

Figure S2a. Group 1: S1CMH1d, S1C3H3d, S1C3H2, S1C12H3d, S1C6H1L, and fragment of S1C3H1L

Group 1 is marked according to the types of monomers in S1CMH1d.

Basic HOR S1CMH1d in ABBA01004652.1

| | | | | |
|---------|----|----|----|----|
| Mon | 1 | 2 | 3 | 4 |
| Type | A | B | A | B |
| Class | R2 | Um | J1 | R1 |
| Num | 1 | 2 | 3 | 4 |
| Group 1 | a | b | c | d |

Basic HOR S1C3H3d in ABBA01004655.1

| | | | | | |
|---------|----|----|----|----|----|
| Mon | 1 | 2 | 3 | 4 | 5 |
| Type | A | B | A | B | A |
| Class | R2 | R1 | J1 | R1 | J1 |
| Num | 1 | 2 | 3 | 4 | 5 |
| Group 1 | a | b | c | b | c |

Basic HOR S1C3H2 in GJ211866.1

| | | | | | | | | | | |
|---------|----|----|----|----|----|----|----|----|----|----|
| Mon | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Type | A | B | A | A | A | A | B | A | B | A |
| Class | R2 | J2 | J1 | R1 | J1 | R2 | J2 | J1 | J2 | J1 |
| Num | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Group 1 | a | b | c | b | c | a | b | c | b | c |

Basic HOR S1C12H3d in AEKP01211346.1

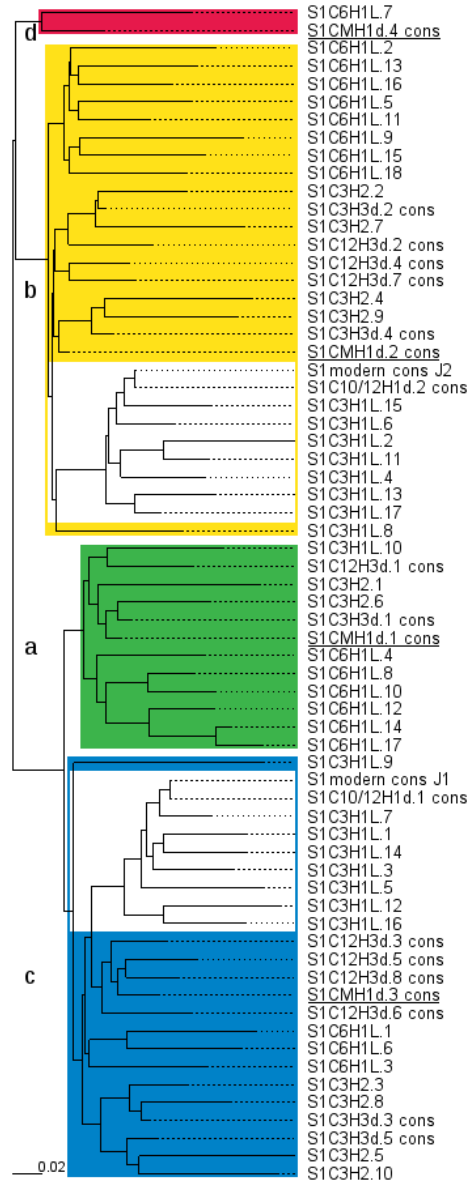
| | | | | | | | | |
|---------|----|----|----|----|----|----|----|----|
| Mon | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Type | A | B | A | B | X | A | B | A |
| Class | R2 | J2 | J1 | J2 | Um | Um | Um | J1 |
| Num | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Group 1 | a | b | c | b | c | c | b | c |

Basic HOR S1C6H1L in GJ211907.1

| | | | | | | | | | | | | | | | | | | |
|---------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Mon | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| Type | A | B | A | A | B | A | B | A | B | A | B | A | B | A | B | B | A | B |
| Class | J1 | J2 | J1 | J1 | J2 | J1 | J1 | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 | J2 | J1 | J2 |
| Num | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| Group 1 | c | b | c | a | b | c | d | a | b | a | b | a | b | a | b | b | a | b |

Basic HOR S1C3H1L in GJ211871.1

| | | | | | | | | | | | | | | | | | |
|---------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Mon | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| Type | A | B | A | B | A | B | A | B | A | A | B | A | B | A | B | A | B |
| Class | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 | J1 | Um | J2 | J1 | J2 | J1 | J2 | J1 | J2 |
| Num | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| Group 1 | c | b | c | b | c | b | c | b | c | b | c | a | b | c | b | c | b |



Note: Modern monomers of S1C3H1L are left not colored. One can see that they are derived versions of the 2 kinds of archaic monomers (b and c).

