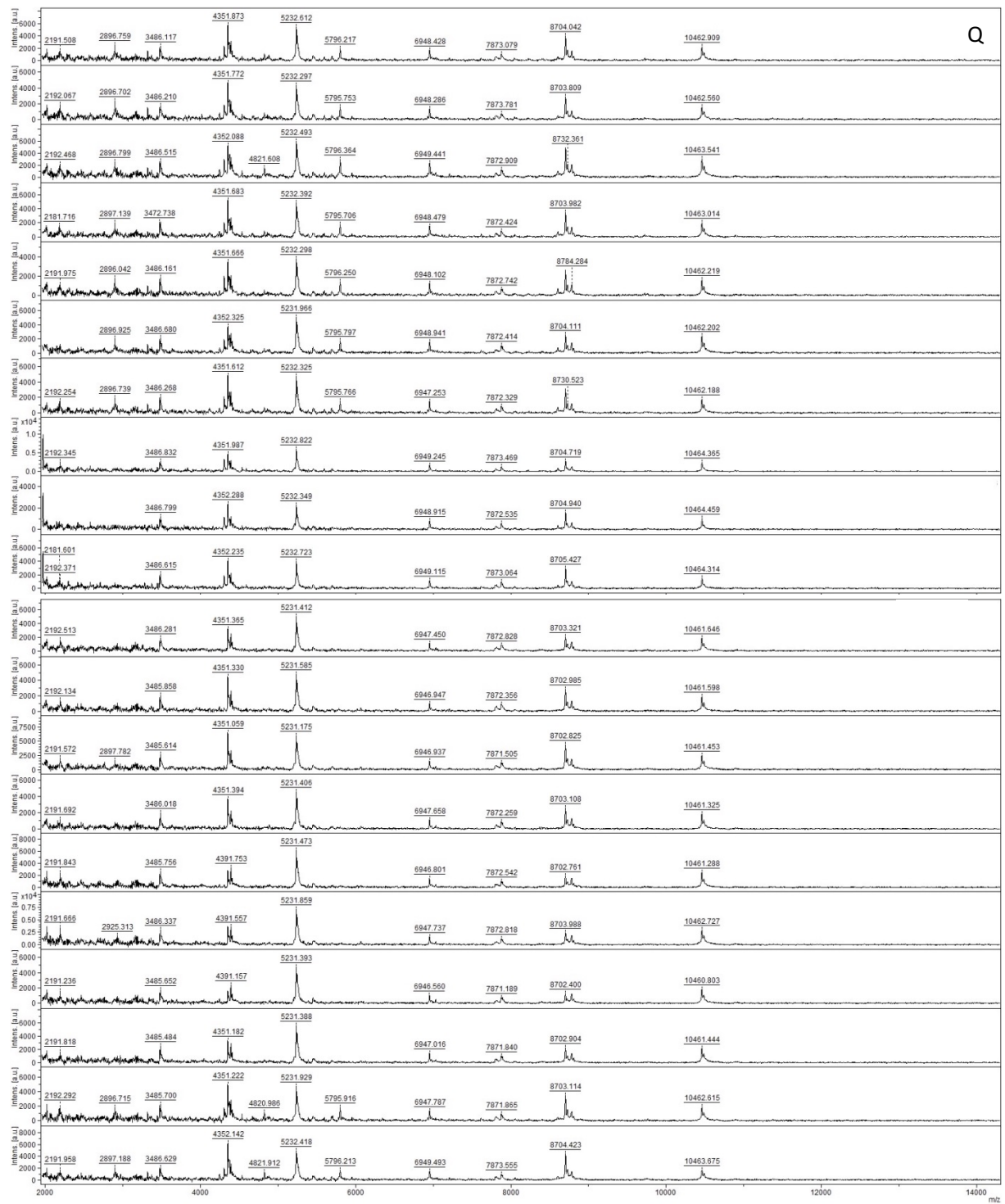
Supplementary Figure 2N. *Scutellospora ovalis*



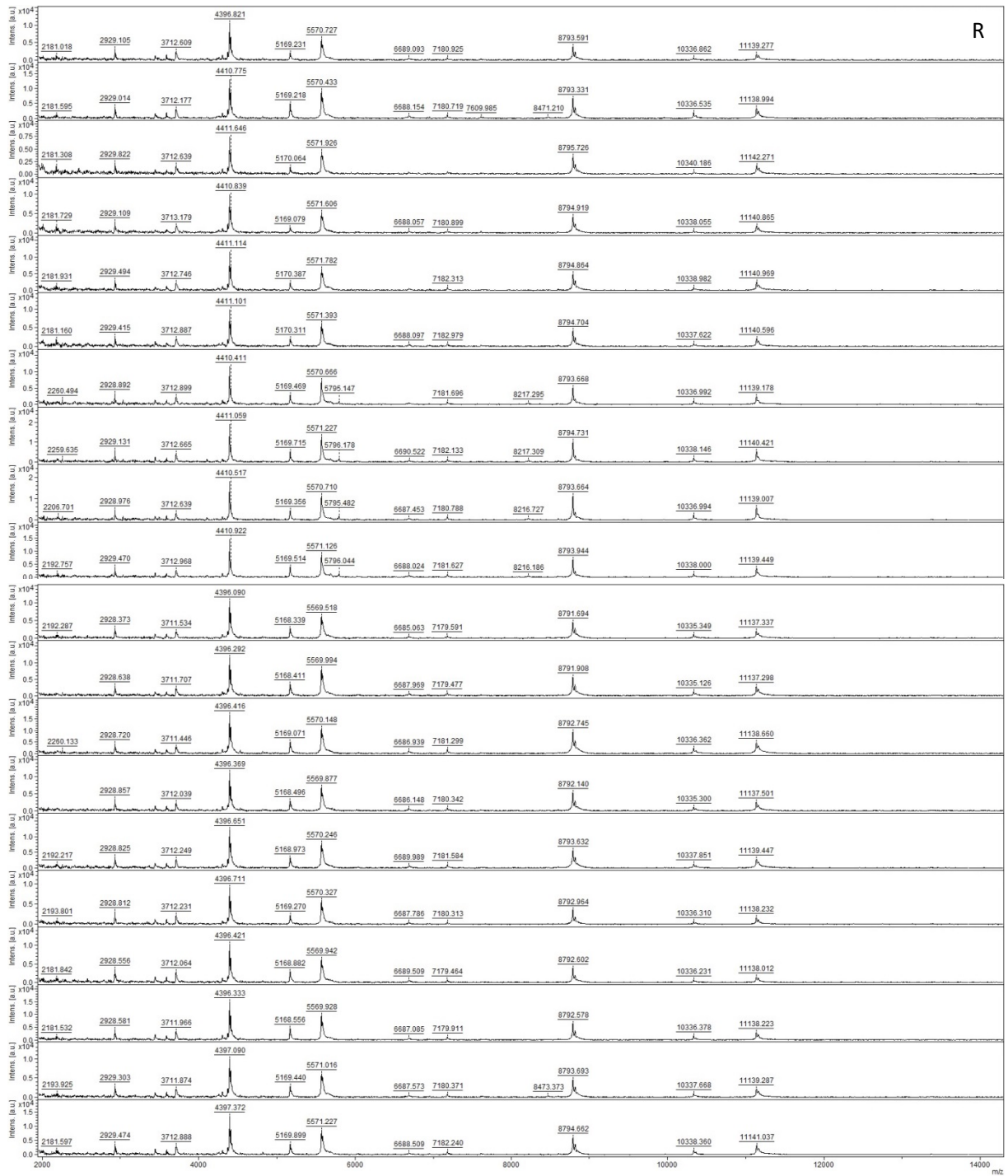
Supplementary Figure 20. *Acaulospora saccata*



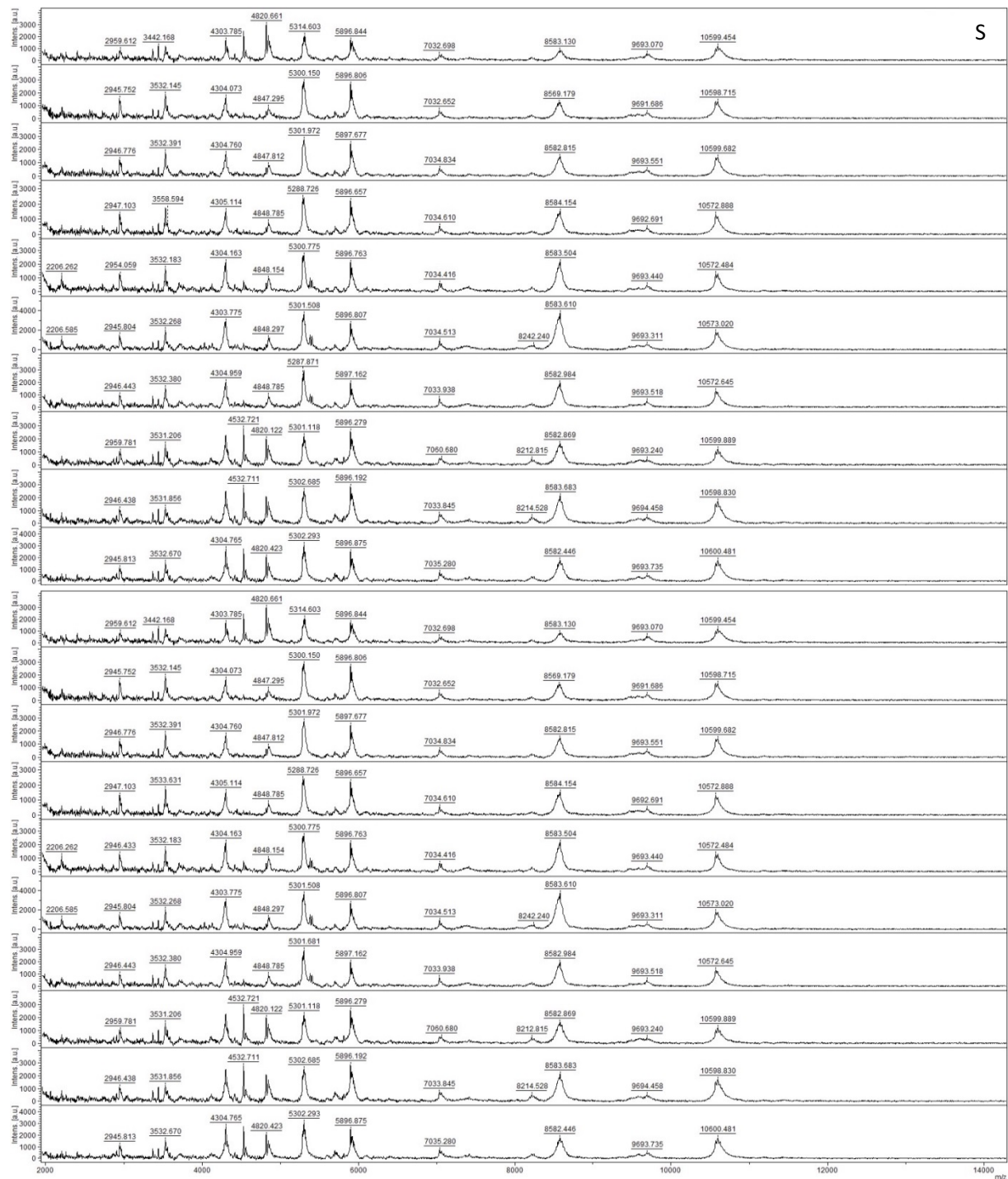
Supplementary Figure 2P. *Acaulospora fragilissima*



Supplementary Figure 2Q. *Rhizophagus neocaledonicus*



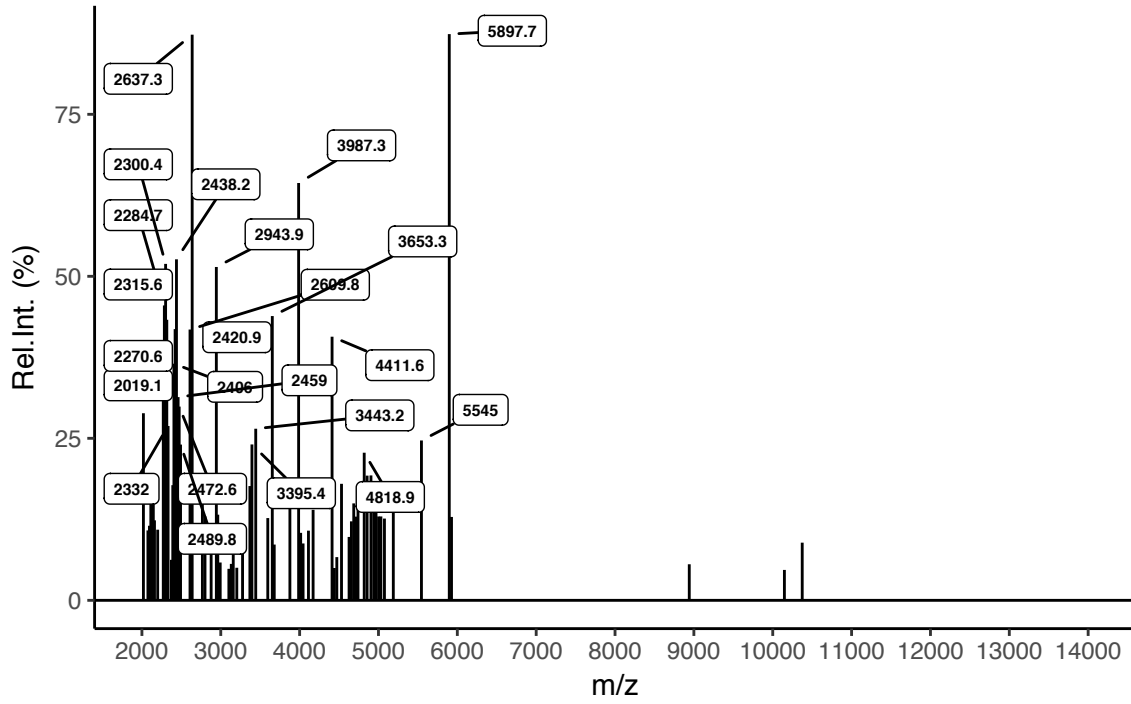
Supplementary Figure 2R. *Claroideoglomus etunicatum nc*