Group 2: S1C5pH2, S1C1/5/19H1L, S1C16H1L

Group 2 is marked according to the types of monomers in S1C5pH2.

Basic HOR S1C5pH2 in GJ211887.1

| | | | | | | | | | | | | | | | | |
|---------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Mon | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| Type | B | A | B | X | B | A | B | A | U | A | B | A | B | A | B | A |
| Class | J2 | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 | J1 |
| Num | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| Group 2 | a | b | c | d | e | f | e | f | g | d | a | h | g | b | c | d |

Basic HOR S1C1/5/19H1L in GJ212203.1

| | | | | | | |
|---------|----|----|----|----|----|----|
| Mon | 1 | 2 | 3 | 4 | 5 | 6 |
| Type | A | B | A | B | A | B |
| Class | J1 | J2 | J1 | J2 | J1 | J2 |
| Num | 1 | 2 | 3 | 4 | 5 | 6 |
| Group 2 | b | c | f | a | d | a |

Basic HOR S1C16H1L in GJ212051.1

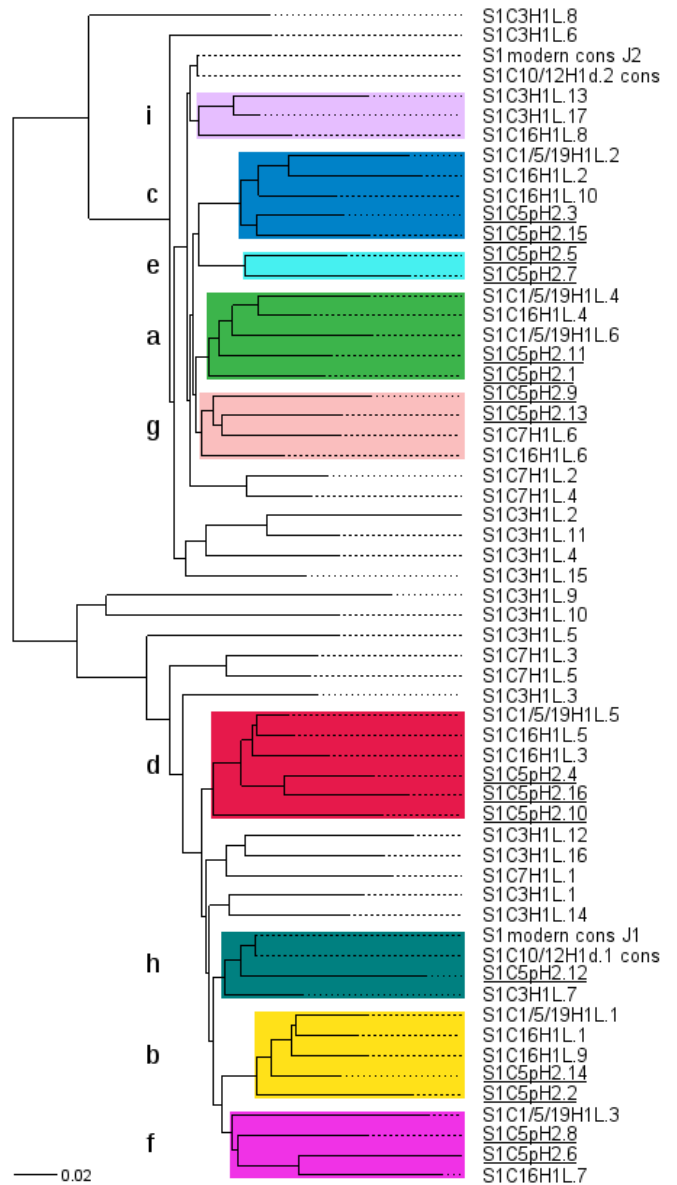
| | | | | | | | | | | |
|---------|----|----|----|----|----|----|----|----|----|----|
| Mon | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Type | A | X | A | B | A | B | A | B | A | B |
| Class | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 |
| Num | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Group 2 | b | c | d | a | d | g | f | i | b | c |

Basic HOR S1C7H1L in GJ211908.1

| | | | | | | |
|---------|----|----|----|----|----|----|
| Mon | 1 | 2 | 3 | 4 | 5 | 6 |
| Type | A | B | A | B | A | B |
| Class | J1 | J2 | J1 | J2 | J1 | J2 |
| Num | 1 | 2 | 3 | 4 | 5 | 6 |
| Group 2 | | | | | | g |

Basic HOR S1C3H1L in GJ211871.1

| | | | | | | | | | | | | | | | | | |
|---------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Mon | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| Type | A | B | A | B | A | B | A | B | A | A | B | A | B | A | B | A | B |
| Class | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 | J1 | Um | J2 | J1 | J2 | J1 | J2 | J1 | J2 |
| Num | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| Group 2 | | | | | | | h | | | | | | i | | | | i |



Group 3: S1C10H1L, S1C10H1-B, S1C10H1-C, and S1C10H2

Group 3 is marked according to the types of monomers in S1C10H1L.

Basic HOR S1C10H1L in GJ211932.1

| Mon | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---------|----|----|----|----|----|----|----|----|
| Type | A | B | A | B | A | B | A | B |
| Class | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 |
| Num | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Group 3 | a | b | c | b | c | b | a | e |

Basic HOR S1C10H1-B in GJ211933.1

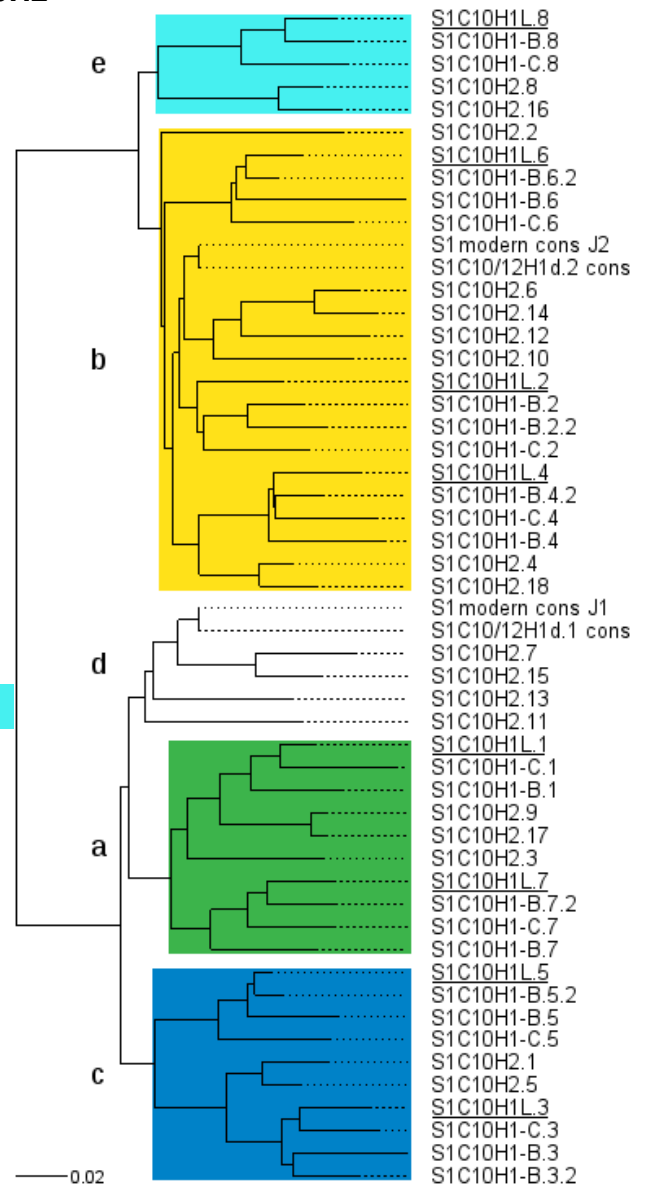
| Mon | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Type | A | B | A | B | A | B | A | B | A | B | A | B | A | B |
| Class | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 |
| Num | 1 | 2 | 3 | 4 | 5 | 2 | 3 | 4 | 5 | 6 | 7 | 6 | 7 | 8 |
| Group 3 | a | b | c | b | c | b | c | b | c | b | a | b | a | e |

Basic HOR S1C10H1-C in GJ211936.1

| Mon | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---------|----|----|----|----|----|----|----|----|
| Type | A | B | A | B | A | B | A | B |
| Class | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 |
| Num | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Group 3 | a | b | c | b | c | b | a | e |

Basic HOR S1C10H2 in GJ211930.1

| Mon | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|---------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Type | A | B | A | B | A | B | A | B | A | B | A | B | A | B | A | B | A | B |
| Class | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 |
| Num | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| Group 3 | c | b | a | b | c | b | d | e | a | b | d | b | d | b | d | e | a | b |



Group 4: S1C12H2 and S1C12H1L

Group 4 is marked according to the types of monomers in S1C12H2.