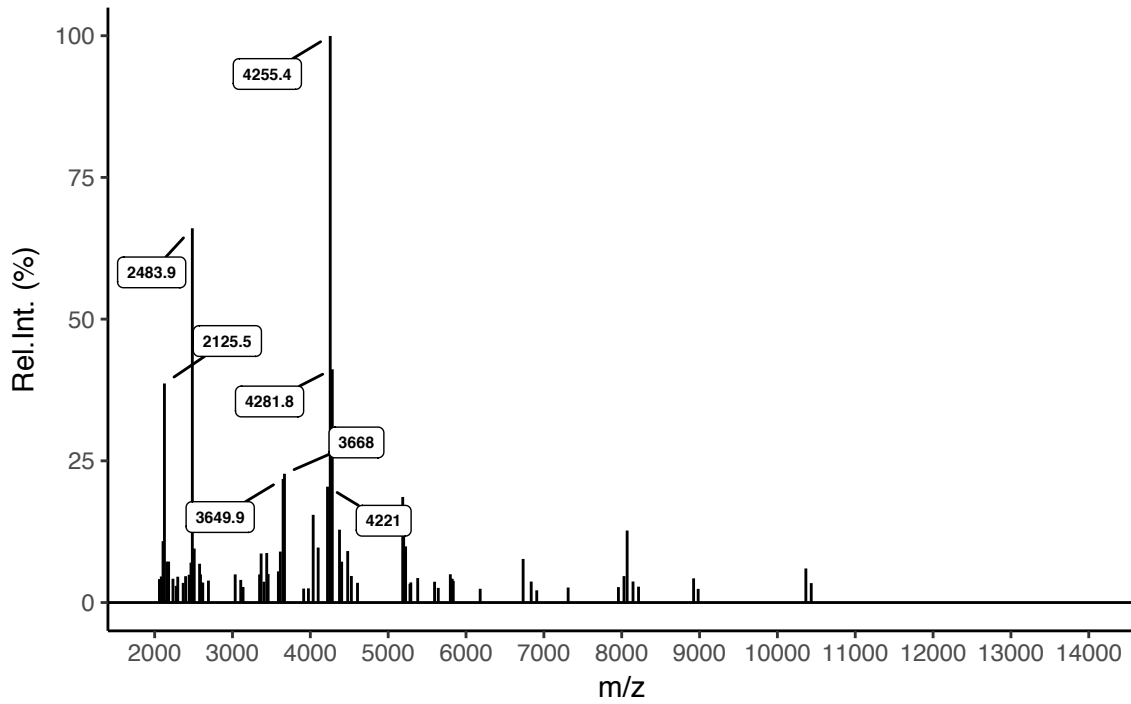
Supplementary Figure 2S. *Pervetustus simplex nc*

Figure S2. Selection of spectra from biological replicate (n=8) MALDI-TOF mass spectra of all studied species for MSP creation. Demonstrating the high degree of reproducibility within sample replicates. A. *Gigaspora rosea* BEG9; B. *Gigaspora margarita* BEG34; C. *Gigaspora candida* BEG17; D. *Scutellospora calospora* BEG32; E. *Rhizophagus clarus* BEG248 ; F. *Rhizophagus clarus* BEG149; G. *Rhizophagus clarus* BEG142 ; H. *Funneliformis coronatum* BEG22; I. *Funneliformis mosseae* BEG12; J. *Claroideogloium etunicatum* BEG247; K. *Claroideogloium claroideum* BEG31; L. *Claroideogloium claroideum* BEG14; M. *Claroideogloium claroideum* BEG23; N. *Scutellospora ovalis*; O. *Acaulospora saccata*; P. *Acaulospora fragilissima*; Q. *Rhizophagus neocaledonicus*; R. *Claroideogloium etunicatum nc*; S. *Pervetustus simplex nc*.