Basic HOR S1C12H2 in GJ211949.1

| | | | | | | | | | | | | | | | | | | |
|---------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Mon | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| Type | A | B | A | B | A | B | A | B | A | B | A | B | A | B | A | B | X | B |
| Class | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 |
| Num | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| Group 4 | a | b | c | d | e | b | e | f | e | g | c | b | e | f | e | | c | d |

Basic HOR S1C12H1L in GJ211954.1

| | | | | | | | | |
|---------|----|----|----|----|----|----|----|----|
| Mon | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Type | A | B | A | B | A | B | A | B |
| Class | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 |
| Num | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Group 4 | c | d | | g | c | d | e | g |

Basic HOR S1C7H1L in GJ211908.1

| | | | | | | |
|---------|----|----|----|----|----|----|
| Mon | 1 | 2 | 3 | 4 | 5 | 6 |
| Type | A | B | A | B | A | B |
| Class | J1 | J2 | J1 | J2 | J1 | J2 |
| Num | 1 | 2 | 3 | 4 | 5 | 6 |
| Group 4 | a | g | | g | | g |

Basic HOR S1C3H1L in GJ211871.1

| | | | | | | | | | | | | | | | | | |
|---------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Mon | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| Type | A | B | A | B | A | B | A | B | A | A | B | A | B | A | B | A | B |
| Class | J1 | J2 | J1 | J2 | J1 | J2 | J1 | J2 | J1 | Um | J2 | J1 | J2 | J1 | J2 | J1 | J2 |
| Num | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| Group 4 | | | | | | | | | | | a | f | | | a | f | |

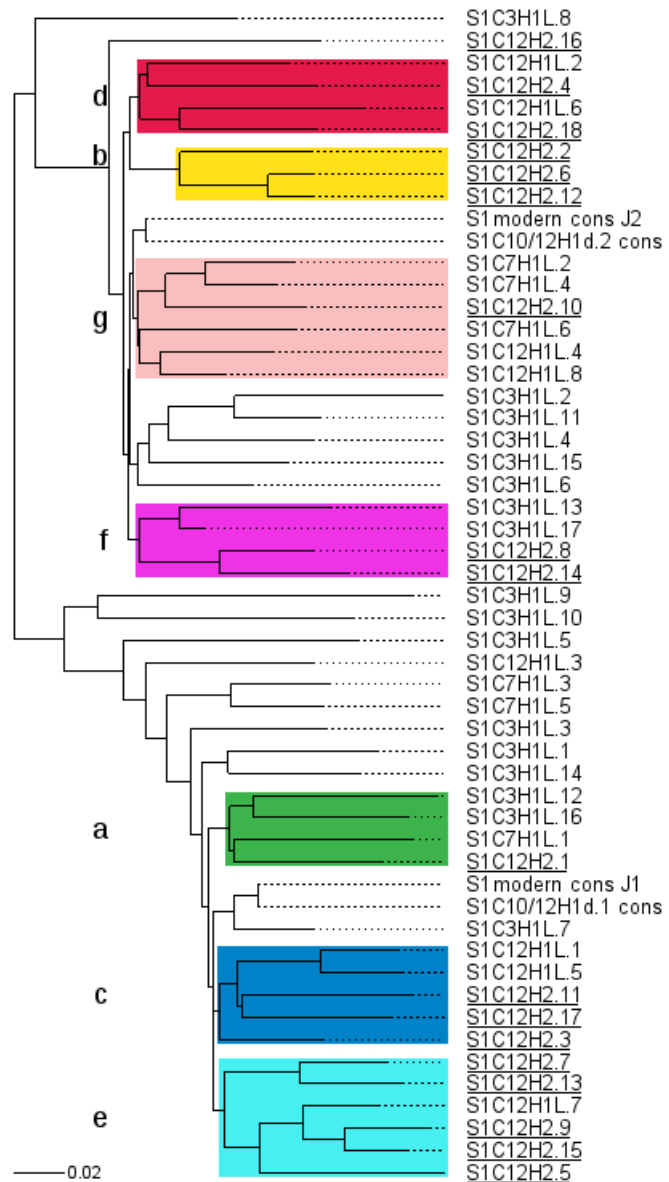
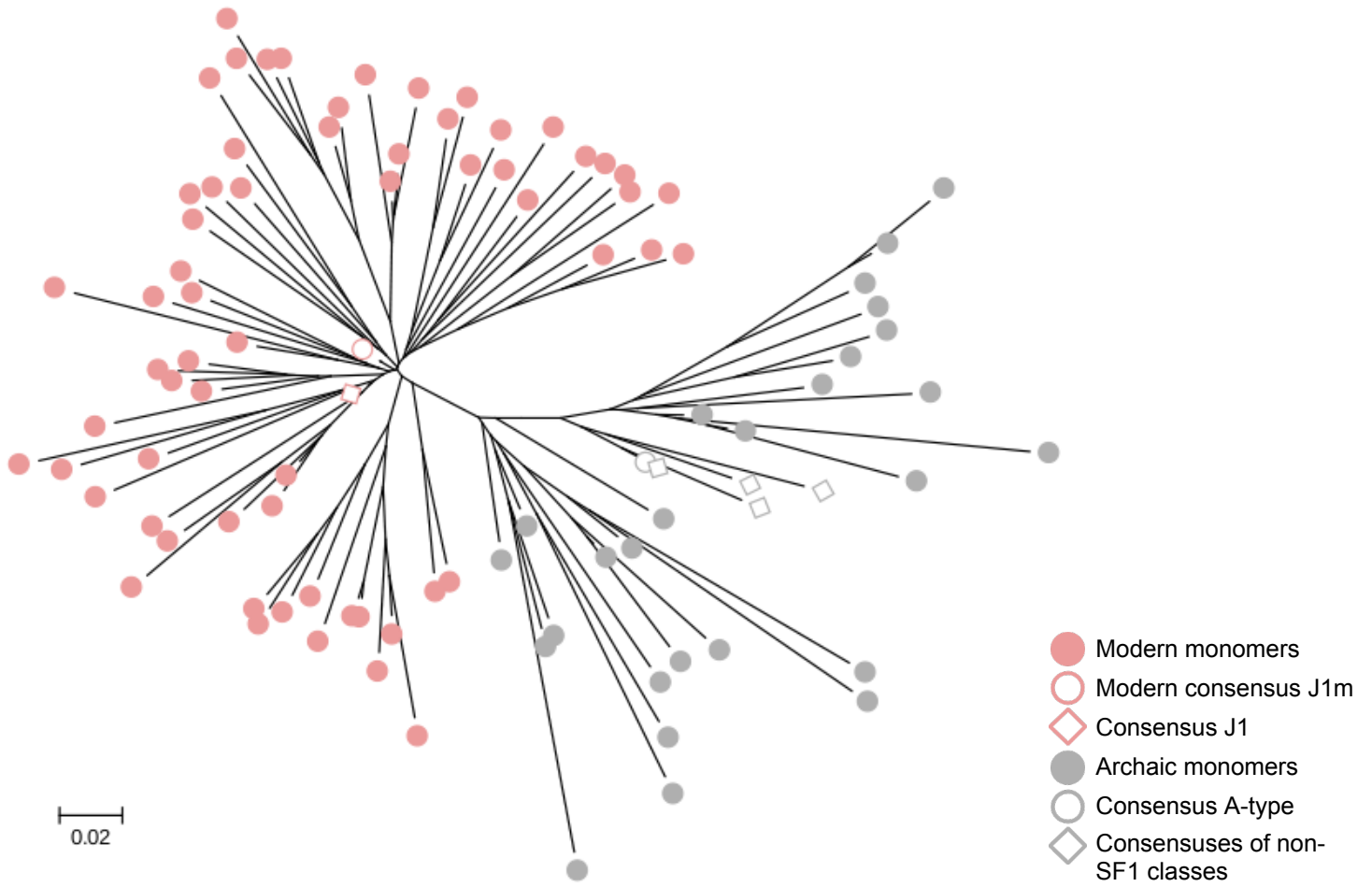


Figure S2b. SF1 A-type monomers



SF1 B-type monomers