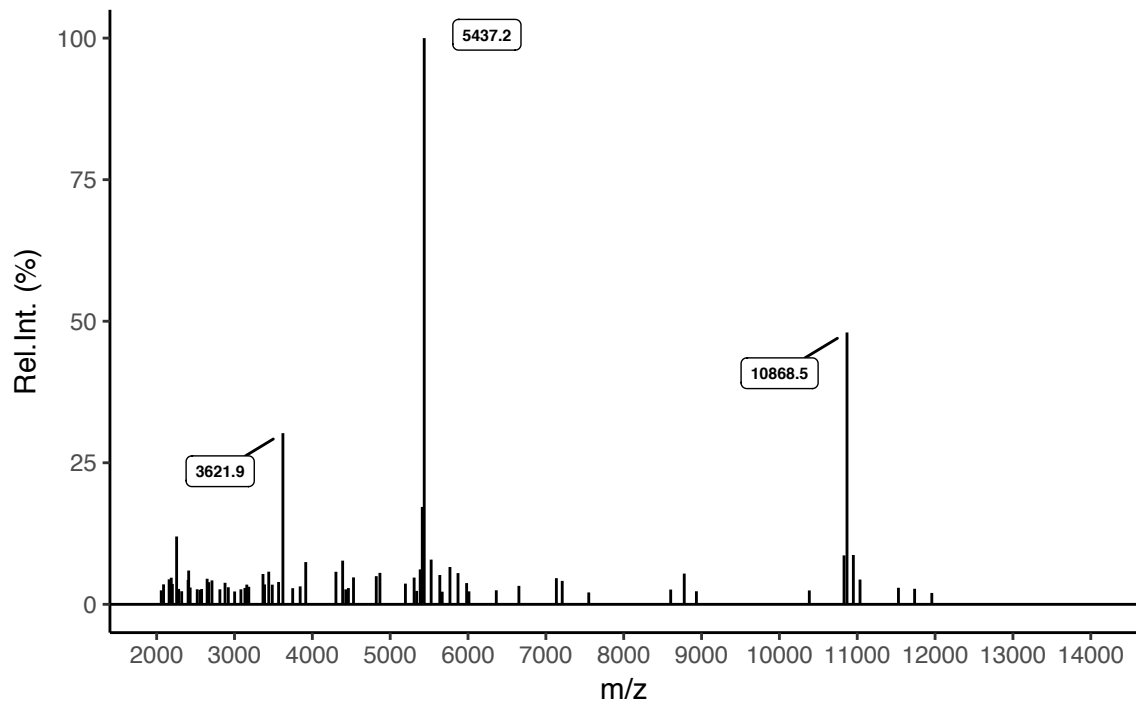
Acaulospora fragilissima sp



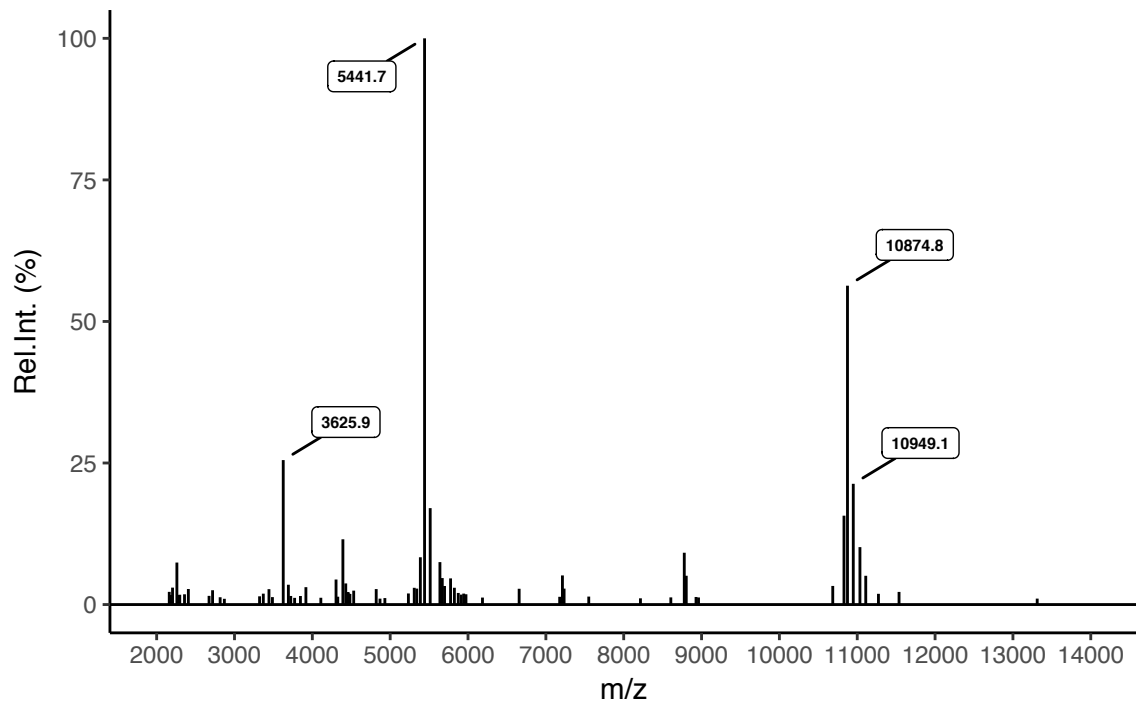
Acaulospora saccata



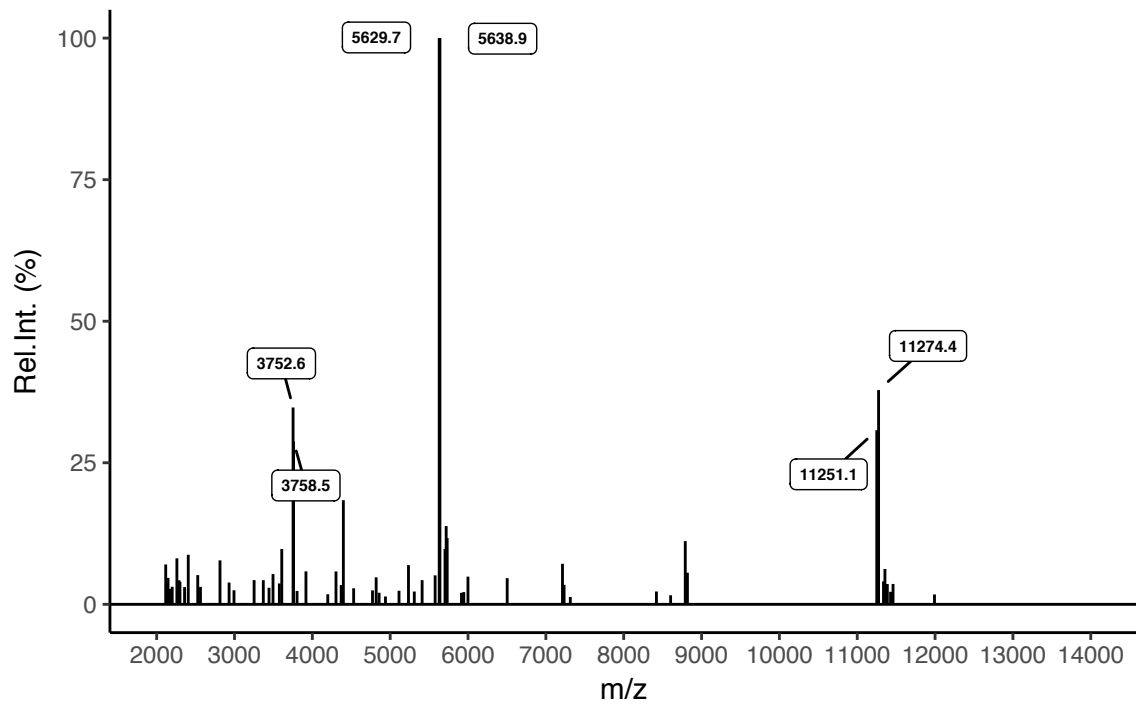
Claroideoglomus claroideum BEG14 sp



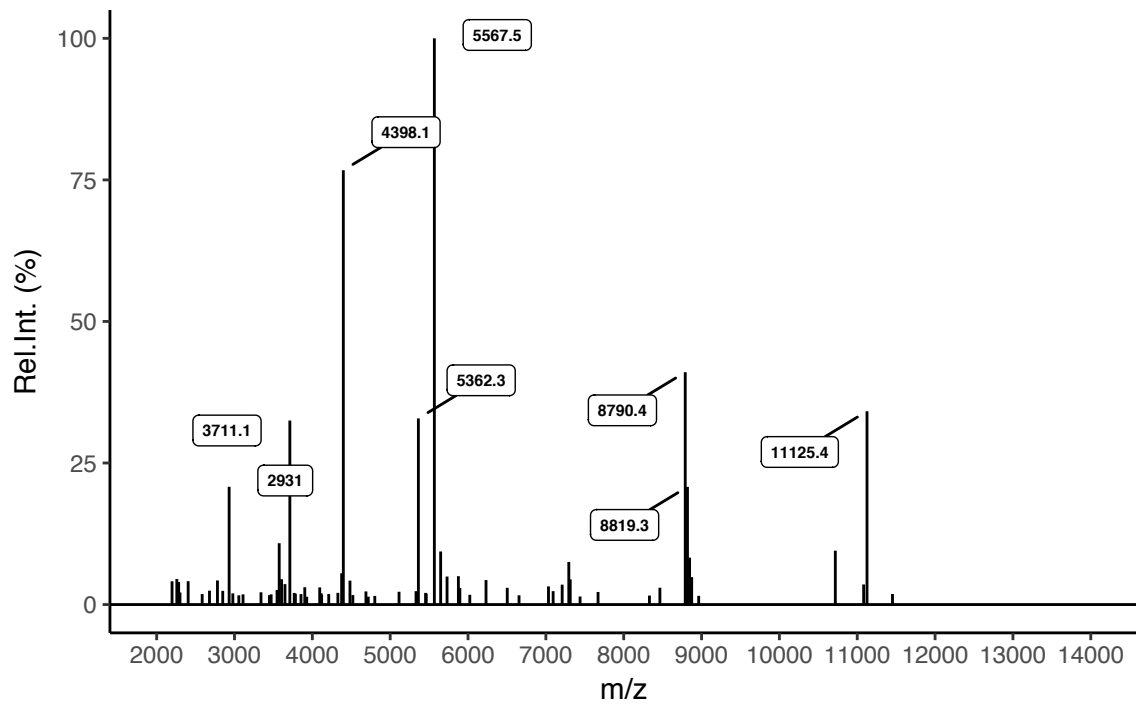
Claroideoglomus claroideum BEG23



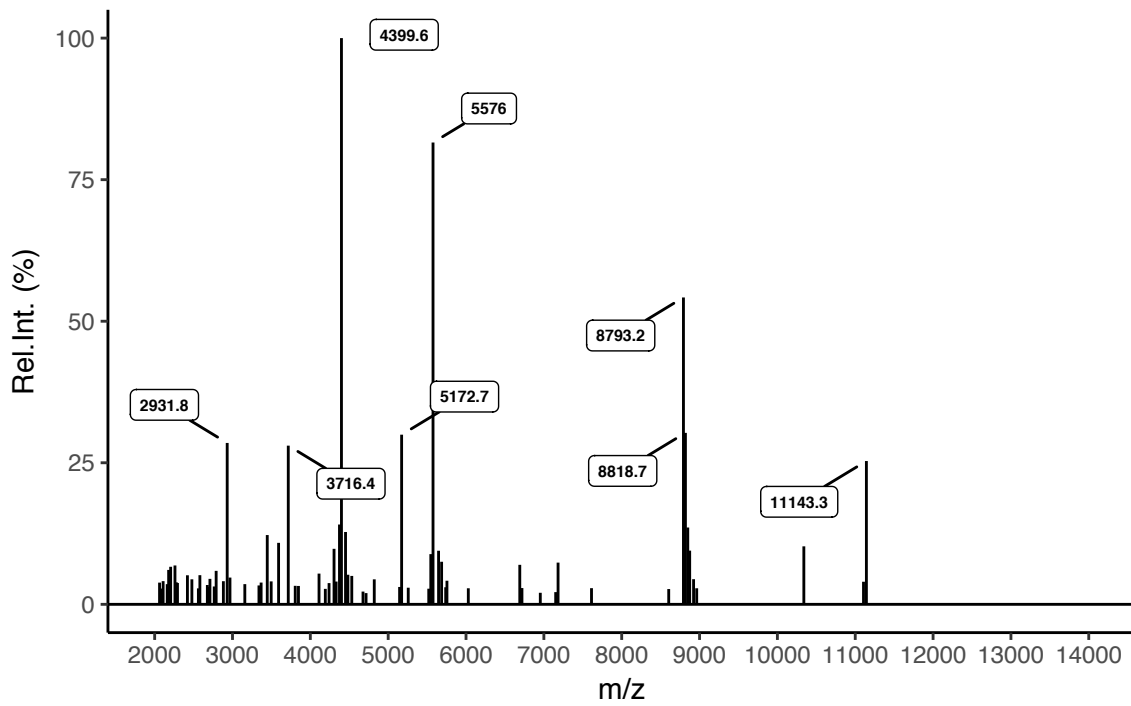
Claroideoglomus claroideum BEG31



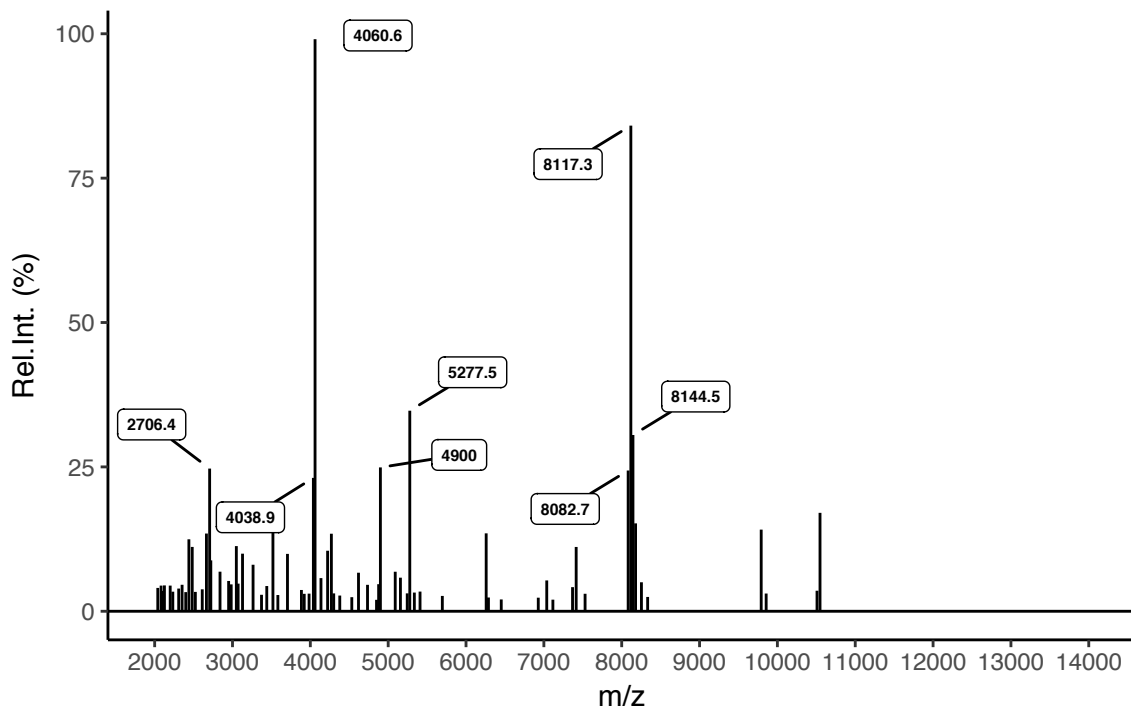
Claroideoglomus etunicatum BEG247



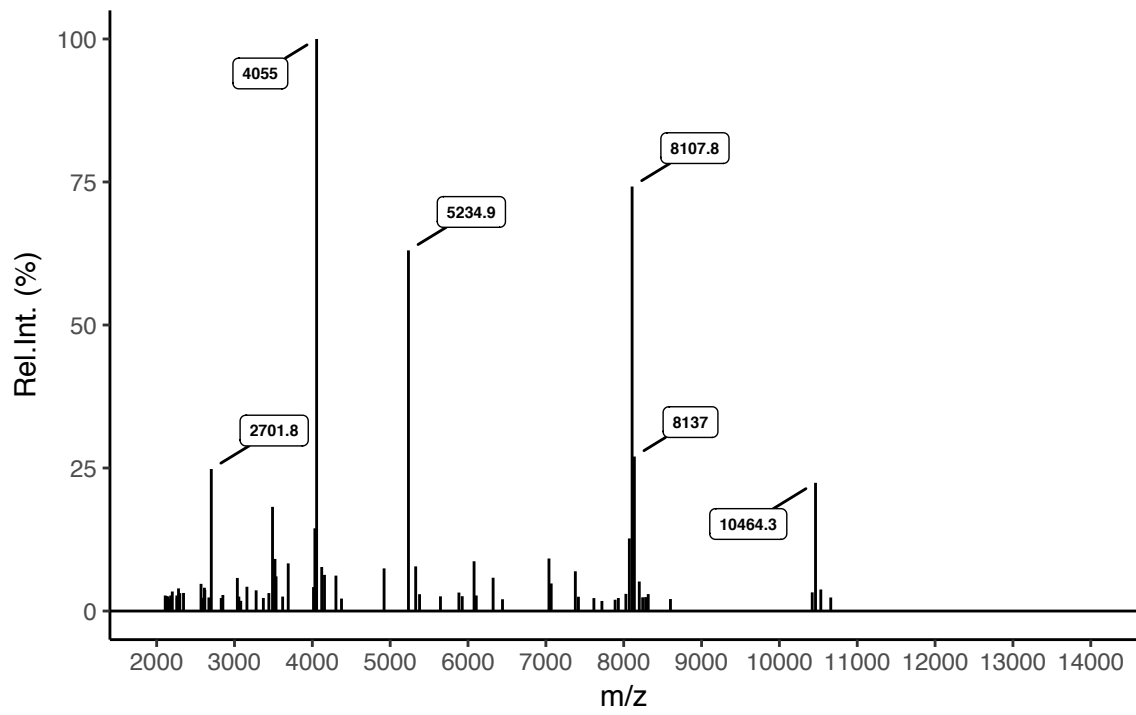
Claroideoglomus etunicatum nc



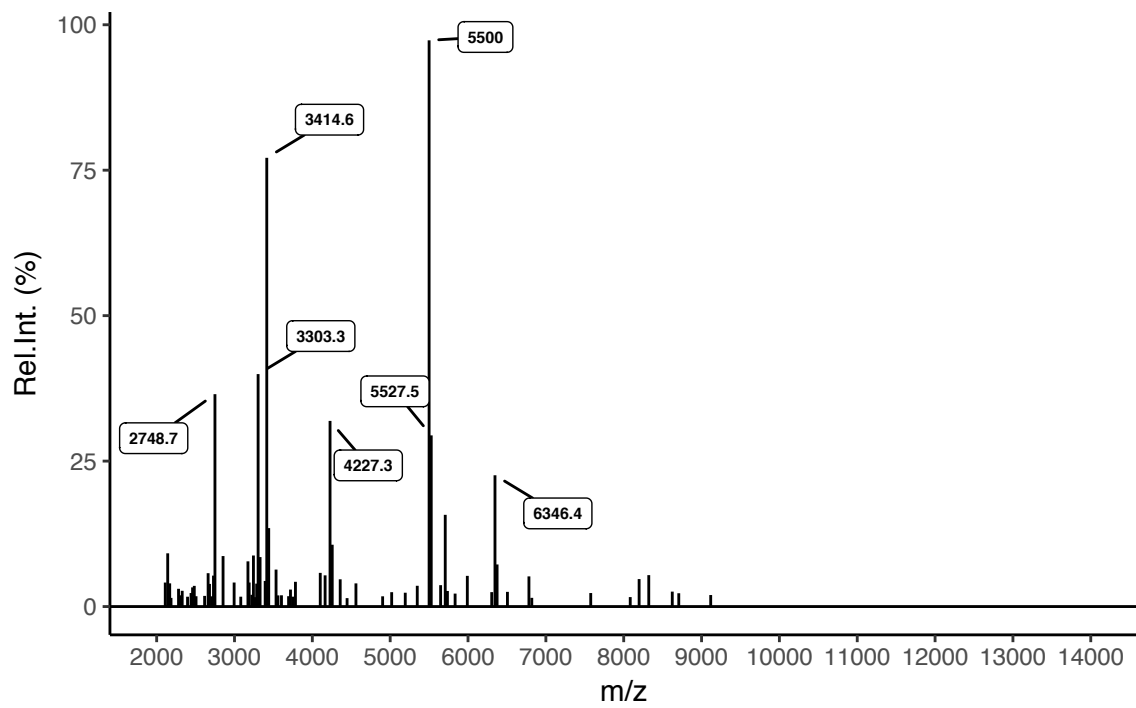
Funneliformis coronatum BEG22



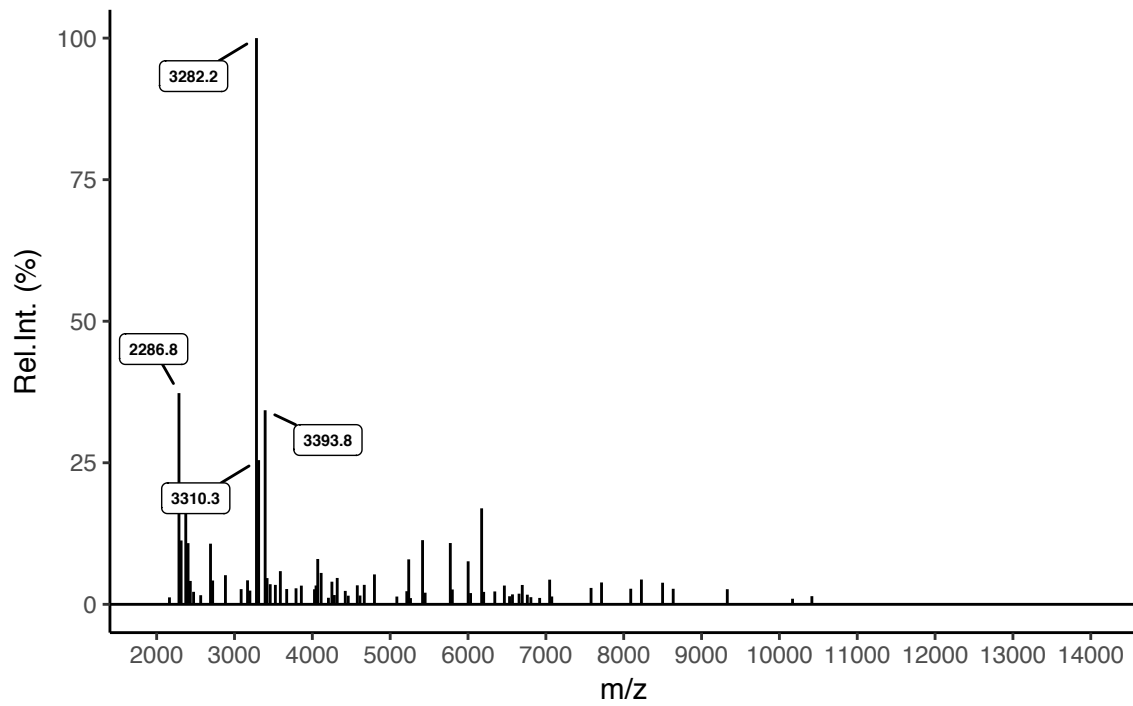
Funneliformis mosseae BEG12



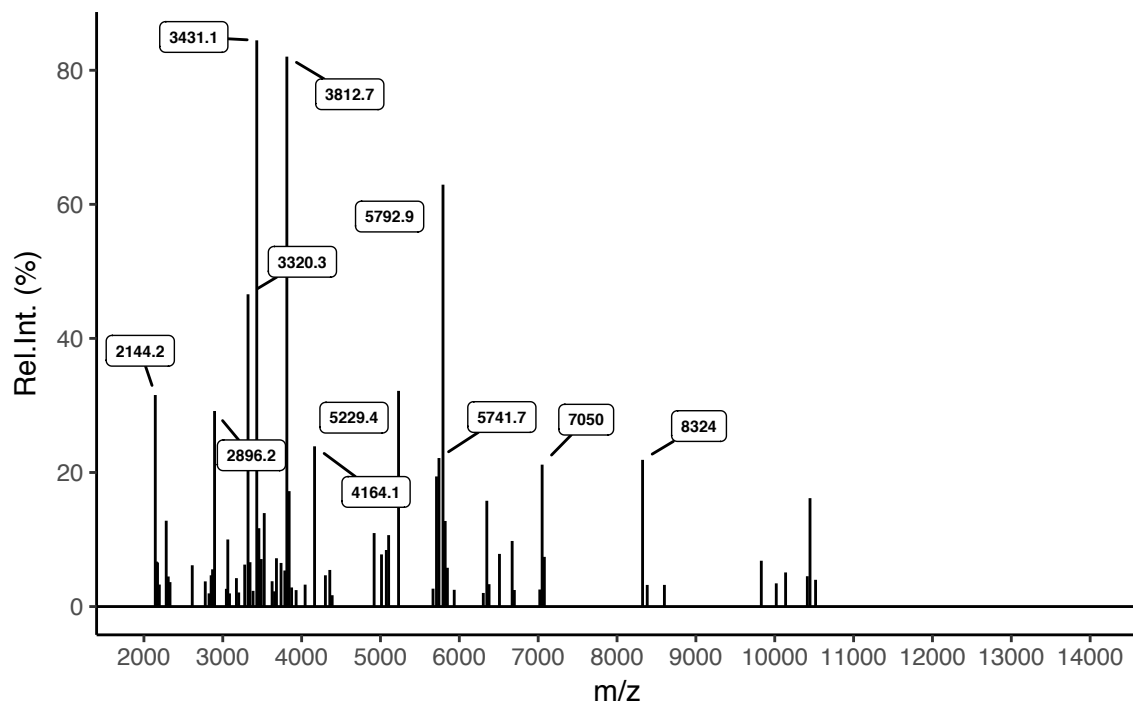
Gigaspora candida BEG17



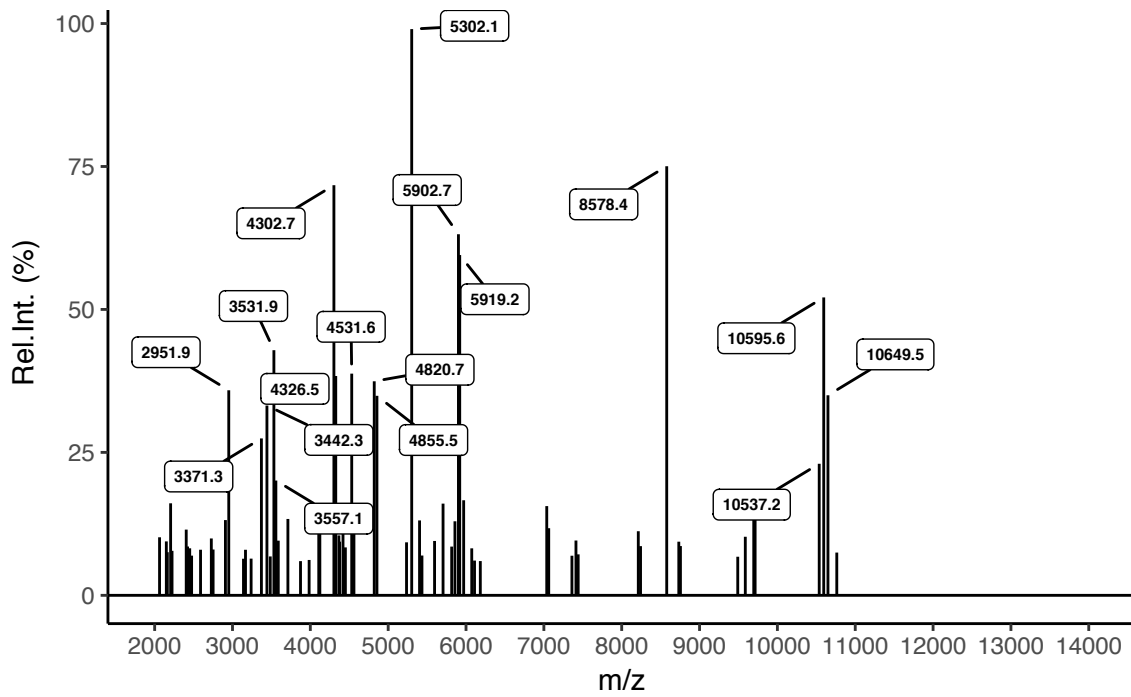
Gigaspora margarita BEG34



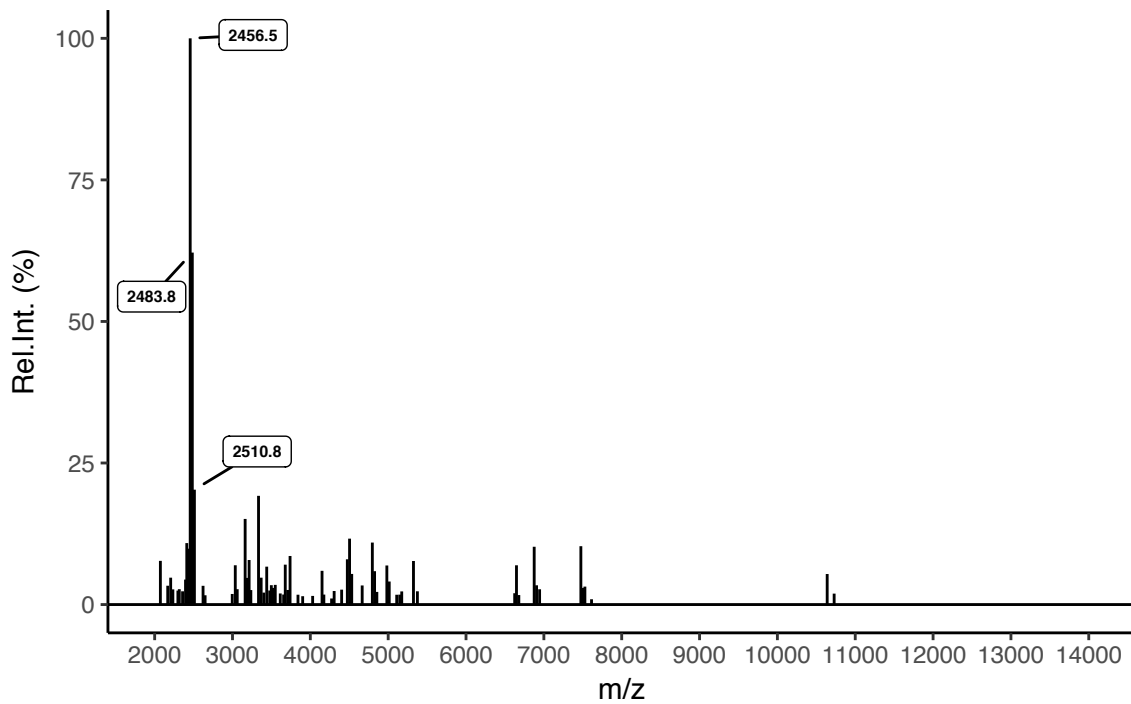
Gigaspora rosea BEG09



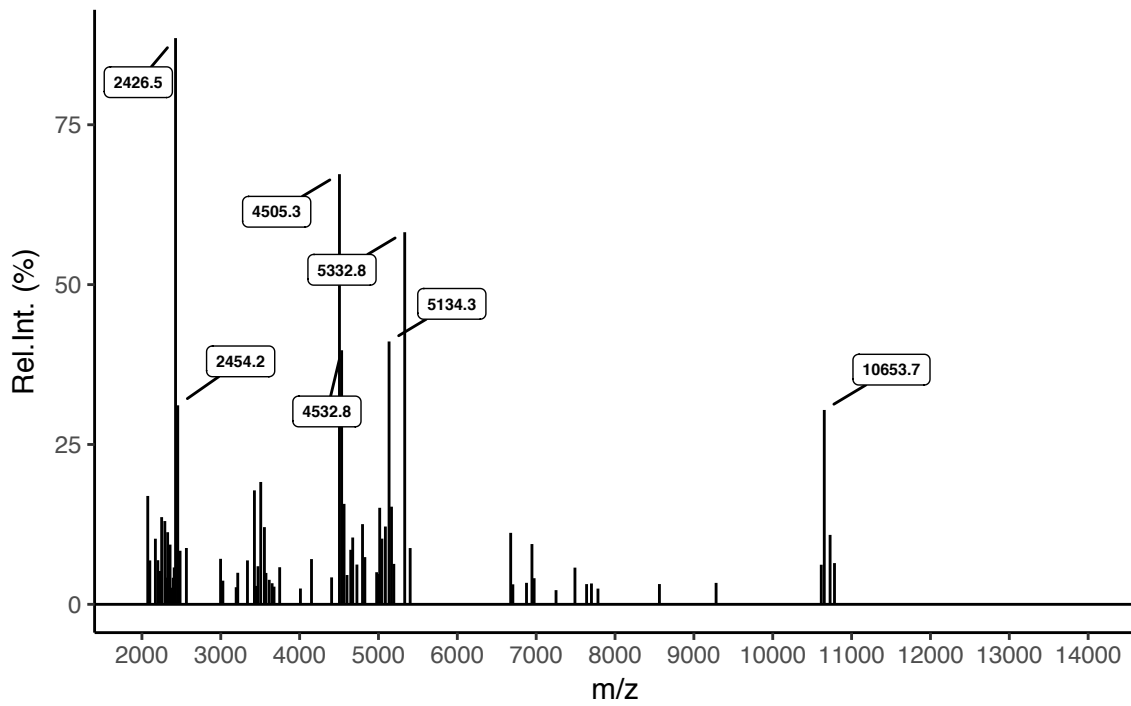
Pervetustus simplex nc



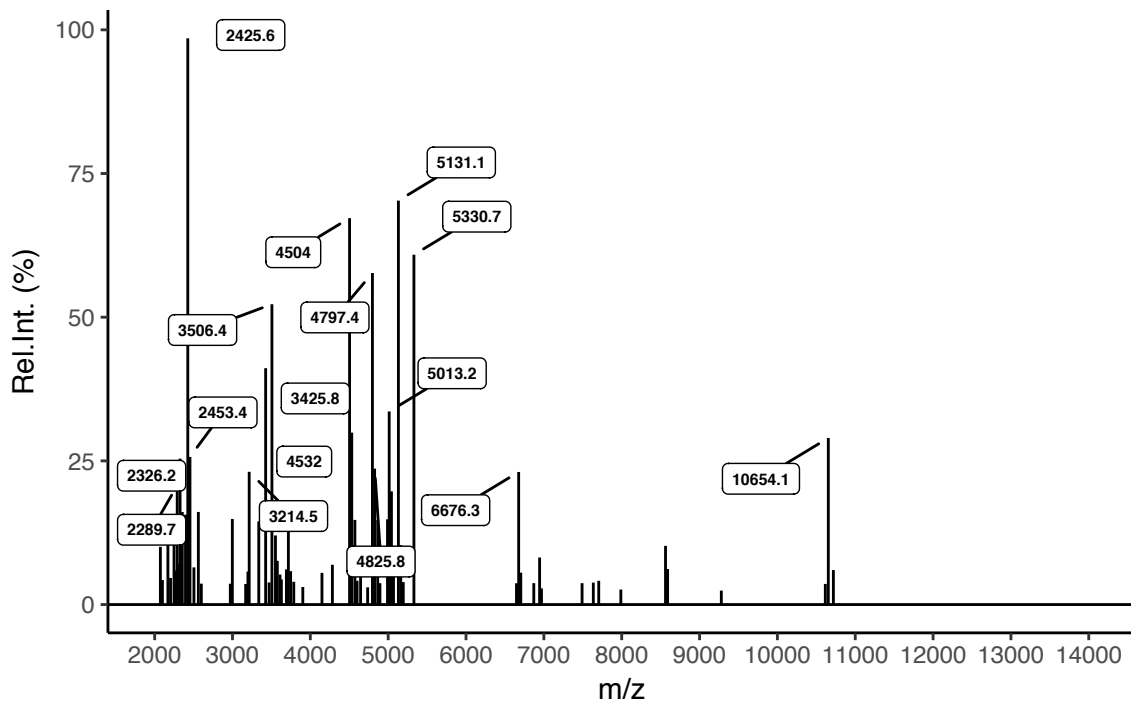
Rhizophagus clarus BEG142



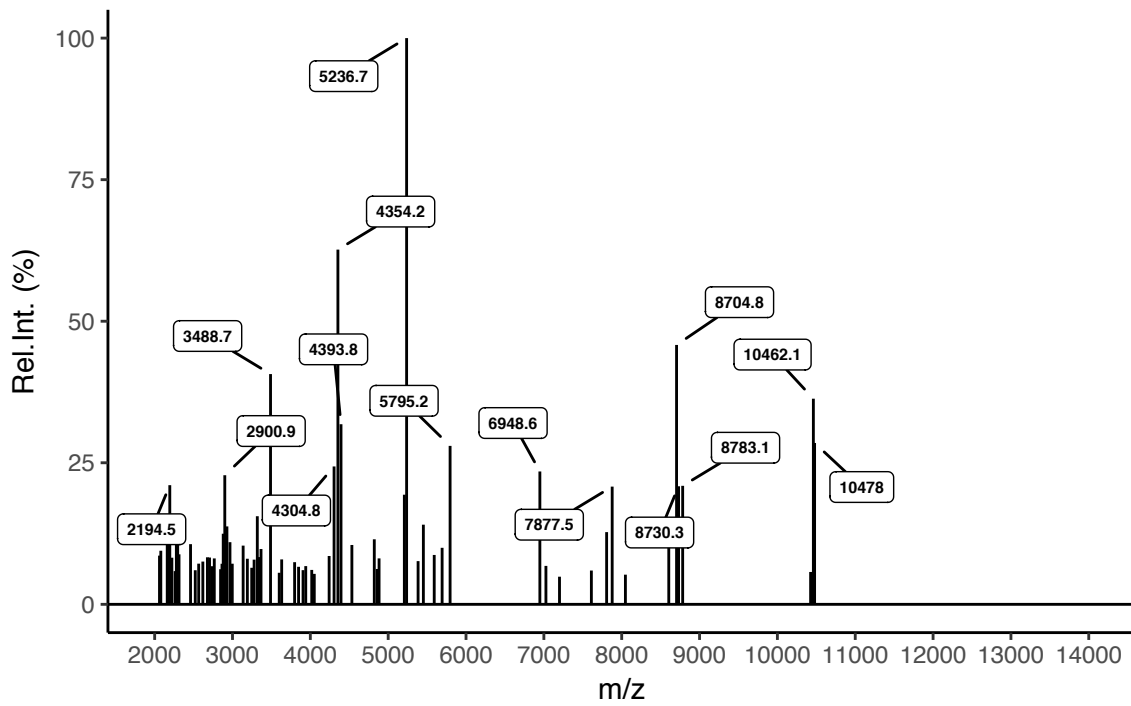
Rhizophagus clarus BEG149



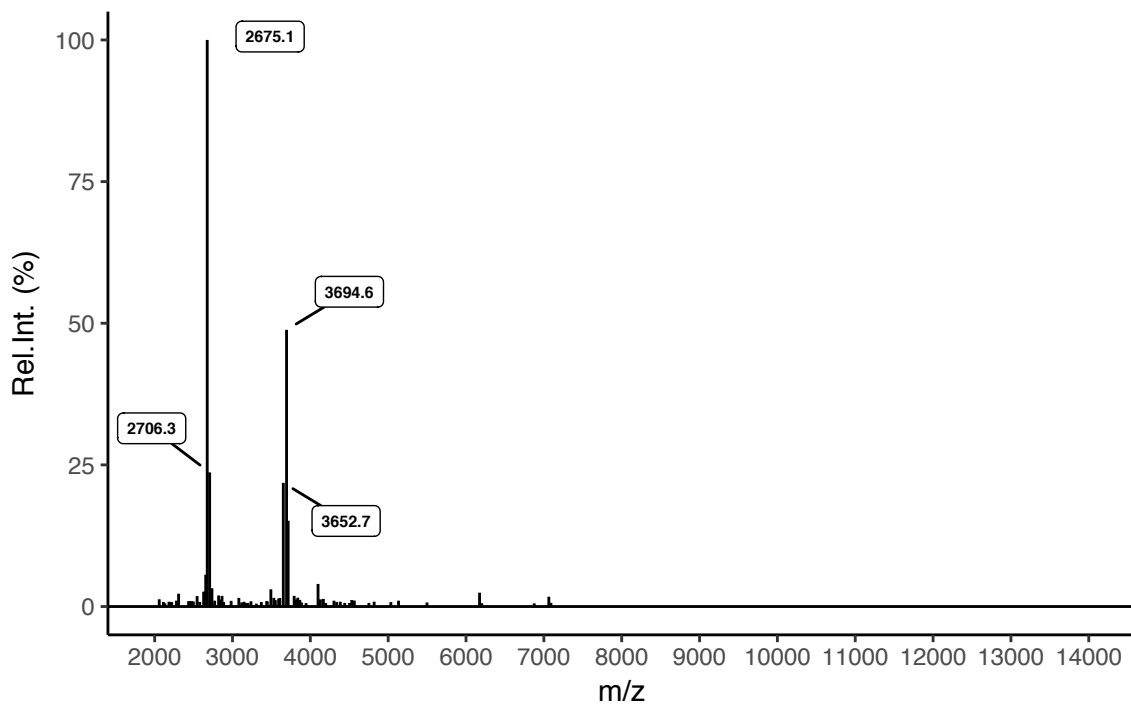
Rhizophagus clarus BEG248



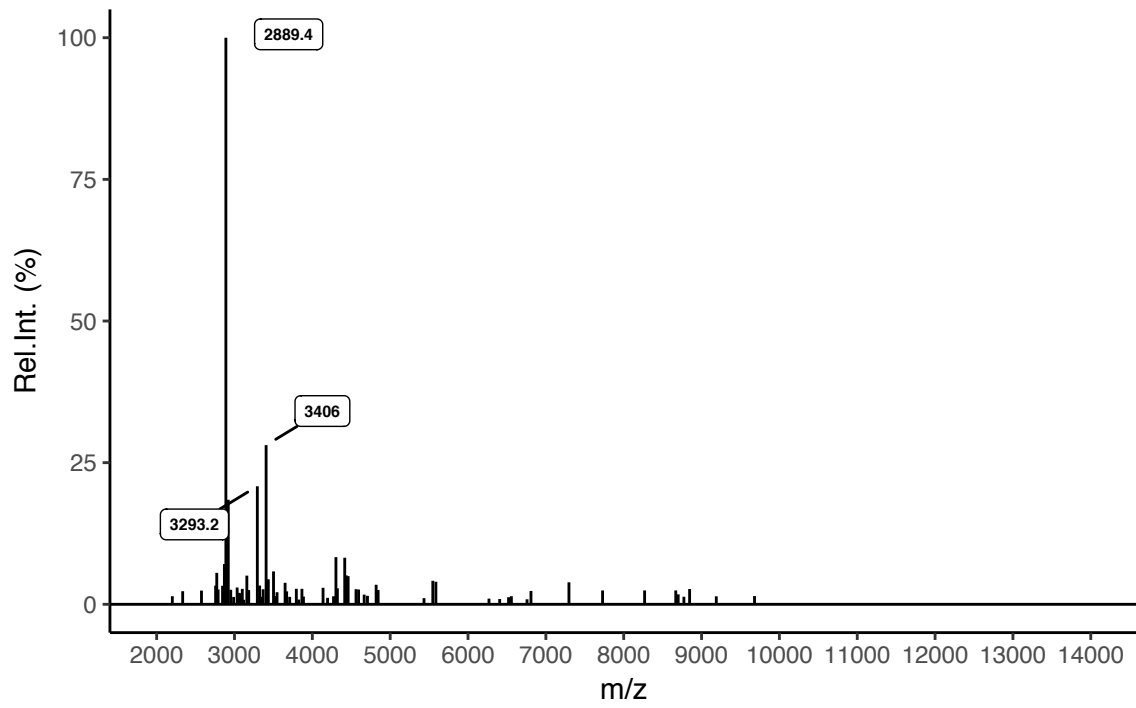
Rhizophagus neocaledonicus



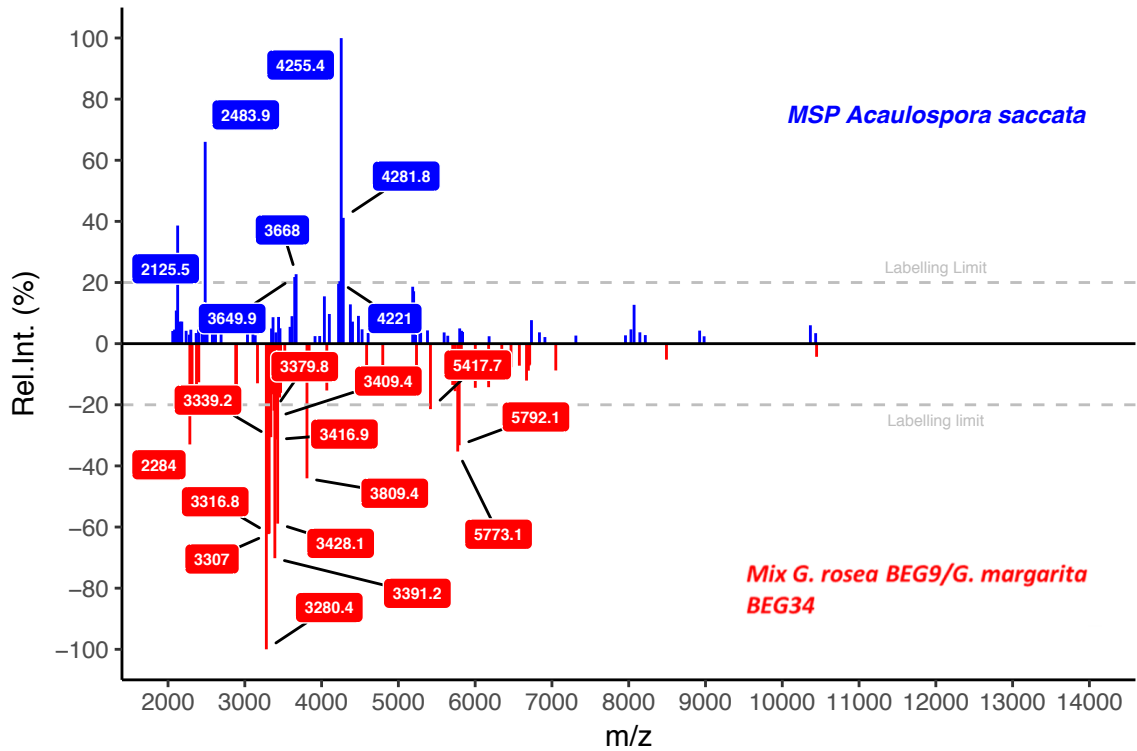
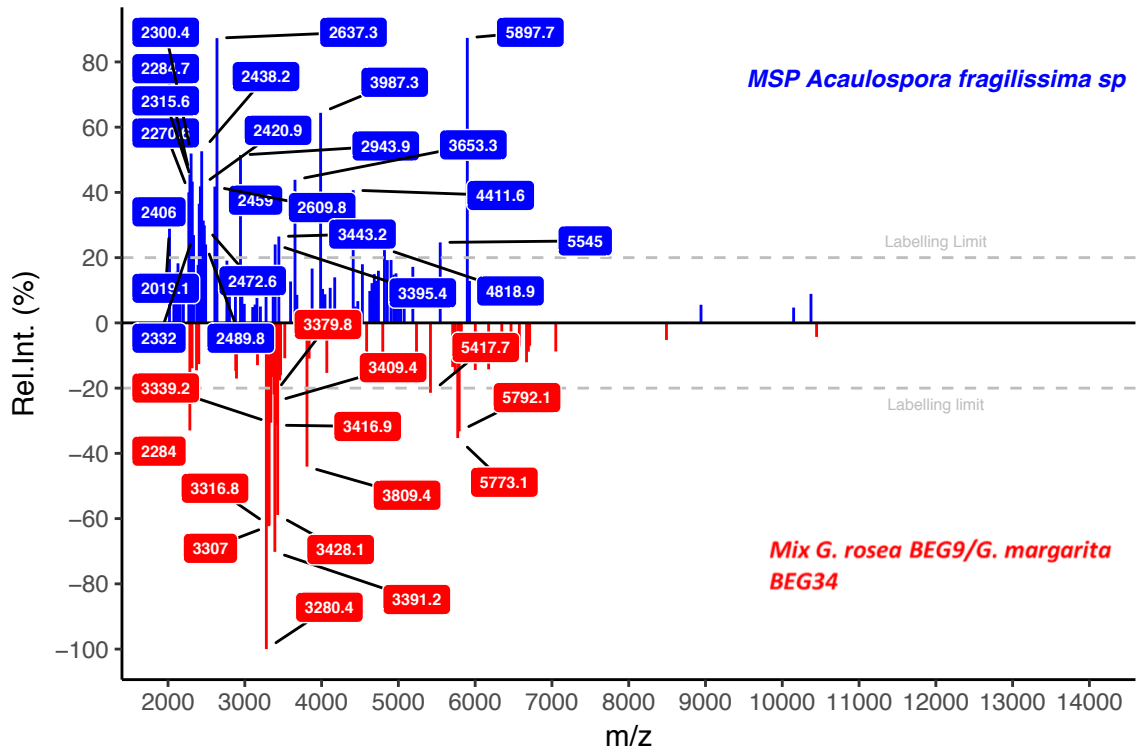
Scutellospora calospora BEG32

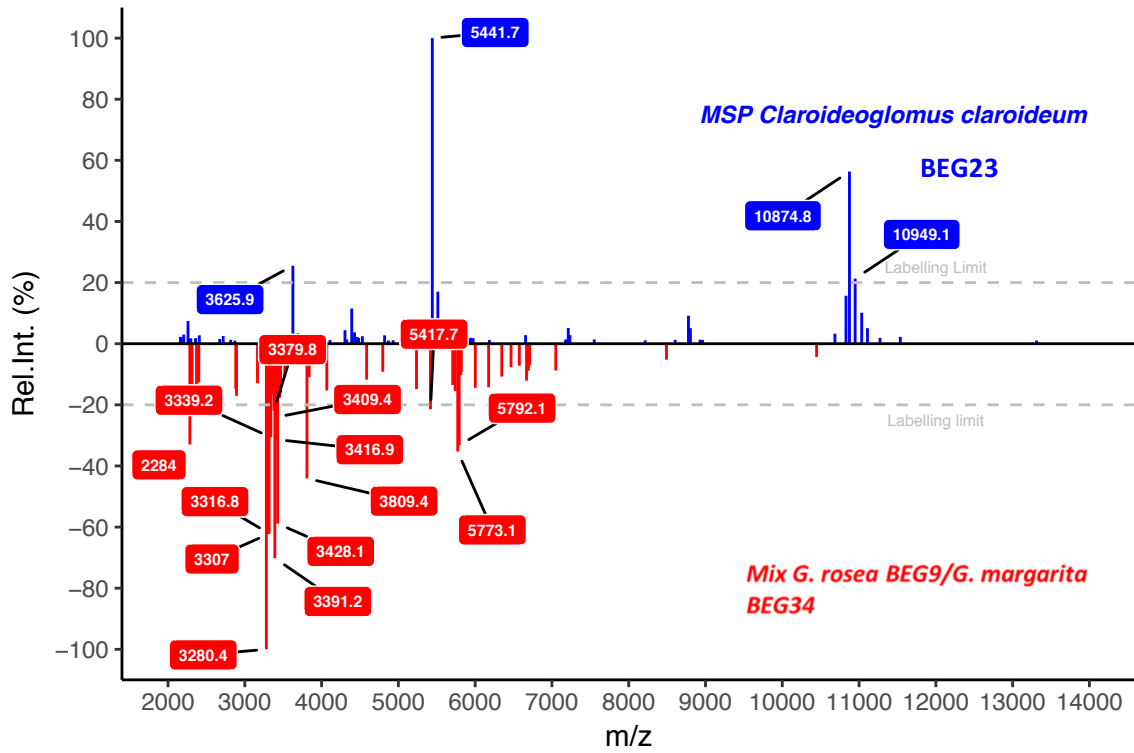
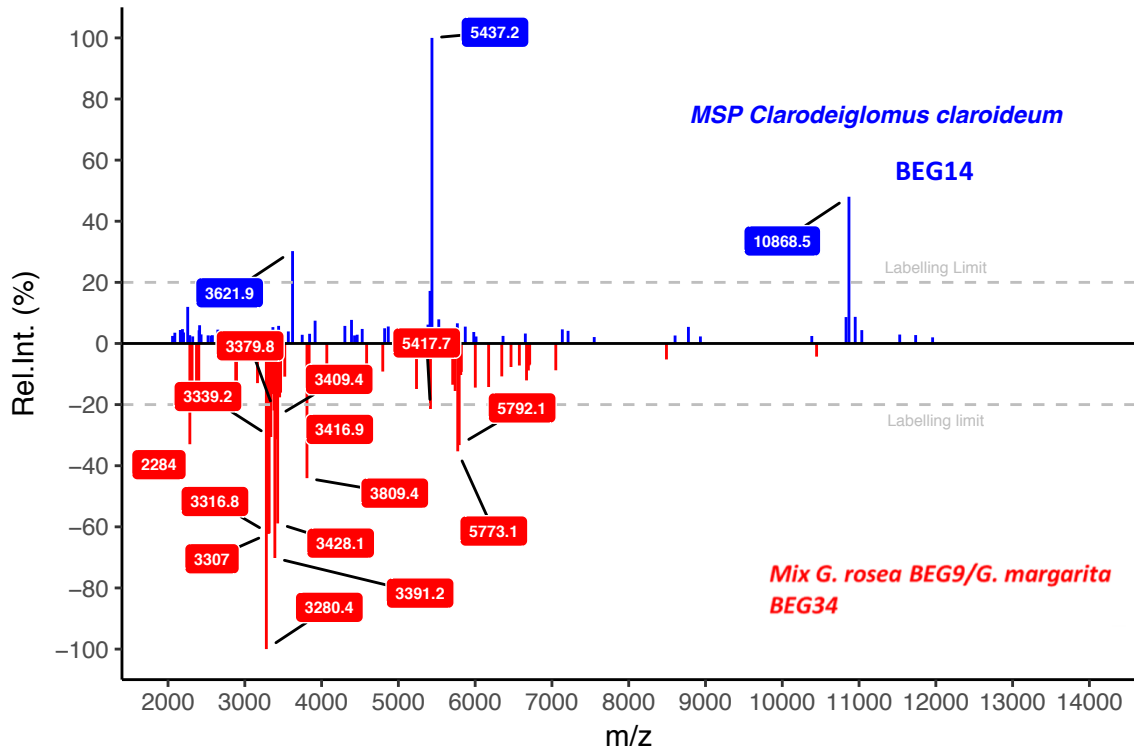


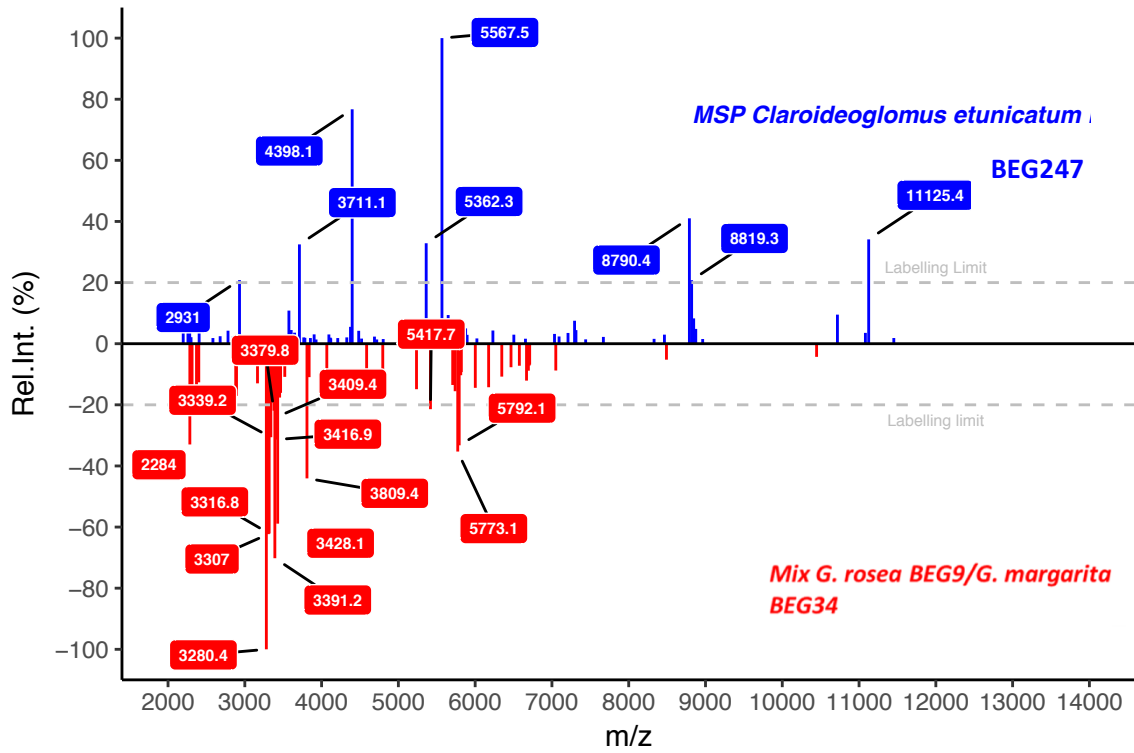
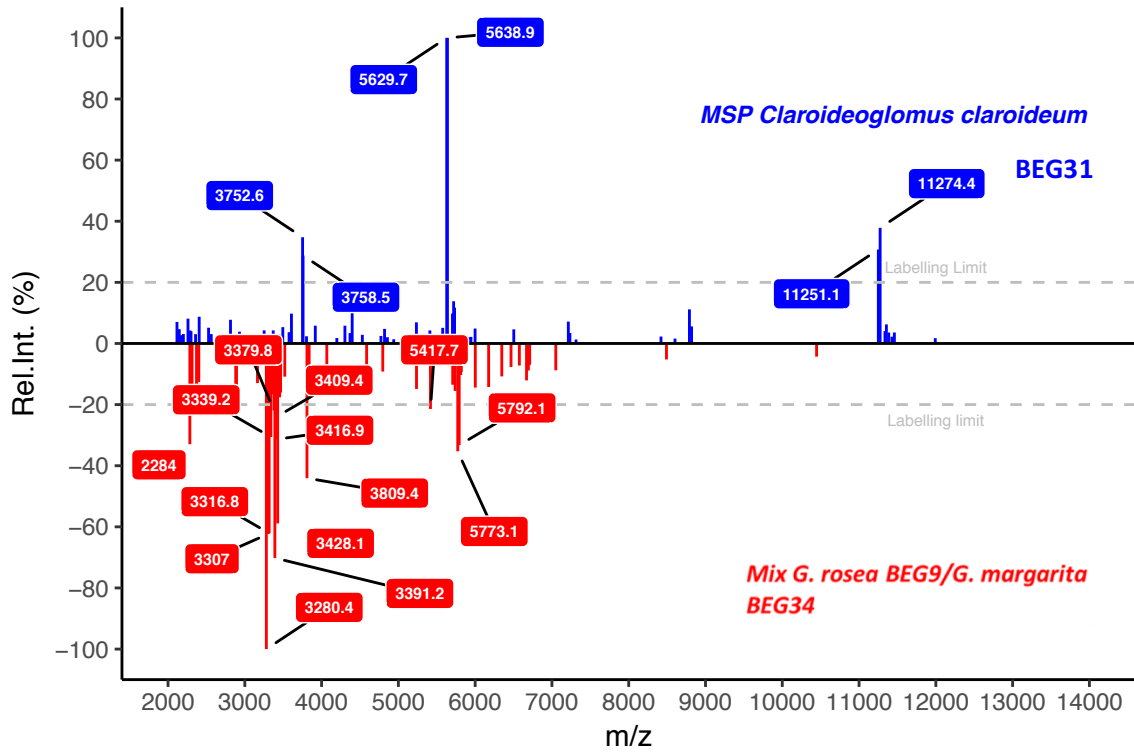
Scutellospora ovalis

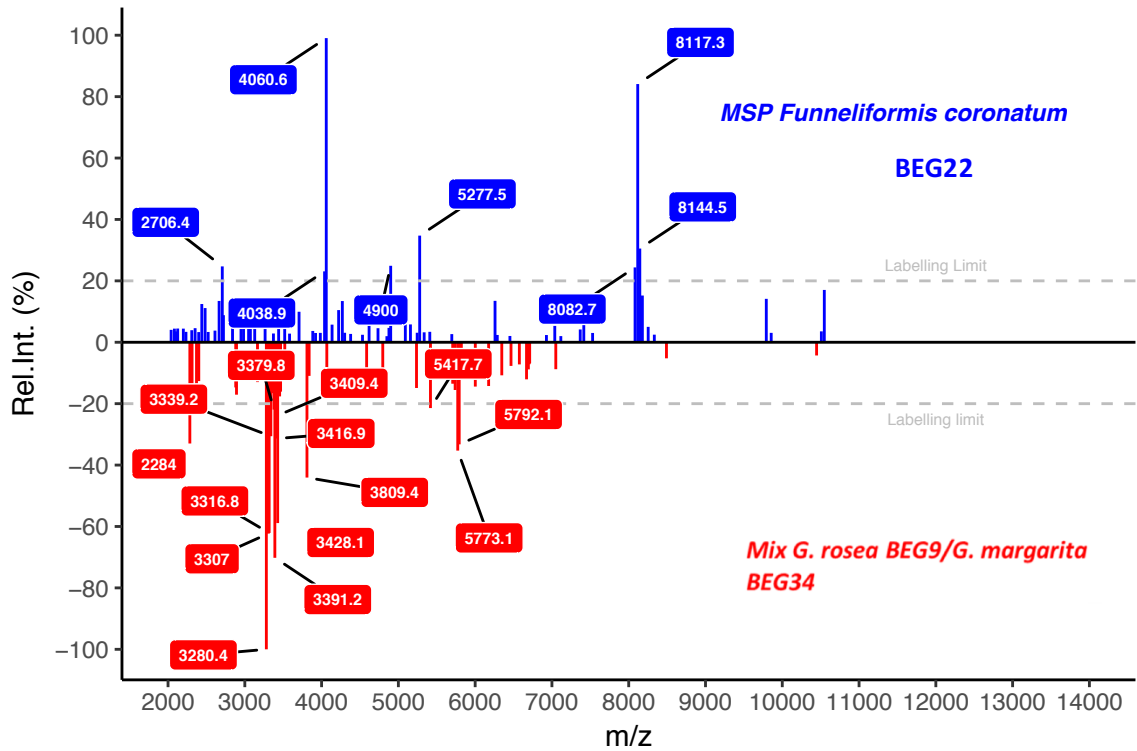
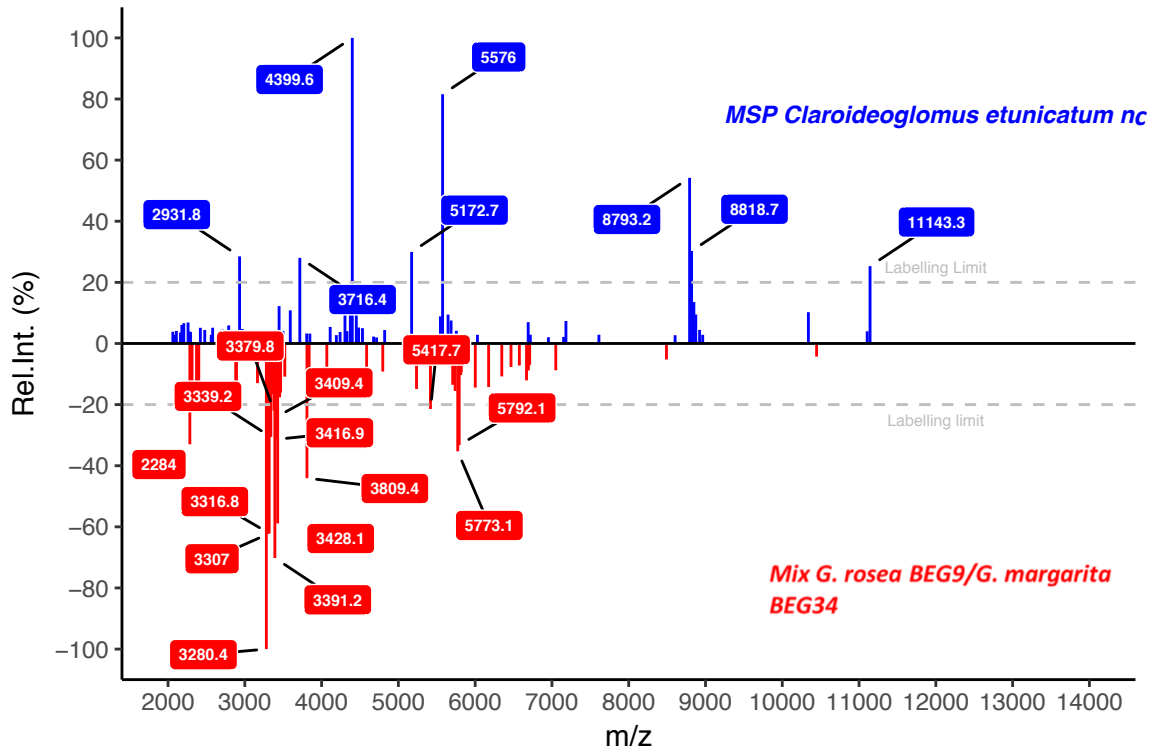


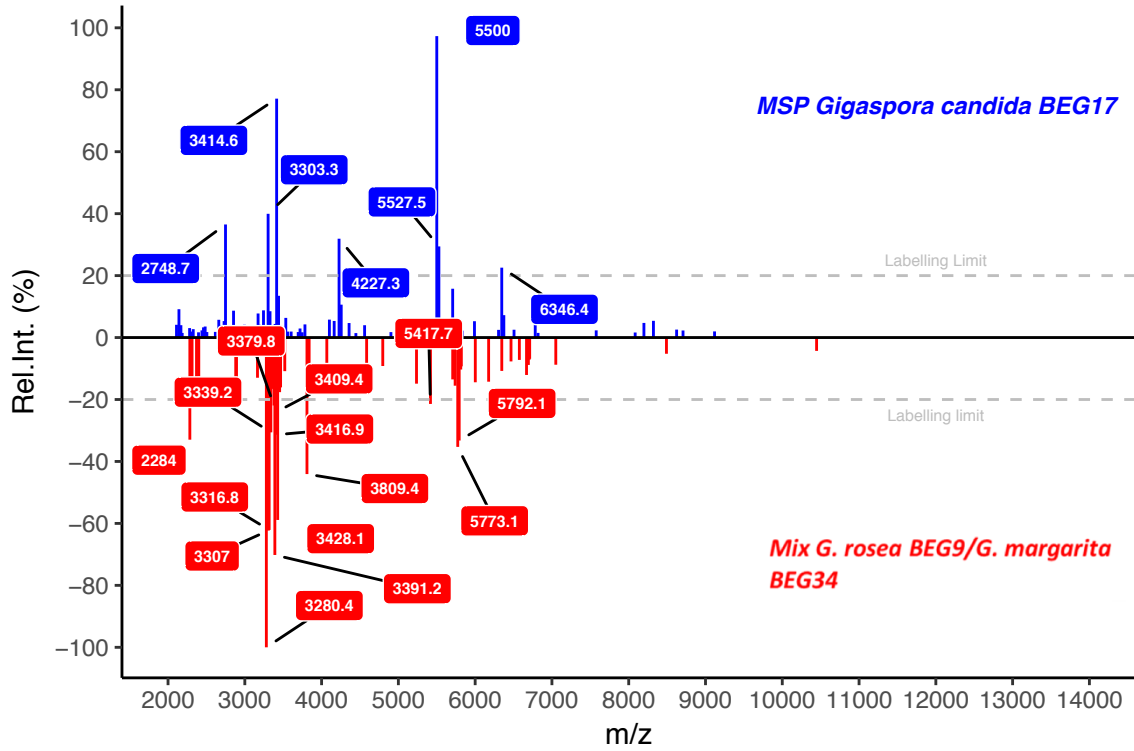
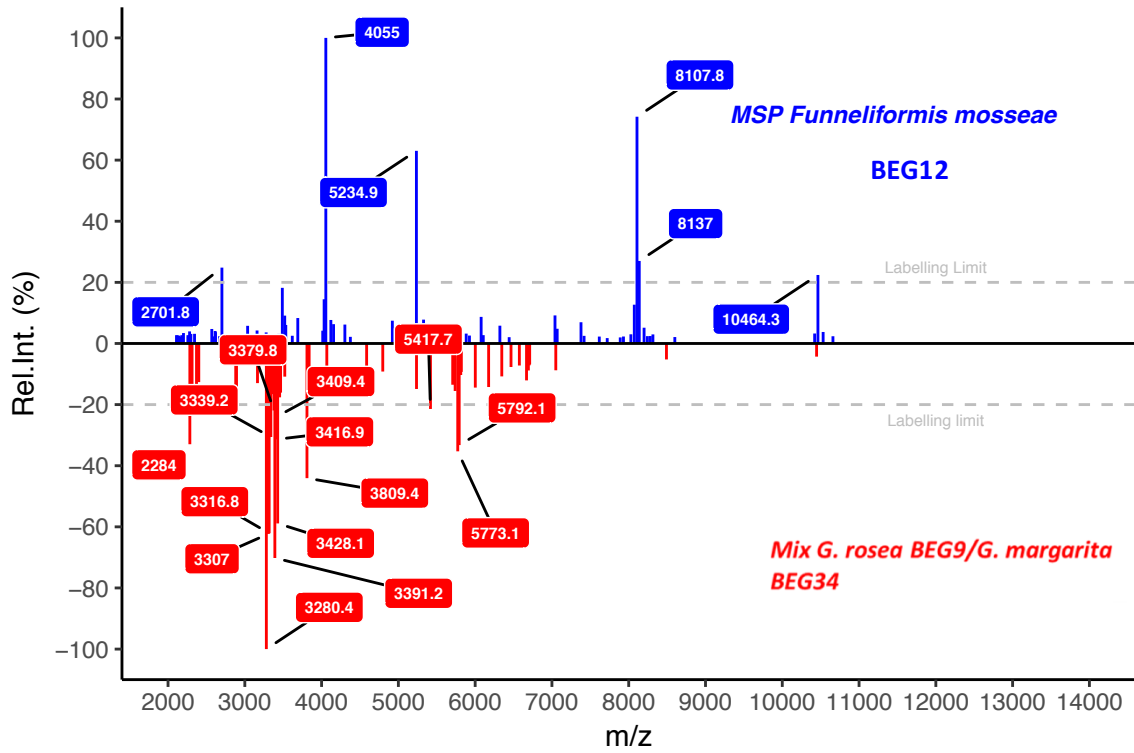
Supplementary Figure 3. MALDI-TOF-MS main spectrum data export of all studied species for MSP centroid representation under R software (version 3.3.2³⁰).

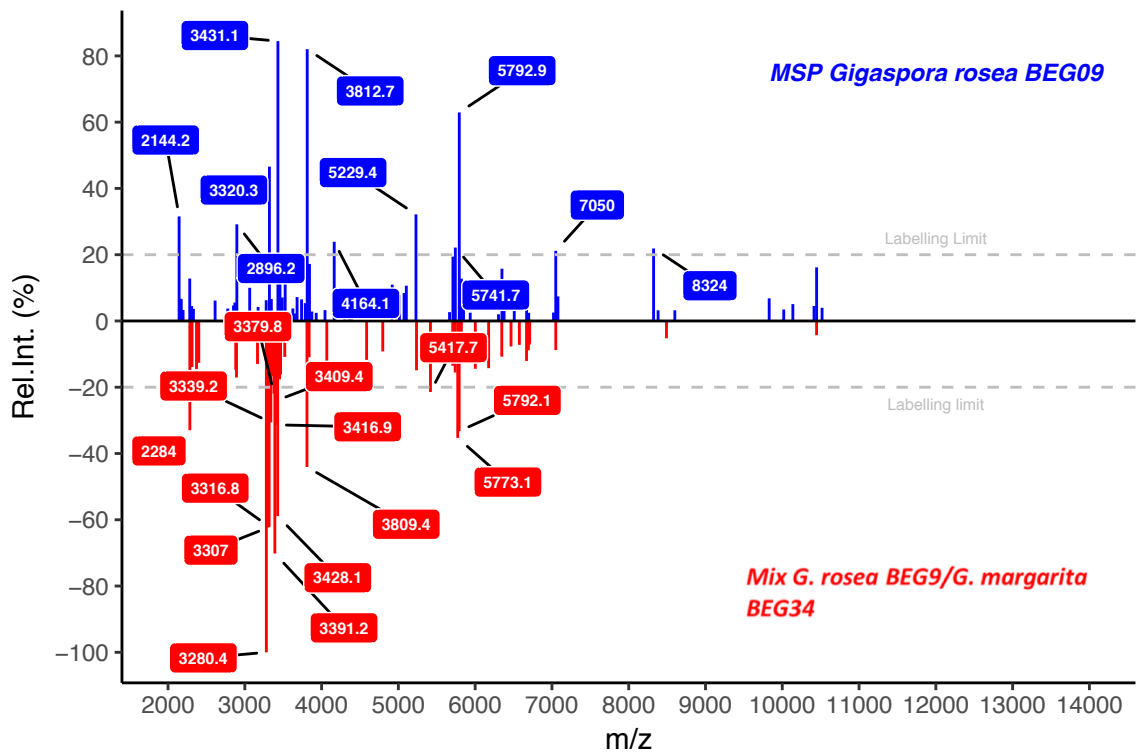
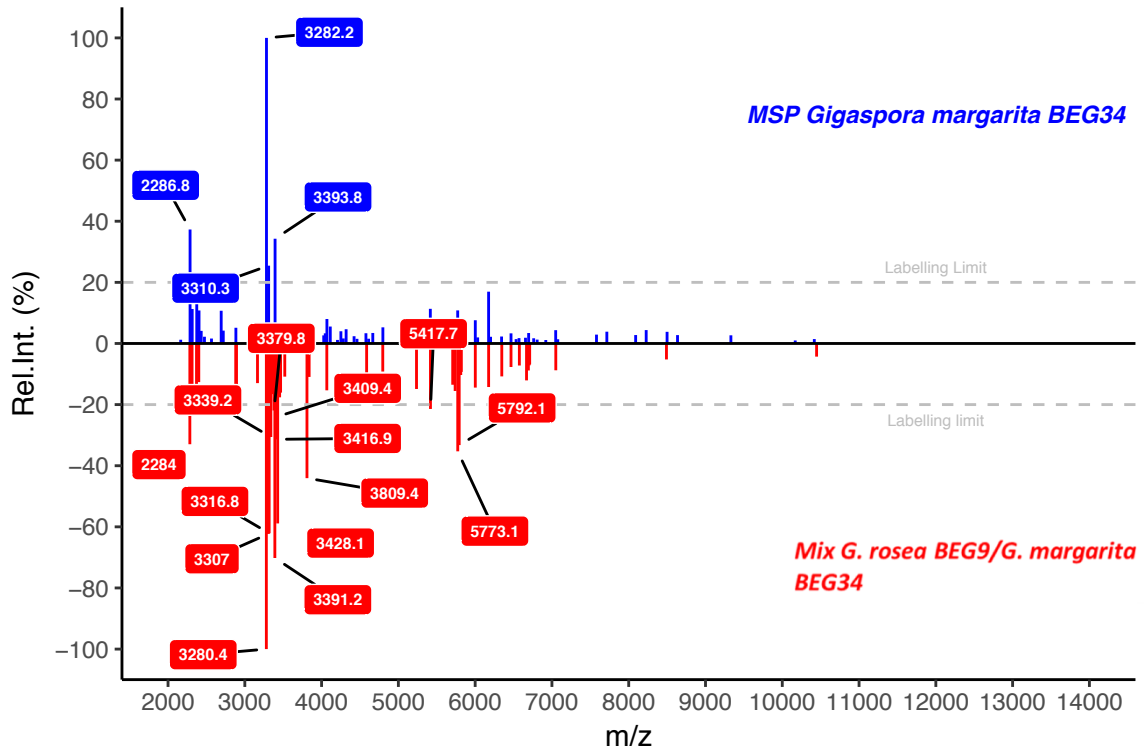


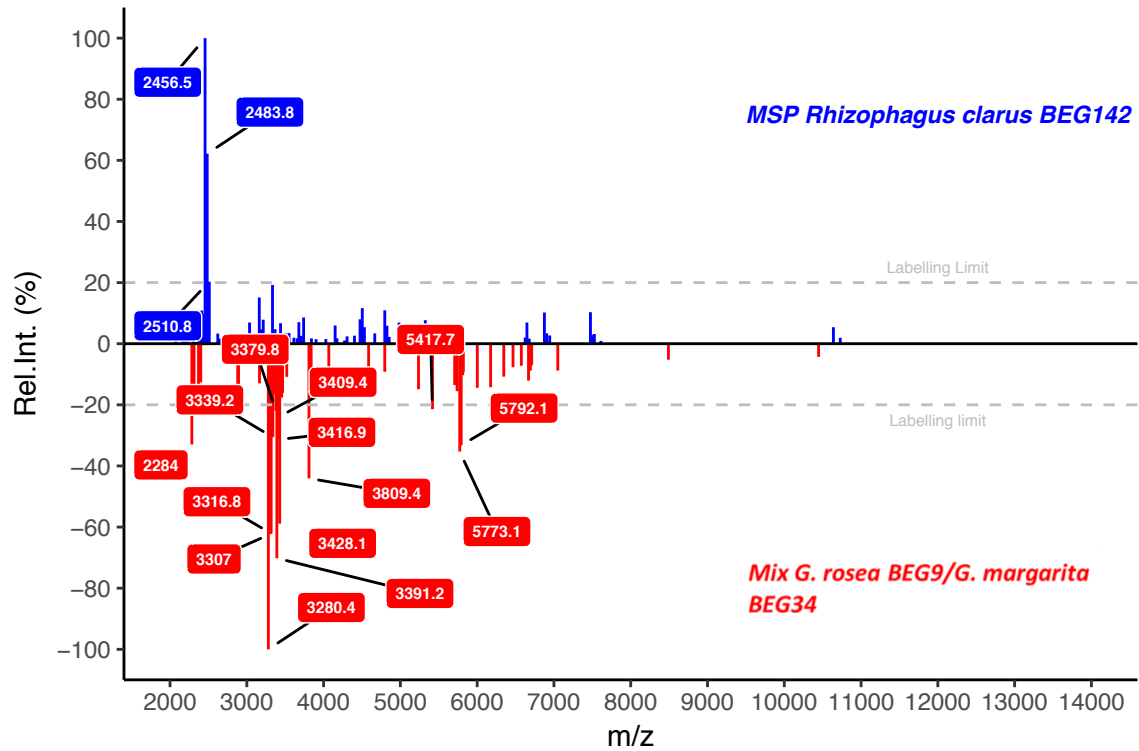
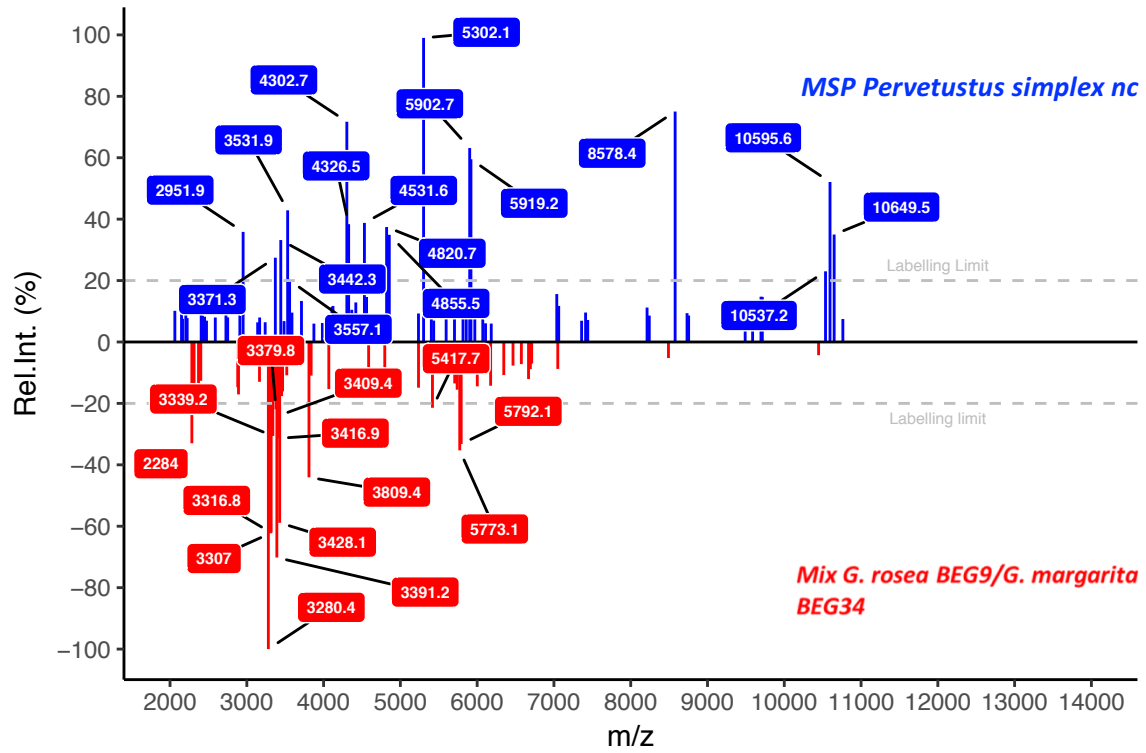


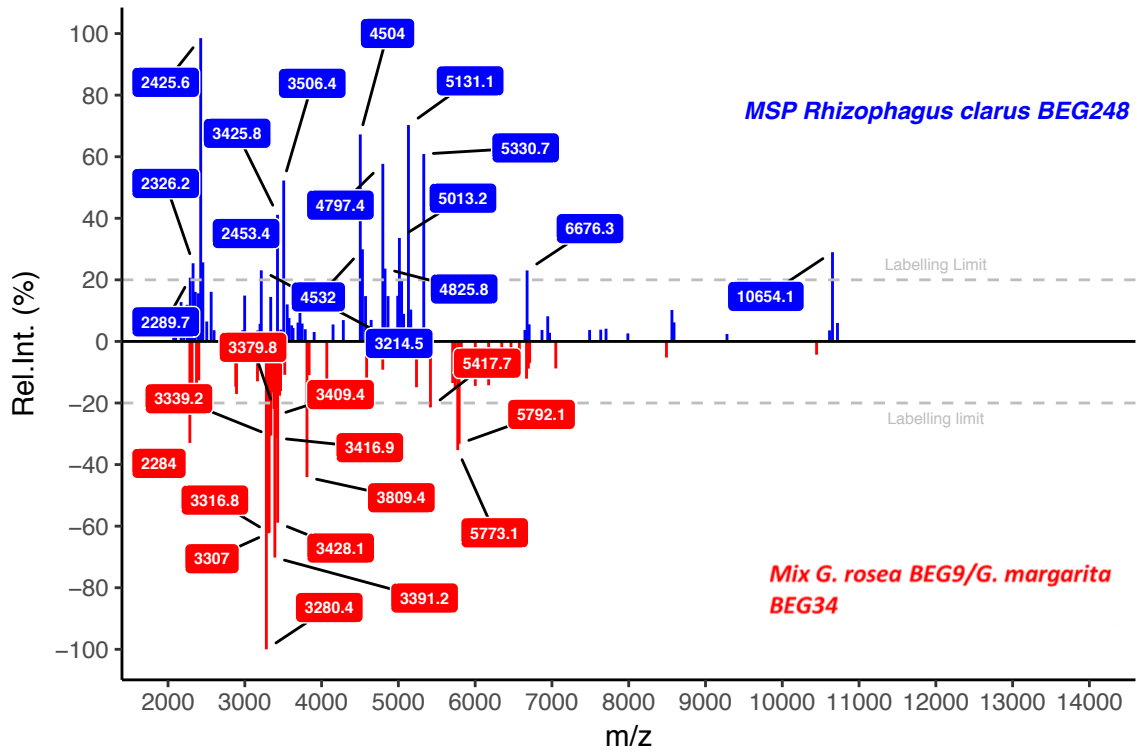
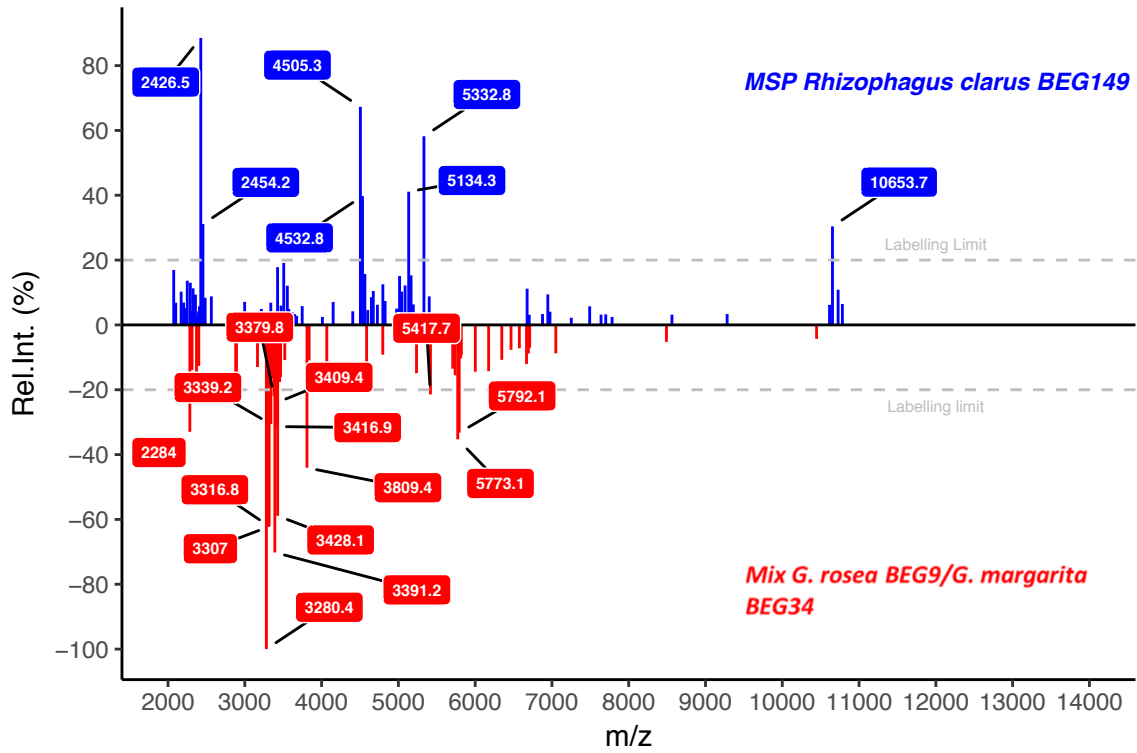


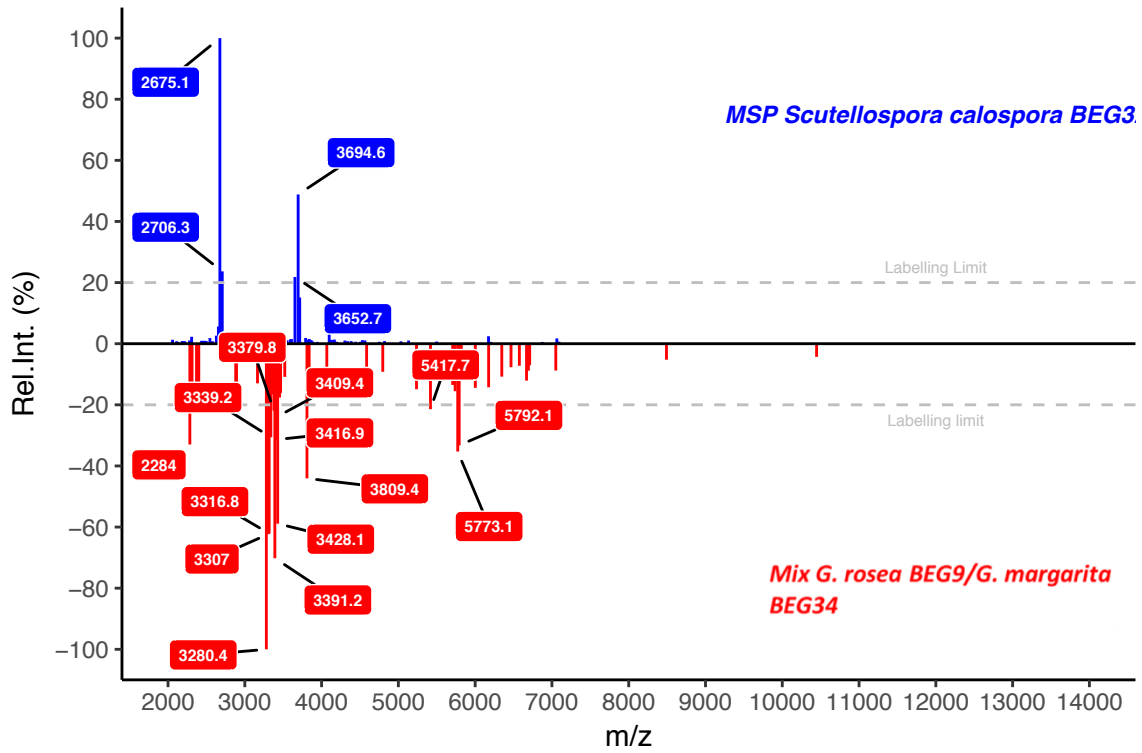
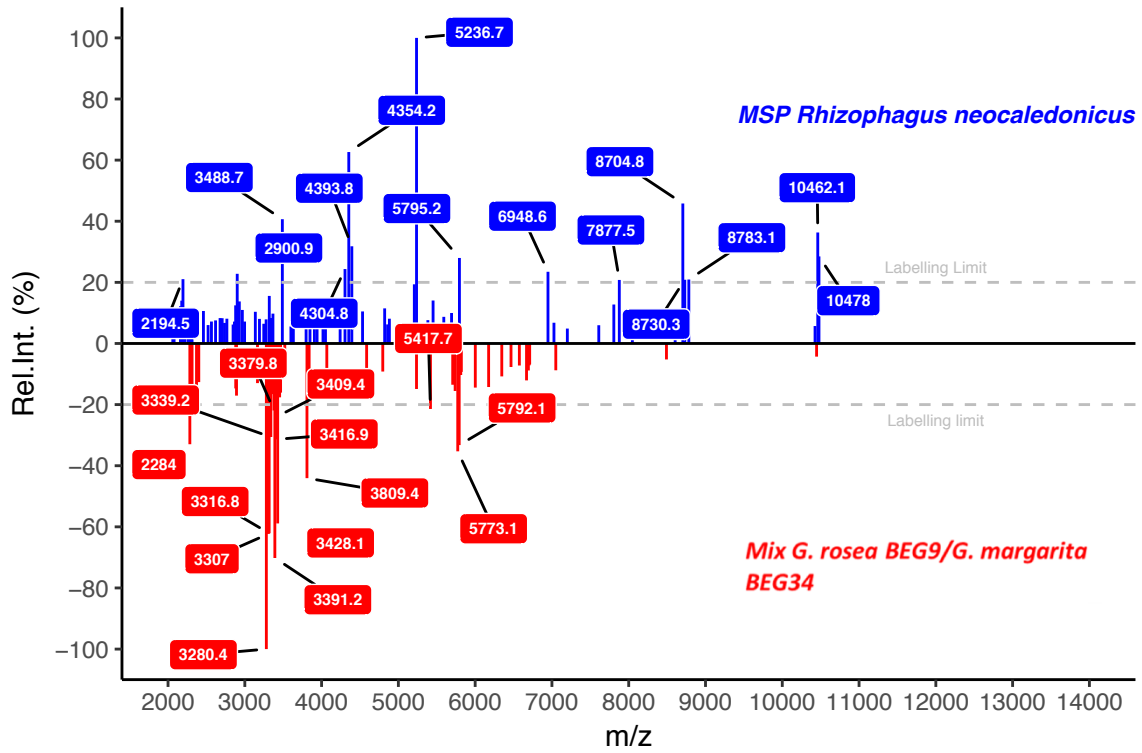


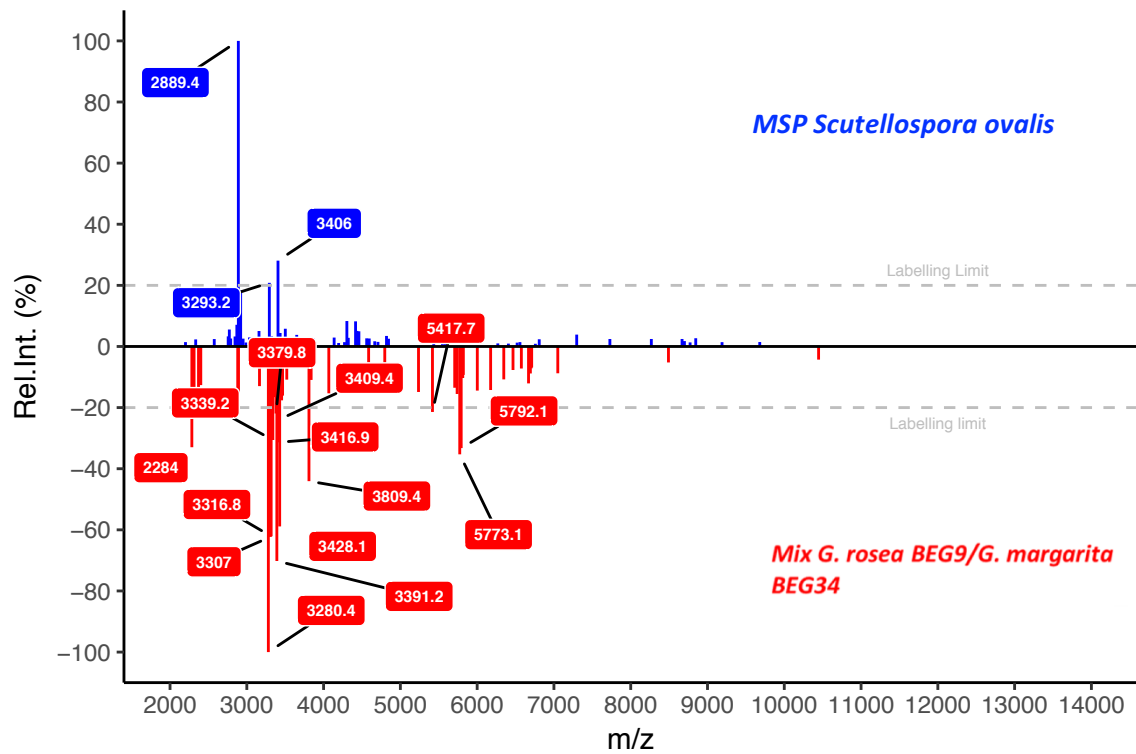












Supplementary Figure 4. Example of using the R (version 3.3.2³⁰) MSP importation data base on a mixed-species sample. The “unknown sample” (red; 1 spore of *G. margarita* BEG34/ 1 spore of *G. rosea* BEG9) is matched to MSP reference spectra (blue).